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
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
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
15. Game 3: Captain Blaster

- The Concept
- The Rules
- The Requirements
- The World
- The Camera
- The Background
- Game Entities
- The Player
- The Meteors
- The Bullets
- The Triggers
- The UI
- Controls
- Game Control
- The Meteor Script
- The Meteor Spawn
- The DestroyOnTrigger Script
- The ShipControl Script
- The Bullet Script
- Improvements

16. Particle Systems

- Particle Systems
- Particles
- Unity Particle Systems
- Particle System Controls
- Particle System Modules
• 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
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
• The Trigger Zone
• The Player
• The Controls
• Trigger Zone Script
• The Game Control Script
• The Player Script
• The Move Script
• The Spawn Script
• Putting It All Together
• Room for Improvement

20. Audio
• Audio Basics
• Parts of Audio
• 2D and 3D Audio
• Audio Sources
• Importing Audio Clips
• Testing Audio in the Scene View
• 3D Audio
• 2D Audio
• Audio Scripting
• Starting and Stopping Audio
• Changing Audio Clips

21. Mobile Development
• Preparing for Mobile
• Setting Up Your Environment
• The Unity Remote
• Accelerometers
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