

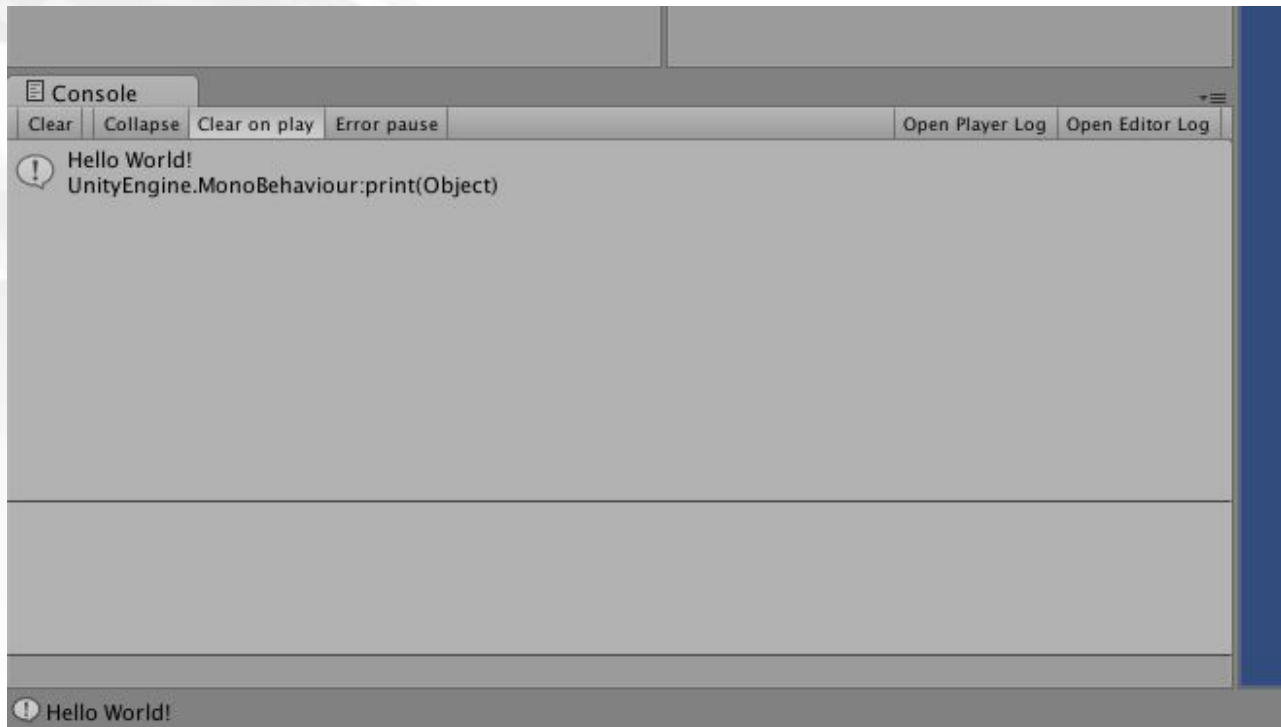
# HELLO WORLD: YOUR FIRST PROGRAM

# Topics

- **Hello World?**
- **Creating a Unity Project**
  - **The Unity Project Folder**
- **MonoDevelop: Unity's Code Editor**
- **Attaching Scripts to GameObjects**
- **Start() and Update()**
- **GameObject Prefabs and Instantiation**
- **The HelloWorld Project**

