EA SPORTS™ COURSE ARCHITECT™

TABLE OF CONTENTS

INTRODUCTION 3
CONVENTIONS OF THE TOOL 4
COURSE ARCHITECT DOWNLOADS 5
BEGINNING COURSE DESIGNERS 5
ADVANCED COURSE DESIGNERS 5
QUICK COMMANDS 6
QUICK START 8
OVERVIEW OF COURSE ARCHITECT 12
GOLF COURSE ELEMENTS 13
DESKTOP ELEMENTS 16
WORK WINDOW 17
NAVIGATION WINDOW 20
CAMERA WINDOW 20
THE CAMERA 22
HOLE DEFINITION TOOL 24
GETTING STARTED 24
NEW COURSE WIZARD (NCW) 25
SAVING YOUR WORK 35
LOADING A COURSE 36
ERASING YOUR WORK 37
COMPILING COURSES 37
LAYING OUT A COURSE 38
BASIC DESIGN DECISIONS 38
COURSE DESIGN ISSUES 39
BUILDING HOLES 41
HOLE PLACEMENT 42
GENERAL GRADE OF THE COURSE 43
LARGER TERRAIN FEATURES 44
THE MEASURE TOOL 44
PANORAMAS 44
AMBIENT SOUND 45
TUTORIAL: CREATING HOLE 1 45
ON BUILDING A HOLE 46
SHAPING YOUR HOLE 46
HOW TO 56
COMMAND REFERENCE 63
MENUS 63
TOOLBARS 89

STATUS BAR 92
RIGHT-CLICK MENUS 93
HOLE DEFINITION 98
HOLE DEFINITION ELEMENTS 99
DELETING A HOLE 104
SHAPES 105
HOW TO CREATE A SHAPE 106
TEXTURES 107
SHAPE TOOLS 112
PATH SHAPES 118
TERRAIN 120
WHOLE LAND PLOTTING 121
VIEWING MODELING CLAY 125
MAKING TERRAIN FEATURES 125
MAKE IT NATURAL 127
ADDING MORE TERRAIN 128
OBJECTS AND THE LIBRARIAN 129
OBJECT TYPES 129
THE LIBRARIAN 131
POPULATING AREAS 134
SOUNDS 135
MOVE, DELETE, COPY AND PASTE OBJECTS 137
MISCELLANEOUS OBJECTS 138
THE EDGE OF YOUR COURSE 139
PANORAMAS 140
SKIES AND THE WEATHER 140
COURSE PERIMETER 141
OPTIMIZE DETAIL 143
OPTIMIZING AS YOU DEVELOP 144
WHEN TO OPTIMIZE 146
OPTIMIZING BEFORE COMPILING 146
COMPILING YOUR COURSE 147
PREPPING YOUR COURSE FOR COMPILE 148
COMPILING 149
IN THE GAME 150
REPAIRING YOUR COURSE 151
GLOSSARY 152
TECHNICAL SUPPORT 159
CREDITS 160

This product has been rated by the Entertainment Software Rating Board. For information about the ESRB rating, or to comment about the appropriateness of the rating, please contact the ESRB at 1-800-771-3772.

INTRODUCTION

Welcome to *EA SPORTS™ Course Architect™*, a complete 3D development environment. The *Course Architect* lets you develop courses for use in *Tiger Woods PGA TOUR® 06* in full 3D.

For years, this tool has been used to design, build, and compile golf courses for PC-based golf games. Now, you can use these professional design tools to build the golf course of your dreams. And, you can import your dream course into *Tiger Woods PGA TOUR 06* to challenge the Pros to a round or tournament on your custom course. Or, bundle your courses and publish them online to share your creations with other *Tiger Woods PGA TOUR 06* golf fans.

NOTE: Make sure every hole you create for a custom course has at least two pin positons when using a version of Course Architect prior to 06. Holes with only one pin position will crash when loaded. For more information about adding pin positons, see Pin Positions on p. 102.

Course Architect is a 3D development suite that shares features and methods with many popular 3D graphics programs. New for this year, Tiger Woods PGA TOUR courses feature whole land plotting. Through the New Course Wizard, you can design the entire plot of land containing your golf course, including general topography, large terrain features, substantial water areas and the basic layout and orientation of each hole.

When you have completed your course, you can use the Optimize Detail to prep your project for compiling. The *Course Architect* compiler then proofs and packages your course to include it in your suite of courses in *Tiger Woods PGA TOUR 06*. In the event of problems during compile, Repair Course can address many of them.

KEY FEATURES

Full 3D: All terrain, course and object elements are displayed in the *Course Architect* and the game in three dimensions.

Used for years to build courses for golf games, this professional tool has been tuned and updated for easy customer use.

Course creation tools fully integrated into one application for WYSIWYG (What You See Is What You Get) development.
Two view windows automatically update to let you switch in real-time from strategic planning to detailed implementation.
Three-plane camera positioning and movement puts the camera right where you need it.
Excellent movement and selection tools give you total command over the course and its terrain features.
Visual tool palettes with keyboard and menu equivalents let you tailor the controls to your personal preferences.
Get an idea, make the idea: Create holes in any sequence.
Build a course, send it to your friends, and play over the net.
Game time! One-button course compiler pumps your course from the *Course Architect* directly into the game for easy menu access.
Content Librarian of hundreds of objects, textures, and sounds speed the development process.
Compile courses in development to *Tiger Woods PGA TOUR 06* games for test-play. Build it and test it, and then perfect it to challenge the PGA TOUR Pros.

WHAT'S NEXT?

Course Architect has a number of terms that apply to its special brand of 3D modeling. While the terms seem easy to understand, they do have special applications inside the tool. For more information on specific terms, see *Overview of Course Architect* on p. 12 or *Glossary* on p. 152.

FOR MORE INFO about this and other titles, check out EA SPORTS on the web at **www.easports.com**.

CONVENTIONS OF THE TOOL

Length and width distances are measured in yards, feet and inches by default. However, you can switch between English Customary (yards) and metric systems of measurement.

To toggle the units of measurement, select USE METRIC in the View menu.

Toolbars group the most commonly used tools. However, you can access all of the tools through the menu system, and the most common menu tools can be selected with hot keys.

When an item is selected, you can often open a menu of relevant commands by clicking the right mouse button. One of the more important means of defining a course feature is through its Properties window, which, if available, can be accessed through the right-click menu. For more information, see *Right-Click Menus* on p. 93.

COURSE ARCHITECT™ DOWNLOADS

On a regular basis, the *Course Architect* team posts patches to the tool and new data files on the EA SPORTS web site. You can download free software patches and much more.

NOTE: For the latest information on *Course Architect™*, please visit **http://tigerwoods06.com**.

BEGINNING COURSE DESIGNERS

After installing *Course Architect* and reading this Introduction, beginning course designers should read the Overview chapter and follow the step-by-step tutorial to start a first test course. After you have completed the basic tutorial, you can use the rudimentary hole as a reference for further development and exploration.

ADVANCED COURSE DESIGNERS

Course Architect is a graphical tool that allows you both top-down and 3D views of your work. If you are familiar with 3D graphics tools, you may want to read the rest of the Introduction and then begin digging into the tool. As you learn, you may find the Quick Start, Reference, and Glossary sections helpful.

QUICK COMMANDS

Use the following Quick Commands to access the most commonly used functions of *Course Architect*. The keys are shortcuts to menu commands.

FILE QUICK COMMANDS

ACTION	KEYBOARD
New	CONTROL + N
Open	CONTROL + O
Save	CONTROL + S

EDIT QUICK COMMANDS

ACTION	KEYBOARD
Undo	CONTROL + Z
Delete	DELETE
Duplicate	CONTROL + D
Select All: Land Shapes	CONTROL + A
Select All: Hazards	CONTROL + H
Select All: Paths	CONTROL + P
Select All: Sounds	CONTROL + U
Select All: Objects	CONTROL + 2
Select All: Structures	CONTROL + 3
Drop Selected Shapes	INS

VIEW QUICK COMMANDS

ACTION	KEYBOARD
Librarian	SHIFT + L
Modeling Clay	SHIFT + M
Mesh	CONTROL + ALT + T
Scroll Work Window	←, →, ↑, ↓
Zoom Mode	Z
Zoom: In	Z + left mouse button
Zoom: Out	Z + right mouse button
Zoom: Select	ALT + Z
Zoom: Cancel	ALT + SHIFT + Z
Center Camera	CONTROL + C
Auto Focus Camera	SPACEBAR
Grid	G

TOOLS QUICK COMMANDS

ACTION	KEYBOARD
Create Land Shape	L
Create Path	P
Create Hazard Area	H
Create Course Perimeter	C
Rotate	CONTROL + R
Measure	CONTROL + M
Make a Hill	ALT + SHIFT + H
Make a Bunker	ALT + SHIFT + B
Make a Slope	ALT + SHIFT + L
Smooth an Area	ALT + SHIFT + S
Flatten an Area	ALT + SHIFT + F
Foresting Tool	SHIFT + F
Click-Click Object Tool	SHIFT + O
Hole Definition Tool	D
Sky Picker Tool	SHIFT + S
Point Count Indicator	ALT + CONTROL + D
Grid Settings...	SHIFT + G

QUICK START

This Quick Start guide is intended to get you up and working with the *Course Architect* in a short period of time.

NEED INSTALLATION HELP? Please see the enclosed Install Guide for installation instructions.

SOME TERMS

The desktop of *Course Architect* supports two different views on your golf course through three different windows. The entire course is displayed through the Navigation window, through which you can zoom in on selected pieces of the course to display in the Work window, the main window of the *Course Architect* application.

Through the Work window, you manipulate objects and land shapes. When you create a land shape in the Work window, it is floating on the terrain. By moving, adding and rotating the shape's control points, you can adjust the size and form of the land shape. You can use the shape to apply textures to the terrain, shape the underlying terrain, or both. When you have finalized your manipulations, you can drop the land shape into the terrain to make the shape and texture a permanent feature of your course.

Shapes have many functions, including terrain manipulation and object population. For more information on the functions and properties of shapes, see *Shapes* on p. 105.

Depending on whether the shape is floating or has been dropped, the contents of the right-click menus for that shape vary. For more information, see *Right-Click Menus* on p. 93.

To see your course as it would appear in the game, activate and use the Camera window. You can change the contents of the Camera window by repositioning the camera, which is represented by a black camera icon in the Work window.

To move the camera, click and drag the icon in the Work window. The contents of the Camera window are automatically updated.
To rotate the camera, click and drag the black triangle that is part of the camera icon. The contents of the Camera window are automatically updated.
Many shape manipulations can also be conducted through the Camera window. For more information about the camera and the Camera window, see *Camera Window* on p. 20.

At the bottom of the application window is the status bar, which contains the location of the cursor and the point count of the underlying shape. For more information, see *Status Bar* on p. 92.

Above the Work window, you can see the menu system and the toolbars of the *Course Architect*.

For more information about the contents of the menus, see Menus.
For more information on the Edit, Course, Navigation and Window toolbars, see *Toolbars* on p. 89.

Through the menu system, you can access the Librarian, which lets you place textures and objects in your project. For more information, see *The Librarian* on p. 131.

If you are having performance problems in the *Course Architect*, you can toggle display of resource-intensive course elements through the Layers tool. For more information, see *Layers* on p. 21.

To get started:

Prior to starting *Course Architect*, you should set your display to 1024 x 768 or higher in the Display control panel. For information on how to set it, see the Windows® Help file.

1. Close all other applications, including the game.
   Before you begin designing a course, you should have an idea or plan that you are trying to execute. To learn more about how to develop your plan and other issues to consider before building your course, see *Laying Out a Course* on p. 38.
2. Double-click the *Course Architect* icon. The program opens.
3. In the dialog box, click next to **CREATE A NEW COURSE**. Click **BEGIN**.
4. In the spaces provided, enter the name and description of your course. To define the entire workspace of your course, enter figures in the length and height of the course. For the time being, accept the default settings.
   Default measurements for length and height are in yards.
   1 meter = 1.1 yards.
5. Make sure that the box next to Use New Course Wizard is **checked**.

.

NOTE: The New Course Wizard is a very powerful tool for placing the holes and major land features of your course. This Quick Start guide just touches on the basics of using it. For more information, see *New Course Wizard* on p. 25.

To continue creating your course with the New Course Wizard, click NEXT.

6. Now, define the basic terrain of your course.
   To set the basic terrain of your course, check the box next to the appropriate location from the list on the left.
   To modify the degree of change in the terrain, use the slider bars on the right.
   Change area indicates the amount of area in which the changes to terrain are applied. A small change area combined with a severe change makes for very up-and-down terrain.
   Severity indicates the amount of change in any given change area.
7. Click **NEXT**. Now, select the location of your course.
   The location that you select essentially defines the vegetation set used when foresting areas in the New Course Wizard. Later, you can use vegetation from any of the installed course libraries.
8. Click **NEXT**. You can now place , water, forest areas and holes on the map of your course. Holes can have pars of 3, 4 or 5.

To save your work in the New Course Wizard, select SAVE from the File menu.

NOTE: It's highly recommended that you use the New Course Wizard to place all of the holes of your course. Although you can place holes in the *Course Architect* using the Hole Definition tool, using the Wizard is much faster and easier. For more information, see *Hole Definition* on p. 98.

To place a hole, water or forest onto the course, click the appropriate tab on the right side of the screen. Then, click and drag the appropriate icon onto your course. The element is placed.

NOTE: No hole or water shape placed in the New Course Wizard can cross another one. A forest shape can overlap other shapes.

To move the element to a different place, click and drag it. To rotate the item, click and drag at one end of it.
To place the element permanently on the course, click on it and then click **APPLY**.
Most dropped items can be picked up again and re-manipulated. After a forest has been applied to plant trees, the trees cannot be picked up again in the New Course Wizard.

Holes:

To change the hole number for a selected hole, select a new number from the Hole drop-down in the lower-right corner. Then, click **APPLY**.

NOTE: Check the hole number to be sure that you are not replacing an existing hole. The New Course Wizard overwrites the existing one.

Water and Forests:

To reshape a body of water or forest, click and drag one of the red control **points** in the shape to a new position.
To place the water or forest permanently on the course, click **APPLY**.

9. When you have placed at least one hole on your course, click **FINISH**.
10. Your course is now created. You may begin using the other tools of the *Course Architect*. For more information, see *Tools* on p. 72.

NOTE: Save your course before you begin work. Select SAVE from the File menu. In the dialog box, select a destination directory in which to save your course. Enter a filename. Then, click SAVE.

For detailed instructions on creating a hole, see *Tutorial: Creating Hole 1* on p. 45.

OVERVIEW OF COURSE ARCHITECT™

The following sections survey the tools and features of the *Course Architect*.

Each designer discovers his or her own strategy for designing in the *Course Architect*. Because it is a flexible tool, you can develop the holes of your course in an order that is most comfortable for you. However, it may not be comfortable for your computer. The *Course Architect* application generates a high number of computations and can use large amounts of memory. When the application is performing a high number of computations, your computer can slow down which, in turn, slows down your designing process. Throughout this help guide, there are notations to inform you when actions or features may slow down your computer. It is recommended that you add these elements toward the end of the development.

A generalized strategy for designing a hole starts with a vision of what you want to do. What is the basic shape and play for the hole? Does it start high and end low? Is the green protected? Are there subtleties to each shot? How challenging is the hole? Can aggressive golfers eagle the hole? How does the hole fit into the overall design of the course? These questions affect the concept for the hole and should be kept in mind during its design.

When you have a conceptual idea for the hole, you lay down the floorplan for the hole with the requisite land shapes (tee boxes and the greens) and any other land shapes that you want to include (fairways, roughs, hazards, sand traps, et cetera). Then, in the Hole Definition tool, you unify the placed elements as a single hole and lay down shot paths for the computer-controlled players to follow.

Most features of the hole are started in the Work window. This top-down view of your course lets you lay the major elements, called shapes, and apply textures to them to build course features such as fairways, greens, bunkers, water, and tees. With the Measure tool, you can judge distances between these areas to establish basic shots on the course. For example, you can measure the distance between the tee and the first turn to calculate the club that is needed to reach it.

When you have laid one or more course shapes, you may want to see how they appear in three dimensions. Represented as a black icon in the Work window, the camera can be positioned to display contents of the course in three dimensions in the Camera window. Changes made in the Work window are automatically updated to the Camera window, provided that the camera is in position to view such changes.

You can change the hole features in the Camera window, too. You can select areas of the course and apply terrain changes to them—raise, lower, flatten, smooth, and more. Changes in the Camera window are likely to ripple through the other hole features. Then, you return to the Work window to tweak a few things. Then, you view the results again in the Camera window. This iterative process continues until you are satisfied with the results.

When you want to test your work in the game, you can compile the course to the game. For more information, see *Compiling Your Course* on p. 147.

GOLF COURSE ELEMENTS

In a computer golf course, there are three basic components to design: textures, terrain and objects. In the *Course Architect*, textures and terrain are manipulated and placed with a tool called a shape.

A shape is a connected set of points that encompass a surface area on the course. When a shape is created, it is floating on the course. While it appears as a circular shape in the Work window, you can see that it is indeed floating on the terrain of the course in the Camera window. While a shape is floating, you can change the size, perimeter, and smoothness of the shape through its control points. Control points are used to define the perimeter of the shape. You can click and drag control points to change the perimeter of the shape, and you can add, delete and rotate control points to get the shape in perfect form.

A floating shape must follow a set of rules:

A shape cannot overlap any other shape, yet a shape can be completely enclosed in another shape.
The perimeter of a shape should not cross itself.
For more information on shapes, see *Shapes* on p. 105.

You adjust the form of the shape to create features on your golf course such as tee boxes, greens, fairways and bunkers. After you have defined the perimeter of these features with the shape, you must apply a texture to them. In general 3D graphic tools, a texture is a graphic image that is applied to the exterior of a 3D mesh. In the *Course Architect*, you apply specialized textures to shapes to assign a playing surface to it. When you choose a texture to display on your shape, you are selecting by extension a set of play characteristics. For example, when you apply a sand texture to a shape, you produce a sand bunker. In the game, when a golfer hits a ball into the sand, the specialized texture informs the game to play a soft sound and to proceed with the code that calculates the roll and the lie of the ball based on the trajectory of the shot.

You can identify one or more sections of the course as a hazard area. When a ball lands in a hazard area, the hazard rules of golf apply. For more information, see *Create Hazard Area* on p. 74.

After the texture has been applied to the shape, to make the textured shape a permanent part of the course, you must drop the shape. The shape now becomes a terrain object, which is a series of interconnected breakline points in the terrain.

You use shapes to manipulate the underlying terrain, too. Terrain refers to the shape of the land. Terrain greatly influences the play characteristics and appearance of a hole. Is the land raised or lowered? Are there depressions and hillocks on the hole? Does the land have features that are consistent throughout the entire course? In a regular golf course, terrain decisions are a major component of the development effort and are expensive to undo.

In a computer course, creating terrain features is a matter of pointing and clicking. The terrain of a computer course is described by a mesh of touching triangles, called faces. These triangles are sized and placed together to describe a 3-dimensional grid, called the mesh. You push and pull a seamless mesh that, in total, describes the outer shell of a 3D shape. When you manipulate a 3D shape, the computer changes the shape of the mesh

to seal it. Think of a wire mesh. You can change the shape of the mesh, and the loops adjust their size to accommodate.

To manipulate the terrain, you can 1) lift the shape used to define the course feature above or 2) create another shape and use it as a frame to make changes to the terrain underneath it. Through the first method, you can define areas of the course that have a single shape with a single texture on them. For example, you can create an elevated tee box by changing the perimeter of a shape, applying a texture, dropping the shape and then lifting it to use to elevate the terrain. Through the second method, you can create terrain features that cross over multiple course features. For example, you can create a bunker that is part of a slope below the green. Terrain manipulations can be applied over multiple dropped shapes.

Shapes are the fundamental tool for designing your courses and should be well-understood by every designer. For more information, see *Shapes* on p. 105.

On top of the terrain, you place objects and structures. Objects like trees and rocks can be added to give authentic flavor and interesting variation to your golf course. Additionally, you can add structures such as houses, shacks and clubhouses to make it feel like a real golf course. These 3D objects have the appearance and play characteristics of their real-world counterparts.

For more information on objects and structures, see *Objects* on p. 130.

In summary, the following steps loosely describe the order of development for defining and shaping an area of your course:

1. Create a shape. Move its control points to reshape it.
2. Apply a texture. Drop it into the terrain.
3. Use the same shape or create a new one. Move its control points to reshape it.
4. Use the Course tools to change the underlying terrain.
5. Add objects and textures to the area.

Applied many times across your project, this iterative process produces the terrain and course features of your ideal course. Then, you can add the touches described in the following section.

ADDITIONAL COURSE ELEMENTS

HOLES

A full golf course is composed of eighteen holes. In *Course Architect*, the hole is the basic unit of development; to build a course, you build eighteen separate holes.

SKIES AND PANORAMAS

Other features that can be included are panoramas and skies. Panoramas give the appearance of the horizon in photographic detail, and you can select which panorama you want to appear along the perimeter of your course. The skies fill in behind the panorama, and you can view your course under various sky conditions through the Sky Picker tool. The panoramas and skies of the *Course Architect* have been designed to seamlessly blend together.

For more information on the Sky Picker tool, see *Sky Picker Tool* on p. 84.

SHADOWS

Tiger Woods PGA TOUR 06 automatically computes the sun's shadows over objects like trees, rocks, and other terrain features. In the game, users can choose to display these lighting effects. When your course is compiled to the game, players can toggle display of shadows, as shadows can be very demanding of system resources. Water reflections are also selectable for display in the game only.

DESKTOP ELEMENTS

Click on any of the following links to learn more about a type of element found on the desktop of the *Course Architect*. You can browse the information here to get a better understanding of the structure of the tool. Or you can use it as a reference.

Prior to starting the *Course Architect*, you should set your display to 1024 x 768 or higher in the Display control panel. For information on how to set it, see your Windows Help file.

Work window - Tools and functions of the main application window.

Camera window - Tools and functions of the Camera window, which displays the course from a 3D camera's point of view.

Camera - Placement and settings for the camera icon, which determines the contents of the Camera window.

Navigation window - Tools and functions to display different areas of your project in the Work window.

Hole Definition tool – Define gameplay elements of a hole on the course.

Menus - All menu items and functions, sorted by menu.

Right-Click Menus - Descriptions of the right-click menus that appear based on what has been selected in the Work window.

Toolbars - Descriptions and contents of each of the five toolbars.

QUITTING THE PROGRAM

To safely exit the program, select EXIT from the File menu.

If prompted, save your work, or unsaved changes will be lost.

WORK WINDOW

The Work window gives you the best perspective on the course. From this top-down view, you can see the shapes and objects that populate the area of the course beneath. Most course creation and editing work is done in the Work window, including object positioning, shape selection and elevation changes.

When a project is opened in the *Course Architect*, the Work window is visible at all times. Its contents can be changed with the Navigation tools in the toolbar, and those contents can be zoomed in or out.

The Work window can float inside the *Course Architect* application window or can be maximized to fill the window.

In the Work window, you can place the camera. The camera looks out on the course and projects what it sees in the 3-dimensional view in the Camera window.

At the bottom of the Work window is the status bar, which contains important positional information about the cursor. For more information, see *Status Bar* on p. 92.

CONTENTS OF THE WORK WINDOW

The Work window lets you change its contents to display the entire map of the course or a part of a land shape that is no more than a few inches across. With the Zoom tools in the Navigation bar, you can change the focus of the Work window's camera.

To zoom in and out on your hole, click the Zoom tool. To zoom in, left-click. To zoom out, right-click. You can zoom in and out multiple times.
To scroll the Work window, use the Arrow keys. Or, click the Grab tool. Click and drag the hand icon over an area in the Work window on which you want to view. The Work window is updated to focus on this selected area.
To return the view for the Work window to its default height and focus, click the Cancel Zoom button.
To zoom in on a specific area of the Work window, click the Zoom Select tool. Click and drag a rectangle around the area in the Work window on which you want to zoom. The entire contents of the rectangle are then displayed in the Work window.

To resize the Work window, click and drag from the lower-right corner of it.
You cannot resize the Work window if it is maximized. To make the Work window float in the *Course Architect* application, select FLOAT from the Work sub-menu of the Window menu.
To focus the camera on a shape, select the shape in the Work window. Then, select **AUTO FOCUS CAMERA** from the View menu. The camera now focuses on your selection.
To center the camera in the Work window, select **CENTER CAMERA** from the View menu or press CONTROL + C.
To edit the fundamental properties of the current hole or to define a set of unrelated shapes as a hole, select **HOLE DEFINITION TOOL** from the Tools menu. For more information, see *Hole Definition* on p. 98.

SHAPES IN THE WORK WINDOW

To create shapes in the Work window, select **CREATE LAND SHAPE** from the Tools menu. Click a location in the Work window. Then, click to define the control points of your shape. Right-click to finish the shape. For more information, see *Shapes* on p. 105.
To define the type of texture in your shape, click the shape and then right-click in it. Select **PROPERTIES**. Select the texture type from the drop-down list and click OK. The texture becomes visible when you drop the shape. For more information, see *Textures* on p. 107.

GRID SIZE

You can layer a grid of dots on top of the Work window. For placing and aligning objects and shapes, it is a useful feature.

To toggle display of the grid, press G.
To change the size of the grid, select **GRID SETTINGS...** from the Tools menu or press SHIFT + G. For more information, see *Grid Settings* on p. 86.

NAVIGATION WINDOW

Unlike tools that require courses to be developed hole by hole, the *Course Architect* lets you move around your entire course to focus on various pieces of it as needed. The primary tool for navigating your course is the Navigation window. The Navigation window lets you change the contents of the Work window so that you can work on different parts of the course, as you see fit.

To toggle display of the Navigation window, select **NAVIGATION** from the Window menu.
To change the contents of the Work window, zoom in and reposition the focusing rectangle in the Navigation window. The Work window is automatically updated.

NOTE: Displaying the Navigation window can impact performance. To increase performance in the *Course Architect*, deselect display of the Navigation window in the Window menu.

CAMERA WINDOW

When developing 3D art on a computer, you are confronted with an irresolvable fact: you cannot display three-dimensional objects on a 2D screen without some form of interpretation. In the *Course Architect*, this interpretation is the Camera window.

To toggle display of the Camera window, select **CAMERA** from the Window menu.

The Camera window displays what is viewed from the camera that is placed in the Work window. The Camera window is your eye on the course. If you were playing the course as a golfer in the game, you may see the course as it is displayed in the Camera window.

You can select and manipulate shapes in the Camera window as you do in the Work window.
To resize the Camera window, click and drag any side or corner.

The Camera window is a powerful tool that gives you infinite perspectives on the course through repositioning the camera. For more information, see *The Camera* on p. 22.

TERRAIN

The Camera window is the best place to fine-tune your terrain features. While you can start large-scale terrain features such as hills and ridges in the Work window, you can give them subtlety and definition in the Camera window.

The multiple terrain selection tools allow you to highlight terrain pieces of any size and shape. With the terrain tools, you raise, lower, tilt, flatten, smooth, and add noise to them. For more information, see *Terrain* on p. 120.

LAYERS

The Layers tool allows you to select and deselect course elements to display in the Work window. Depending on the capabilities of your computer and the size and contents of the Camera window, you may notice an impact on the performance of the *Course Architect*. In such cases, it may be a good idea to deselect the display of some course elements, so that you can concentrate on the work that needs to be done, and the computer can concentrate on updating the screen with your changes.

