



Introduction to Game Development with Unity3D

Objectives

The objective of this workshop is to give you a fundamental understanding of how to develop Games on the Unity3D platform. It will also cover basic principles of Game Development that can be applied to all projects.

By the end of the workshop you will have:

- Understand how to put together a Space Invaders Game
- Understand how the various parts of the Unity Engine such as Game Objects, Components, Scripts interact with each other to create a game.

Introduction to Unity

Unity is a game development tool that has been designed from the ground up to be simple to use, yet powerful enough to make high-quality titles.

Unity is perfect for:

- Creating games!
- Making interactive 3D visualizations such as architecture walkthroughs, medical visualization
- Making interactive multimedia Tablet Apps
- Interactive Digital Installations
- Augmented Reality Applications



Lesson 1: Concepts

Topics:

- Engine Architecture
- Component Based Game Engine
- 3D

Lesson 2: The Interface

Topics:

- Project Window – Organizing your files & workspace
- Play Controls – Allows you to run,pause,stop the game
- Scene Window – Moving around the scene using Arrow Keys,QWER and mouse zoom
- Inspector Window – Checking attributes of a Game Object and it's components
- Game Window – Checking your layout
- Hierarchy View – Checking what's in the Scene
- Console – Error messages and debugging
- Translating/Rotating/Scaling objects in 3D space - Moving objects using the selectors and through the Inspector Window

Lesson 3: Scripts

Topics:

- Syntax
- Variables
- Decisions
- Functions
- Attaching & Editing scripts
- Javascript vs UnityScript
- Functions called by the Game Engine



- Debugging to the Console

Lesson 4: Setting up the Camera

Topics:

- Different Camera modes – Orthographic and Perspective
- Position the Camera – How to setup the camera for your game
- Adding object primitives for testing – Test scale and game play space

Lesson 5: Adding a player ship

Topics:

- The GameObject
- Unity functions for handling Input, Time & Movement
- Input Handling
- Moving objects via Scripts

Lesson 6: Making the player spaceship shoot

Topics:

- Prefabs – What are prefabs?
- Creating prefabs – How do we create prefabs?
- Instantiating game objects – Creating Objects via scripts
- Exposing variables in Inspector – Allowing gameplay to be tweakable
- Unity functions for the fire button, current time and destroying objects

Lesson 7: Adding the Enemy Invader

Topics:

- Collisions – Making objects collide



- Triggers vs Collisions – Choosing the right collision method
- Rigidbody – Physics based collisions
- Tags – A way to group a Game Object

Lesson 8: Spawning more Enemy Invaders

Topics:

- Enemy prefabs
- Other uses for Game Objects
- Loops

Lesson 9: Making the enemies move

Topics:

- Cleaning up the Update() function in EnemyController
- Making the Invaders move

Lesson 10: Adding Audio

Topics:

- Audio Listener & Source Components
- Playing One clip through functions
- Playing Multiple Audio clips through functions
- Adjusting volume,stop,pause
- Co-routines

Lesson 11: User Interface

Topics

- User Interfaces
- GUI Styling



- Accessing other components

Lesson 12: Adding Enemy Invader Assets

Topics

- Adding the Invader Models
- Sizing your Box Collider
- Exposing an Array in the Inspector
- Absolute positional movement versus translation

Lesson 13: Enemies Fight Back!

Topics:

- Designing how the Invader should return fire
- Built In Arrays and Array Class
- Implementing Invader firing
- Implementing which Invader can fire

Lesson 14: Player re-spawning and tracking lives

Topics:

- Create player prefab
- Spawning and re-spawning a player
- Tracking Lives left with the UI

Lesson 15: Polishing your Game Part One

Topics:

- Replacing the player & enemy bullets
- Disabling Components



- Parent & Child Game Objects
- Adding explosions
- Showing “Ready?” message on Game Start and “Game Over”

Lesson 16: Polishing the Game Part Two

- Adding Lights
- UFO & Barrier
- Shaders

Lesson 17: Building and deploying

Topics

- Loading between scenes
- Building and deploying the game
- Testing the game