Unity Game Development

1. Introduction to Unity

• Getting to Know the Unity Editor

• The Project Dialog

• The Unity Interface

• The Project View

• The Hierarchy View

• The Inspector View

• The Scene View

• The Game View

• Honorable Mention: The Toolbar

• Navigating the Unity Scene View

• The Hand Tool

• Flythrough Mode

2. Game Objects

• Dimensions and Coordinate Systems

• Putting the D in 3D

• Using Coordinate Systems

• World Versus Local Coordinates

• Game Objects

• Transforms

• Translation

• Rotation

• Scaling

• Hazards of Transformations

• Transforms and Nested Objects

3. Models, Materials, and Textures

• The Basics of Models

• Built-In 3D Objects

• Importing Models

• Models and the Asset Store

• Textures, Shaders, and Materials

• Textures

• Shaders

• Materials

• Shaders Revisited

4. 3D Terrain

• Terrain Generation

• Adding Terrain to Your Project

• Heightmap Sculpting

• Unity Terrain Sculpting Tools

• Terrain Textures

• Importing Terrain Assets

• Texturing Terrain

5. Environments

• Generating Trees and Grass

• Painting Trees

• Painting Grass

• Terrain Settings

• Environment Effects

• Skyboxes

• Fog

• Lens Flares

• Water

• Character Controllers

• Adding a Character Controller

• Fixing Your World

6. Lights and Cameras

• Lights

• Point Lights

• Spotlights

• Directional Lights

• Creating Lights Out of Objects

• Halos

• Cookies

• Cameras

• Anatomy of a Camera

• Multiple Cameras

• Split Screen and Picture in Picture

• Layers

• Working with Layers

• Using Layers

7. Game 1: Amazing Racer

• Design

• The Concept

• The Rules

• The Requirements

• Creating the Game World

• Sculpting the World

• Adding the Environment

• The Character Controller

• Gamification

• Adding Game Control Objects

• Adding Scripts

• Connecting the Scripts Together

• Playtesting

8. Scripting—Part 1

• Scripts

• Creating Scripts

• Attaching a Script

• Anatomy of a Basic Script

• The Using Section

• The Class Declaration Section

• The Class Contents

• Variables

• Creating Variables

• Variable Scope

• Public and Private

• Operators

• Arithmetic Operators

• Assignment Operators

• Equality Operators

• Logical Operators

• Conditionals

• The if Statement

• The if / else Statement

- The if / else if Statement

- Iteration

- The while Loop

- The for Loop

9. Scripting—Part 2

- Methods

- Anatomy of a Method

- Writing Methods

- Using Methods

- Input

- Input Basics

- Input Scripting

- Specific Key Input

- Mouse Input

- Accessing Local Components

- Using GetComponent

- The Transform

- Accessing Other Objects

- Finding Other Objects

- Modifying Object Components

10. Collision

- Hour 10. Collision

- Rigidbodies

- Collision

- Colliders

- Physics Materials

- Triggers

• Raycasting

11. Game 2: Chaos Ball

• Design

• The Concept

• The Rules

• The Requirements

• The Arena

• Creating the Arena

• Texturing

• Super Bouncy Material

• Finish the Arena

• Game Entities

• The Player

• Chaos Balls

• The Colored Balls

• The Control Objects

• The Goals

• The Game Controller

• Improving the Game

12. Prefabs

• Prefab Basics

• Prefab Terminology

• Prefab Structure

• Working with Prefabs

• Adding a Prefab Instance to a Scene

• Inheritance

• Instantiating Prefabs Through Code

13. 2D Games Tools

• The Basics of 2D Games

• The 2D Scene View

• Orthographic Cameras

• Adding Sprites

• Importing Sprites

• Sprite Mode

• Imported Sprite Sizes

• Draw Order

• Sorting Layer

• Order in Layer

• 2D Physics

• Rigidbody 2D

• 2D Colliders

14. User Interfaces

• Basic UI Principles

• The Canvas

• The Rect Transform

• Anchors

• Additional Canvas Components

• UI Elements

• Images

• Text

• Buttons

• Canvas Render Modes

• Screen-Space Overlay

• Screen-Space Camera

• World Space

- Default Module

- Emission Module

- Shape Module

- Velocity over Lifetime Module

- Limit Velocity over Lifetime Module

- Force over Lifetime Module

- Color over Lifetime Module

- Color by Speed Module

- Size over Lifetime Module

- Size by Speed Module

- Rotation over Lifetime Module

- Rotation by Speed Module

- External Forces Module

- Collision Module

- Sub Emitter Module

- Texture Sheet Module

- Renderer Module

- The Curve Editor

17. Animations

- Animation Basics

- The Rig

- The Animation

- Animation Types

- 2D Animations

- Creating the Animation

- Animation Tools

- Animation Window

- Creating a New Animation

• Record Mode

• The Curves Editor

18. Animators

• Animator Basics

• Rigging Revisited

• Importing a Model

• Configuring Your Assets

• Rig Preparation

• Animation Preparation

• Creating an Animator

• The Animator View

• The Idle Animation

• Parameters

• States and Blend Trees

• Transitions

• Scripting Animators

19. Game 4: Gauntlet Runner

• The Concept

• The Rules

• The Requirements

• The World

• The Scene

• The Ground

• Scrolling the Ground

• The Entities

• The Power Ups

• The Obstacles

• Designing for the Accelerometer

• Using the Accelerometer

• Multi-Touch Input

22. Game Revisions

• Cross-Platform Input

• Virtual Controls

• Converting Projects to Mobile

• Amazing Racer

• Using Tilt Control

• Using a Touch Joystick

• Fixing the Disappearing Joystick

• Chaos Ball

• Captain Blaster

• Gauntlet Runner

23. Polish and Deploy

• Managing Scenes

• Establishing Scene Order

• Switching Scenes

• Persisting Data and Objects

• Keeping Objects

• Saving Data

• Unity Player Settings

• Cross-Platform Settings

• Per-Platform Settings

• Building Your Game

• Build Settings