To open the Layers tool, select **LAYERS** from the Tools menu. In the Layers tool, toggle display of layers that you do not need to see currently. Close the pop-up window. The Work window is updated.

PICKING SKY AND PANORAMA FROM THE CAMERA WINDOW

To get the right look for the sky and the panorama of your course, you can define these elements from inside the Camera window.

To choose a different sky, right-click on the sky in the Camera window. Select **CHOOSE SKY DOME**. The Sky Picker Tool opens. For more information, see *Sky Picker Tool* on p. 84.

To choose a different panorama, right-click on the sky in the Camera window. Select **CHOOSE PANORAMA**. The Choose Panorama window opens. For more information, see *Panorama Properties* on p. 85.

THE CAMERA

Aiming triangle

When the Work window is active, you can move the camera and update the Camera window. In the Work window, the camera is represented by a black square with a triangle attached to one end of it. The open side of the triangle indicates the direction in which the camera is pointed.

To toggle display of the Camera window, select **CAMERA** from the Window menu.

To focus the camera on a different area of the course, click and drag the camera icon to a new location in the Work window. The Camera window is automatically updated.

To move the camera without redisplaying the Camera window, hold CONTROL down while you click and drag. Make your position changes. Then, release CONTROL to update the Camera window.

TIP: If you are experiencing slow times in refreshing the camera, you may want to use the above method for moving the camera. It is also useful for making very fine movements of the camera.

NOTE: If you mistakenly drag the camera out of the Work window and into the Camera window, press CONTROL + C to center the camera back in the Work window.

To rotate the camera, click and drag the triangle on the camera icon to a new position. The Camera window is automatically updated.

You can also change the height and angle of the camera. For more information, see *Camera Properties* below.

To center the camera in the Work window, select **CENTER CAMERA** from the View menu.

To focus the camera on what is currently selected in the Work window, select **AUTO FOCUS CAMERA** from the View menu.

A NOTE ABOUT 3D DIRECTIONS

Movements in three-dimensional space can be described in three directions. Stand up from your computer. Let's call the position where you are located, "Point A."

The **X-direction** refers to steps to the left or right of Point A.

The **Y-direction** refers to changes in elevation from Point A. From where you're standing, movements in the Y-direction require you to jump into the air or dig into the ground. Before you get a shovel, let's get back to the computer.

The Z-direction refers to steps to forward or backward of Point A.

Often, movements can be described in planes. A plane is a perfectly flat surface that extends to infinity. Imagine an infinitely floor—a plane. In 3D space, the **X-Y plane** refers to all of the positions that can be described as movements in the X-direction or the Y-direction—not the Z-direction. While you can describe movements in the other two planes (X-Z plane and Y-Z plane), most planar movements in the *Course Architect* are described in the X-Z plane and the Y-direction.

CAMERA PROPERTIES

The Camera in the *Course Architect* can be positioned at any angle to display the viewed terrain in the Camera window. Through the Camera Properties dialog, you can position the Camera's elevation, pitch and direction as needed.

Elevation indicates the height at which to place the camera above the terrain.

NOTE: When the camera is placed high above the terrain, small changes in elevation are difficult to see in the Camera window. To see small changes in elevation, position the camera close to the ground. Position the camera about nine feet off the ground to view the course as you would see it when the course is played in the game.

Pitch points the lens of the camera at an angle relative to the horizon. For example, a pitch of –10 degrees aims the camera at a slightly downward angle.

Direction measures that angle at which the camera is pointed. An angle of 0 degrees points the camera at the top of the screen.

To open the Camera Properties, right-click on the camera icon in the Work window. Then, select **PROPERTIES**. Make changes as needed. To accept the changes, click OK. To close the Camera Properties dialog box without making changes, click **CANCEL**.

NOTE: Rendering the view of the camera can take time if you have a lower-end machine. If you are experiencing an impact on the Camera window's update speed, you might consider opening the Camera window only when you need to proof your work. Or, you can deselect the display of some layers in the Work window. For more information, see *Layers* on p. 21.

HOLE DEFINITION TOOL

You can define a set of shapes in the *Course Architect* as a course hole through the Hole Definition tool. By identifying the tees, greens and shot paths of a hole in the Hole Definition tool, the hole is defined.

To open the Hole Definition tool, select **HOLE DEFINITION TOOL** from the Tools menu, or you can click the Define Holes button on the Course toolbar. For more information about defining holes inside the *Course Architect*, see *Hole Definition* on p. 98.

You can also define holes through the New Course Wizard. For more information on the New Course Wizard, see *New Course Wizard* on p. 25.

GETTING STARTED

Getting started in the *Course Architect* is easy. Finishing a course takes some work, but the tools of the *Course Architect* hopefully make that work fun to complete. This chapter discusses how you can begin to develop entire golf courses in the *Course Architect*. At the conclusion of this chapter, you should have enough information to begin development of your own project and references to other parts of the documentation to explore topics in depth.

Prior to starting *Course Architect*, you should set your display to 1024 x 768 or higher in the Display control panel. For information on how to set it, see your Windows Help file.
To start *Course Architect*, double-click the *Course Architect* icon or use the Windows Start menu. The program opens. To begin creating a new course with the New Course Wizard, check the box next to Create a New Course. Then click **BEGIN**. For more information on creating new courses, see *New Course Wizard* below.

NOTE: When you are using *Course Architect*, it is highly recommended that you close all other programs. The tool needs as much RAM as your system can maximally provide.

NEW COURSE WIZARD (NCW)

When you begin to build a new course, you have two choices for your approach. You can build the course from scratch, or you can use the New Course Wizard to set the basic course parameters, terrain characteristics and location. The New Course Wizard gives you a good start towards building an entire course and is recommended for beginning and expert designers.

You can use the New Course Wizard to lay out some basic terrain elements, water, forests and one or more of your holes. The layout tools are a sub-set of the entire set of *Course Architect* tools and are primarily intended to get the basic shape and position of course elements. However, if you do know exactly what you want, with each hole positioned in a precise location, the New Course Wizard lets you complete your layout to that level of detail.

NOTE: To start a new project, you should check first to see that you have enough space. To start, you should have at least 200MB of free hard drive space—as much as possible, really.

Course Architect from EA SPORTS lets you build the golf course of your dreams. Or you can recreate any of the twenty-seven courses on the PGA TOUR. A specialized suite of graphical tools puts the bulldozers, landmovers, and lawn mowers at your fingertips.

ADVANTAGES OF THE NEW COURSE WIZARD:

When you use the New Course Wizard, you can accomplish quite a bit with a minimum of effort. In the *Course Architect*, the following features are available only through the New Course Wizard:

Randomize terrain. After you enter a few parameters, the New Course Wizard can create realistic terrain that blends together yet retains a sense of randomness. You can create overall effects from flat swampland to rugged mountains.

Place entire holes. In the New Course Wizard, you can place the basic elements for entire holes. You do not have to place the fairways, tees, greens and shot paths individually.

Apply entire foresting libraries. The New Course Wizard lets you populate entire forested areas with a selection of trees from the library of your choice. It's a quick way to create natural populations of flora.

Speed and ease of laying out all 18 holes. In a very short period of time, you can lay out all of the major features of your course, including all water areas, forests and all 18 holes. It's a great way to start.

BEFORE USING THE NEW COURSE WIZARD

If you are ready to begin development of a course, you may want to do some pre-production work prior to beginning the New Course Wizard.

NOTE: When you develop a course, you can use the New Course Wizard **one and only one time.** Therefore, it's wise to know what you're trying to accomplish with the tools in the New Course Wizard prior to using them.

The following elements should be considered prior to beginning development with the New Course Wizard:

Size. What are the length and the width of the golf course? What is the total area that you are going to design? Keep in mind that you should have at least 10% extra area on the sides of your course for appearance and design reasons. At a later time, you can trim off this fat as needed.

Terrain features. What are the major terrain features of your course? A giant mountain on one side? A lake around which the course is created? Do sections of forested area dapple your course? You can build rough-cut versions of these features inside the New Course Wizard.

Location. Where is your course located? If you know the geographic location of your course prior to using the New Course Wizard, you can place textures and some objects.

Hole placement. How much do you know about the placement of the holes on your course? Do you know the angular orientation of each hole? Do you know the distances between each hole? If possible, acquire or draw a map of the basic hole locations and relationships before beginning.

Hole par. What is the par for each hole? Based upon the par for a hole, you can select from one of several basic shapes. Standard total par for an 18-hole course is 72.

1. COURSE NAME & SIZE

1. To begin creating your new course, select NEW from the File menu. The New Course window opens.
2. In the spaces provided, enter the name and the Course description information.
   The **Course Name** appears in *Tiger Woods PGA TOUR 06* in the Select Course screen. It is not a filename.
3. In the Height and Width boxes, enter the total dimensions for the land plot that you want to use for creating your course.

NOTE: Be sure to give yourself at least a 10% cushion on each dimension. You may need the extra room. Also, the blending of the terrain with panoramas and skies works better if you give yourself a bit of room to create the appropriate perspective.

If you know the course dimensions in meters but the display is in yards, quit the New Course Wizard. Then, select **USE METRIC** under the View menu. Select **NEW** from the File menu to begin again the New Course Wizard.

4. To use the New Course Wizard, you must check the box next to Use New Course Wizard.
5. Click **NEXT**. The New Course Wizard begins.

2. BASIC COURSE TERRAIN

After defining the name, description and size of your course, you must configure the basic terrain for it.

1. On the left-hand side of the Randomize Terrain, you select the basic topography of the terrain. Click the button next to the general type of terrain to use. When you make a selection, the slider bars on the right side of the screen change automatically.
2. After you select the basic terrain type, you can make adjustments to the terrain with the slider bars on the right side of the dialog box.
   Change area indicates the amount of area in which the changes to terrain are applied. A small change area combined with a severe change makes for very up-and-down terrain.
   Severity indicates the amount of change in any given change area.
3. When you have finished making your adjustments to the basic terrain, click NEXT. The Course Location window opens.

3. COURSE LOCATION

NOTE: If you do not see a dialog box at this juncture, then you did not choose to use the New Course Wizard. You can either begin using the *Course Architect* to build your course from scratch or start again with the New Course Wizard. To begin creating your course again, select NEW from the File menu. Make sure the box next to Use New Course Wizard is checked.

1. In the Course Location window, you are essentially selecting the default library to add to your course. Here are brief descriptions of the available libraries:
   Northern California Coast: Library from Pebble Beach, Poppy Hills, and Spyglass courses.
   Southeastern US: Library from TPC at Sawgrass course.
   UK Coast: Library from Royal Birkdale course.
   Tropical: Library from Princeville course.
   Rocky Mountains: Combo library of large pines and deciduous trees from TPC at Sawgrass and Pebble Beach.
   Palm Springs: Combo library of palms from TPC at Sawgrass and Princeville and desert-looking vegetation from other libraries.

Later, from inside the *Course Architect*, you can access libraries that contain objects and textures from other environments. For more information, see *The Librarian* on p. 131.

2. When you have selected your location, click **NEXT**.

4. NEW COURSE WIZARD

You are now placed in the New Course Wizard, where you can use placement tools to create, position and drop entire holes, water and forests into your course.

NOTE: You can save your work in the New Course Wizard. Select SAVE from the File menu.

These tools allow you to do the first pass at designing your course. You can position and shape the large-scale features, but the New Course Wizard is probably not the right method for fine-tuning your course.

TIP: For some of our in-house designers, the best way to use the New Course Wizard is to create a large-scale terrain feature, such as a lake or a major forested area. Using the feature as a point of reference, you can then position the holes that abut the feature. After that, your development efforts are probably best realized with the tools on the *Course Architect* desktop.

On the left side of the screen, you can see the course as it has been designed using the terrain and location selection tools. Areas of lighter color indicate higher elevations, with darker colors representing lower elevations.

To zoom in on a particular area, click the Zoom button and then click on the location where you want to zoom.
To select an area to fill the display of the NCW Work window, click the Zoom Select button. Click and drag a rectangle around the area that you want to display in the NCW Work window.
To return the NCW Work window to its starting position, click the Cancel Zoom tool.

NOTE: In the New Course Wizard, you cannot tweak the terrain beneath the elements that you place. Don't worry about the details for now; the *Course Architect* has plenty of tools to get the right effect.

On the right side of the screen, you can see the tabs and tools to select and place elements on the course.

To place an element, click on the proper tab. A list of icons is displayed. When you decide the basic shape that you want to use, click and drag the icon onto the NCW Work window. The shape appears in the window as a **floating shape** and can now be repositioned. Water and forest elements can be reshaped, too.
To **drop** the shape into the terrain, click **APPLY**. The element is now part of the terrain.
To undo your most recent action, press CONTROL + Z.
To delete the selected shape, press DELETE.
To finish using the New Course Wizard, click **FINISH**.

Rules for placing elements:

When you place elements in the New Course Wizard or with the *Course Architect* tools, the following rules apply:

Shape lines should not cross over themselves.
Shape lines cannot cross over other water or holes.

Notes on the particulars of placing each type of object are listed in the following sections.

A. WATER AND FORESTS

When you place a body of water or forest on the course, it appears as a floating shape. You can reposition and reshape this figure to get it to fit appropriately on the course.

NOTE: When you create a water shape in the New Course Wizard, the underlying terrain still retains the generated elevations and depressions. Unless you are creating a moving stream, you may want to reshape and then flatten the terrain beneath the water in the *Course Architect* with the Smooth tool. These tools are available after you finish the New Course Wizard. For more information, see *Smooth an Area* on p. 80.

TIP: To create an island in the middle of water, create the water shape in the New Course Wizard (or later in the *Course Architect*) and then later create a shape inside of the water shape. Use the Make a Hill tool to lift the shape out of the water. Then, apply a land-type texture to it, and you've got an island.

To reposition the shape, click and drag it to a new location.
To change the shape, click and drag one of the **control points** to a new position.

NOTE: You cannot add or remove control points in the New Course Wizard. However, you can place the shape in the Wizard and then lift and reshape it later inside the *Course Architect*.

To place the shape into the terrain, select the shape. Then, click **APPLY**. The shape is placed into the terrain.
To delete the shape, select the shape. Then, press DELETE. The shape is removed.

Notes on placing forests:

Placing forests is very similar to placing water. The location that you chose determines the type of vegetation that you can use.

NOTE: In the *Course Architect*, you can configure the height, variation of height and density of your forested areas. These options are not available in the New Course Wizard. For more information, see *Foresting Tool* on p. 81.

B. CREATING HOLES

In the New Course Wizard, you can place and rotate entire holes whether they are par 3, par 4 or par 5.

Rules for creating and placing holes:

Holes cannot cross over themselves.
Holes cannot cross over water or other holes.
Holes cannot encompass water or other holes.

To place a hole:

1. To place a hole in the New Course Wizard, you first select the number of the hole that you are about to create.
   It's not necessary to create all eighteen holes or to create them in numerical order.
   To select a hole to place, use the up and down arrows on the Hole Indicator in the lower-right corner of the screen.

NOTE: In the *Course Architect*, you can place the Driving Range, Chipping Area and Putting Green for your course. However, you must do so from within the Hole Definition tool, which is not part of the New Course Wizard. For more information, see *Hole Definition* on p. 98.

2. Now, select a hole template based on the par for the hole. Click the tab that indicates the par from the hole. From the list of basic shapes, choose one that you want to use. Click and drag it into the NCW Work window.

NOTE: A standard course has a total par of 72, which averages to a par of 4 on each hole. Therefore, to make a standard course, you should have an equal number of par 3's and par 5's; many courses have four par 3's and four par 5's.

After you add the hole to the project, you can rotate it so that it matches the orientation that you need.

3. When the hole is placed, you can reposition it as needed.

NOTE: Because of the scale of the New Course Wizard, it can be difficult to see if one shape is crossing over another shape. So, it's recommended that you avoid getting too fine in your placement and rotations. You can make subtle adjustments using the Course tools in the Tools menu of the *Course Architect*.

To reposition a hole, click and drag it to a new location.
To rotate a hole, click and drag at one end of the hole until the hole is oriented in the correct direction.

4. When you are satisfied with the placement of the hole, you must drop it into the course.
To drop the hole into the course, select the hole in the NCW Work window. Then, click **APPLY**.

NOTE: When the *Course Architect* attempts to drop a hole into your project, it performs a number of checks to ensure the consistency and viability of your project. If an error is reported, it must be corrected before the hole can be placed in the project.

To delete the hole and start over, press DELETE.
After you finish up with the New Course Wizard, you can create holes through the Hole Definition Tool. For more information, see *Hole Definition* on p. 98.

5. FINISH

When you press FINISH, the New Course Wizard completes the final actions to embed the water, forest and holes that you placed into the terrain. These objects are now part of your project.

You are now in the *Course Architect*, with the beginnings of your course displayed. Your first task is to save your course.

To save your course, select **SAVE** from the File menu. Navigate your local hard drive to find a location for your project.
It's recommended that you create a new folder and label it with the name of your course. Save your project inside this folder.

NOTE: After you have started your project, it's okay to move your .TCA files. However, to move .TCL (library) or .CRS (course) files, use the Course Utilities. For more information, see Course Utilities in your game documentation.

To see your project in a 3D perspective, select **CAMERA** from the Windows menu. Then, select **CENTER CAMERA** from the View menu to place the 3D camera in the center of the Work window.

Your project is saved in one file with the extension .TCA. In addition to the .TCA file, your course may use one or more course libraries (.TCL). It's likely that these files are not stored in the same directory, but the *Course Architect* knows where to find them.

WHEN USING COURSE ARCHITECT, save your work on a regular basis. Your project may take more than one day to complete. It's a good idea to back up your work on a regular basis..

You can now begin to design in earnest. For more detailed information, see the following topics in this documentation:

Overview of Course Architect (p. 12). An overview of the *Course Architect* desktop.
Tutorial: How to Create Hole 1 (p. 45). A step-by-step tutorial for how to create a hole from scratch outside of the New Course Wizard. Also, tutorial covers how to create key course elements such as cart paths and sand traps.
Command Reference (p. 52). An explanation of all of the menu and toolbar commands.

SAVING YOUR WORK

When you are loading and saving projects, keep the data on a local drive. Do not load your projects from external media or from a connected network. Performance can be significantly impacted.

To save your project, select SAVE from the File menu.
The default directory for saved projects is C:\My Documents. You can choose to save in any directory.
To save a version under a different name, select **SAVE AS...** from the File menu.
The Save As feature is useful if you are engaged in major changes to your course or if you want to experiment without committing to the change.
To open a different project, select OPEN from the Project menu. If prompted, you can choose to save your current project.

LOADING A COURSE

To load your project, you load the *Course Architect* file. These files end with the .TCA extension.

To load a project, select OPEN from the File menu. Navigate to the folder where you initially saved your project. Select the .TCA file and press OPEN. Your project opens.
If you cannot see your project file, make sure the Files of Type box reads, "*Course Architect* File".

The *Course Architect* file contains all of the data necessary to describe the contents of your course. It does not contain the object and texture libraries that contain those elements; in the *Course Architect* file, objects and textures are stored as references to the libraries that are automatically loaded when you load the *Course Architect* file.

When you are loading and saving projects, keep the data on a local drive. Do not store your projects on external media or on a connected network. Performance can be significantly impacted.

ERASING YOUR WORK

In *Course Architect*, mistakes aren't as costly as on a real golf course. Instead of rehiring the landmovers, contractors, and labor to correct mistakes, a few mouse clicks can undo or erase your worst blunders.

UNDO

If you make a simple mistake, undo it.

To undo the last action, select UNDO from the Edit menu, or press CONTROL + Z.

DELETING SHAPES

You can remove shapes and points of shapes very easily in *Course Architect*.

To remove a floating shape, a dropped shape or a control point, right-click on the item in the Work window. Select DELETE. The item is deleted. If the dropped shape has shapes enclosed by it, select DELETE WITH CHILDREN to delete all of the shapes.

DELETING HOLES

For more information on deleting holes, see *Deleting a Hole* on p. 104.

DELETING COURSES

To delete a course, exit *Course Architect*. Open the Course Utilities. For more information, see Course Utilities in your game documentation.

COMPILING COURSES

Even if your course is not completed, you can compile your course to the game to test it. When you compile a course, the tool saves the output files in the proper directory for use in the game. Use this feature to test your partially completed courses or to compile finished courses for your system or to share with friends.

When you are ready to compile your course, you can do so quickly through the *Course Architect*.

NOTE: You can compile courses to *Tiger Woods PGA TOUR 06* only.

To compile your course for use in the game, select COMPILE COURSE... from the File menu.

To make the course immediately available to the game, check the box next to Register Course.

For more information on the specifics of compiling a course, see *Compiling Your Course* on p. 147.

LAYING OUT A COURSE

On a computer golf course, you don't have to walk from hole to hole. When you complete a hole, the computer simply places you at the tee for the next hole. Consequently, you never see the course on a scale larger than the individual hole.

However, the best courses in the world have a consistency from hole to hole. On each hole, you can see familiar terrain shapes that are integrated into the topography of the course location. When done right, this consistency has a harmonious effect on the golfing experience. You feel like you're in a peaceful and carefully considered environment.

The fundamental element of a golf course is the individual hole, and the tools of the *Course Architect* emphasize this orientation. So, to account for features and issues on a scale larger than the individual hole, you need to plan ahead. This chapter provides some design points before you start digging.

BASIC DESIGN DECISIONS

DRAMA VS. REALISM

Before you begin to work on your course, you should make some essential decisions. Are you making a realistic course or a fantasy course? Or are you making something in between? Your decision can influence how you complete your course. A realistic course requires more patience and adherence to pre-defined course features, including accurate terrain creation, hole positioning and orientation and attention to the details of the course. After all, you don't want to make mistakes in Amen Corner, as a golfer or as a designer.

COURSE LOCATION AND DEGREE OF DIFFICULTY

Secondly, you need to place your course in a particular climate and geological environment. Is it a coastal course or an alpine course? How much does the natural surrounding terrain impact the course? These decisions affect which elements such as objects, textures, panoramas, and terrain shapes are used on the course.

You should also consider how difficult you want the course to be. Is it a championship-level course? How long is the course? What is the par?

A typical format for a course might be four par 3's, four par 5's, and the rest as par 4's. Such an organization produces a par 72 course.

You should consider how you want to distribute the holes on your course. A par 3 hole doesn't necessarily imply an easy hole; your tee shot could be very challenging. Does your course get easier or harder as the holes progress? How do you want the course to finish? Does it end on a par 5, so that a second-place golfer can make up a stroke or two?

And finally, what elements of your course are going to stand out as unique? What are its risks? What are its rewards? Do you have signature holes? Unusual terrain? Or is it just a great round of golf?

While you may not have answers to all of the above questions, it's important that you know what you don't know. It's reasonable to postpone resolution until you're actually shaping the course with the *Course Architect* tools. However, you should be aware that making large-scale changes can be very expensive in terms of time when you are far along in development.

TIP: If you have yet to resolve some of these fundamental issues, you should try to figure them out as soon as possible. Alternatively, you can get fairly regular about using the SAVE AS... feature to save copies of your course as you develop. Keep in mind, though, that retaining multiple versions of a course can consume large volumes of disk space.

COURSE DESIGN ISSUES

In very rough-cut form, plan your entire course before you begin. Keep in mind the following concerns:

How big is the entire land plot on which the course sits? To include everything in your course, how many yards long and across do you need?

TIP: Whatever you need to design a course, add 10% in all directions. You can always trim back the course at a later time. If you need to add more terrain to your map, it is added to the right and top direction of the screen.

How does the course fit into the topography of the surrounding terrain? Is there a general slope to the entire course? Does it have large terrain features that need to be linked into the terrain of individual holes?
What are the large terrain features that appear in the horizon of the course? Things like mountains, rivers, a city, et cetera.
What is the weather like? Sunny? Cloudy? How should the combination of the weather and the sun give us a sense of where the course is located in the world?
How are the holes positioned throughout the course? How are they placed next to each other?
Have you identified north on your maps? In the *Course Architect*, the north direction defaults to the top of the screen.
How are your holes oriented? If possible, position them at 30-degree intervals. Do not position them at finer intervals, as it can cause discontinuities with the panorama.
What are the basic shapes for each hole? Straight? Dogleg left? Dogleg right?
What is the par for each hole?
Which are the signature holes?

The first and most important issues are discussed in further detail in this chapter.

You may choose to develop your course on graph paper. While the lines can help you to position and orient course features and holes, you may find the constraints of the lines to be overly restricting. In the game, there is no way to see the overall view of the course, so approximations of object placements may be sufficient. Choosing to use graph paper is your call.

THE NEW COURSE WIZARD

The best way to develop a new course is to use the New Course Wizard. Through the New Course Wizard, you can:

Define the size of the entire land plot,
Randomize the terrain based on the basic topography of the land,
Select your location,
Place and shape large features such as forested areas and water,
Place all of the holes on the course,
Rotate all holes on the course.

After you lay down the basic elements in the New Course Wizard, you can use the tools of the *Course Architect* to perfect them. To get the most out of the New Course Wizard, of course, you need to have these issues resolved up-front. It's recommended that you read the rest of this chapter,

come to some conclusions about the essentials of your course, and then you should proceed to the New Course Wizard.

A NOTE ON PAR

After you start a hole, you can change its par by clicking and dragging its tee boxes, greens and the related shot paths.

If you need to change the par for the hole, you need to change the distances of the shot paths of the hole through the Hole Definition tool. For more information, see *Hole Definition* on p. 98.

BUILDING HOLES

A 3D graphics tool allows you to tackle any feature of the environment in any order. However, to save time, you may want to consider a few things.

First steps in creating a hole:

If possible, start the creation of your course with the New Course Wizard, including the laying out of all eighteen basic shapes for the holes.

If you must build the hole from scratch, you can follow the steps of the Tutorial to create the basic elements of the hole. For more information, see Tutorial: *Creating Hole 1* on p. 45.

Lay out the essential shapes for the hole, like tees, greens, fairways, rough areas and any hazard areas. Get them into their correction positions, sizes, orientations and distances from each other.

Establish the shot path, tees and pin positions in the Hole Definition tool. For more information, see *Hole Definition* on p. 98.

Check the shot path again. Get the basic shape of the core hole features to your satisfaction.

Establish your set of textures.

To change the texture of a shape, right-click on it. Select PROPERTIES. Change the texture in the drop-down list. The play characteristics of the shape depend on the texture that you select.

Build and manipulate the major terrain pieces.

Place objects on the terrain.

The Edit Cycle:

Continue editing until you've reached a point where you want to check your results.

Compile the course for the game.

Play-test your hole. Note the problems and incomplete areas. Be sure to test the shot path.
Return to the *Course Architect*.
Repeat the Edit Cycle until you complete the hole or want to move on to the next one.

HOLE PLACEMENT

Inside the *Course Architect*, you place a hole on the course by placing, sizing and orienting the shapes of the hole.

To get the placement of your hole correct, you need to get familiar with the Measure tool. To measure distances, select MEASURE from the Tools menu. For more information, see *Measure* on p. 77.
To get the orientation of your hole correct, use the Rotate tool. To rotate shapes, select ROTATE from the Tools menu. For more information, see *Rotate* on p. 76.

TIP: When creating a hole, try to place it relative to an existing hole or land feature whose placement and characteristics are solid in your mind. By measuring distances and placements from known entities, you can build your course in a sensible fashion. By building methodically, you can remove unnecessary terrain and save data and disk storage space, hereby improving game performance.

Many of the basic hole sizing and shaping tools are listed under the Tools menu. For more information on the commands available under the Tools menu, see *Tools* on p. 72.

TIP: When you are placing a hole near the left or top border, try to give yourself extra space from the perimeter. Later, near the end of your construction, you can trim this space away. You cannot acquire new space at the bottom and left margins of the land plot without moving holes, terrain and other features of the course.

GENERAL GRADE OF THE COURSE

Suppose you want to build your course at the foot of a mountain. The terrain of the course should be shaped so that it 1) has variation consistent with mountainous terrain and 2) has a slope in a general direction.

You can accomplish both of these objectives in the *Course Architect*.

RANDOMIZING TERRAIN

Using the New Course Wizard, you can choose a general terrain shaping, based on the geographic area of the course.

TIP: To get the right look of your course's terrain, you might step through the New Course Wizard a few times to experiment with the settings in the Randomize Terrain window. Save the results each time, try again, and then go through the New Course Wizard again, using the settings that you liked and finishing the other aspects of the New Course Wizard. Later, you can use these experiments as templates through the Save As... command.

For more information on the New Course Wizard and the Randomize Terrain feature in it, see *New Course Wizard* on p. 25.

GENERAL SLOPE

After you have created your course in the New Course Wizard, you can create a general sloping to it.

To create a general slope to your project:

1. Save a version of your project prior to creating the slope.
2. Create a new land shape.
3. Resize it to encompass the entire land plot.
4. To apply a tilt to the course, use the Make a Slope tool.
   For more information on making a slope, see *Make a Slope* on p. 78.
5. It may take a while for the *Course Architect* to complete the changes. You can use this methodology to create large terrain features, as well. For example, using land shapes, you can create a mountain in one area or a canyon in another. Think about the possibilities, and read the next section.
6. When the terrain change is completed, save a version of the newly sloped project.

LARGER TERRAIN FEATURES

The technique used to create a general grade for your course can be applied to other kinds of terrain features that apply to more than one hole.

For projects that are recreations of real-world courses, you should try to acquire topographical data on the features of the course.

TIP: Where possible, try to shape the larger terrain features before you finalize the terrain features of your holes. If you are forced to move, resize or reshape a large terrain feature, all of those tiny details on the adjacent holes may have to be redone elsewhere.

When creating a large terrain feature, use land shapes to create the larger impressions, elevations and flows of the terrain. Then, you can create shapes within that shape to build the details.

Remember that two land shapes cannot cross. A land shape must be entirely encompassed by another land shape.

THE MEASURE TOOL

Designers tweak holes to force golfers to make shots with particular clubs. By calculating distances on the course and by positioning objects and terrain features, a good designer can force a golfer into tough yet interesting decisions.

When you're building a hole, learn to use the Measure tool to measure distances between course features. Taking care to carefully place your course features can really improve the playability of the hole. Get familiar with the *Measure* tool (see p. 77).

PANORAMAS

You cannot display 3D graphics to infinity. To have a computer display a golf course to infinite distances stuffs the CPU with detail that slows down the golfing experience. Consequently, at a definable distance from the perimeter, each course is wrapped in a 360-degree 2D image of what is visible in the infinite landscape.

In the *Course Architect*, these wrappings are panoramas. Think of the wall of a circus tent. It is a canvas piece that simulates an entire enclosure. Panoramas in the *Course Architect* are generated in a similar manner.

The *Course Architect* comes with a library of pre-made panoramas from which you can choose to include in your course. Each 360-degree panorama is composed of a single image that has been composited using advanced photographic techniques.

To place a panorama, select **PANORAMA PROPERTIES** from the Tools menu. Select a panorama from the drop-down list. Then, click **OK.** To cancel and exit, click **CANCEL**.
Its left-most edge becomes the point at due north, which is equivalent to the top of the screen in the *Course Architect*.

AMBIENT SOUND

You can add one or more ambient sounds for your course. For more information, see *Sounds* on p. 135.

TUTORIAL: CREATING HOLE 1

This tutorial steps through the essential parts of building a hole from scratch. The first sections offer instruction on how to position your tees and green. You can then learn the essentials of building course features in a short step-by-step tutorial on making each feature.

The second part of the tutorial explains how to design, build, and integrate a number of course features, including more generalized explanations of the elements of the first part of the tutorial.

The major tools of hole development are integrated into the desktop; although it's helpful to know them, you don't need to know the menu system intimately to begin making exciting golf challenges.

THE NEW COURSE WIZARD

The best way to start building a course in the *Course Architect* is to use the New Course Wizard. Through the New Course Wizard, you can generate randomized terrain, layout out the basic forms of each hole and plant large-scale features such as water and forests.

NOTE: It's highly recommended that you use the New Course Wizard to start building your courses. This chapter assumes that you have already done so.

For more information, see *New Course Wizard* on p. 25.

ON BUILDING A HOLE

Before you build a hole, you should have a good idea of how it fits into the terrain and the overall gameplay of your course. For example, is it part of a set of holes, like Amen Corner at Augusta? Does the hole have any unique terrain features, such as a stream along the left side of the fairway? What are the elevation changes on the hole, and how do they fit into the current structure of the terrain? These are just some of the considerations that you should bear in mind.

For a more detailed discussion of these issues and how to put together an entire course, see *Laying out a Course* on p. 38.

SHAPING YOUR HOLE

A hole in the *Course Architect* is composed of three essential elements:

Tees
Greens
Shot Paths

Technically, everything else is not essential. However, a golf course hole may be composed of other important features, such as:

Fairways
Rough areas
Water
Sand Traps
Fringes
Trees and rocks
Cart paths

This chapter discusses how to build each of these elements.

GETTING STARTED

Starting up the *Course Architect*

NOTE: The Course Architect should not be run with other programs open at the same time. It's recommended that you print out this chapter and follow along with it as you work in the Course Architect. After you have printed the chapter, close this document and start the Course Architect.

If the *Course Architect* is already open with a project on-screen, skip to *Shapes in General* on p. 48.

1. If you haven't started the *Course Architect*, do so now.
2. At the Begin Session pop-up, check the box next to Create a New Course. Click **BEGIN**.
3. In the New Course pop-up, enter a Course Name and Description. For now, accept the default width and height.
4. Make sure that the New Course Wizard box is **not** checked. The New Course Wizard is the best way to place holes for your course, but this tutorial goes through the steps from scratch.
   For more information, see *New Course Wizard* on p. 25.
5. In the Randomize Terrain pop-up, select Small Undulations. Leave the slider bars in their default positions. Click **NEXT**.
6. Your course is created. You are placed in the *Course Architect* with your new course on-screen.
7. Make sure that the Camera window is displayed.
   To toggle display of the Camera window, select **CAMERA** from the Window menu. A small black icon appears over the course in the large main window, called the Work window. This icon is called the camera, and what it "sees" is displayed in the smaller Camera window.

Placement of the Hole

Before you begin, you should have an idea of what you're trying to build on the hole. You should also know where you want to build it on the course.

8. To get started, select an area of the course where you want to build your hole.
9. Click and drag the camera so that the triangle end of it is pointed at the area where you want to build your hole. The contents of the Camera window change to display this area of the course.

Choosing Par

10. What is the par of the hole—three, four or five? Par is automatically determined by the length of the shot path and factors in the number of turns in the shot path leading to the green.
    After you create a hole, you can change its par by altering the distance between the tees and greens and the shot paths that connect them. For more information, see *Hole Definition* on p. 98.
11. How long do you want the hole to be? It is a factor of the par of the hole. How wide should the hole be? Write these figures down.

SHAPES IN GENERAL

Shapes are the fundamental tools of building your golf course. After you have defined the perimeter your shape, you apply a texture to it in the Properties dialog box to establish the appearance and play characteristics of the shape.

Shapes are also used to mold terrain. As you manipulate terrain, you may want to have more shape area to fine-tune the shape of the terrain. When placed in the terrain, shapes can be nested one inside the other, with the inside one (the **child shape**) taken precedence over the outside one (the **parent shape**).

To create a shape, select **CREATE LAND SHAPE** from the Tools menu. Click in the Work window to create the turn points for the shape. To finish creating, double-click.

Shapes can be moved, rotated and inflated or deflated.

To move a shape, click and drag it from the center.
To rotate a highlighted shape, select the shape, and select **ROTATE** from the Tools menu. Click and drag the shape in the Work area.
To resize a shape, select the shape. Click and drag one of the red dots (control points) to change the shape.

MANDATORY SHAPES FOR THE HOLE

To create a hole, you must first create the mandatory shapes: the tee and the green. However, most holes have a background shape that defines the entire length and breadth of the hole. That's the first one to create.

To create the background shape:

1. From the Tools menu, select **CREATE LAND SHAPE**.
2. Move the pointer to the furthest edge of the green. Then move it to a location about 50 feet behind it. Adding terrain to the back of a hole can make it very forgiving.
3. Write down or remember the figures that are displayed in the status bar at the bottom of the screen.
   To toggle display of the status bar, select **STATUS BAR** in the View menu.
4. Click in the Work window to start creating the shape. You are now creating the entire playing area for the hole, so it must be larger than the playing length of the hole. Click and drag around the entire perimeter of the hole. Right-click to create the shape.
5. When the shape is created, pull, add and rotate control points to adjust the shape of your hole.
6. Use the Measure tool to make sure that the dimensions of the hole are sufficient for creating the hole.
7. Right-click in the shape and select **PROPERTIES**. In the drop-down list, select the texture to apply. For now, select a "Deep Rough" texture. Click **OK**.
8. When you have finalized the perimeter, texture and terrain beneath the shape, right-click on it and select **DROP**. The shape is dropped into the terrain.
9. If you want to change the underlying terrain of the hole, now is the time to do it. Right-click on the dropped shape and select **USE AS A SHAPE**. You can now use the duplicated and floated shape to manipulate the terrain. For more information, see *Terrain* on p. 120.
10. You've created the space and background for your hole.

To create a green:

A green is just another type of shape, so follow the same process:

1. From the Tools menu, select **CREATE LAND SHAPE**.
2. Move the pointer to a location at one end of the hole where you want to create the green. Click to create the green shape. Right-click to finish the shaping.
3. When the shape is created, pull, add and rotate control points to adjust.
4. Use the Measure tool to make sure that the dimensions of the green are sufficient for your needs.
5. Right-click in the shape and select **PROPERTIES**. In the drop-down list, select a "Green" texture to apply. Click **OK**.
6. When you have finalized the green, right-click on it and select **DROP**. The green is dropped into the terrain.

7. If you wanted to change the underlying terrain of the green, now is the time to do it. Right-click on the dropped shape and select **USE AS A SHAPE**. You can now use the duplicated and floated shape to manipulate the terrain. For more information, see *Terrain* on p. 120.

To create a tee:

A tee is also a type of texture. A hole may have up to five different tees. Tees are usually arranged according to difficulty, with the most difficult (the Tournament tees) furthest from the green.

1. From the Tools menu, select **CREATE LAND SHAPE**.
2. Move the pointer to a location at the end of the hole furthest from the green. Click and drag to create a tee shape. Double-click to finish the shaping.
3. When the shape is created, pull, add and rotate control points to adjust.
4. Use the Measure tool to make sure that the dimensions of the tee are sufficient for your needs.
5. Right-click in the shape and select **PROPERTIES**. In the drop-down list, select a "Tee Box" texture to apply. Click **OK**.
6. When you have finalized the tee, right-click on it and select **DROP**. The tee is dropped into the terrain.
7. Tees are usually completely flat, so you may want to use the Flatten tool to smooth it out. For more information, see *Flatten an Area* on p. 81.
8. A hole may have up to five tees, so repeat this process to create tee boxes at different distances from the green.

TO DEFINE THE HOLE

Now that you've created the tee, green and background rough shapes, you need to define the gameplay components for the hole. The mandatory ones are the pin positions, the shot paths and tees. These elements are defined in the Hole Definition tool.

NOTE: Before you use the Hole Definition tool, you should zoom in or out on the hole so that it is maximized in the Work window. Also, reposition the camera so that the Camera window is looking at the hole.

To open the Hole Definition tool, select **HOLE DEFINITION TOOL** from the Tools menu.

In the Hole Definition tool, define the new hole by defining these elements in order: Hole Number, Pin Positions and Shot Paths.

To define the hole number:

In the Hole Definition tool, enter a number for the hole next to Hole Number.

If you've already created a course, you may want to Zoom out to see the entire course, just to check that you are not about to change the parameters for a hole that has already been defined.

To position the pin:

Now, position the pins. The game uses the pin positions placed in the *Course Architect* as a set from which to select one during a round. To add variation and interest, place at least four.

NOTE: Make sure the green is quite large in the Work window. You may also find it useful to position the camera so that the undulations of the green are visible in the Camera window.

1. In the Hole Definition tool, click the button next to Pin Positions.
2. On the green, click on a location for a pin. In the Work window, a small red triangle is placed.
3. Click in other locations on the green to place additional pins.
   Pins must be placed on a green texture.
   To undo a placement immediately, press DEL.

To position the shot paths:

From each tee on the hole, the shot paths indicate the set of aiming points for each shot to the second shot point, after which all share the same shot path to the green. In the game, computer-controlled players use the shot points as aiming devices. You can define one shot segment from each tee, or one shot for all tees, and a single shot path for all tees from the second shot path forward.

The distance and the number of turns in the shot path factor into the par of the hole. A three-par has no turns. A par 4 can have one turn, and a par 5 can have two turns.

1. In the Hole Definition tool, click the button next to Shot Path Information.
2. For the sake of explanation, we want to create the shot paths one-by-one. So, check the boxes so that only the one next to Tournament is selected.
3. Shot paths are created from the Tee Box shapes to the Green shape. The Tournament tee is usually the one furthest from the green, so click in the Tee Box shape that is furthest from the hole.
   If you have difficulty selecting that shape, Zoom in.
   To undo a placement immediately, press DEL.
4. Now move the mouse to a position closer to the green to identify where computer golfers should aim their tee shot.

NOTE: A shot point should land on the fairway or green.

TIP: You can use the Measure tool in the toolbar to measure distances. For example, if you want a golfer to hit a wood from the tee, you can measure out a distance that is maybe 220 yards or more from the tee.

   If the measured distance already places you on the green, that's fine. You are creating a par 3 hole.
5. When you are satisfied with the destination of the tee shot, left-click. A yellow dot appears. The yellow dot in the shot path indicates a location where all golfers aim. The other tees (red, white, blue and black) aim for the yellow dots as well.
6. Continue clicking at locations until you reach the green.

NOTE: Each yellow dot does **not** necessarily represent a stroke. You can create more shot path dots than strokes needed to reach the green in location. The dots give the computer golfers a series of targets from which to choose when aiming the next shot, so you can create some variation in their approach to a hole.

TIP: Your final shot path point should aim for the center of the green or that point which is close to as many of the pin placements as possible.

7. You have now created the shot path for the Tournament tee for this particular hole. Now, you can create the shot paths for the other tees.

8. In the Hole Definition tool, check the box next to Professional in the Shot Path Information area.
9. Click the Tee Box shape from which the Professional-level golfers should play.
   The Professional tee should begin no further than the Tournament tee.
10. A dot is placed, and a line is drawn to the first yellow dot. The shot path for the Professional tee has been created.
11. Repeat the process for the other tees.
12. After you have finished creating the tees, click **CLOSE**. The hole is created.
    This process and the other sections of the Hole Definition tool are described in greater detail. For more information, see *Hole Definition* on p. 98.

TIP: You can compile your course and test these shot paths. Compile the course, exit the *Course Architect*, start *Tiger Woods PGA TOUR 06* and create a game in which you have at least one golfer play from each tee. For more information on compiling your course, see *Compiling Your Course* on p. 147.

MAKING A SAND TRAP

1. From the Tools menu, select **CREATE LAND SHAPE**.
2. Click on a location to place your first control point. Move your mouse to the next desired location. Then click the pointer to lay down the second control point. Continue until you have roughly approximated your desired shape.
   To finish shaping your shape, right-click. You can resize it and shape it as needed.
3. To change the type of surface for your shape, right-click inside the shape. Select **PROPERTIES**. From the drop-down list, select the texture to apply to the shape. Choose one of the Bunker textures. Click **OK**.
4. Reposition the camera in the Work window so that it is looking at your sand trap.
   To toggle display of the camera, select **CAMERA** from the Windows menu.
5. Drop the shape into the terrain.
   To drop the shape into the terrain, right-click on it and select **DROP**.

TERRAIN: CHANGING YOUR SAND TRAP

Now, you can now use the shape to add depth to the sand trap you just dropped.

1. Right-click on the sand trap and select **USE AS A SHAPE**. You now have a shape with which to manipulate the underlying terrain.
2. From the Tools menu, select **MAKE A BUNKER**.
   A bunker in the *Course Architect* is not necessarily a sand trap on the course. You can use the Make a Bunker tool to create other terrain formations. Similarly, you can create sand traps using other terrain tools.
3. In the Make a Bunker pop-up, check the box next to Down. Using the slider bar, indicate the depth of the bunker.
   If the camera is positioned to see your sand trap, you can see real-time changes to the slider bar in the Camera window.
4. To change the terrain, click **OK**.
   To cancel changes and exit, click **CANCEL**.
5. The terrain change is made.
6. To make the sand trap a part of your project, right-click on the shape in the Work or Camera window. Select **DROP**. The sand trap is dropped into the terrain. You can see the texture now. You have built a sand trap.
   To remove the sand trap from the terrain, right-click on it and select PICK UP. The terrain changes remain.
7. To smooth the bunker into the terrain, see *Smooth an Area* on p. 80.

LARGE ELEVATION CHANGES

Managing the larger terrain features requires careful planning.

EA SPORTS

TIP: It's best to do the larger terrain features first, and to work from the outside in when creating them. To build a hill with two ridges, get the shape of the hill correct, and then create new land shapes to apply changes to the terrain inside of that hill in order to create the ridges.

To create a large hill:

1. From the Tools menu, select **CREATE LAND SHAPE**.
2. Click in the Work window to create the outline of the entirety of your large terrain shape.
3. Move, add and rotate control points and the overall shape to get the form correct.
4. With the land shape selected, click the **HILL** tool in the toolbar.

5. In the pop-up, change elevation settings to create the peak of the hill. Click **OK.**
6. The hill should be elevated in the Work window. To smooth the hill into the surrounding terrain, you need to inflate it and smooth it. Right-click on the shape and select **PROPERTIES**.

NOTE: To smooth a large terrain feature effectively, inflate the shape quite a lot.

7. In the Properties pop-up, inflate the shape. Calculating the amount by which to inflate is a matter of experience and feel. When you are satisfied, click **OK**.
   To undo your inflation, press CONTROL + Z.
8. With the floating, larger shape selected, click the Smooth tool in the toolbar.
9. In the Smooth pop-up, select the amount of smoothing that you want to apply.

TIP: When smoothing, start with small amounts.

   To apply the smoothing changes, click **APPLY**. Changes are updated in real-time in the Camera window. To apply the same smoothing factor again, click **APPLY** again.
   To exit, click **DONE**.
   To cancel all of the smoothing changes and exit, click **CANCEL**.
10. Now, you can make additional changes to the terrain for more subtle changes, such as a ridgeline across a hill.

NOTE: When creating interior shapes, remember that the lines for any shape cannot cross the lines of another shape. It is recommended that you avoid letting shapes cross themselves.

HOW TO

For some hands-on users, it's easier to visualize the tools in *Course Architect* by stepping through the process of developing course features. These sections describe how to develop common course features inside the application.

HOW TO CREATE A FAIRWAY, GREEN, BUNKER, OR WATER

The process for creating a new basic shape and its underlying terrain follows the process described in the Tutorial for making a sand trap. For each shape type, you can apply a different texture to give it the appearance and play characteristics of the desired course feature—fairway, green, bunker, water, etc.

1. From the Tools menu, select **CREATE LAND SHAPE**.
2. Move the cursor to the starting point of the Work window.
3. Click on a location to place your first control point. Move the mouse and click to lay down a second control point. Continue until you have roughly approximated your desired shape.
   To finish shaping your shape, right-click. Or, click over the first point that you created.
4. The shape is now created and floating above the terrain. Now, you can edit your shape to get the shape right.
   To change the size or shape of a selected shape, click and drag a red control point.
   To rotate the shape, click the Rotate button in the toolbar. Click and drag over the shape to reposition it in the Work window.
   To add a new red control point, right-click on one of the control points of the shape. Select DUPLICATE. A new control point is created in the clockwise direction of the selected control point.

You can click and drag the red control points to change the shape. You can also click and drag multiple control points at once. To one or more control points, you can apply rotations to create some very interesting effects. For more information, see *Modifying Control Points* on p. 114.

To create a type of course feature, you apply a texture to the shape. Based upon your selection of texture, a ball landing in it has a set of physical effects applied to it. For example, a ball landing in a deep rough texture does not bounce very much, while a ball landing on a water texture disappears, penalizing the golfer.

5. You can change the texture of the shape very easily. Right-click on the shape and select PROPERTIES. In the Properties dialog box, select the new texture from the drop-down list. Click OK. For more information, see *Textures* on p. 107.
6. You can't see textures on your shape until you drop it into the terrain. To drop the shape into the terrain, right-click on the shape and select DROP. The shape is dropped into the terrain.
   If you need to perform further manipulations of the shape, you have to lift it out of the terrain.
   To lift a shape from the terrain, right-click on it. Select PICK UP. The shape is now floating.

HOW TO USE A SHAPE TO MAKE A HILL

NOTE: To use a shape to modify terrain, it must be floating. If you have already placed a shape and want to modify the terrain beneath it, right-click on the area and select PICK UP.

You can use shapes as a mechanism for changing the terrain beneath them. Tees and water are generally flat. Greens have more subtle undulations. As the largest shapes on your hole, fairway terrain changes are usually part of the overall shaping of the hole's terrain.

1. To change the form of the terrain beneath a floating shape, select the shape in the Work window. Or, create a new one.

   NOTE: Terrain manipulations can be performed across multiple dropped shapes. You can create a new land shape, stretch it across multiple textures and manipulate the terrain with it.

   For more information on creating a new shape, see *Create Land Shape* on p. 73.
2. Change the shape to encompass all of the terrain to modify.
3. Reposition the camera so that the Camera window displays the selected shape.
4. From the Course toolbar or the Tools menu, select the tool to apply to the selected piece of terrain: Hill, Bunker, Slope, Smooth or Flatten. For now, let's make a hill. Select **HILL** from the Tools menu.
   For more information on these tools, see *Tools* on p. 72.

5. In the Change Elevation pop-up, use the slider bar to change the elevation of the hill. In the Camera window, the mesh changes to reflect the changes on the slider bar.
   To change the hill into a valley, click the box next to Down.
6. To change the terrain by the selected height, click **OK**.
   To cancel changes and exit, click **CANCEL**.
   To undo the changes in elevation, press CONTROL + Z.

HOW TO CREATE A FRINGE OR SKIRT

After you've created a shape, you can add a fringe or skirt to it very quickly.

NOTE: Add a fringe after you have finalized the shape and texture for the area.

1. To add a fringe or skirt, right-click on the **floating** shape and select **DUPLICATE**.
   If the shape has already been dropped, right-click on the shape and select **USE AS A SHAPE**.
2. The new shape is floating directly above the shape from which it was created. To add a skirt, right-click on the shape and select **PROPERTIES**.
3. In the Properties pop-up, inflate the shape by the width of the skirt. Select the desired texture for the skirt from the drop-down list. Click **OK**.
4. Right-click on the shape again and select **DROP**.
5. The shape is dropped in the terrain. The interior shape (called a **child shape**) is placed on top of the terrain just dropped, thus creating a course feature with a skirt.

HOW TO CREATE A CART PATH

A cart path is a specialized land shape.

For more information, see *Path Shapes* on p. 118.

HOW TO CREATE A FENCE

1. Use the Zoom tools to get close enough to see the entire area at maximum size where the fence is going to go.
2. Reposition the camera so that it displays the area.
3. From the View menu, select **LIBRARIAN**.
4. The Librarian opens.

5. In the Librarian, scroll down until you find the fence that you want to use. Click and drag it into the Work window. The Work and Camera windows display the fence object.
6. Click and drag it into the proper position.
7. From the Librarian, click and drag another fence object into the Work window.
8. Move and rotate the second fence object so that it is as close as possible to the first fence object.
   To rotate an object, select it in the Work window. Click the Rotate button in the toolbar. Click and drag the object to the new angle. Release the mouse button.
9. You have placed two fence objects. Repeat the process until you have created your entire fence. Rotate the fence pieces one at a time to get them in place.

HOW TO POSITION A HOUSE

Houses are structures that can be placed with standard tools and then buried into the terrain to make them appear natural.

To position a house, navigate the Librarian to find the house to add. Click and drag it into the Work window. Right-click on the placed house, and select **PROPERTIES**. In the Properties dialog, click **PLANT IN GROUND** and then click **OK**. In the Camera window, examine the seam between the house and the terrain. If you see a gap, re-open the Properties dialog and use the Elevation tool to plant the house further into the ground. To rotate the house, use the Rotate tool. For more information, see *Rotate* on p. 76.

Place houses after you feel comfortable with the shape of the underlying terrain. The terrain immediately under the house must be flattened, or golfers may be able to see the seams of the object. If you later must dramatically change the terrain around the house, you have to tweak the terrain directly beneath the house—for each house. It can add work that is unnecessary unless you plan ahead.

HOW TO ADD A PANORAMA

When your course is initialized, a default panorama is placed along the edge of the playable boundary. The panorama can be seen if you reposition the camera to display the edge of the course. *Course Architect* comes with several predefined panoramas. For more information on panoramas, see *Panoramas* on p. 140.

To select a different panorama for your course, select **PANORAMA PROPERTIES** from the Tools menu. For more information, see *Panorama Properties* on p. 85.

HOW TO CHANGE THE SKY

Although skies are not textures that you can position and manipulate, you can select a different one to display inside the *Course Architect*. To change the sky, you use the Sky Picker Tool (see *Sky Picker Tool* on p. 83).

NOTE: The sky selected in the *Course Architect* applies only to the *Course Architect*. In the game, users can choose their own sky and customize other environmental elements.

HOW TO ADD OBJECTS

You can add objects like trees, rocks, and other types to the surface of your terrain.

For more information, *see Objects and the Librarian* on p. 129.

HOW TO POPULATE AN AREA WITH OBJECTS

The *Course Architect* lets you populate multiple objects of the same type through two different mechanisms:

The Foresting Tool: Use the Foresting tool to place natural distributions of objects such as trees and animals within the selected land shape. The Foresting tool lets you define parameters such as type, height and density of the objects to place. For more information, see *Foresting Tool* on p. 81.

The Click-Click Tool: The Click-Click object tool lets you place individual objects of a selected type anywhere you click in the Work window. For more information, see The *Click-Click Tool* on p. 134.

HOW TO REPOSITION THE TEES

NOTE: It's assumed that you've already created a hole, including at least one tee and the shot path for the tee. If you have not, see *Shaping Your Hole* on p. 46.

Each hole can have five different tees from which golfers can play. In order of increasing difficulty, the tees are (color of tee):, Ladies (red), Amateur (white), Professional (blue), black, and Tournament (gold), where the PGA TOUR Tournament golfers begin. In standard practice, the tees are placed in order of increasing distance from the green. In *Tiger Woods PGA TOUR 06*, Some courses have five tees while others have four tees.

At least one tee must be defined on each hole.

NOTE: Over the course of a round, a golfer plays from the same set of tees on each hole. Consequently, you need to create tees and shot paths for each tee type that is supported on your course.

If you have already created a hole, then you know that a tee box is actually composed of two parts: the tee and the shot path.

To move a tee:

1. Zoom in until the tee is large enough to select in the Work window.
2. If the tee is not floating, you must pick it up.
   To pick up a tee, right-click on it and select **PICK UP**. The tee is now floating.
3. Move the floating tee to a new location.
4. Right-click on the tee and select **DROP**. The tee is dropped in the new location.

To move the shot path:

1. From the Tools menu, select **HOLE DEFINITION TOOL**.
2. In the Hole Definition Tool, check the box next to Shot Path Information. Make sure all of the checkboxes are checked.
3. In the Work window, one of the shot paths is not over a tee shape. Click and drag the colored dot that identifies the tee to the new location of the tee shape. Release the mouse button.

NOTE: The shot paths for tees must be placed over a tee box texture.

4. To close the Hole Definition tool, click **CLOSE**.

HOW TO REPOSITION THE PIN

You can reposition pins to define pin placements for each hole or add new ones. In each round of golf in the game, the program selects one of these pins to use.

After you have created a hole, use the Hole Definition tools to reposition or add pins.

To reposition a pin:

1. From the Tools menu, select **HOLE DEFINITION TOOL**. The Hole Definition pop-up opens.
2. Select the hole whose pins you want to reposition.
3. Use the Zoom tools to zoom in on the green to maximize its size.
4. Check the box next to Pin Placements. The current pin placements appear in the Work window as red triangles.
5. To reposition a pin, click and drag it to a new location.

   NOTE: It can be difficult to pick up the pin placement icons. If you accidentally create a new one, press CONTROL + Z to undo the placement. Zooming in further may help.

   To delete a pin placement, click on it and press y. The pin placement is deleted.

   To add a new pin placement, click in the location where you want to place the pin.
6. The pin is moved. To close the Hole Definition tool, click **CLOSE**.

EA SPORTS **TIP:** It can be difficult to pick up the pin placement icons. If you accidentally create a new one, press CONTROL + Z to undo the placement. Zooming in further may help.

HOW TO COMPILE A COURSE

When your course is ready for play, the *Course Architect* compiles the course into the final format for the game.

To compile your course for the game, select **COMPILE COURSE** from the File menu.

For more information on compiling your course, see *Compiling Your Course* on p. 147.

COMMAND REFERENCE

Use the Command Reference to learn the different menus and toolbars of the *Course Architect* and their effects on the selected items of the displayed project.

Menus can be accessed from the menu bar at the top of the screen.

Toolbars appear on screen and can be toggled in the View menu. For more information, see *View* on p. 69.

The status bar appears along the bottom of the application window.

The contents of the right-click menu depending on what you have selected in the Work window.

MENUS

The menus of the *Course Architect* give you access to all of the functions needed to build top-flight courses.

FILE

For a list of the keystrokes to access the commands under the File menu, see *File Quick Commands* on p. 6.

NEW

To start a new project, select NEW from the File menu. Enter a course name and description. Set the dimensions of your project in the spaces provided.

Keyboard Shortcut: CONTROL + N

NOTE: If you are unsure of the space needed, add to the default figures. During development and prior to compile, it is possible to add more course perimeter and to trim it. For more information, see *Course Perimeter* on p. 141.

You should use the New Course Wizard to begin development of your project. The New Course Wizard lets you set basic topography, select course libraries, place the fundamental structures for each hole, and shape large-scale hazards and terrain features. For more information, see *New Course Wizard* on p. 25.

To use the New Course Wizard, check the appropriate box in the New Course pop-up.

OPEN

The Open command lets you load and begin work in a course that was saved during a previous session.

To open a saved project, select **OPEN** from the File menu. Navigate your file directory structure to find the .CRS file. Select it and click **OPEN**.
Keyboard Shortcut: CONTROL + O

SAVE

To save a project, select **SAVE** from the File menu. If the project has not been saved yet, you are prompted for a filename and location, and then click **SAVE**.
Keyboard Shortcut: CONTROL + S

TIP: It is a good practice to save your project frequently, especially before you execute large-scale operations.

SAVE AS...

For any of several reasons, you may decide to save your project under a different name. During development, you may want to experiment with large-scale effects on your project. You may want to be able to step back in the event of a mistake to a point where you were satisfied with the project. Or, you may want to save a backup copy for archival purposes. For these reasons and more, the Save As... command lets you save the current project under a new name in a new location.

To save your project under a new name, select **SAVE AS...** from the File menu. In the dialog box, navigate the file directory structure to the desired destination. Enter a new name for your project in the space provided. Click **SAVE**.

NOTE: When you are saving in a new location, you only need to save the .TCA file. The *Course Architect* knows where to find the library files. Do not move the course libraries through the operating system. To move the course libraries, use the Course Utilities. For more information, see Course Libraries in the documentation for the game.

COURSE PROPERTIES...

You can review the name and description of your project through the Course Properties pop-up. You can resize the basic terrain map of your course, too.

To see the course properties for the opened project, select **COURSE PROPERTIES** from the File menu.

To change the size of the terrain map, enter new figures in the spaces provided.

NOTE: Do not attempt to trim the course perimeter through this function. You may cut terrain pieces that you wanted to keep. Use the Course Perimeter command instead. For more information, see *Course Perimeter* on p. 141.

When you change the size of your terrain to add more terrain, the new terrain is added to the right and to the top of the course. For more information, see *Terrain* on p. 120.

COURSE INFO

The Course Info window shows vital information on the contents of your project. It is especially important if you are having performance problems in the *Course Architect* or when you are ready to compile the project for use in the game.

The Totals section indicates the number of elements in your project. For definitions of these terms, see *Glossary* on p. 152.

TIP: A good rule of thumb is to keep the number of points in your project well below 400,000. You can significantly reduce the total by using the Optimize Detail feature without compromising the quality of your course. For more information, see *Optimize Detail* on p. 143.

The Memory Usage section lists the amount of space in memory occupied by each type of project element. The total amount of RAM and hard drive space is listed at the bottom of the window. Some notes about Course Info:

When a land shape is dropped into the terrain, the **breakline points** identify the boundary between the texture of the dropped shape and

the textures around it. Users cannot directly control the number of breakline points.

The **faces** total indicates the number of three-side polygons in your course, and the **faces data** indicates the amount of data that those faces occupy.

The figures listed are in megabytes (MB).

COMPILE COURSE...

Compile Course creates a .CRS file that can be used in *Tiger Woods PGA TOUR 06*. When you are ready to compile your course for use in the game, the Compile Course command walks you through the process.

NOTE: You can compile courses that are incomplete or lack all eighteen holes. Missing holes are skipped.

For playtesting purposes, you may choose to compile only selected elements of the course. Do not compile lighting, reflections, trees & bushes or structures to speed up the compiling process and improve performance of the course in the game. When you are ready to compile for final release, you can add back these elements.

To toggle inclusion of lighting, reflections, trees & bushes or structures, check the appropriate box.

To make the course immediately available to the game, click the Register Course checkbox.

You should always use the Register Course feature.

To compile the project, click **COMPILE**.

NOTE: The compiled course files are saved in the directory in which the .TCA file is located. You may want to create a directory inside the *Tiger Woods PGA TOUR 06*\Courses directory for your course and move it there after compiling. When you compile a course with the Register Course checkbox marked, it is immediately available for play.

Warnings: After the course has compiled, it is a good idea to read the generated warnings. The generated warnings are the existing issues with the course layout and structure. A course with warnings should not be considered complete until you have evaluated or resolved all of the warnings.

NOTE: Read the warnings. If you ever distribute your course to other people, all warnings generated by the compiler should be addressed first.

To review the list of warnings, click **WARNINGS** when the Course Compiler has finished compiling.

To exit the Course Compiler, click **CLOSE**.

RECENT FILES

This section below Compile Course contains the list of the most recently opened files. You can list up to four files here for quick access.

TIP: You can use the Recent Files list to compare two courses rapidly. Zoom in on a piece of terrain in one course and save the course. Then, do the same for the destination area of the other course. You can use this quick-loading capability to put features of one course into another.

EXIT

To quit the *Course Architect*, select **EXIT** from the File menu. If your project is unsaved, you are prompted prior to exit.

EDIT

The commands in the Edit menu let you perform operations on the selected object, shape or piece of terrain.

For a list of the keystrokes to access the commands under the Edit menu, see *Edit Quick Commands* on p. 6.

UNDO

To undo the most recent change, select **UNDO**.

Keyboard Shortcut: CONTROL + Z

DELETE

Removing objects or shapes from your project is easy.

To delete an object, select the object in the Work or Camera windows. Then, select **DELETE** from the Edit menu. The selection is deleted.

NOTE: If you delete a shape with which you have performed a terrain manipulation, the terrain manipulation remains. To undo the terrain manipulation, you must use the smoothing tool. For more information, see *Smooth an Area* on p. 80.

DUPLICATE

During development of a project, a smart designer perfects the characteristics of one instance of each object, shape or terrain element and then populates using that instance as a template. The Duplicate command lets you copy a selection and then place it in a new location.

You can duplicate shapes that have been dropped through the Work window. For more information, see *Right-Click On Dropped Shapes* on p. 95. To duplicate a selected shape or object, select the object in the Camera or Work window. Then, select **DUPLICATE** from the Edit menu. The duplicated selection appears floating on the course.

SELECT ALL

To make global changes to all elements of the same class, use the Select All command. Then, you can make changes to the selected shapes through the right-click menu. For more information, see *Right-Click on Floating Shapes* on p. 93.

Select All land shapes applies only to floating shapes. To apply Select All to dropped shapes, you must lift shapes that have been dropped first. To select all of a certain project element, navigate to the Select All submenu in the Edit menu. Select the type of element. All instances of the selected element are highlighted in the Work window.

DROP SELECTED SHAPES

Before a shape and its associated texture become a part of your course, the shape must be dropped into the terrain. The Drop Selected Shapes lets you do this.

To drop a shape, select the shape in the Work window. Then select **DROP SELECTED SHAPES** from the Edit menu. The shape is dropped into the terrain. Or, you can drop a shape by double-clicking on it in the Work window.
The properties and available commands that apply to a floating shape and to a dropped shape are different. For more information, see *Right-Click Menus* on p. 93.

You can drop shapes one by one or by selecting multiple shapes in the Work window.

VIEW

The View menu options let you toggle display of toolbars, control the contents of the Work window or access other tools such as the Librarian.

For a list of the keystrokes to access the commands under the View menu, see *View Quick Commands* on p. 6.

LAYERS

Course Architect lets you toggle display of object types . These selections, or layers, are toggled through the Layers pop-up.

TIP: Display of some layers can have a significant impact on the performance of the *Course Architect* on your system. If you are having performance issues, deselect display of layers that are data-intensive or numerous or unnecessary to see in order to complete your current tasks.

To toggle display of a layer, select **LAYERS** from the View menu. In the pop-up, check the box next to the layers to toggle. When finished, close the pop-up.

TOGGLE DISPLAY OF...	HOTKEY
Course Perimeter	SHIFT + C
Hazards	SHIFT + H
Shot Paths	SHIFT + D
Sky Picker Tool	SHIFT + S

LIBRARIAN

Through the Librarian, you can access all of the libraries that are currently installed on your system and the objects contained in them. In each library, you can browse and add objects to your project.

To open the Librarian, select **LIBRARIAN** from the View menu.
Keyboard Shortcut: SHIFT + L
For more information, see *The Librarian* on p. 131.

MODELING CLAY

Some designers find it easiest to manipulate terrain as a single unit of modeling clay.

To render the entire course as modeling clay, select **MODELING CLAY** from the View menu.
Keyboard Shortcut: SHIFT + M

To manipulate terrain using modeling clay:

1. To deselect all layers, select **LAYERS** from the View menu. Clear all checkboxes and close the pop-up.
2. To render the entire course as modeling clay, select **MODELING CLAY** from the View menu. The course now appears as an unpopulated mound of clay.
3. Use the Course tools to manipulate the course for smooth terrain shapes and changes.
4. When finished with modeling clay, select **MODELING CLAY** again to return it to its natural state. Select layers for display as needed.
5. Be sure to visually proof areas where you performed terrain manipulations to make sure land shapes and objects are properly placed and aligned.

EA SPORTS

TIP: You can also toggle the display of the mesh that defines the terrain. To toggle display of the mesh, press CONTROL + ALT + T. Displaying mesh is a resource hog.

ZOOM

The Zoom tools allow you to adjust the zoom of the Work window. They can be used independently or in conjunction with elements selected in the window.

In the Zoom tools, the directional menu options move the view across the course without changing the height of the camera. For more information on changing the height of the camera, see *Camera Properties* on p. 23.

To zoom in on a selection in the Work window, choose **SELECT** from the Zoom sub-menu of the View menu. Then, click and drag a rectangle around the area or elements in the Work window. The Work window zooms to fill the window with the selected element.

To return the Work window to its default height over the course, select **CANCEL** from the View menu.

TIP: In many cases, it is easiest to reposition the height of the camera to its default setting with the Cancel tool and then to position it again with the other Zoom tools.

SCROLL

With the Scroll tools, you can scroll the Work window to display a new part of the course.

In the Scroll tools, the directional menu options move the view across the course without changing the height of the camera. For more information on changing the height of the camera, see *Camera Properties* on p. 23.

To scroll the Work window, select a direction (left, right, up or down) from the Scroll sub-menu in the View menu.

CENTER CAMERA

Designers of real golf courses spend a great deal of time walking the course under construction and viewing its development from various vantage points. You can "walk" your project in development by repositioning the camera and rotating it wherever you need it.

To position the camera in the center of the Work window, select **CENTER CAMERA** in the View menu. The camera is positioned in the center, pointing in the same direction as before.

Keyboard Shortcut: CONTROL + C

To rotate the camera about its origin, click and drag the triangle that is part of the camera icon. Release it when the camera is repositioned at the desired angle.

AUTO FOCUS CAMERA

Often, your work in the *Course Architect* is done on what is selected in the Work window. To be forced to reposition the camera icon each time that you select a new shape or object would be tedious.

To automatically reposition and focus the camera on the currently selected shape or object in the Work window, select **AUTO FOCUS CAMERA** in the View menu.

Keyboard Shortcut: SPACEBAR

If multiple shapes or objects are selected, the camera attempts to position itself so that all selected elements are visible.

USE METRIC

For those more comfortable with the metric system of measurement, *Course Architect* lets you convert all measurements into metric units.

To toggle use of metric measurement, select **USE METRIC** from the View menu.

TOOLS

From the Tools menu, you can select all of the Course Tools to make elevation changes, shape terrain features and smooth them into a consistent course. Special features of a golf course, such as a bunker embedded into a hill, cart paths, hazard areas and even the tiny undulations of the green, can be shaped quickly and efficiently using the *Course Architect* tools. Additionally, you can measure distances and rotate your shapes to get them into the exact position that you want on the course.

A tool in the Tools menu may not be available until you have made selections or created elements in the Work window to which the tool can be applied.

To use a tool in the Tool menu, you must select a floating land shape first.

The effects of any land change can be seen in real-time in the Camera window. When the alterations are completed, you can see the results in the underlying terrain. For more information, see *Camera Window* on p. 20.

For a list of the keystrokes to access the commands under the Tools menu, see *Tools Quick Commands* on p. 7.

Using Tools on multiple shapes:

You can use some of these tools on multiple shapes one of which must be completely enclosed in the other. You can create hills, bunkers and slopes using multiple shapes.

To select multiple shapes, click on one shape. Then, press CONTROL and click on a second shape. Both shapes are selected.

When you apply land shaping tools to two shapes, one of which is inside the other, the change is applied in full to the inner shape, and the outer shape is changed to blend with the inner shape.

If multiple land changes are applied to a set of shapes, the net effect is the aggregate of those changes. Additionally, multiple terrain operations can create redundant data, so you should optimize the detail of your land shape after its manipulation. For more information, see *Optimize Detail* on p. 143.

CREATE LAND SHAPE

The land shape is the basic instrument for building your project. Use the Create Land Shape tool to define the size and starting location of the shape, and then apply other *Course Architect* tools to get the desired look, location and gameplay effects.

To create a land shape:

1. To create a land shape, select **CREATE LAND SHAPE** from the Tools menu. The cursor changes.
   Keyboard Shortcut: L
2. Move the cursor into the Work or Camera window and click at one corner to start building the shape.
3. As you move the cursor, a white line extends from the starting location to the cursor. Click again to mark another corner of your land shape.

NOTE: You do not have to create your shape in final form at this point, so you do not need to create smooth curves as you define the shape. The *Course Architect* smooths the land shape after you have defined its perimeter, and you can add control points after you have completed the shape definition. For more information, see *Right-Click On Control Points* on p. 94.

4. Keep drawing and clicking until the perimeter of your shape has been roughly defined. Make the final line segment return to the starting point. Click again to complete the shape definition.
   To let the *Course Architect* complete the shaping for you, right-click when you place a point.
5. The *Course Architect* takes the rough perimeter that you defined and creates a smooth land shape inside the perimeter.
   For more information on moving, resizing and reshaping land shapes, see *Shapes* on p. 105.

TIP: When defining a land shape, you can make a nearly perfect square by refining areas into corners. To create a corner, click three times in close proximity to make an "L" shape. Do this for each corner of the square. After the shape has been created, zoom in and adjust the alignment of each "L". You can manipulate the corners in relation to each other by selecting (holding down CONTROL) and dragging the three vertices to move them as a group.

CREATE PATH

A cart path is a special shape in the *Course Architect*. Unlike other shapes, a cart path is not an enclosed shape; it has a beginning and an end.

To create a cart path, select **CART PATH** from the Tools menu. Move the cursor to the start location and click. Move the mouse to the first turn point of the path and click again. Continue doing so until you reach the end of the path. Right-click to complete the creation of the path shape.
Keyboard Shortcut: P
You can apply different textures to cart paths through the Properties dialog box. For more information on creating cart paths, see *Cart Path* on p. 74.

CREATE HAZARD AREA

A hazard area is defined differently from a land shape in the *Course Architect*.

A **hazard area** in golf is any part of the course where the hazard rules apply to any ball that lands in it. Hazard rules cost the golfer a one-stroke penalty and allow him to rehit the ball from the location or drop it just outside the hazard area.
To begin creating a hazard shape, select **CREATE HAZARD AREA** from the Tools menu.

Because a hazard is a feature of the game of golf, it is not necessarily a terrain feature. Consequently, when you define a hazard area, you are not shaping terrain. After a hazard has been created, it floats on the course. Hazard areas are not dropped into the terrain. In the *Course Architect*, a hazard area is effectively a part of the course that is cordoned off by sticks (control points) and string between the sticks (the hazard perimeter).

Keyboard Shortcut: H

The steps for defining a hazard area are the same as those used to create a land shape. For more information, see *Create Land Shape* on p. 73.

CREATE COURSE PERIMETER

When you are on a virtual golf course, you are subjecting yourself to a number of illusions, one of which is the impression that you can see forever into the distance. However, at some distance, there is no more data available on the terrain and land shapes, and the game must fill in the details using formulas. This border between the game data that you create and manipulate and the game data that is algorithmically generated is the **course perimeter**.

Prior to defining the course perimeter, make sure that your entire course is visible in the Work window. Use the Zoom tools to change the display of the Work window. For more information, see *Zoom* on p. 70.
To define the course perimeter for your project, select **CREATE COURSE PERIMETER** from the Tools menu. Click on a starting point. Move the mouse to another turn point and click again. Continue clicking until you have completely circumnavigated the course and returned to the starting point. Right-click to finish defining the course perimeter.
Keyboard Shortcut: C

NOTE: When defining your course perimeter, make sure that you leave some space between the edge of the course and your perimeter. The smoothing factor of the shape creation tools may overlap parts of your course if they are too close to the perimeter. Of course, if you do have an overlap, you can reshape the perimeter after it has been defined.

To change the shape of your course perimeter, click and drag a control point to a new location.
To add or delete control points to your perimeter, right-click on a control point and select DELETE or DUPLICATE as needed.
To finish creation of the course perimeter, right-click and select **CREATE COURSE PERIMETER**. If no error is reported, then the perimeter is created.
The definition of the course perimeter strikes the balance between gameplay and visual quality. There are multiple factors to consider in creating a course perimeter for testing or final releases. For more information, see *Course Perimeter* on p. 141.

ROTATE

You can rotate a selected shape around its center with the Rotate command.

Rotating a shape does not rotate the underlying terrain.
To rotate a shape, select it in the Work window. Then, select **ROTATE** from the Tools menu. The cursor changes. Click and drag the cursor to the left or to the right to rotate the shape.
Keyboard Shortcut: CONTROL + R

Rotating multiple shapes

You can apply rotations to multiple shapes simultaneously.

To select multiple shapes, click on one shape. Then, press CONTROL and click on a second shape. Both shapes are selected.

NOTE: When you rotate multiple shapes, remember that none of them can cross another shape.

Rotating control points within a shape

Rotations can also be applied to one or more points in a shape. These kinds of rotations can produce some very interesting effects.

Experiment with rotating control points. The edge of your shape should not cross itself.
To rotate one or more control points in a shape, select the shape in the Work window. Then, click on a single control point. If you want to rotate multiple control points, press CONTROL and click on a second control point and continue as needed. To rotate, select **ROTATE** from the Tools menu. Apply the rotations. When the desired rotation is displayed, select

ROTATE from the Tools menu again. The control points are rotated.

MEASURE

No course designer can be caught without a measuring tool. Whether you are trying to duplicate a real-world golf course or designing a second shot on a par 4, you need to understand and use the Measure tool to get the desired effects into your project. The measuring tool calculates the horizontal and vertical distance between two points on the course.

To measure the distance between two points, select **MEASURE** from the Tools menu. The cursor changes to a tape measure. Move the tape measure to the initial position in the Work window. Click and drag the cursor to the second position. The horizontal and vertical distances are displayed.

Keyboard Shortcut: CONTROL + M

To toggle measurement in English or metric units, select **USE METRIC** in the View menu.

MAKE A HILL

What's a golf course without challenging mounds, hills and valleys? The Make a Hill tool lets you apply elevations and depressions to the terrain underlying a floating shape.

For definition purposes, a hill is a positive or negative change in elevation in which the *Course Architect* smooths the edges with the surrounding terrain.

To make a hill:

1. To make a hill, select a floating shape in the Work window. Then, select **HILL** from the Course toolbar menu. The Hill pop-up appears.
   You can make a hill with multiple shapes that do not touch and are enclosed by one of the selected shapes. It is useful if you're trying to create a series of terrain features of the same height or depth.
   Keyboard Shortcut: ALT + SHIFT + H
2. In the pop-up, select whether you want to make a hill (Up) or a valley (Down).
3. You can assign the elevation change by using the slider bar or entering a figure in the space provided.

Changes made in the elevation appear real-time as changes to the mesh of the shape in the Camera window. Make sure that the camera icon is positioned in the Work window so that you can see the net effects of your changes to the entire selection.

4. To apply the changes to the terrain underlying the shape, click **OK**. The terrain is changed.
   To cancel changes made in the Hill pop-up, click **CANCEL**.

MAKE A BUNKER

The Make a Bunker tool lets you apply elevations and depressions to the terrain underlying a floating shape in the same manner as the Hill tool but with different effects.

For definition purposes, a bunker is a positive or negative change in elevation in which the *Course Architect* sharply lifts or depresses the change from the surrounding terrain. A bunker with a positive elevation change is a mesa.

To make a bunker:

1. To make a bunker, select a floating shape in the Work window. Then, select **BUNKER** from the course toolbar. The Bunker pop-up appears.
   Keyboard Shortcut: ALT + SHIFT + B
   You **cannot** make a bunker with multiple shapes that do not touch. You can make a bunker with nested shapes.
2. In the pop-up, select whether you want to make a mesa (Up) or a bunker (Down).
3. You can assign the elevation change by using the slider bar or entering a figure in the space provided.
   Changes made in the elevation appear real-time as changes to the mesh of the shape in the Camera window. Make sure that the camera icon is positioned in the Work window so that you can see the net effects of your changes to the entire selection.
4. To apply the changes to the terrain underlying the shape, click **OK**. The terrain is changed.
   To cancel changes made in the Bunker pop-up, click **CANCEL**.

MAKE A SLOPE

You can use the Slope tool to create sculpted, sloping effects on the course. A slope is essentially a hill with a sharp edge; the changed edges are sharp, and the sides of the elevation change are flat. The Slope tool is most effective for making gradual, small changes in slope.

For definition purposes, a slope is a positive or negative change in elevation in which the *Course Architect* sharply lifts or depresses the change from the surrounding terrain. There is no flat or smoothed top or bottom.

TIP: The Slope tool is useful for trying to provide a general grade to your course. Create a land shape around the entire course and then apply the Slope tool.

To make a slope:

1. To make a slope, select a floating shape in the Work window. Then, select **SLOPE** from the Course toolbar menu. The Make a Slope pop-up appears.
   Keyboard Shortcut: ALT + SHIFT + L
   You can make a slope with multiple nested shapes.
2. In the pop-up, select whether you want to make a rising (Up) or falling (Down) slope.
3. You can assign the elevation change by using the slider bar or entering a figure in the space provided.
   Changes made in the elevation appear real-time as changes to the mesh of the shape in the Camera window. Make sure that the camera icon is positioned in the Work window so that you can see the net effects of your changes to the entire selection.
4. To apply the changes to the terrain underlying the shape, click **OK**. The terrain is changed.
   To cancel changes made in the Slope pop-up, click **CANCEL**.

TIP: The Slope tool slopes up or down to a center point. To make your green with a left-to-right slope, make a land shape twice as large as the green, and position it so the center of the shape is at the left side of the green. When you use the Slope tool, the focal point is near the left side of the green.

SMOOTH AN AREA

Because a project is stored as numeric data, irregularities can be introduced into the shape of the terrain that do not look natural. So, a designer needs to be conscious of using the smoothing tool over areas that have been reshaped to give the land a more natural appearance.

TIP: After reshaping and smoothing an area, it's a good idea to use the Optimize Detail tool to remove data redundancies. For more information, see *Optimize Detail* on p. 143.

The Smoothing tool lets you define the degree to which you want the shape smoothed into the surrounding terrain. A greater level of smoothing removes smaller terrain changes in favor of general terrain trends.

To smooth an area:

1. Select the shape that encompasses the area that is to be smoothed.

NOTE: If you select a shape that exactly matches the terrain feature that you are trying to smooth, smoothing has little effect. You need to select an area that encompasses that terrain feature, plus some of the surrounding terrain. One method is to right-click on the shape, select **DUPLICATE**, and then inflate the new shape through the Properties pop-up. When you smooth the larger, encompassing shape, the inner shape is also affected. Then, you can delete the outer shape as needed.

2. Select **SMOOTH AN AREA** from the Tools menu. The Smooth pop-up appears.
   Keyboard Shortcut: ALT + SHIFT + S
3. In the Smooth pop-up, use the slider bar to select the degree to which you want the terrain in the selected shape to be smoothed.
   To view the changes in the Camera window, click **APPLY**.

TIP: It's better to smooth an area a little bit many times than to smooth the area a lot at once. If you want to smooth an area of land without dramatically affecting the elevations, set the Smoothing tool slider towards "A Little" and click **APPLY** multiple times. Keep an eye in the Camera window to see the effects of each application.

To see the changes without saving, click **APPLY**.

To cancel the smoothing, click **CANCEL**.
To accept the changes and exit, click **DONE**.

4. The effects of smoothing appear in the Camera window and in the Work window.

FLATTEN AN AREA

You can use the Flattening tool to do what no bulldozer ever could. It's an invaluable tool for creating great gameplay and sharp effects on the course.

The Flattening tool can be applied to a single land shape.

To flatten an area:

1. Select the shape that encompasses the area that is to be flattened.
2. Select **FLATTEN AN AREA** from the Tools menu. The Flatten pop-up appears.
   Keyboard Shortcut: ALT + SHIFT + F

NOTE: The Flattening tool can generate some very severe effects. Based on your selection in the pop-up, all terrain data is changed to a single value, and the original information is lost. So, defining and positioning the right shape to flatten is important. Practice before you need to use the tool. The Flattening tool is best used in conjunction with the Smoothing tool to get desired, natural effects.

3. In the Flatten pop-up, you can select one of four methods for flattening the terrain under the land shape:
   Along Contour examines the edges of the selected shape and draws a smooth face across the terrain inside the shape. It's useful, for example, in removing a bunker from the side of a hill.
   Maximum Height flattens all of the shape's terrain to the maximum height within the shape. In effect, it creates a tabletop.
   Average Height forces all of the terrain to the average height in the shape. Average height does not smooth the terrain into its surroundings, so you are likely to need to use the Smoothing tool afterwards.
   Minimum Height flattens all of the shape's terrain to the minimum height within the shape. In effect, you can use it to create a flat bottom, like a riverbed.
   To flatten the terrain under the shape, select the desired method. Then click **OK**. The terrain is flattened in the Camera and Work window.
   To cancel flattening, click **CANCEL**.

FORESTING TOOL

The Foresting tool lets you populate a shape with objects such as trees, flowers, plants or bushes without having to place them individually. The tool allows you to define the parameters of the foresting, such as height of the objects and density of them and then places them in a natural pattern.

TIP: To accurately configure the density of objects, you may want to measure the length and width of the shape with the Measure tool prior to beginning Foresting. For more information, see *Measure* on p. 77.

NOTE: The Foresting tool applies only to objects. You cannot use it to place structures.

To forest the inside of a shape, select the shape in the Work window. Then, select FORESTING TOOL in the Tools menu.

Keyboard Shortcut: SHIFT + F

NOTE: Objects such as trees and rocks can have a significant effect on the update speed of the *Course Architect*. It's suggested that you delay adding objects until they are necessary.

In the Foresting pop-up, you can select the object and the method of population.

To select the object with which to populate the area, click the Object button. The Librarian is opened. Select the object to return to the Foresting pop-up. For more information, see *The Librarian* on p. 131.
To change the units by which you configure your population, click Feet or Inches.
To define the height of each object, use the slider bar.
You can create variation in the heights of the objects by selecting a range in the Plus/Minus box.
To set the density of the objects, use the slider bar to set the average distance between them.
The *Course Architect* randomizes the distance between objects around the average that you set.
To populate the shape as defined, click **APPLY**. The changes are updated in the Work and Camera windows.

To cancel, close the Foresting tool window.
You can continue populating after adding your first forest. Set the parameters and click **APPLY** again. The new objects are added to the existing ones.
To finish populating and return to the *Course Architect*, click **DONE**.

TIP: After an area has been forested to your satisfaction, you can increase performance in the *Course Architect* by deselecting the display of the object or structure type. For more information, see *Layers* on p. 21.

To remove objects, right-click on the objects in the Work window. Select DELETE. The selection of forested objects is removed.

TIP: To add forest to your course, it's easier to use the New Course Wizard to cover the entire course. You can remove unwanted trees later in the *Course Architect*. Otherwise, in the *Course Architect*, you have to place trees individually or in groups. For more information, see *New Course Wizard* on p. 25.

CLICK-CLICK OBJECT TOOL

NOTE: Objects such as trees and rocks can have a significant effect on the update speed of the *Course Architect*. It's suggested that you delay adding objects until they are necessary.

The Click-Click tool allows precise placement of objects on the terrain. With the Click-Click tool, you do not have to place objects within the confines of a selected shape, so you have much greater control of placement of the objects.

TIP: Objects such as trees and rocks can have a significant effect on the update speed of the *Course Architect*. It's suggested that you delay adding objects until they are necessary.

To place individual objects, select **CLICK-CLICK OBJECT TOOL** from the Tools menu. The Click-Click pop-up appears.
Keyboard Shortcut: SHIFT + O

In the Click-Click pop-up, you can select the type of object to place and define size and variance parameters.

To select the object with which to populate the area, click the Object button. The Librarian is opened. Select the object to return to the Foresting pop-up. For more information, see *The Librarian* on p. 131.
To change the units by which you configure your population, click Feet or Inches.
To set the height and variation of the objects, use the slider bar to set the average height and the Plus/Minus buttons to set the variation from the height.

When you have finished configuring the objects to place, you can move the Click-Click pop-up and begin clicking in the Work window. Each click places an object at the location indicated by the object icon.

To finish populating with the Click-Click Tool, click **DONE**.

HOLE DEFINITION TOOL

You can define holes through two methods: the New Course Wizard or the Hole Definition Tool.

For more information on the New Course Wizard, see *New Course Wizard* on p. 25.
For more information on the Hole Definition tool, see *Hole Definition* on p. 98.

SKY PICKER TOOL

You can use the Sky Picker tool to test the appearance of various skies in the *Course Architect*.

EA SPORTS

TIP: Prior to selecting a sky, you may want to reposition the Camera window so that it has a clear view of the perimeter of the course.

To see a different sky, select **SKY PICKER TOOL** in the Tools menu. The Sky Picker tool pop-up appears. Click the box next to the sky that you want to view on your course. To change the sky to the new choice, click **OK**.
Keyboard Shortcut: SHIFT + S
To cancel changes in the Sky Picker pop-up, click **CANCEL**.

NOTE: The sky that you select in the *Course Architect* can be changed in the game. In the game, players can choose the sky in the Select Course screen. For more information, see Select Course in your user documentation.

PANORAMA PROPERTIES

From the Panorama Properties window, you can select a panorama to display from any of the installed libraries.

TIP: Prior to changing the panorama, you may want to reposition the Camera window so that it has a clear view of the perimeter of the course.

A **panorama** is a 360-degree image of the horizon that is wrapped around the perimeter of your course. The *Course Architect* includes a variety of panoramas from which you can choose the right one to create an appropriate background for your course.

To choose a panorama, select **PANORAMA PROPERTIES** from the Tools menu. From the drop-down list, select the course whose panorama you want to use for your course. To change the panorama, click **OK**. To cancel and exit, click **CANCEL**.

POINT COUNT INDICATOR

The Point Count Indicator tool lets you select dropped shapes on the course that have more points than a number that you select.

A **point** is an internal data element of the *Course Architect* that is used to determine the terrain within a dropped shape. You cannot see points directly in the *Course Architect*. However, their management and control have significant ramifications on how your course performs.

TIP: You can use the Point Count Indicator to reduce the data storage and performance issues of your course both in the *Course Architect* and the game. By using the Point Count Indicator in conjunction with the Optimize Detail tool, you can reduce the point counts in the most data-intensive shapes. For more information, see *Optimize Detail* on p. 143.

The maximum number of points for any individual shape is 64,000.

To use the Point Count Indicator, select **POINT COUNT INDICATOR** from the Tools menu. The Point Count Indicator pop-up opens.
Keyboard Shortcut: ALT + CONTROL + D

In the Point Count Indicator pop-up, the number of points displayed is used as a measure to indicate which shapes and objects should be selected when the window is closed.

To highlight shapes and objects with more than X points, move the slider until the figure is X. To highlight those objects and shapes, click **CLOSE**. All of those elements are highlighted.
To cancel and exit the Point Count Indicator pop-up, press ESC.

TIP: To view the point count for the entire course, use the Point Count Indicator over an empty area of the canvas.

GRID SETTINGS...

In the Work window, you can overlay a grid of dots to help you to measure and position holes, hazards and objects on the course.

For more information, see *Show Grid* on p. 90.
Keyboard Shortcut: SHIFT + G

NOTE: The dots of the displayed grid are positioned on the terrain equi-distant from each other, so the pattern formed may look uneven in the Work window because of elevation changes.

In the Grid Settings pop-up, you can change the distance between the points displayed in the Work window.

To change the settings for the gird, select **GRID SETTINGS...** from the Tools menu. In the pop-up, enter a new figure for the distance between points and change the units of measurement, if needed. To accept the changes, click **OK**. To cancel and exit the Grid Settings pop-up, press ESC.

REPAIR COURSE...

A project in the *Course Architect* requires a large volume of data to describe all of the terrain features, objects and gameplay elements of a golf course. Manipulation is piled on top of manipulation, and sometimes the data gets corrupted in a way that is difficult for the *Course Architect* to reconcile. Irrelevant or redundant data can pollute your project files. These situations occur very rarely and are difficult to predict.

The Repair Course tool sifts through the data in your project to repair problems that it encounters or that will be encountered when you attempt to compile the course for use in the game.

NOTE: The Repair Course tool is not the same as the Optimize Detail tool. Use the Repair Course tool only if you are experiencing terrain tears, rips, voids or randomness in how the terrain renders your project in the *Course Architect* or in the game.

TIP: Prior to repairing your project, save a copy under a different name. Repair Course performs large-scale data operations on your project.

To repair your course, select **REPAIR COURSE...** in the Tools menu. After you select **OK**, the Repair Course tool begins running.

If a repair is needed to your course, you are informed before the tool makes the repair. If no repairs are needed, your course is untouched.

Restoring from backup:

NOTE: In the event of catastrophic failure in the course file or a crash of the *Course Architect*, the program may be able to bail you out. Every five minutes, the *Course Architect* automatically saves a backup of your course file. So, SAVE AS... under a different name, exit the program, and double-click the original file to reload it in the *Course Architect*. When prompted, reload the program from the backup file.

Troubleshooting Repair Course:

If you continue to experience problems trying to repair your course in the *Course Architect*, follow these steps to try to get back on track.

1. Do not attempt to repair your course with data tools outside of the *Course Architect*. It's likely that such efforts will render your course useless.
2. Did the problem appear very recently? Try to undo your previous terrain operation. Or, save the course under a different name and then reload your most recently saved version.
3. Try deselecting the display of some elements on your course, which may speed up display. For more information, see *Layers* on p. 21.
4. If available, revert to a version of your project that is known to predate your problems in the *Course Architect*. If desired, you can redo the work between the old version and the new one to try to debug the problems that were introduced to your project.

WINDOW

Through the Window menu, you can toggle display and control the windows in the *Course Architect*.

The Work window is always visible.

WORK

The Work window is the main area where you work to develop your project. Through the Window menu, the Work window can be floated or maximized.

A **floating window** has control buttons in the upper-right corner and can be resized and repositioned in the application window.
A **maximized window** occupies the entire space and bottom layer of the application window.
To float or maximize the Work window, select the Work sub-menu under Window. Then, select the desired option.
For more information, see *Work Window* on p. 17.

CAMERA

The Camera window displays the view from the perspective of the camera that is positioned with the camera icon in the Work window.

To toggle display of the Camera window, select **CAMERA** from the Window menu.
The camera can be positioned anywhere on the course and in the vertical plane. For more information on the camera and the Camera window, see *Camera Window* on p. 20.

NAVIGATION

The Navigation window gives you an overhead map of the entire course. The rectangle highlighted in the Navigation window is the displayed contents of the Work window. You can use the Navigation window to reposition the contents of the Work window and can use its zoom tools to show more or less detail in the Work window.

To toggle display of the Navigation window, select **NAVIGATION** from the Window menu.
To display another part of the course, move the rectangle in the Navigation window. The Work window is updated.

CASCADE

You can display the currently opened windows in a cascading pattern. It is a useful way to select and reposition your windows.

To cascade the opened windows from the upper-left corner, select **CASCADE** from the Window menu.

TILE

You can tile display of the currently opened windows. Tiling resizes all windows to fit on-screen side-by-side.

If the Work window is maximized when you tile the windows, it is turned into a floating window.
To tile the opened windows, select **TILE** from the Window menu.

TOOLBARS

Along the top border of the main application window, you can see a set of toolbars that give you one-button access to the main functions of the *Course Architect*.

These toolbars can be repositioned in the Work window or docked to any side of the window, as needed.
To toggle display of any toolbar, select its name from the View menu. For more information, see *View* on p. 69.
To find out the function of a toolbar button, move the cursor over the button and let it sit. A pop-up text description of the button is displayed.

EDIT TOOLBAR

The Edit toolbar contains all of the tools you need to delete, duplicate, undo and drop selections in the Work window.

LASSO SELECT

You can use the Lasso Select to draw a perimeter around all of the floating shapes and objects that you want to select.

To lasso select a number of shapes and objects, click the Lasso Select button on the Course toolbar. Then, click on an initial point and extend a line that passes outside of all of the floating shapes that you want to select. At a turnpoint, click to begin drawing a new line segment. To finish defining the lasso, right-click. All floating shapes and placed objects inside this perimeter are selected.

COURSE TOOLBAR

- **a** Create Land Shape (see p. 73)
- **b** Create Path (see p. 74)
- **c** Create Hazard (see p. 74)
- **d** Drop shapes (see p. 91)
- **e** Measure (see p. 77)
- **f** Rotate (see p. 76)
- **g** Hill (see p. 77)
- **h** Bunker (see p. 78)
- **i** Slope (see p. 79)
- **j** Smooth (see p. 80)
- **k** Flatten (see p. 81)
- **l** Foresting (see p. 82)
- **m** Click-Click (see p. 83)
- **n** Hole Definition (see p. 84)

DROP SHAPES

The Drop Shapes button embeds the currently selected floating shapes into the terrain.

When you create a shape in the *Course Architect*, the shape is initially a **floating shape** that rests on top of the terrain. After you have set properties of the shape and its underlying terrain, you can drop the shape into the terrain, embedding a texture inside the shape into the golf course. Depending on whether the shape is floating or dropped, you can perform different functions with it and to it.

For more information, see *Right-Click On Floating Shapes* on p. 93.

The tools on the Course toolbar are some of the most useful and powerful in developing your projects in the *Course Architect*. Use these tools to create new shapes, turn them into hills, bunkers or slopes, populate shapes and much more.

WINDOW TOOLBAR

From the Window toolbar, you can control the display of the windows in the *Course Architect*.

You can toggle display of and arrange the layout of these windows through the Window menu. For more information, see *Window* on p. 88.

WINDOW TOOLBAR: LAYERS WINDOW

Click the Layers Window button to display the Layers pop-up.

The Layers window lets you toggle display of objects, sounds, floating shapes and other course elements to improve performance of the *Course Architect*. For more information, see *Layers* on p. 21.

NAVIGATION TOOLBAR

The Navigation toolbar gives you control over the contents of the Work window. Using these tools, you can zoom in and out over your project or choose another area of the project to review altogether

.

For more information, see *Zoom* on p. 70.

NAVIGATION TOOLBAR: ZOOM IN

The Zoom In button changes the view of the Work window so that the course elements are bigger on the screen.

NAVIGATION TOOLBAR: ZOOM SELECT

The Zoom Select lets you define an area that zooms to exactly fill the Work window as it is currently sized.

NAVIGATION TOOLBAR: CANCEL ZOOM

The Cancel Zoom button changes the view of the Work window to the default height and location above the project.

NAVIGATION TOOLBAR: GRAB

The Grab button lets you select a position in the Work window over which the camera is so moved that the position is in the center of the window.

STATUS BAR

Along the bottom of the *Course Architect* main window, the status bar is displayed. It indicates several pieces of information.

To toggle display of the status bar, select **STATUS BAR** from the View menu.

POSITION: X, Y, AND Z

As you move the cursor about the Work window, the positional information in the status bar is updated. The information is displayed in terms of X-direction, Y-direction and Elevation. For more information, see *A Note about 3D Directions* on p. 23.

To toggle display of measurement in English or metric units, select **USE METRIC** in the View menu.

POINT COUNT

When you position the cursor over a land shape that has been dropped in the Work window, the point count in the status bar indicates the total number of points that the object contains.

The point count for a land shape is directly correlated to the memory and performance capability that it requires. You can reduce the point count of the land shape without compromising its visual quality by using the Optimize Detail tool. For more information, see *Optimize Detail* on p. 143. You can also select all of the land shapes in your course that have point counts over a predetermined size. For more information, see *Point Count Indicator* on p. 85.

RIGHT-CLICK MENUS

You can access a number of very useful functions by right-clicking on a shape in the Work or Camera windows.

When you create a shape in the *Course Architect*, the shape is initially a **floating shape** that rests on top of the terrain. After you have set properties of the shape and its underlying terrain, you can drop the shape into the terrain, embedding a texture of that type into the golf course. Depending on whether the shape is floating or dropped, you can perform different functions with it and to it.

For more information on Shapes, see *Shapes* on p. 105.

RIGHT-CLICK ON FLOATING SHAPES

DELETE

When you right-click on a floating shape, select **DELETE** to remove it from the *Course Architect*.

DUPLICATE

To duplicate a shape, select one in the Work window. Then, right-click and select **DUPLICATE**. The highlighted shape is the duplicate.

DROP

To drop a shape into the course, right-click on the shape and select **DROP**.

NOTE: After a shape has been dropped, you cannot perform further manipulations with it to the underlying terrain. You must pick up the shape before you can manipulate the terrain again. For more information, see *Right-Click On Dropped Shapes* on p. 95.

FLOATING SHAPE PROPERTIES

From the Properties pop-up, you can define the texture and resize the shape.

To change the texture that appears on top of the shape, select the texture from the drop-down list.
The name of the library from which the texture came is listed in parentheses ( ). The gameplay properties for each texture are defined in the object library containing that texture. Textures do not appear in the Work window until the shape is dropped. For more information, see *The Librarian* on p. 131.
To resize the shape, select the unit of measurement. Then, use the Up and Down arrows to choose the value by which you want to inflate or deflate the shape.
To accept the changes to the shape properties, click **OK**.
To close the Properties pop-up without accepting changes, click **CANCEL**.

RIGHT-CLICK ON CONTROL POINTS

You can manipulate a control point of a floating shape by moving it or through its right-click menu.

A **control point** is one of the dots that appears when you select a floating shape. These dots can be repositioned, rotated, duplicated or deleted to change the outline of the floating shape.
To move a control point, select the shape in the Work window. Then, click and drag on the control point to reposition it.
When you select a control point, the icon changes from a pointing finger to a finger that is pinching the control point.

DELETE

To delete a control point, select the shape in the Work window. Then, select the control point that you wish to delete and click the right mouse button. Select **DELETE**. The control point is deleted.
Deletion of control points can be undone with the Undo command. For more information, see *Undo* on p. 68.

DUPLICATE

To duplicate a control point, select the shape in the Work window. Then, select the control point nearest the location in which you want to place the new control point. Click the right mouse button. Select **DUPLICATE**. The control point is added between the source control point and the next one on the shape in a clockwise direction.

Duplication of control points can be undone with the Undo command. For more information, see *Undo* on p. 68.

RIGHT-CLICK ON DROPPED SHAPES

When a shape is dropped into the terrain, it becomes integrated into the terrain data and therefore has a different set of properties.

DELETE

To delete the dropped shape, right-click on it and then select **DELETE**.

NOTE: Objects placed inside of dropped shapes are not deleted.

DELETE WITH CHILDREN

To delete the dropped shape and its child shapes, right-click on it and then select **DELETE WITH CHILDREN**.

A child shape is a dropped shape that is completely enclosed by another shape. So the children of a shape are all of the shapes that are inside of it. A shape cannot cross over the edge of any other shape.

USE AS A SHAPE

To copy the dropped shape and use it as a floating shape, right-click on the dropped shape and then select **USE AS A SHAPE**. The floating shape is created and selected.

TIP: The Use As a Shape tool is very useful in creating multiple, similar shapes. After you create one instance of the shape with which you are satisfied, you can create the remainder of the shapes of the same type for your course quite easily. Select the source shape, and then right-click to select **USE AS A SHAPE**. Configure properties as needed. For more information, see *Floating Shape Properties* on p. 94.

PICK UP

To remove the shape from the terrain and define it as a floating shape again, right-click on the dropped shape and then select **PICK UP**. The shape is floated and selected.

NOTE: To reshape the terrain beneath a dropped shape, you must first pick it up.

PICK UP WITH CHILDREN

To remove the shape and all of its child shapes from the terrain and define them as floating shapes again, right-click on the dropped parent shape and then select **PICK UP WITH CHILDREN**. The shapes are floated and selected.

NOTE: To reshape the terrain beneath a dropped shape, you must first pick it up.

A child shape is a dropped shape that is completely enclosed by another shape. So the children of a shape are all of the shapes that are inside of it. A shape cannot cross over the edge of any other shape.

OPTIMIZE DETAIL

During development of a project, multiple elevation operations can be performed on a single piece of the terrain. The *Course Architect* adds detail to represent the multiple manipulations. Some of this data can be removed

NOTE: If you are experiencing slow performance on compiled courses, optimize details to remove redundant data. An iterative process of optimizing detail and compiling to the game several times over may improve the overall course performance.

It's a good idea to periodically use the Optimize Detail tool to remove the redundant data in your project file. Using the tool on a regular basis improves the performance of the course in the *Course Architect* and in the game.

NOTE: Optimize Detail is only applicable to the terrain.

To optimize detail of an area of the project:

1. Until you get a feel for how to optimize your project, you may want to save a copy of it prior to performing such large-scale changes.
   To save a copy of your course, select **SAVE AS...** from the File menu.
2. Move the cursor over a dropped land shape that completely encompasses the area in question. In the right corner of the status bar, you can read the number of points in the shape and all of the shapes inside of it.
   You can get an idea of how much data you will save with Optimize Detail by right-clicking on the parent shape and selecting PROPERTIES. For more information, see *Dropped Shape Properties* on p. 98.
3. When you are ready to optimize the dropped shape or shapes, right-click on the parent shape and select **OPTIMIZE DETAIL**.
4. n the pop-up, use the slider bar to indicate the level of optimization that you require.

NOTE: Optimize Detail cannot be undone. So, it's best to optimize incrementally. Optimize a little, check it in the Camera window, and then optimize a little more. Even at the lowest setting, Optimize Detail removes a significant amount of redundancy.

To apply the optimization to the children shapes of the selected shape, check the appropriate checkbox.

NOTE: Use the Point Count Indicator in the Tools Menu to find shapes that with a high point total. For more information, see *Point Count Indicator* on p. 85.

5. To begin the optimization as configured, click **OK**. To cancel and return to the *Course Architect*, click **CANCEL**.
   Optimization can take a while to complete, depending on your system. To cancel optimization during the process, press ESC.

NOTE: You should remove detail at much higher level for dropped shapes such as the background texture that encircles the whole course and objects containing flowerbeds or forests.

6. When the optimization is complete, you should save the course.

DROPPED SHAPE PROPERTIES

The available Properties of a dropped shape are the same as those of a floating shape, except that you cannot resize the shape.

To change the texture that appears on top of the shape, select the texture from the drop-down list.
The name of the library from which the texture came is listed in parentheses ( ). The gameplay properties for each texture are defined in the object library containing that texture. For more information, see *The Librarian* on p. 131.

You can also see the possible effects of using the Optimize Detail tool to reduce the number of points in the shape. For more information, see *Optimize Detail* on p. 143.

To apply the changes to all objects of the same type, check the appropriate checkbox.
To accept the changes to the shape properties, click **OK**.
To close the Properties pop-up without accepting changes, click **CANCEL**.

HOLE DEFINITION

When you create a new course in the New Course Wizard, you may not have the layout of your course finalized. Or, you may decide that your initial ideas about a hole were unworkable. After you have used the New Course Wizard, you can define holes in the *Course Architect* through the Hole Definition tool.

To open the Hole Definition tool, select **HOLE DEFINITION TOOL** from the Tools menu.
You can step through the process of creating a new project and your first hole through the online tutorial. For more information, see *Tutorial: Creating Hole 1* on p. 45.

HOLE DEFINITION ELEMENTS

Depending on which gameplay element you are trying to define within the Hole Definition tool, instructions for how to define that element are listed at the bottom of the dialog box. With the Hole Definition tool, you can define the following elements of a hole for gameplay purposes:

Tees are the locations where golfers begin the hole. Tees are usually set up and separated based on player ability, with the tees furthest from the green for Tournament-level players.
Shot paths indicate where computer-controlled golfers should aim for optimal scoring on the hole.
Pin Positions are potential locations for the pin on the green. You can place as many pins as you like, and in the game, the location of the pin for any round is chosen from the set of pin positions.
Out of Bounds areas are defined like shapes to indicate parts of the hole in which the out of bounds rules of golf apply to balls that land there.
Galleries are areas around the perimeter of the hole where textures of crowd galleries are placed.

CREATING TEES AND GREENS

Before you define a hole, you need to define the following information:

Size and position of the tee box or boxes.
Size and position of the greens.
Distance between the tees and the greens.

Based upon the distance between the tees and the greens, the par for the hole is determined. The other elements of the hole, such as sand traps, water and terrain shapes, can be determined at a later time.

To create a green or tee:

1. From the Tools menu, select **CREATE LAND SHAPE**. Draw the perimeter of the shape in the Work window. Right-click to create the floating land shape (see *Create Land Shape* on p. 73).
2. Now, the created shape must be identified as a green or tee. Select the shape in the Work window. Then, right-click and select **PROPERTIES**. From the drop-down list, select a Green or Tee texture. Click **OK** (see *Textures* on p. 107).
3. When you are satisfied with the form and position of the shape, its position on the terrain, and its relative position and distance from the other

shapes that are part of the same hole, you must drop the shape into the terrain. Select the shape in the Work window. Then, right-click and select DROP. The shape is now dropped. For more information on dropping shapes, see *Right-Click on Floating Shapes* on p. 93.

4. After the tee or green has been created, you may want to manipulate the terrain beneath it. Tees should be flat.
   To use the dropped shape as a separate floating shape, right-click on the dropped shape and select **USE AS A SHAPE**. You can now resize and reposition the shape to perform terrain manipulations (see *Terrain* on p. 120).
5. When you have completed steps 1-4 for a tee area and a green, you can define the hole for the *Course Architect*.

HOLE NUMBER

At the top of the Hole Definition tool, you set the Hole Number that you are going to define.

NOTE: If you change the Hole Number and see colored lines or dots on the course, then the selected hole has already been defined. Either select a different Hole Number to re-define or edit the existing hole information.

To change the hole number to define, click the Up or Down arrow next to the Hole Number.

Par for the hole is listed next to the Hole Number and is automatically calculated based on a number of factors related to the shot paths.

NOTE: After you define the hole, you can change the par of the hole by pulling the tee boxes, greens and related shot paths to new locations.

SHOT PATHS

Shot paths are used to indicate the best way for computer-controlled golfers to approach the hole. For human golfers, the shot paths dictate where the golfer is initially aiming and what club he is using at the beginning of each shot. So, it's important to give it some consideration, for you do not want to give the impression that the AI golfers have no idea how to play your course.

Think of the shot path as a sequence of aiming targets. There is no relationship between the par of the hole and the number of segments in the shot path.

When creating shot paths for your course, consider the following:

Try to center the shot path over the fairway to give the greatest margin of error.

Try to avoid directing the shot path through a collection of tall hazards, like trees or buildings.

Don't put shot paths in unplayable terrain. The AI looks quite stupid when it aims for and drops a beautiful lob into a gully.

If a shot path must cross unplayable terrain, put a land spot right in front of the terrain. In this way, the AI can evaluate whether to lay up or try to hit over the unplayable terrain more effectively.

SHOT PATHS AND TEES

A *Course Architect* golf course can have up to five different sets of tees, in order of difficulty (color of tee): Ladies (red), Amateur (white), Professional (blue), black and Tournament (gold).

At least one tee must be defined on each hole.

NOTE: Over the course of a round, a golfer plays from the same set of tees on each hole. Consequently, you need to create tees and shot paths for each tee type that is supported on your course.

Some courses have fewer. However, if you decide to have a tee of one type on Hole #1, it should appear on each hole of the course.

To create shot paths:

1. A shot path can be created for each tee on the hole. When you are ready to create a shot path, check the box next to the tees to place.
2. In the tee box shape for the hole, click the location of the first tee. Then click the location of the second tee. Continue until all selected tees have been placed.
3. Click the second shot point on the hole, as you proceed towards the green. All tees aim for this point. Continue to move the mouse and click to create the remainder of the shot points.
4. The last shot point should end in the middle of the green.

PIN POSITIONS

When you create pin positions for your hole in the *Course Architect*, the game looks at the set of possible pin locations and chooses one to use each time the round is played.

You can place as many pin positions as you like on the putting green. To add pin positions, click the radio button next to Pin Positions. Then, begin clicking locations for pin positions on the putting green.
To move a pin position, click and drag it to a new location on the putting green.
To remove a pin position, click it on the putting green and press DEL.

NOTE: Make sure every hole you create for a custom course has at least two pin positons when using a version of Course Architect prior to 06. Holes with only one pin position will crash when loaded.

OUT OF BOUNDS AREAS

When you define the Out of Bounds areas, you are indicating to the game where the Out of Bounds rules should be applied.

When a ball crosses an Out of Bounds, it is considered out of bounds for play on the hole. The golfer can rehit the ball or take a drop in the spot where the ball has carried out of the playing area. In both cases, the golfer is penalized one stroke.

To create the Out of Bounds:

To define the Out of Bounds areas, you click and drag segments that are dividing lines between in-play and out of play. If the ball crosses one of these segments, it is out of bounds.

1. In the Hole Definition tool, click the radio button next to Out of Bounds.
2. Select which Out of Bounds segment to create.
   To change the segment number, use the arrow buttons in the indicator box to select a new Out of Bounds segment.
3. To draw a segment, click in the location of the initial point of the segment. Drag and click and then drag again as you create the other points of the segment.
   To create a new segment number, click **NEW**.
   To delete a segment number, click **DELETE**.

4. Repeat steps 2 and 3 until you have created all of the Out of Bounds segments for this hole.

GALLERIES

Galleries are specialized textures that you can place along the course to recreate the great atmosphere of golf on the PGA TOUR.

NOTE: Galleries are not displayed in the *Course Architect*. They do appear in the game.

You can create Galleries in a similar way to the method used to create Out of Bounds.

Gallery segments do not have to be touching.

NOTE: You may want to compare the location of your galleries and the out of bounds areas. In most cases, you want to put the galleries beyond the boundaries of the hole.

To create a Gallery, click the radio button next to Gallery in the Hole Definition tool. Instructions are listed at the bottom of the screen.
To change the segment number, use the arrow buttons in the indicator box to select a new Gallery segment.
To draw a segment, click in the location of the initial point of the segment. Drag and click and then drag again as you create the other points of the segment.
To create a new segment, click **NEW**.
To delete a segment, click **DELETE**.

DRIVING RANGE, CHIPPING AREA AND PUTTING GREEN

You can also define the Driving Range, Chipping Area and Putting Green for your course in the Hole Definition tool. These areas of a course are used in the game when you are engaged in Practice mode, so it's worthwhile to give attention to the definition of your practice areas for purposes of playing your course.

To define one of these course elements, use the Up arrow in the Hole Number indicator to move pass the 18th hole.
Driving Range (DR) requires a tee box area and a target field.

To define a Driving Range, you need to indicate the starting shot path and the location of the target areas.

Putting Green (PG) is a Green land shape with pin placements. To define a Putting Green, you must define a land shape as a Green type and drop it into the terrain. Then, you are required to make all of the pin placements for the putting green.

Chipping Area (CA) requires a Green land shape. You must define where golfers are to begin chipping.

FINISHING HOLE DEFINITION

To define the hole as specified in the Hole Definition tool, click **CLOSE**. The hole is created.

DELETING A HOLE

There are two functional components to a hole: the land shapes and the gameplay elements, which are configured in the Hole Definition tool. In order to remove the hole as a functional gameplay entity, you must remove the gameplay elements from the project.

You can retain the land shapes for use on another hole.

To delete a hole:

1. Before you delete a hole, it's a good idea to save your project.
2. Use the Grab and Zoom tools to focus the Work window so that the hole to delete is maximized in the window.

NOTE: You are going to select some very small course elements, like pin placements, so they need to be as large as possible on the screen.

3. To open the Hole Definition tool, select **HOLE DEFINITION TOOL** from the Tools menu.
4. In the Hole Definition tool, use the up and down arrows to change the Hole Number until the shot paths of the hole to delete are highlighted in the Work window.
5. **Delete the shot paths:** Click the radio button next to Shot Path Information. The shot paths are highlighted in the Work window, and the appropriate boxes are checked in the Hole Definition tool. Deselect all of the shot path checkboxes.

To delete the yellow shot paths, click on one of the shot path control points to highlight it. Then, press DEL. Continue clicking and deleting all shot path segments, including the final dot.

6. **Delete the pin positions:** Click the radio button next to Pin Positions. The pin positions are highlighted in the Work window. Click on a pin position in the Work window. It is selected and highlighted. Then, press DEL. Continue clicking and deleting all pin placements.
   If it appears that the pin position remains on the screen, you may have created a new one when you tried to click on an existing one and then deleted it, leaving the original pin placements. You must either select the pin placement more carefully or exit the Hole Definition tool to zoom into the green for easier selection.
7. **Delete the Out of Bounds markers:** Click the radio button next to Out of Bounds. OB Number 1 should be indicated and highlighted in the Work window. Click **DELETE**. Continue clicking **DELETE** until all are removed and the Delete button is grayed out.
8. **Delete the Gallery markers:** Click the radio button next to Gallery. Section Number 1 should be indicated and highlighted in the Work window. Click **DELETE**. Continue clicking **DELETE** until all are removed and the Delete button is grayed out.
9. When you are finished, click **CLOSE**. The gameplay elements of the hole have been deleted.
10. **To remove the hole's land shapes:** Removing land shapes must be done manually. The quickest way to do it is to select the land shape that surrounds as many of the hole's other land shapes as possible. Then, right-click and select **DELETE WITH CHILDREN**. Continue deleting shapes until you have removed all that are no longer needed.
    If you are relocating the hole to a different part of the course: You can apply the method in Step #4, as well. Instead of Deleting with Children, select **PICK UP WITH CHILDREN**. The shapes are lifted and selected. Reposition them as needed. Note that the underlying terrain is **not** selected. It must be reshaped in the new location.
11. If you are satisfied with the results, be sure to save your work.
    To restore the hole, close the project. Do not save it. Re-open the file.

SHAPES

The fundamental tool for creating the terrain and appearance of your course is the shape. When a shape is created, it floats above the terrain, and you can use it to change the underlying terrain. Then, to make its asso-

ciated texture a permanent part of the terrain, you drop the shape into it. Dropped shapes can be lifted and used again elsewhere.

HOW TO CREATE A SHAPE

Creating a finished shape is a multi-step process that begins with the press of the button. Depending on what type of shape you want to create, you select the appropriate menu option in the Tools menu. For discussion purposes, this chapter assumes that you're trying to create a land shape.

For more information on path shapes, see *Path Shapes* on p. 118.
The course perimeter is a specialized kind of shape used to identify the outside edges of the course. For more information, see *Course Perimeter* on p. 140.
Hazard areas demarcate regions in which golfers landing shots are penalized. For more information, see *Create Hazard Area* on p. 74.
The Out of Bounds areas of the course are not defined as shapes. They are defined through the Hole Definition tool. For more information, see *Out of Bounds Areas* on p. 102.

To create a land shape:

You can create shapes from other shapes already on the course. For more information, see *Duplicating Shapes* on p. 117.

NOTE: You are going to select some very small course elements, like pin placements, so they need to be as large as possible on the screen.

1. To create a land shape, select **CREATE LAND SHAPE** from the Tools menu. Alternately, you can press L.

2. The icon changes to a finger. Move the finger icon to the location in the Work window where you want to begin making your land shape. Click at the starting location to begin.
   You can also create shapes in the Camera window. However, most designers find the top-down view of the Work window an easier space in which to work.
3. Move the mouse to the first turn point. Click again.
4. Continue moving and clicking at turn points to create the shape.

NOTE: At this point you only want to describe the rough perimeter of the shape. With other tools, you can refine the shape and add subtlety to its curves. For more information, see *Changing the Shape's Basic Outline* on p. 114.

5. To finish creating the shape, click the final segment that completes the shape back to the initial starting point. Or, you can right-click to let the *Course Architect* complete the shape creation.
6. The shape is now created.
   For information on changing the texture and play qualities of the shape, see *Textures* below.
   For information on refining and placing the shape, see *Shape Tools* on p. 112.
   For information on using shapes to manipulate terrain, see *Terrain* on p. 120.

TEXTURES

Onto the shapes of each course, you can place any texture that is part of any installed library. If you're familiar with textures from other graphical tools, textures in *Course Architect* are a little different. Associated with each texture is a set of characteristics that define the sounds and physical properties of the texture. For example, whenever a ball hits a water texture, a splashing sound is played, and the ball disappears from view. In the case of a water texture, it is also defined as an unplayable area, where the hazard rules of golf are applied.

When you are developing a course in the *Course Architect*, you can apply textures and their related play characteristics through one of two ways:

To select textures from the Librarian, select **LIBRARIAN** from the View menu. Then, click and drag the texture to the shape in the Work window in which you want it applied.

For more information, see *The Librarian* on p. 131.

To apply a different texture to all shapes containing the same texture, right-click on the shape and select PROPERTIES. In the pop-up, select a new texture from the drop-down list. Make sure that the box next to "Apply change to all objects of this type" is checked. Click OK.

NOTE: Changes to the texture are not visible until the shape is dropped into the terrain. In the Properties pop-up, texture names are color-coded based on playability: **Green = playable; Red = unplayable; Blue = unplayable with free drop**

For more information, see *Changing the Shape Properties* on p. 113.

STANDARD TEXTURES

You can change the texture beneath the shape to create the different course elements of your golf course. The Librarian contains all of the libraries installed on your computer, each of which may contain many separate textures. The following section lists and describes the main gameplay textures that you may use for creating your courses.

For more information on the Librarian, see *The Librarian* on p. 131.

FAIRWAY

The fairway shape describes the play area where a golfer wants to hit his tee shot and all other shots before he reaches the green. A golf fairway has fairly short grass and is intended to have smooth play characteristics.

BUNKER

Stay off the beach! The sand shape is used for sand traps, the bane of a golfer's game.

A sand trap or bunker is filled with relatively soft sand into which a ball can partially sink. To get out of a bunker, a golfer usually swings a sand wedge, a sharply angled club, which is designed to get under a ball mired in sand and to give it lift over the lip of the trap. Sand is not the most forgiving of play surfaces; a sand wedge out of a bunker doesn't carry well. In some cases, a stop in a bunker can effectively cost a golfer a stroke.

TIP: Add challenge to a hole by placing bunkers around the green. When you place your bunkers, consider where deviations on the approach shot are likely to land. Raise the green above the bunkers to make things even more interesting.

ROUGH

Where the fairway ends, there begins the rough. Covered in deeper and more uneven grass, the rough can be a crapshoot for a golfer. In what kind of rough did the ball land? Is the ball on top of the grass? Is it buried? Because of the vagaries of the lie, even a well-struck ball from the rough can end up in an unplanned destination.

TIP: Place patches of rough in locations where a golfer should pay a modest penalty for inaccuracy. If a golfer misses his drive a little bit, a rough area reminds him.

TIP: You can combine areas of rough with object placement to make for more challenging second or third shots.

DEEP ROUGH

Stay out of the deep stuff, as they say. Deep Rough can wreak havoc on an otherwise well-played hole. Generally speaking, deep rough areas are beyond the rough that runs along the edges of the fairway; when a golfer misses a shot badly, the deep rough can swallow the ball. Closer to the main golfing areas, deep rough can have selective, strategic application. For example, in front of an elevated green, an embankment of deep rough can complicate the chip shot to the green, which places greater emphasis on the approach shot.

WATER

On the golf course, water is death. When a golfer hits the ball into the water, he has two options. He can rehit the ball from where he last hit, or drop the ball near the spot where the ball entered the water. In either case, a penalty stroke is assessed. So if he hit the ball into the water off the tee, his next shot is his third shot. Ouch.

EA SPORTS **TIP:** Water can be used to divide the aggressive and conservative. You can place water on your course where an aggressive golfer may be able to power a shot over the body of water. For hitting a long and accurate shot, he is rewarded.

TEE BOX

A hole's tee is where a golfer makes his first swing. On the course, there can be up to five kinds of tees. Tees are color-coded to indicate distance and difficulty. In order of increasing difficulty, the tees are red, white, blue, black and gold (Tournament). PGA TOUR tournaments play from the Tournament tees. A golfer plays the same tees for an entire round.

TIP: Gold Tournament tees are supposed to be the most challenging. While tees are usually separated by 10-15 yards, they do not have to be a proportional distance from each other.

To create a tee, you need to create two different course elements. You need to place the tee box shape and texture. Then, you need to define the shot paths that tell computer golfers where to begin and how to proceed in order to finish the hole.

For more information on shot paths, see *Hole Definition* on p. 98.

TIP: Tees are usually placed 50-100 yards in front of the first fairway. The area between the tees and the beginning of the fairway is rough—or worse.

GREEN

Somewhere on the green shape is the cup. When a golfer's ball reaches the green, he switches to his putter to complete the hole. Sticking out of the cup is a flag to indicate the location of the hole from distances up to 500 yards away.

The surface of a golf green is short, immaculate grass. Although Mother Nature may say otherwise, the surface is intended to be consistent. The challenges on a green are the terrain changes; undulations and breaks add degrees of difficulty to targeting and striking a putt.

In the game, the program places the actual pin in one of the locations you define. Variation to pin placements is more consistent with real golf courses. You can move the placement of the pin on a green. For more information, see *Pin Positions* on p. 102.

TIP: When you design a green, pay careful attention to its terrain. Subtle changes in elevation can dramatically affect how the greens are played. Similarly, placing the pin in a different location on the green can change a straightforward hole into a challenging one.

TIP: Do not place a Green texture in any location other than the putting green. The game pulls clubs based on the type of texture on which the ball is resting.

CART PATH

For more information on creating cart paths, see *Path Shapes* on p. 118.

SHAPE TOOLS

The Course tools in *Course Architect* provide maximum flexibility and control over the creation of shapes that populate the surface of your course. This section describes how to manipulate, duplicate and delete existing shapes with the tools.

TIP: You can experiment with changing a shape by remembering the Undo command. If you make a change that you don't like, press CONTROL + Z immediately. *Course Architect* does not support more than one undo.

FLOATING VS. DROPPED SHAPES

When a shape is created, it floats above the surface of the terrain. To a **floating shape**, you can change its form by moving its control points, rotating them, or adding new ones. Floating shapes can also be repositioned, duplicated and rotated. Additionally, you can change the texture that is displayed on top of the shape through the Properties pop-up.

A major function of a floating shape is to use it as a mechanism to manipulate the underlying terrain. For more information, see *Terrain* on p. 120.

When you are satisfied with the characteristics of the shape, you drop it into the terrain. A **dropped shape** is a permanent part of the course. However, you can lift the shape from the course and move or use it elsewhere. Changes made to the terrain are permanent.

CHANGING THE SHAPE PROPERTIES

You can change the properties of both floating and dropped shapes.

To change properties of the shape, right-click on it. Select PROPERTIES. The shape properties pop-up opens.

For more information on changing the texture of a shape, see *Textures* on p. 107.

For more information on inflating shapes, see *Inflating and Deflating the Shape* on p. 115.

CHANGING THE SHAPE'S BASIC OUTLINE

After a shape has been created and is floating, you can apply a variety of changes to it and the control points that define its perimeter.

You can make changes to a floating shape in both the Work window and the Camera window.
To move a shape, click in its center and drag it to a new location on the course.

MODIFYING CONTROL POINTS

When a shape is first created, it may only have a few points. As you get more detailed in your design, you may discover that you need finer control over the outline and positioning of the shape. The control points are the mechanisms for achieving this increased level of precision.

To reposition a control point, move the cursor over it. The mouse pointer changes to a hand that is pinching. Click and drag the control point to a new location.

NOTE: When repositioning a control point, you should not have the perimeter line that defines the shape crossing itself. A crossed shape can introduce errors in the terrain.

To add a control point, right-click on the control point that is "just counter-clockwise" of the location where you want to place the point. Select DUPLICATE. The new control point is placed between this point and the one next to it in the clockwise direction.
To delete a control point, right-click on the control point. Select **DELETE**. The control point is deleted.
A shape must have a minimum of **three** control points.

You can even rotate control points to produce some very interesting effects.

To rotate a control point, select the control point only. Make sure that you are not selecting the entire shape. When the control point is selected, click the Rotate button in the toolbar. The mouse pointer changes to a rotation icon. Click and drag left or right to rotate the point.

TIP: You can select multiple control points in a shape and rotate only those points. For example, you can select the control points at one end of the hole and rotate them together in order to increase the dogleg of the hole. To select multiple control points, press and hold CONTROL as you click the points.

ROTATING LAND SHAPES

To rotate a shape, click in its center to select it. Click the Rotate button in the toolbar. Move the mouse back over the Work window. The mouse pointer changes to a rotation icon. Click and drag left or right to rotate the shape.

INFLATING AND DEFLATING THE SHAPE

You can also manipulate shapes by changing the size of them in all directions. Inflating a floating shape causes all of the control points on the shape to move away from the center of the shape. The amount offset is defined by a predetermined distance. Similarly, you can deflate the shapes by moving the control points closer.

NOTE: You can inflate and deflate floating shapes only.

To inflate a floating shape, right-click on it and select PROPERTIES. In the Properties pop-up, check the button next to the units of measurement by which you want to inflate. Then, use the arrows to select the number of units.

To deflate a shape, enter a negative number in the Units textbox.

To accept changes, click **OK**. To cancel and exit, click **CANCEL**.

EXAMPLE: ADDING A SKIRT OR FRINGE

You can quickly add a skirt or fringe by using the inflate facility, when you are satisfied with a shape and have dropped it into the terrain.

Create a skirt only after you are satisfied with the source shape.

To create a skirt or fringe, right-click on the dropped shape and select **USE AS A SHAPE**. Right-click on the new shape and select **PROPERTIES**. In the Properties pop-up, inflate the shape as desired, and select a different texture. Click OK. Then, drop the new shape into the terrain. The inner shape is displayed on top of the larger shape.

For more information, see *How to Create a Fringe or Skirt* on p. 58.

EXAMPLE: SMOOTHING A HILL

You can use inflated shapes to smooth a hill into the surrounding terrain. For this example, create a floating shape and use the Make a Hill tool to create a hill inside the shape. Do not drop the shape into the terrain.

To smooth the hill into the terrain, right-click on the shape and select **PROPERTIES**. In the Properties pop-up, inflate the shape by a great deal—perhaps twice the size of the original shape. Click **OK**. Then, select **SMOOTH AN AREA** from the Tools menu. Move the slider bar over to the left. Click **APPLY**. Check to see the results. If you would like more smoothing, click **APPLY** again or increase the Smoothing Amount and click **APPLY**.

For more information, see *Smooth an Area* on p. 80.

DROPPING A FLOATING SHAPE

When you are happy with the shape, texture and terrain of a floating shape, you must drop the shape into the terrain to make it a permanent part of your course.

To drop a floating shape, double-click on it. Or, right-click and select **DROP**. The shape is dropped.

NOTE: You should not have the perimeter line that defines the shape crossing itself. Correct any errors and try to drop it again.

To drop multiple shapes simultaneously, select the first shape. Press CONTROL and then select the shapes. To drop these shapes, select **DROP SELECTED SHAPES** from the Edit menu. The shapes are dropped.

Drop Selected Shapes is a useful command if you are using multiple shapes to create a single terrain feature and want to see the effect, in aggregate, in the terrain.

To undo the placement, press CONTROL + Z immediately. If you have performed another operation and cannot undo the placement, right-click on the outer shape and select **PICK UP WITH CHILDREN**.

LIFTING A DROPPED SHAPE

After a shape has been dropped, you can still tweak both terrain and shape to get the desired effect. To edit the texture and size of a dropped shape, you must pick up the shape first.

To pick up a dropped shape and use it as a floating shape, right-click on it. Select **PICK UP**. The shape is lifted from the terrain and selected.
To pick up a dropped shape with its child shapes, right-click on it. Select **PICK UP WITH CHILDREN**.

The shape is floating again and can be manipulated with all of the Course tools at your disposal. When the shape is altered to your satisfaction, you can drop it back into the terrain to apply the texture to the terrain.

To drop a shape into the terrain, right-click on it. Select **DROP**.

DELETING A SHAPE

You can delete floating and dropped shapes using the same mechanism.

To delete a floating or dropped shape, right-click on it and select **DELETE**. The shape is deleted.
To delete a shape and the shapes that are inside of it, right-click on it and select **DELETE WITH CHILDREN**. The shape and its child shapes are deleted.

NOTE: You cannot delete the background shape that covers the entire land plot. You can, however, change its basic texture through the Properties pop-up.

DUPLICATING SHAPES

You can duplicate floating and dropped shapes, although the mechanisms are slightly different.

To duplicate a floating shape, right-click on it. Select **DUPLICATE**. Move the new shape to a different location.
To duplicate a dropped shape, right-click on it. Select **USE AS A SHAPE**. The new shape is floating and selected. Move it to a different location.

NOTE: When duplicating a dropped shape, you are copying the outline of the shape and its properties. You are not copying the undulations of the terrain beneath it. At this point, you cannot copy and paste terrain in the *Course Architect*. However, you may be able to work around it. For more information, see *Copying Terrain* on p. 124.

SHAPE LAYERS

In the Layers pop-up, you can select which types of shapes you want to view.

To open the Layers pop-up, select **LAYERS** from the View menu.

NOTE: Floating paths are not included in the output file when you compile a course. Make sure to review the Layers tab before you compile.

The following options in the Layers tool apply to shapes:

To toggle display of floating shapes, click the box next to Layout.
To toggle display of path shapes, click the box next to Cart Path.
To toggle display of the course perimeter, click the box next to Course Perimeter.

PATH SHAPES

Path shapes describe the route of cart paths through your golf course. Although a cart path is unnecessary in virtual golf, it does have special play characteristics. If you hit a ball onto a cart path, it bounces very well—for better or worse. Paths make your course look more authentic, too.

NOTE: Cart paths are very narrow shapes and may be hard to select after you have created them. In such a case, use the Zoom tools to get very close to the surface of the project. You should find it easier to select and manipulate a path in close quarters.

TIP: You can use the path shapes to make rivers and streams. Lay a path, and change the texture to a water variant in the Properties pop-up.

CREATING A PATH

A path shape is defined as a connected series of line segments. Unlike a standard land shape, the ends of the path shape do not and cannot touch.

To create a path shape, select **CREATE PATH** in the Tools menu. In the Work window, click on the starting point of your path. Click at the first turn point. Continue clicking. To finish the path, right-click on the last point. The path is created and floating above the project.

When a path is created, the *Course Architect* attempts to smooth out the curves. You can add, delete, move and rotate control points to adjust the cart path, just like any other shape.

When a path is placed onto the course, it follows the flow of the terrain. No check is made to see if the path is actually navigable; you can create a cart path that climbs straight up a cliff. You cannot use a path with the Course tools to raise or lower terrain.

DELETING A PATH

Deleting a path works just like deleting any shape.

To delete a path, right-click on it and select **DELETE**.

PATH PROPERTIES

Path properties are similar to the properties of a standard shape with one notable exception.

To edit a path's properties, right-click on it. Select **PROPERTIES**. The Properties pop-up opens.

In the Properties dialog box, you can change the texture of the path.

TIP: By changing a path's texture to water, you can create a stream. However, the path will always be the same width, so to make it look natural, you may have to create many twists and turns.

For paths, you can set the width of the path in the Properties dialog box.

To change the path width, select the units of measurement and then enter the number of units in the box. To accept the changes, click **OK**.

TIP: Paths can be used to create an edging for another shape, such as a flowerbed.

TERRAIN

Course Architect comes with a polished set of terrain tools for selecting and manipulating the elevation information on your course. You can grab any piece of elevation information and apply large-scale terrain tools or push and pull the terrain on the tiniest scale.

With the terrain tools, you can raise, lower, slope, flatten or smooth the selected terrain.

TERRAIN TERMS

Before continuing, you should be familiar with the definition and usage of the following terms: face, mesh, shape and control point.

For more information on faces, mesh, shapes, and control points, see *Golf Course Elements* on p. 13.

WHOLE LAND PLOTTING

Course Architect gives you the tools to develop and manipulate terrain on the entire land plot. Through one interface, you can make changes to Hole 1 and Hole 18 simultaneously. With such powerful tools in hand, you should spend time considering the shape of the terrain across the entire course.

TIP: When placing the holes of your course, do not crowd yourself against the left and bottom edges of the land plot. After you create the land plot, you cannot add terrain in those directions. Added terrain is placed to the top and to the right of the current land plot.

BEFORE YOU BEGIN

If you're simulating an actual course, get a good topographical map of the course that includes length and width in yards for the entire course. If you're doing your own design, you are free to prep as you see fit. A sketch of the hole layouts and positional relationships on graph paper can help. Note the length and width of the entire map for the course in yards. Note the direction of north on the map and the range of elevations, as well. For ease of visualization, the top of the map should correspond to north.

THE BEST TOOL: THE NEW COURSE WIZARD

While it's possible to develop your land plot by hand, it can be very time-consuming. *Course Architect's* New Course Wizard allows you to create the large-scale land shapes and to define the general characteristics of the terrain with very simple tools. You can use the New Course Wizard to:

Define the size of the land plot
Define basic terrain type and randomize the terrain
Place and rotate hole templates into position
Place, size and shape water and forested areas

TIP: Even if you know what you're going to create to the finest detail, the New Course Wizard can shorten development time. Some features, like randomizing terrain and placement of entire hole templates, are available only in the New Course Wizard. Otherwise, these things must be created from scratch in the *Course Architect*.

For more information, see *New Course Wizard* on p. 25.

TWO APPROACHES

When developing your entire land plot, there are two fundamental approaches:

Shape the terrain first. Build the terrain shapes of the course in rough-cut. Then, begin adding in the holes and reshaping the terrain to accommodate. This approach may be more suitable to creating a course out of your imagination.

Start with a single hole or terrain feature. Create the singlemost prominent feature of the course and work out from there. Get one thing right, in terms of size, shape and positioning on the land plot. Then build the rest around it. This approach may be more suitable to re-creating an existing golf course.

SELECTING TERRAIN AREAS

a Create Land Shape
b Create Path
c Create Hazard
d Drop Shapes
e Measure
f Rotate
g Hill
h Bunker
i Slope
j Smooth
k Flatten
l Foresting
m Click-Click
n Hole Definition

In either the Work or Camera windows, you can use the Course tools to select or define floating shapes and then manipulate the terrain beneath those shapes with other tools. All Course tools are applied to floating shapes.

You can select a Course tool to use from the Course toolbar, menu system, or keyboard shortcut.

DEFINING SHAPES

You can create land shapes, paths and hazards using the same generalized method.

To create any shape, click the appropriate "Create" tool or select it from the menu system. In the Work or Camera window, click the starting location of the shape. Click at the first turn point. Continue until the shape is roughly defined. Right-click to end the shaping. The floating shape appears in the Work and Camera windows.

To reshape a floating shape, click and drag the control points to new positions.
You can add, delete, move and rotate control points. For more information, see *Right-Click On Control Points* on p. 94.
Notes on land shapes and hazards: These shapes are closed loops. Your last point must be the initial point. Click to the initial point to manually finish the shape, or right-click to let the *Course Architect* finish it for you.
Notes on hazards: Hazards are not placed in the terrain. They remain in the Work window as red areas. If they are interfering with the development, you can hide them through the Layers tool. For more information see *Layers* on p. 21.
Notes on paths: Cart paths are not enclosed shapes. You finish shaping them by right-clicking on the final point. To link one path shape to another, you should place the second one as close as possible to the first one you initially shape. Then, zoom in and move the terminal point of one shape to one pixel's distance from the other. Remember: two shapes cannot touch or overlap each other.

SELECTING SHAPES

After shapes are created and floating, you can select one or more shapes. You can also select dropped shapes.

To select a floating land shape, click inside of its perimeter in the Work window. The control points of the shape are highlighted, and you can begin manipulations.
To select multiple shapes, hazards and paths, click one of them in the Work window. Then, hold down v as you click on the other shapes to select. Alternatively, you can use the Lasso Select to draw a highlight box around all of the shapes to select.
To select all floating land shapes, press CONTROL + A.

NOTE: Some tools are unavailable for use on multiple shapes. Their buttons and menu selections are grayed out. For more information, see *Using Tools on Multiple Shapes* on p. 73.

To select a dropped shape, right-click inside of its perimeter. The right-click menu opens. To lift the shape from the terrain, select **PICK UP** or **PICK UP WITH CHILDREN**. The shape is removed from the terrain and selected.

To duplicate a dropped shape, right-click inside of its perimeter. The right-click menu opens. Select **USE AS A SHAPE**. The shape is duplicated, and the floating duplicate is highlighted and selected.

For more information on manipulating dropped shapes, see *Right-Click Menus* on p. 93.

For more on the Course tools, see *Tools* on p. 72.

COURSE TOOLS USING MULTIPLE UNCONNECTED LAND SHAPES

When you select multiple unconnected land shapes, you can use all of the Course tools except for the following:

Foresting tool
Smooth tool
Flatten tool

COPYING TERRAIN

At this juncture, the *Course Architect* does not support direct copy and pasting of terrain. However, you can get pretty close.

To "copy and paste" terrain:

NOTE: If you know that you're going to use a terrain shape for multiple locations, drop the shape into the terrain, and write down all of the terrain manipulations that you do in order to create the shape. Then, you can duplicate these manipulations for the new shape.

1. Right-click on the shape that contains all of the terrain data that you want to put somewhere else.
2. Select **USE AS A SHAPE**. The new shape appears and is highlighted.
3. Click and drag the shape to the new location.
4. Re-apply the terrain manipulations to the shape to recreate the original terrain.

   Future versions of the *Course Architect* may support copy and pasting of terrain.

VIEWING MODELING CLAY

Some designers prefer to view the terrain as an organic whole. You can turn the entire terrain surface of the course into a computer-generated lump of modeling clay. Then, using the Course tools, you can create and manipulate shapes so that the land flows well.

To toggle viewing the course in modeling clay form, select **MODELING CLAY** from the View menu. For more information, see *Modeling Clay* on p. 70.

MAKING TERRAIN FEATURES

NOTE: Some Course tools are not available until conditions exist where the elevation change is applicable.

After you select a piece of terrain, you can apply one of several tools to the terrain. While these tools assist you in getting started on building terrain features, you may want to use the finishing tools to make the terrain look smoother or to give it unique features and definition.

TIP: If you are having difficulty seeing the changes in the terrain, you may see better results if the grid or the modeling clay is visible. For more information, see *Grid Settings* on p. 86.

Course tools can operate on outer and inner shapes simultaneously. If multiple shapes are used, the inner shape is moved the full amount requested. Terrain between outer and inner shapes is altered to blend the effect.

NOTE: Multiple land operations can add redundant points to the course. Optimizing detail increases performance without impacting overall visual quality. For more information, see *Optimize Detail* on p. 143.

TIP: When creating large-scale terrain features, it is best to work from the outside in. Define the outer shape and manipulate the terrain. Then, deflate the shape or duplicate the shape to create the interior terrain features. Such a method tends to create more natural-looking terrain. For more information, see *Shape Tools* on p. 112.

CAMERA WINDOW AND TERRAIN

NOTE: Prior to creating one of these terrain features, you may want to reposition the camera so that the shape is displayed in the Camera window. Adjustments are updated to the Camera window in real-time.

MAKING A HILL, BUNKER OR SLOPE

The Make tools can be used separately and together to define the terrain beneath the selected land shape.

To make a terrain feature, select or define the land shape that encompasses the terrain area. Then select the appropriate Make tool from the Tools menu. Use the slider bar to adjust the height of the shape. To accept the new terrain shape, click **OK**.

If you know the exact height of the shape, enter it into the height textbox. Be sure to indicate whether it is Up or Down from the current terrain elevation.

NOTES ON HILLS

The Hill tool shapes concave or convex features in the selected land shape. The top or bottom of the shape is always in the middle of the selected terrain; you cannot pull up one edge of a selected piece of terrain.

To create hills with multiple bumps and ridges, you need to create land shapes within land shapes. The interior land shapes should be considered details to add only when their appearance in the terrain becomes necessary.

TIP: For traditional British links courses, the Hill tool comes in handy, as it is the best way to build a smooth hillock.

NOTES ON BUNKERS

After you have selected a piece of terrain, you can reshape it into a bunker or mesa. After selecting the Bunker tool, use the slider bar to move the terrain up or down and review the results in the Camera window. When you are satisfied with the new height or depth of the selected terrain, click OK.

TIP: The Bunker tool is good for shaping any flattened area—a tee, a multi-leveled sand trap, or something else.

NOTES ON SLOPES

The Slope tool lets you lean a selected shape to change the underlying terrain along a user-defined axis.

TIP: The Slope tool is useful for making small flat slopes inside of other shapes. For example, the side of a sculpted hill can be refined with the Slope tool.

MAKE IT NATURAL

An artifact of some of the terrain tools is unnatural blending with the surrounding terrain. Because the tools make mathematical adjustments to the selected terrain, they do not, by themselves, blend those adjustments into the terrain. That is the role of the Smooth and Flatten tools.

SMOOTHING TERRAIN

You can smooth a terrain shape into the surrounding piece of terrain with the Smooth tool. For more information on general uses of the Smooth tool, see *Smooth an Area* on p. 80.

TIP: If you're smoothing a large section of the hole, do it piece by piece. Smoothing in smaller pieces, in the long run, takes less CPU time.

FLATTENING TERRAIN

The Flatten tool makes the selected shape horizontal at a defined height. After you select a shape to flatten, click the Flatten button to open the Flatten pop-up. For more information on general uses of the Flatten tool, see *Flatten an Area* on p. 81.

TOWARDS BETTER SMOOTHING AND FLATTENING

You may discover that the Smooth and Flatten tools seem a bit hard to control. When you smooth or flatten a floating shape, you may be confused by the effects. Follow these steps to smooth or flatten the terrain with better control.

1. Reposition the camera so that the shape is fully visible in the Camera window.
2. Click on the land shape that is to be changed.
   If you're trying to smooth/flatten a floating shape: Right-click on the shape. Select **DUPLICATE**. A new shape is created and highlighted.
   If you're trying to smooth/flatten a dropped shape: Right-click on the shape. Select **USE AS A SHAPE**. A new shape is created and highlighted.
3. Right-click the new shape and select **PROPERTIES**. In the Properties pop-up, inflate the shape by the measurements that you need. Click **OK**.

TIP: Some designers have discovered that inflating a shape by a very large factor creates the most natural results.

   If you're creating a skirt to the shape, you may want to change the texture in the drop-down list in Properties.
4. Click on the shape again.
5. Select **SMOOTH AN AREA** or **FLATTEN AN AREA** from the Tools menu. In the Smooth an Area pop-up, you may want to smooth bit by bit. Select a low smoothing setting and click **APPLY** repeatedly until you get the effect you want.

ADDING MORE TERRAIN

While it's best to avoid adding terrain to the land plot, you may discover that you have no choice. As you define your course or shape your course perimeter, you may need to add terrain.

NOTE: When you add terrain to the land plot, it is added to the right in the X-direction and to the **top** in the Y-direction.

To add more terrain to your land plot:

1. Save your course, if desired.
2. Select **COURSE PROPERTIES** from the File menu.
3. In the Course Properties pop-up, enter new dimensions in the Course Width and Course Height boxes.

NOTE: Do not use the Course Properties pop-up to delete terrain from the land plot. Deleting terrain is better managed through the definition of the Course Perimeter. For more information, see *Course Perimeter* on p. 141.

4. To add the new terrain, click **OK**.
   To cancel changes, click **CANCEL**.
5. Any new terrain is added to the right and to the top of the land plot.

OBJECTS AND THE LIBRARIAN

A golf course without trees, rocks, bushes, equipment huts, birds, deer, and the sounds to go along with them would be sterile and lifeless. *Course Architect* comes with a library of hundreds of objects that you can place on your courses. Megabytes of trees, rocks and other touches are at your disposal for inclusion in your designs.

TIP: Objects are nice touches to add realism and flavor to your course. However, unless an object is a gameplay factor that you are trying to test, it's recommend that you delay placement of objects until they are necessary. They can consume system resources that are better spent elsewhere.

OBJECT TYPES

Objects in the *Course Architect* come in three varieties: objects, structures and sounds. You can click and drag these objects from the Librarian directly into your project.

TEXTURES

You can also select and place textures through the Librarian. These are not objects and are covered elsewhere. For more information, see *Textures* on p. 107.

STRUCTURES

The Librarian contains a wide selection of the various structures that populate a golf course and its perimeter. Houses, bridges, fences, walls and other details can add character to your course.

To add a structure to your course, navigate the Librarian to find the desired structure. Click and drag it into your course. The structure is placed.

When a structure has been placed, you can change its properties to improve its appearance in the game.

To open the Properties pop-up, right-click on the placed structure and select PROPERTIES.

To adjust the horizontal rotation of the placed structure, use the Rotate tool. For more information, see *Rotate* on p. 76.

In the Properties dialog, you can set the following parameters:

Scale: The Scale factor is a multiplier. To double the size of the structure, enter 2.0 in the space provided. To halve the size of it, enter 0.5.

Elevation: Select the units of measure to establish the elevation for the structure. Using elevation, you can bury the structure into the terrain to ensure that no seams are showing between it and the terrain.

To place the center point of the structure in the terrain, select **PLANT IN GROUND**.

To accept changes, click **OK**. To cancel changes and exit, click **CANCEL**.

OBJECTS

NOTE: Objects such as trees and shrubbery can create a significant performance hit in the *Course Architect*. Add these later, if possible, and deselect their display in the Layers tool when you don't need them. For more information, see *Layers* on p. 21.

All objects in the *Course Architect* are in 3D. Three-dimensional objects used to be a rarity in computer golf. Because of the large CPU bandwidth required to display and update them, 3D objects were either eliminated or used very sparingly. Unfortunately, large 2D objects often looked out of place on a golf course; a large billboard image of a house was supposed to represent a million-dollar home on a golf course. It often spoiled the suspension of disbelief.

Fortunately, computers have come up in power and RAM has dropped in price, so it is now possible to create golf courses with 3D objects and to expect that end users can display them effectively on their machines. So, with the *Course Architect* the 3D worlds of golf that you create are really delivered in 3D.

SOUNDS

In *Course Architect*, localized sounds are treated and placed as objects, yet they have special properties. For more information, see *Sounds* on p. 135.

THE LIBRARIAN

Through the Librarian, you can review objects contained in their libraries and add them to your projects. The Librarian's click, drag and drop interface allows for easy review and placement.

To open the Librarian, select LIBRARY from the View menu.

In the Librarian, objects are displayed as thumbnails under the library in which they are located. The libraries are listed as tabs at the top of the Librarian.

TIP: To develop a realistic golf course, it is best to select one primary library to use. Object libraries are organized by the *Tiger Woods PGA TOUR 06* course where they are used. Objects from the Princeville course, for example, reflect the location of that course in Hawaii. So, if you're developing a tropical golf course, the Princeville library may be the one to use. You can use objects from multiple libraries in a single project.

To see objects in a different library, click on the appropriate tab at the top of the Librarian. Or, you can use the small arrows in the top-right corner of the Librarian to scroll through the available libraries.
To see objects that are off-screen, use the scroll bars.
To close the Librarian, close the window.

ADDING OBJECTS FROM THE LIBRARIAN

You can place single objects on the course by clicking and dragging from the Librarian.

To add an object to your course from the Librarian:

NOTE: This method of placement lets you place a single object with default properties. To place multiple objects with a single mouse click, see *The Foresting Tool* on p. 134.

1. Change the area of focus for the Work window and reposition the camera so that the area where you are placing the object is displayed in both windows.
2. If the Librarian is not open, select **LIBRARIAN** from the View menu.
3. To select the library that contains the object, click on the appropriate tab at the top of the Librarian.
   To see libraries that are not currently displayed in the Librarian, use the arrow keys in the upper-right corner.
   To see objects in the current library that are not displayed, use the scroll bars.
4. When you have found the object, click and drag it into Work or Camera windows. Depending on the type of object, the mouse pointer changes to a specific color. The object is placed.
5. You can continue placing objects in a similar manner.
   To place multiple plant objects at once, see *The Foresting Tool* on p. 82, 134.
   To place a single object type multiple times, use the Click-Click Tool. For more information, see *The Click-Click Object Tool* on p. 83, 134.
   To place specialized objects like cart paths, see *Miscellaneous Objects* on p. 138.

TIPS ON PLACING OBJECTS

TIP: Where possible, place objects some distance from the playable areas on the course, particularly if you have increased the scale of the object's height and width parameters. Up close, even high quality objects can look artificial.

TIP: Delay placement of objects until you feel that the terrain of the hole is close to completion. When you place objects on unfinished terrain, adjustments to the terrain can expose the bottom edge of the object. Especially for larger objects, you may want to flatten a space on the terrain to hold the object—after the major shaping around the space has been completed.

TIP: To select all objects of a particular type, press and hold CONTROL while you double-click on one object of the type in the Work window. All objects of that type are selected, and any changes that you make to the object's properties are applied to all of them.

OBJECT PROPERTIES

To change an object's properties, right-click on it and select **PROPERTIES**. The Properties pop-up appears.

In the Object Properties pop-up, you can change the type of object and its parameters.

To change the type of object displayed, click the Object button. The Librarian opens. For more information, see *The Librarian* on p. 131.
To change the size of the object, use the slider bar. Be sure to set the units of measurement.
To restore the object to its default height, click **USE DEFAULT HEIGHT**.
To accept changes to the object properties, click **OK**.
To cancel and exit, click **CANCEL**.

SELECTING OBJECTS IN YOUR PROJECT

After you have added objects to your project, you can select them via multiple methods.

To select a single object, click on it in the Work or Camera window.
To select multiple objects, click on the first one. Press and hold CONTROL and click on the other objects. All objects are highlighted and selected.
To select all objects in a given area, press and hold q as you click in one corner of an area. Drag a rectangle over all objects that you want to select. All objects are highlighted and selected. You can also use the Lasso Select tool.

POPULATING AREAS

The Click-Click Object and Foresting tools allow you to place objects individually or in groups in a designated area. For example, it's a great way to plant a stand of trees or a field of rocks.

NOTE: The Foresting and Click-Click Object tools apply only to objects. You cannot use them to place structures.

THE CLICK-CLICK OBJECT TOOL

Sometimes, you need to get an object in an exact spot. Or, you want to place a few objects in particular locations. The Click-Click Object tool lets you select objects from the Librarian and then place them in precise locations in your project.

The Click-Click Object tool can be applied in both floating and dropped shapes. You can use the Click-Click Object tool anywhere on the course.

TIP: When using the Click-Click Object tool, use the Zoom tools to get as close as needed to place the objects in the desired locations on the course. It may also be helpful to reposition the camera to see your work in the Camera window.

To use the Click-Click Object tool, select **CLICK-CLICK OBJECT TOOL** from the Tools menu. The Click-Click Object tool pop-up opens. For information on how to populate an area with objects, see *Click-Click Object Tool* on p. 83.

TIP: When placing objects, don't fill every little nook. Populating twenty percent of the available area with objects is too much. Too many objects can slow down your gameplay performance.

THE FORESTING TOOL

Particularly for organic objects, the exact placement on the course may not be critical. In fact, adding randomization to the placement of trees, rocks and flowers can make them appear much more natural. The Foresting tool lets you define parameters and place objects inside of land shapes to give a natural, organic feeling. Then, you can add, remove or repopulate these areas to get them right.

Prior to using the Foresting tool, you should reposition the camera so that it's looking at the entire area that you're going to be populating.

To use the Foresting tool, select a floating shape. Then, select FORESTING TOOL from the Tools menu. The Foresting pop-up opens. For information on how to populate an area with objects, see *Foresting Tool* on p. 82.

TIP: When foresting an area, start with just a few objects by selecting a large distance between the objects. You can apply your changes multiple times to get to the density that you desire.

SOUNDS

Sounds can be selected and placed directly from the Librarian. When placed, you can configure the playback options for a sound, or configure them in groups.

TIP: Groups of similar sounds, like birds in the trees, should be configured together, so that you can create random, naturalized effects.

To place a sound in your project, select **LIBRARIAN** from the View menu. Find the sound to place. Click and drag it to a location in the Work window. The sound is placed.

Sounds can be selected, moved and deleted like any other object in the Work or Camera windows.

TIP: You can also create a single background sound for the course. For example, you can use create the background sounds of the ocean on a coastal course. Place at the source of the sound or in the middle of your project. Then, configure the radius of the sound to cover the entire course.

SOUND PROPERTIES

When you drop a sound on your project, you can still modify its properties.

To change the properties of sound in your project, right-click on the sound object. Select **PROPERTIES**. The Properties pop-up opens.

NOTE: When you select multiple sounds, the values displayed in the Sound Properties pop-up are averages of the values of the selected sounds.

The sound properties are the following:

Original Sound: An image representing the currently selected sound is displayed. If multiple sounds of different types are selected, this image is grayed out.

New Sound: Click New Sound to open the Librarian. Select any sound from the libraries. For more information, see *The Librarian* on p. 131

To play a sound, click **PLAY**.

To stop playback, click **STOP**.

Select the position and range of the sound. Be sure to indicate the appropriate units.

Height: Enter the height from which the sound is played. For example, you can place bird sounds in a tree.

To apply the height to all sound objects of this type, check the appropriate checkbox.

Radius: A sound can only be heard within a specified radius.

TIP: To make a sound audible everywhere on the course, make the radius large enough to cover the entire course.

To apply the radius to all sound objects of this type, check the appropriate checkbox.

Select the play back options for the sound.

Loop: Check the box next to Loop to run the selected sound or sounds continuously.

Frequency: Use the Frequency settings to control when the sound is played. Periodically, all sounds near the golfer are checked to see if they should be played based on the percentages set in this window. After a sound gets played, the game waits a short period before retesting the nearby sounds for playback.

To set the frequency of playback, use the slider bar.

To apply the frequency setting to all sound objects of this type, check the appropriate checkbox.

To accept the changes to the Sound properties, click **OK**. To cancel changes and exit, click **CANCEL**.

MOVE, DELETE, COPY AND PASTE OBJECTS

You can delete, copy, and move (cut and paste) objects on your course.

To move an object:

1. Zoom in the Work window or reposition the camera so that you can see the object.
2. Click on the object. A white quadrilateral appears around it to indicate that it has been selected.
   To move multiple objects, select the first object. Then, press and hold CONTROL and select the second object. Keep holding and selecting until all objects have been selected and then hold as you move the selections to the new location.
3. When all objects have been selected, move them to the new location. The Work and Camera windows are updated.
4. If you make a mistake in your movement, you can undo it by pressing CONTROL and Z.

To rotate an object:

To rotate an object, select it in the Work or Camera window. Click the Rotate button in the toolbar. Click and drag the object to its new rotation. The Work and Camera windows are updated.

To delete an object from the terrain:

To delete an object from the terrain, right-click on the object in the Work or Camera window and select **DELETE**. Or, select it and press DELETE. The object is deleted from the terrain.

To "copy and paste" an object multiple times:

If you like how an object looks and want to use it multiple times, you can follow these steps to effectively copy and paste the object.

1. Select the object that you want to copy.
2. Right-click on the object to open the Properties window. Write down the Properties. Click **CANCEL**.
3. Select **CLICK-CLICK OBJECT TOOL** from the Tools menu.
4. In the Click-Click pop-up, enter the Properties from the first object. To keep the height exact, leave the Plus/Minus box at 0.

5. When the parameters have been configured, click in the Work or Camera window to place objects. Continue placing objects until you are satisfied. If you make a mistake in your movement, you can undo it by pressing CONTROL and Z.
6. When finished, click **DONE** in the Click-Click Object pop-up.
   If you need to start over, close the Click-Click Object pop-up, select the unwanted objects and press DELETE.

EA SPORTS

TIP: You can duplicate complex, multi-layered shapes, such as an edged tee box. Right-click on the outside texture layer, and select **PICKUP WITH CHILDREN** to lift it and the interior shapes off of the terrain. Then, right-click again and select **DUPLICATE**. Hold down CONTROL as you drag the selected shapes to a new location.

MISCELLANEOUS OBJECTS

Elsewhere in this document, you can learn how to place the following miscellaneous objects.

HOW TO CREATE A CART PATH

Although you never see moving carts in the game, you can add cart paths to give the authentic appearance of a golf course. In *Course Architect*, these are not treated as objects; they are shapes. For more information, see *Path Shapes* on p. 118.

PANORAMAS

You can change the appearance of the horizon, called a panorama. For more information, see *Panoramas* on p. 140.

In the *Course Architect*, the sky is not treated as an object, strictly speaking. For more information, see *Sky Picker Tool* on p. 84.

THE EDGE OF YOUR COURSE

One of the illusions of 3D graphics is the sense of perspective. A well-designed 3D graphics engine conveys the sense of being able to see to the natural horizon. However, the horizon is part of the illusion.

When a 3D engine displays graphics on the screen, it must compute positional, rotational and scaling information for every object and the relationships of each object to the other objects on-screen. These objects must then be displayed as a series of overlapping layers, with the nearest objects on the top layer. However, objects in the layers further from the camera require the same computations and calculations to display. Yet, if these objects are partially or completely obscured by the closer objects, then there is not much added value in finishing these calculations. Additionally, if the object is tiny on-screen, the calculations to precisely position, size and rotate the object have little value to the overall appearance of the frame.

In the case of realtime 3D graphics engines for first-person point of view games, it is especially important to minimize the computations required to display a single frame. The mathematics involved are fascinating, complicated and quite beyond the scope of this document.

In the *Course Architect*, the elements that need to be displayed are the terrain, the textures and the objects on the course. Yet, it would take too much computing power to display courses that extend into infinity. And consider the amount of time to develop to infinity. Imagine that you're creating a course on a hillside overlooking a beautiful valley. If you were required to create terrain, textures and objects to the limits of sight, you would have to create an entire valley. Yet no golfer would ever see or play on your beautiful valley. Infinite Valley would demand much processing power to display with very little benefit.

Consequently, to improve performance in the *Course Architect* and in the game, you can put limits to the perimeter of your course. You can define the edge of your course, called the **course perimeter**, so that both the *Course Architect* and the game can speed the display of non-essential material to the horizon. At the course perimeter, the *Course Architect* allows you to hang photo-realistic images of the horizon, called panoramas, to convey the sense of perspective. How to define and tweak the course perimeter and then choose an appropriate panorama is the subject of this chapter.

Also covered in this chapter are skies. The sky displayed in the *Course Architect* is established in the Sky Picker tool. In the game, users can select their own weather conditions to create custom environments.

PANORAMAS

The *Course Architect* comes with a set of object libraries, and in each one, there is a panorama suitable for the type of environment where the plants and textures of the library would flourish.

To place a panorama:

1. From the Tools menu, select **PANORAMA PROPERTIES**.
2. In the Panorama Properties pop-up, select the course from which you wish to apply its panorama to your course. To apply the selected panorama, click **OK**. To cancel and exit, click **CANCEL**.
3. Reposition the camera in the Work window to get a good look at the perimeter of the course.

SKIES AND THE WEATHER

Part of the fun of the golf experience is the challenge presented by the elements. Unpredictable weather can wreak havoc on the unprepared golfer—or present opportunities for unknowns to sneak up on favorites.

In the game, "weather" is a combination of the sky color and gameplay effects. For example, if the sky is storming, players see a gray sky behind the panorama and can expect the fairways and greens to play slow. When designing in the *Course Architect*, you can choose the sky to display in the *Course Architect* to test its appearance; in the game, users can configure their own skies and environmental factors.

Weather also affects the performance on the ball. For example, if the weather is stormy in the game, the ball skips and rolls longer distances. To choose a different sky in the *Course Architect*, reposition the camera in the Work window to display the edge of the course. Then, select **SKY PICKER TOOL** from the Tools menu.

For more information, see *Sky Picker Tool* on p. 84.

COURSE PERIMETER

NOTE: Do not create the course perimeter until you are sure that you like the course as it is defined. Creating the course perimeter cannot be undone. Therefore, it should be the final step before you compile your course to the game.

When a course is created, it is laid down on a rectangular tableau, yet when the course is completely designed, there is often a surplus of space around the perimeter of the course. You may not have designed the terrain, textures and objects of this space, and its display in the game can impact performance.

TIP: If possible, try to place the holes of your course so that the perimeter of the entire course is a smooth curve. Holes that "stick out" in any direction impact the distance at which you can create the perimeter and thereby affect the overall visual appeal and performance in the game.

By defining the course perimeter, you establish the edge of what the game needs to display in detail. Defining the course perimeter can improve display speed and gameplay and can reduce the amount of space required to store your course.

To create a course perimeter:

TIP: When defining the perimeter, it can be very helpful to be able to refer to coordinates on the map. Make sure that the status bar is displayed. To toggle display, select **STATUS BAR** from the View menu.

1. Save your course.

NOTE: The creation of a course perimeter cannot be undone. Be sure to save prior to creating the course perimeter.

2. From the Tools menu, select **CREATE COURSE PERIMETER**.
3. In the Work window, draw a perimeter that encompasses the entirety of your course, with a significant amount of room to spare between the perimeter and any terrain, objects or hole materials that you want to keep.
   To draw the perimeter, click in a starting location. Move the mouse pointer to the next point of the perimeter and click. Continue to the next location and click. To finish definition of the course perimeter, right-click.

NOTE: The *Course Architect* creates an oval inside of the perimeter that you define so that the panorama can be displayed in a consistent fashion. So, when defining the perimeter, make sure you have plenty of space to spare inside the perimeter for the oval.

4. When you have defined the shape, you should see a pinkish outline in a roughly oval shape that will become the course perimeter.

NOTE: Any objects that are located outside the course perimeter are removed when the perimeter is created. You cannot create a course perimeter that has some or all of a dropped land shape outside of it.

5. Before you create the perimeter permanently, you should try to make it as regular and smooth as possible. Fortunately, the pink shape that is to become the perimeter has many of the same controls and functions as a floating land shape.

NOTE: By creating the perimeter so that it is equidistant from all playable points on the course, you can create a smooth and even appearance in the game.

To move the shape to a new location, click and drag it.

To move, add or delete points, click on one of the control points. Click and drag it to move it, or right-click and select the appropriate option to add or delete a control point.

NOTE: Again, you cannot undo the creation of the course perimeter.

To define the perimeter as the displayed shape, right-click inside the shape. Select **CREATE COURSE PERIMETER**. Choose whether you want to save the file or not. To cancel creating the course perimeter, click **CANCEL**.

To start over without defining the perimeter, select **DELETE**.

6. After the perimeter has been defined, you can see your course in the Work window. If you like the perimeter as defined, save the course. Or, you can start over.

   To start over, select **OPEN** from the File menu. Do not select the course file from the bottom of the File menu. Navigate the directory tree and select the currently open file. When you are asked if you want to revert to the old file, click **YES**. The last saved version of the file is loaded.

OPTIMIZE DETAIL

During the course of developing a project in the *Course Architect*, you may raise, lower, make a hill, make a bunker and make a slope in the same area—and do it several times. Each manipulation of terrain adds data points. That redundant data occupies space on your hard drive and time for the CPU to calculate its position when it is going to be invisible no matter how you regard it.

The Optimize Detail function applies only to dropped shapes. Since floating shapes have not been imprinted into the terrain, they do not yet "exist" in the game-usable data.

You can use the Optimize Detail function, in conjunction with other tools, to eliminate redundant data from your terrain.

TIP: For best results, you should use the Optimize Detail function from time to time during development. When you are ready to compile your course, you should use it again to reduce the amount of detail throughout the course.

OPTIMIZING AS YOU DEVELOP

After you complete large operations or finalize a particular area of a course, it is a good idea to optimize the detail of that area. Consider it a means of saving your course.

To optimize a dropped shape:

1. If you are ready to optimize detail on the terrain, save the file.
2. Move the cursor over the dropped shape in the terrain area. In the status bar, you can see how many points it occupies in the file.
   To toggle display of the status bar, select **STATUS BAR** from the View menu.
3. Right-click on the dropped shape. Select **PROPERTIES**. In the Properties window, you can see how much data can be saved by optimizing detail.
4. To optimize the detail in the dropped shape, right-click and select **OPTIMIZE DETAIL**.

NOTE: Optimize Detail cannot be undone. Make sure that you have saved your course first.

5. In the pop-up, use the slider bars to indicate how much detail you want to optimize and how many breaklines you want to include (the more breaklines you add, the harder it is to optimize detail in the breaklines).

TIP: It's a good idea to start optimizing detail at low levels and then to continue to optimize in increments. Large dropped shapes should be optimized at higher levels.

To optimize detail to the terrain inside of the dropped shape, click the box next to Include Children.
To optimize detail with the current configuration, click **OK**.
To return to the *Course Architect* without optimizing detail, click **CANCEL**.

6. As the *Course Architect* is optimizing, you can interrupt the process by pressing ESC.

NOTE: Depending on the amount of data that you are optimizing and the level of optimization, the process can take a while.

7. When the optimization is complete, you can move the cursor over the shape again and compare the original point count with the point count now displayed in the status bar.
8. Be sure to examine the results in the Camera window. If the results are unsatisfactory, you can reload your course.
   To reload your course without the optimize detail changes, select **OPEN** from the File menu. Navigate to find your course file and select it. When prompted to revert to the old version, select **YES**.
9. If you are satisfied with the changes of Optimize Detail, select **SAVE** from the File menu to save your course.

OPTIMIZING WITH POINT COUNT INDICATOR

When changes are applied to the terrain, it can be difficult to predict their effects on the data with the naked eye. You can use the Point Count Indicator to help you to identify the dropped shapes with the greatest number of points.

To reveal shapes with a high point count, select **POINT COUNT INDICATOR** from the Tools menu. Use the slider bar to set the threshold number of points. All shapes with a point count greater than the number indicated are highlighted in red. When you are finished, click **CLOSE**.

When you have identified the shapes with the high point totals, you can then follow the steps listed above to reduce their point counts.

WHEN TO OPTIMIZE

The short answer is: early and often. As you develop your course, terrain manipulation adds more and more detail to the project, so it's a good idea to continually trim back unnecessary layers of data. Certainly, if you're experiencing a performance hit, you should optimize. However, a careful designer optimizes as he goes. Optimize when:

You've performed a number of terrain manipulations.
You've completed a hole or terrain shape to your satisfaction.
You notice that the point count in the Course Info pop-up is above 400,000.
You're compiling the course to the game.

BREAK UP THE COURSE

The large background shape that covers your course can have a great deal of detail removed from it. However, as you perform more and more terrain manipulations, the shape may approach the maximum allowed number of breakline points, which are the points that demarcate the boundaries between two dropped textures.

When it comes to optimizing courses, EA designers have been able to follow one strategy with success. After you complete the New Course Wizard, optimize detail on the background shape as much as possible. Then, you can break up the interior of the background shape in to smaller shapes, each of which may contain a few holes. The total number of breakline points inside of these smaller shapes is less likely to approach the maximum allowed. The trick, however, is to remember these interior shapes and their boundaries.

OPTIMIZING BEFORE COMPILING

NOTE: If you are ready to compile your course to the game and want to optimize it, be sure to save it before optimizing. Optimize Detail cannot be undone.

Ready to compile your course? Whether you're compiling the final version or a playtest one, it's a good idea to try to optimize the details of the course for better performance in the game.

Here are some tips for optimizing prior to compiling:

All shapes should have detail removed at the lowest setting.

Optimize the main rough shape that is the background texture for the whole course at a high level prior to compiling. Make sure that you do NOT select to Include Children in the optimization process.

Use the Point Count Indicator tool to identify dropped shapes that have a high number of points.

Optimize shapes that contain flowerbeds or stands of trees.

NOTE: If you are unsatisfied with the results, you can revert to your old file. Select **OPEN** from the File menu and navigate to find your old course file.

COMPILING YOUR COURSE

Whether you want to playtest a couple of new holes or publish your course on the Internet, *Course Architect*'s compiling feature can quickly prepare, package and publish your course for immediate use in the game. The Compile Course tool performs extensive error-checking and generates a comprehensive set of warnings on each compile, so you know the flaws and potential weaknesses of your project. For playtesting and performance purposes, you can choose to compile your course with CPU-intensive features such as trees, objects and shadows disabled.

TIP: It's a good idea to compile from time to time as you develop. If you encounter a fatal error during an edit cycle, it may be easier to find and fix the error if you successfully compiled recently.

When your course is compiled to the game, the output .CRS file includes all of the course libraries that are needed to display it in the game.

To play your *Course Architect* course in *Tiger Woods PGA TOUR 06*, you must compile it. Before you compile, you should read the remainder of this chapter.

PREPPING YOUR COURSE FOR COMPILE

Before you compile your course, you should do the following:

To prep your course:

1. Save your course.
2. Check amount of space in the volume where your course is stored. Depending on the number of course features, a saved course occupies between 2.51MB and 30MB.
3. Select **LAYERS** from the View menu. Make sure that all layers are visible. In the Work window, check that you are satisfied with their appearance.

> **NOTE:** Floating shapes are not included in output files during compile. Double-check floating shapes to make sure that they are not necessary for purposes of the compile.

4. Select **COURSE INFO** from the File menu. Check the number of Points in the window.

> **NOTE:** The total number of points in your course should not exceed 750,000. If possible, try to get this figure well below 400,000.

   To reduce the number of points in your course, use the Optimize Detail feature in conjunction with the Point Count Indicator. For more information, see *Optimize Detail* on p. 143.
5. If you are publishing a final version of the course to be distributed to other players, you should re-examine your course perimeter. Unnecessary terrain between the edge of your perimeter holes and the defined course perimeter can affect performance. For more information, see *Course Perimeter* on p. 141.

> **NOTE:** If you have already compiled a course from the current *Course Architect* file, you must move the compiled version, or it will be overwritten. The compiler overwrites compiled courses with the same name.

6. When you have completed these steps to your satisfaction, save your course.
7. You are ready to compile your course.

COMPILING

To compile your course, select COMPILE COURSE from the File menu. The Course Compiler pop-up appears.

COURSE COMPILER SETTINGS

In the Course Compiler window, you can configure which aspects of your course you want compiled.

Include Trees and Bushes. For gameplay testing, the appearance of trees and bushes may not be necessary, unless testing the positions of these elements is part of your playtest goals.
Include Structures. Structures can add a lot to the visual appearance of your course, but they are rarely factors in the gameplay.
Reflections. Adding water reflections greatly enhances the realism of your course. However, if your system lacks a quality 3D graphics card, the computations to compute reflections can be a burden to the system.
Tree Lighting. Dynamic lighting requires a large number of computations and can significantly impact performance in the game, particularly if the user does not have a good 3D graphics card.
To compile the course as configured, click **COMPILE**.

NOTE: Larger courses with more objects and data take longer to compile. To interrupt the compiling process, click **CLOSE**. Compiling is halted.

To close the dialog after compiling, click **CLOSE**. Or click the Close Window button in the upper-right corner.

COMPILE COMPLETED

When the compile is completed, the file is saved with the same filename as the .TCA file, but it's given a .CRS extension. The compiled course (.CRS) file is saved in the same directory as the source .TCA file.

Errors: You must correct all errors that stop the compile process before the course can be compiled and implemented in the game.

All fatal errors stop the compile process. In the event of persistent fatal errors that you are having trouble fixing, you should use the Repair Course feature. For more information, see *Repairing Your Course* on p. 151.

Warnings: If the Warnings button is available, you should click it to review the warnings and problems that the compiler encountered during the build. Warnings are non-fatal errors that should be corrected at some point before completing development.

IN THE GAME

If you checked Register Course in the Course Compiler pop-up, your course is ready for immediate use in *Tiger Woods PGA TOUR 06*.

In the event that you need to rename the .CRS file or move it to a new location, you have to re-install the course through the game.

To install the compiled course into *Tiger Woods PGA TOUR 06*, use the Course Utilities. For more information, see Course Utilities in the game documentation.

NOTE: To use a course to the game, you must have a Hole #1. Attempting to play rounds that lack a Hole #1 can cause crashes in the game.

NOT INCLUDED

Some elements of a course's appearance cannot be altered from inside the *Course Architect*. The following elements are created and adjusted algorithmically from inside the game and based on a user's system:

Water reflections
All object shadows
Galleries
Weather and sky selections

REPAIRING YOUR COURSE

NOTE: If at all possible, try to repair your course through the *Course Architect* Course tools. The Repair Course tool should not be used casually. Before using the Repair Course tool, save a copy under a different name.

On rare occasions, terrain manipulations can introduce erroneous data into the project file. For example, terrain along breaklines can cause compiling errors and even crashes. These situations are difficult to detect without running this tool. In the event of persistent crashes or chokes in the compiler, you should try to repair your course.

NOTE: Repair Course is not the same thing as the Optimize Detail feature, which trims out redundant data yet makes no repairs of errors. For more information, see *Optimize Detail* on p. 143.

The Repair Course feature parses the entire project and repairs any invalid data. If a repair is needed, you are informed. Running the tool when no corrections are needed has no effect.

To repair your course, select REPAIR COURSE from the Tools menu. It may take several minutes to repair your course. When completed, save your course.

For more information on course repair, see *Repair Course* on p. 87.

GLOSSARY

Approach shot	After a tee shot, any shot that is aimed for the green.
Auto Focus Camera	The Auto Focus Camera tool focuses the camera on whatever is selected in the Work window.
Breakline points	When a shape is dropped into the terrain, the breakline points identify the boundary between the texture of the dropped shape and the textures around it.
Bunker	Another name for sand trap.
Bunker tool	The Bunker tool lets you create mesas or bunkers in the terrain by raising or lowering the terrain under a shape while retaining a sharp edge.
Camera	Placed in the Work window, the camera "photographs" the features of the hole, which are displayed in the Camera window.
Camera icon	The representation of the camera in the Work window.
Camera window	An application window in which you see a three-dimensional view of the course, as seen from the camera lens.
Cart Path	A cart path is a linear shape that's created to give the appearance and play characteristics of a cart path on a golf course. Various textures can be applied to the cart path shape.
Center Camera	To center the camera in the Work window, select CENTER CAMERA from the View menu.
Child shape	A child shape is any shape dropped in the terrain and completely enclosed by another terrain shape.
Click-Click tool	The Click-Click tool lets you place individual objects of a selected type anywhere you click in the Work window.
Compile Course	When you are ready to use your course in *Tiger Woods PGA TOUR 06*, you must compile the course into the game format.

Control point A control point is one of the red dots that appear on the perimeter when you select a floating shape. These dots can be repositioned, rotated, duplicated or deleted to change the outline of the floating shape.

Course In golf, it is a sequence of holes that when played consecutively constitute a round of golf. Typically, a course has 18 holes, although you can create and compile courses with fewer holes in the *Course Architect*.

Course Info A pop-up that displays important data information on the objects and data points of your course. It can be used in conjunction with the Point Count Indicator and the Optimize Detail tools to streamline the data storage requirements and to improve the performance of your course.

Course Perimeter The border between the game data that you create and manipulate and the game data that is algorithmically generated by the game is the course perimeter.

Course tools A toolbar, the Course tools let you create terrain shapes and access other critical development functions with one click.

Driver The longest club in a golfer's bag, the driver is used for tee shots on lengthy holes.

Dropped shape When a floating shape has been shaped and defined, you drop the shape into the terrain to make it and its texture a piece of your course. You can remove them from the course through the right-click menu. These pieces are also known as terrain objects.

Duplicate Under the Edit menu, select DUPLICATE to create a copy of whatever is selected in the Work window.

Edit tools Available through the Edit menu, the Edit tools let you undo, duplicate, delete and drop shapes into the terrain.

Faces	The individual three-sided shapes that are pushed, pulled, stretched, lifted and depressed to define the mesh of the terrain. You do not directly interact with these course elements.
Fairway	A broad strip of short grass where a golfer attempts to aim tee shots and all subsequent shots before reaching the green.
Flatten tool	A toolbar tool for changing a selected piece of terrain to a height by the elevations inside the selected floating shape.
Floating shape	When a shape is first created, it floats above the terrain. Manipulations can be applied to the underlying terrain with a floating shape, but textures do not appear until the floating shape is dropped into the terrain. When compiling a course, floating shapes are ignored.
Floating window	Any window that can be repositioned in an application window. In the *Course Architect*, the Navigation and Camera windows are floating.
Foresting tool	Use the Foresting tool to place natural distributions of objects within the selected floating shape. The Foresting tool lets you define parameters such as type, height and density of the objects to place.
Green	The short grass area where the cup for a hole is placed.
Grid	In the Work window, a grid can be laid over the course to assist in aligning and placing objects.
Hazard Area	A hazard area in golf is any part of the course where the hazard rules apply to any ball that lands in it. Hazard rules cost the golfer a one-stroke penalty and allow him to rehit the ball from the location or drop it just outside the hazard area.
Hill	A hill is a positive or negative change in elevation in which the *Course Architect* smooths the edges with the surrounding terrain.
Hill tool	A tool that shapes a rounded hump or depression on a selected piece of terrain.

Hole	In golf, it is the playable area in which a golfer hits the ball from the starting tee until he drops the ball into the cup on the green. On a standard golf course, there are 18 holes.
Hole Definition tool	With the Hole Definition tool, you can define the embedded shapes that taken together comprise one hole on the course.
Import	To bring old course files into *Course Architect* for use in developing courses.
Iron	A metal club for mid-range shots.
Lasso Select	A tool with which you trace around all of the floating shapes in the Work window that you want to select.
Layers tool	A pop-up window that allows you to toggle display of various course elements in the *Course Architect*. By hiding layers, you can improve performance in the *Course Architect*.
Layout	The general position and orientation of holes, major terrain features and bodies of water on a course. The basic layout can be defined with the New Course Wizard.
The Librarian	A collection of data libraries for use in *Course Architect*: objects, textures, panoramas, and more.
Lie	The position of the ball on top of the course. In the more challenging terrain areas, a ball can be partially buried, which makes the subsequent shots shorter in length and more difficult to control.
Maximized window	A maximized window occupies the entire space and bottom layer of the application window.
Measure	The Measure tool lets you measure horizontal and vertical distances between two points in either English or metric units.
Mesa	A raised segment of terrain that is created using the Bunker tool.
Mesh	The set of connected faces that, in total, describe the terrain surface of the displayed course.

Modeling Clay	Some designers prefer to render the terrain of their course in single-color modeling clay. For some, this perspective assists in creating natural-looking flows to the terrain.
Navigation tools	A toolbar, the Navigation tools let you control which part of your project is displayed in the Work window.
Object	Any living or inanimate object that is placed from the Librarian into your project is considered an object.
Panorama	A panorama is a 360-degree image of sky and terrain that is wrapped around the perimeter of your course. The *Course Architect* includes a variety of panoramas from which you can choose the right one to create an appropriate background for your course.
Parent shape	Any dropped shape that completely encloses another dropped shape.
New Course Wizard	A tool that steps you through the process of beginning to build a new course.
Pitching wedge	A golf club that produces short shots with high lofts. It is often used to pitch shots onto the green from surrounding terrain.
Point	A point is an internal data element of the *Course Architect* that is used to determine the terrain that is formed within a dropped shape. You cannot see points directly in the *Course Architect*. However, their management and control have significant ramifications on how your course performs.
Point Count Indicator tool	The Point Count Indicator tool lets you select all of the dropped shapes on your course whose point total is greater than a limit that you set. You can use this tool to select high-data land shapes and then Optimize Detail on these shapes to reduce their point counts to acceptable levels.
Putter	A golf club that is used for striking the ball when it is on the green and near the hole.

Repair Course Because of the massive volume of data created and manipulated in terrain operations, errors are introduced from time to time in a course. If you are experiencing problems in the *Course Architect*, you may want to use the Repair Course tool to try to fix them. Saving a version of your course prior to using the tool is recommended.

Rotate Around a single point, you can rotate one or more floating shapes or one or more points within those shapes to achieve some interesting effects.

Rough An area of a golf course characterized by deep grass that can obscure balls and complicate shots.

Sand trap A depression in a golf course that is filled with sand. When hitting a shot stuck in the sand, a golfer often uses a sand wedge to lift the ball onto a better playing surface.

Sand wedge A golf club used primarily to strike a ball stuck in a sand trap. High lift, short distance.

Scorecard In a round of golf, the scorecard contains a golfer's officially recorded scores for each hole.

Shape A special feature in *Course Architect*, a shape is used to select pieces of the course for terrain manipulation, texture definition, or population with objects. In this manner, you can define fairways, greens, and sand traps.

Shadows In *Course Architect*, shadows and the placement of the sun are automatically generated. In the game, users can choose different skies to produce the effect of weather variation.

Shot Path From each tee on the hole, the shot paths indicate the set of aiming points for each shot until the ball lands in the hole. In the game, computer-controlled players use the shot paths as aiming devices.

Skirt A skirt around a terrain shape can be created by duplicating the shape, inflating it and then changing the texture.

Sky Picker tool Using the Sky Picker Tool, you can define the sky to display in the *Course Architect*.

Slope tool A terrain tool, the Slope tool defines sharp peaks and valleys in the terrain underlying the selected floating shape.

Smooth tool The Smooth tool allows you to blend a selected piece of terrain into the surrounding terrain for a more natural-looking appearance.

Sounds Sounds can be placed around the course and given characteristics such as volume and frequency. You can define a single background sound for your project as well.

Status Bar At the bottom of the *Course Architect* application window, you can review status information for the application, the cursor location and the point count for the land shape over which the cursor is located.

Tee The starting point for a hole on the course. Typically, a course has more than one color-coded tee, with each tee rated for difficulty. In the game, the tees are, in order of difficulty: red, white, blue, black, and gold.

Terrain The topographical features of a golf course. In *Course Architect*, the terrain is manipulated with land shapes whose changes are applied to the underlying terrain when the shape is embedded into it.

Terrain object When a floating shape is dropped into the terrain, it becomes a terrain object, with the selected texture displayed in the Work window. Terrain objects are also known as dropped shapes.

Textures Textures represent the appearance and play characteristics of the surface of your course. To define play surfaces, you apply textures to shapes.

Undo If you make a mistake, you can use the Undo command in the Edit menu to erase it. There is only one level of Undo.

Water area	A body of water on the course. When a golfer hits into a body of water, he can place the ball in front of the water without a penalty or can rehit from his starting position with a one-stroke penalty. In *Course Architect*, you create water with shapes and apply a texture.
Window tools	The Window tools let you toggle display and define layout of the three windows of the *Course Architect*: The Work, Camera and Navigation windows. These tools are available through the Windows menu.
Wood	A golf club that is designed to hit long shots from a good lie or from a tee.
Work window	An application window in which you see an overhead view of the opened project.

TECHNICAL SUPPORT

Please see the enclosed Install Guide for technical support information.

APPENDIX

LIBRARY CREATOR

Library Creator is available as a downloadable patch from http://www.ea.com/easports/platforms/games/tigerwoods06/downloads.jsp. This tool lets you create your own library of object, sounds, textures, and panoramas, which you can then add to your created course via The Librarian (see p. 131).

To install Library Creator:

1. Make sure *Tiger Woods PGA TOUR 06* is installed.
2. Run LibraryCreatorInstall.exe.
3. Make sure the *Tiger Woods PGA TOUR 06* install path is listed in the 'Unzip to folder' edit control. If the game was installed to the default location, the path should already be correct.
4. Select 'Unzip'
5. Select 'OK' and 'Close'
6. Run 'C:\Program Files\EA SPORTS\Tiger Woods PGA TOUR 06\Bin\Library Creator.exe' where 'C:\Program Files\EA SPORTS\Tiger Woods PGA TOUR 06' is the location the game was installed to.

To create a library:

1. Place any items (in .bmp or .tga format) you want to add to your library in the C:\Program Files\EA SPORTS\Library Creator\Bitmap folder where 'C:\Program Files\EA SPORTS\Library Creator' is the location the utility was installed to.
2. Launch Library Creator.
3. Select File > New.
4. Click the appropriate tab and then click ADD.
5. Highlight the item you wish to add, then click OPEN.

NOTE: Adding a 3D object automatically adds all the associated textures to the 'Textures' tab.

6. Continue until you have added all the items you wish to add.
   To delete an item, right-click the thumbnail and select DELETE.
   To edit an item, double-click the thumbnail.
7. Save your library by selecting File > Save, giving it a name, and clicking SAVE.
8. The library is automatically made available next time you launch EA SPORTS Course Architect.

You can create your own textures and panorama using a paint program and saving the file in .bmp or .tga format.

NOTE: Texture and panorama files must be at least 8 x 8 pixels and no more than 1024 x 1024 pixels.

To change textures on a 3D object:

1. Click the '3D-Objects' tab.
2. Double-click the thumbnail of the 3D object.
3. Select the texture you wish to change from the drop-down combo.
4. Select CHANGE.
5. Browse for the .tga or .bmp file you wish to replace the texture with.
6. Select DONE.

PRACTICE AREA CREATION AND PLACEMENT

When creating a hole, you can designate practice areas for driving, putting, and chipping. These areas are then used in Practice mode in *Tiger Woods PGA TOUR 06*.

To create a practice area, open the Hole Definition Tool (see p. 24) then follow the steps below for the type of area you want to create.

To create a Driving Range practice area:

1. Select DR from the Hole Number drop-down menu.
2. Click on a tee box to set your starting point.
3. Click again and drag the cursor to define the target path.
4. You may only define one Driving Range practice path.

To create a Putting Green practice area:

1. Select PG from the Hole Number drop-down menu.
2. Click on a green to set your starting point.
3. Click again on the green to set the pin position. You may set multiple pin positions.

To create a Chipping practice area:

1. Select CA from the Hole Number drop-down menu.
2. Click outside the green to set your starting point.

NOTE: You must have a full 18-hole course already created before you can add a practice area.

CREDITS

2004 DESIGN ADDITIONS
Vance Cook
Farrell Edwards

ARTISTS
Matt Peterson
Scott Ferrin

SOFTWARE ENGINEERS
Farrell Edwards
Joe Howell
Jason Howard

DOCUMENTATION
Steve Olson

DOCUMENTATION EDITOR
Dan Davis

DOCUMENTATION LAYOUT
Phillip Hereso

SPECIAL THANKS

Families & Friends of the develoment and production teams, John Vifian, Steve Cartwright, Brian Reed, Chris Bennett, Joe Oleary, Mike Olsen, Steve Arnold, Carmen Consunji, Kris Hammond, Dexter Dorris, Collin Hennen, Wilfredo Aguilar, Tom Esmeralda, Jay Riddle, Laurent Betbeder, Alex Karweit, Alan Borecky, Frank Barchard, Russ Patterson, Phil Sorger, John Batter, Larry Castro, Milly Ng, Dan Givens, Jim Boland, Steve Bene, Kim Kostas, Joel Linzner, Robert Gonzales, Lisa Tensfeldt, Sue Garfield

GOLF COMMUNITY BETA TESTERS

Patrik Anhed, KF Baker, Evan Barley, Michael Baxes, Jim Burns, Scott Chesney, Brien Donaldson, Jorgen Ekroth, Dominic Graziano, Brian Holzberger, Mike Jones, Phillip Lothian, Stuart Love, Ken McHale, Ken Rio, Bill Rader, DG Raftery Sr., Frank Roorda, Ian Rose, Michael See, Patrick Stroup, Steve Stein, Tim Shaffer

Software & documentation © 2004 Electronic Arts Inc. Electronic Arts, EA, Course Architect, EA SPORTS, and the EA SPORTS logo are trademarks or registered trademarks of Electronic Arts Inc. in the U.S. and/or other countries. All rights reserved. The name, likeness and other attributes of Tiger Woods reproduced on this product are the trademarks and copyrighted designs, and/or other forms of intellectual property, that are the exclusive property of those licensers and may not be used, in whole or in part, without their respective written consents. PGA TOUR, PGA TOUR and Swinging Golfer design, TPC, TOURNAMENT PLAYERS CLUB, TPC and Swinging Golfer design, and TPC at Sawgrass are trademarks of PGA TOUR, INC. and used by permission. Pebble Beach, Pebble Beach Golf Links, Spyglass Hill Golf Course, The Lone Cypress, the Heritage logo, their distinctive images, and individual golf hole designs are trademarks, service marks, and trade dress of Pebble Beach Company. Used under license by Electronic Arts. Poppy Hills Golf Course is a trademark of Poppy Hills, Inc. Prince Course Princeville and The Princeville Resort Logo are trademarks of Princeville Corporation. Royal Birkdale and The Royal Birkdale Golf Club are trademarks of The Royal Birkdale Golf Club Merchandising Company Ltd.

All other trademarks are the property of their respective owners.

EA SPORTS™ is an Electronic Arts™ brand.