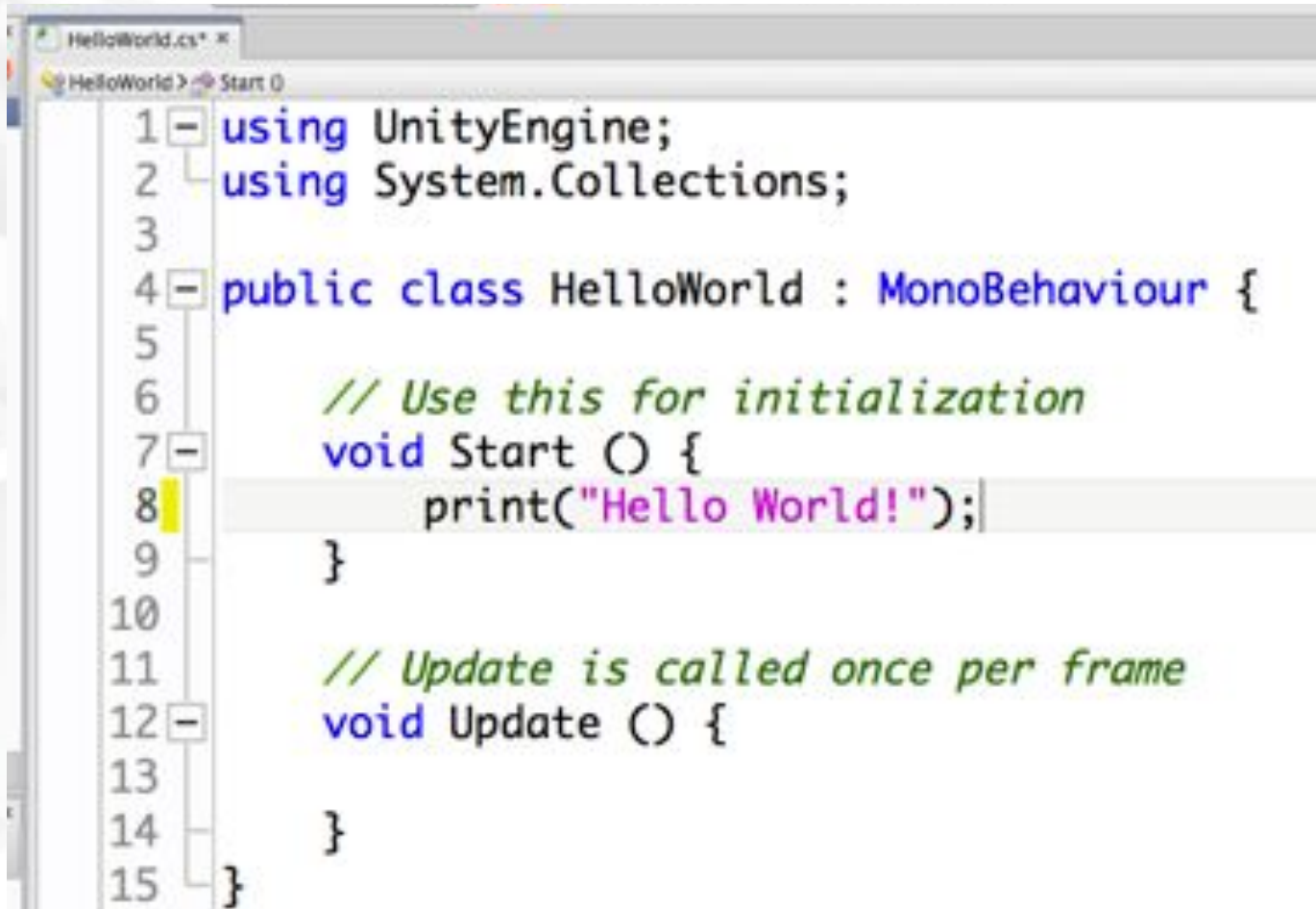
# Hello World?

- Hello World is often the first program written by anyone learning a new programming language.
- Outputs "Hello World!" to the Console



# Hello World?

- The code of HelloWorld.cs is very simple:



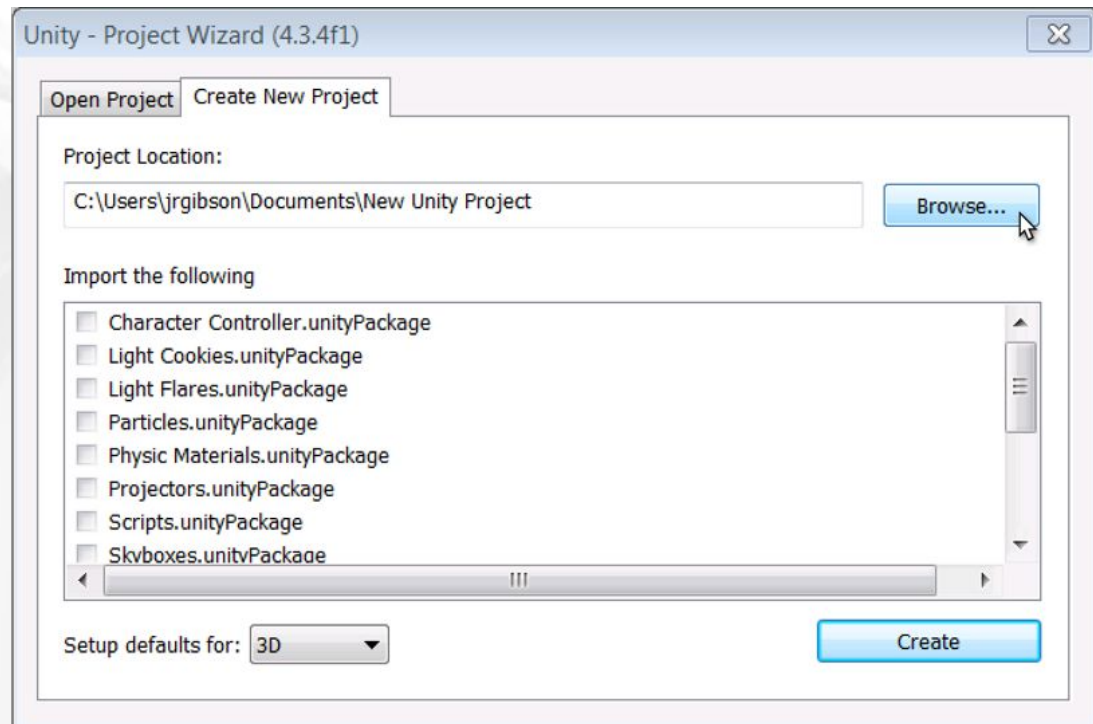
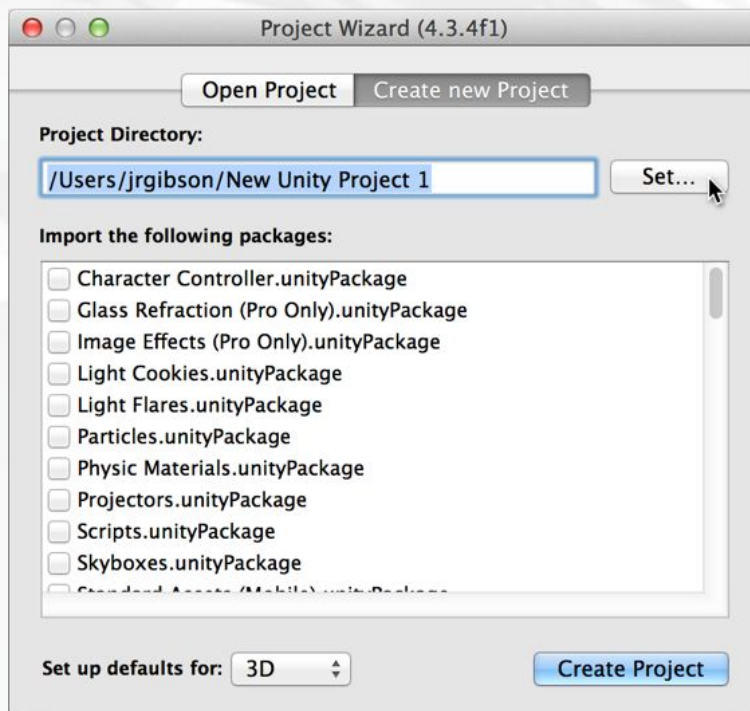
```
1 using UnityEngine;
2 using System.Collections;
3
4 public class HelloWorld : MonoBehaviour {
5
6     // Use this for initialization
7     void Start () {
8         print("Hello World!");
9     }
10
11     // Update is called once per frame
12     void Update () {
13
14     }
15 }
```

# Creating a Unity Project

- From the menu bar, choose *File > New Project...*
- Choose the location for your project folder
  - **Mac OS X**
    - Click the **Set...** button
    - Navigate to the right location
    - Type the project name into the **Save As** field
    - Click the **Save** button
  - **Windows**
    - Click the **Browse...** button
    - Navigate to the right location
    - Click the **New Folder** button and give the new folder the name of your project.
    - Click the **Select Folder** button

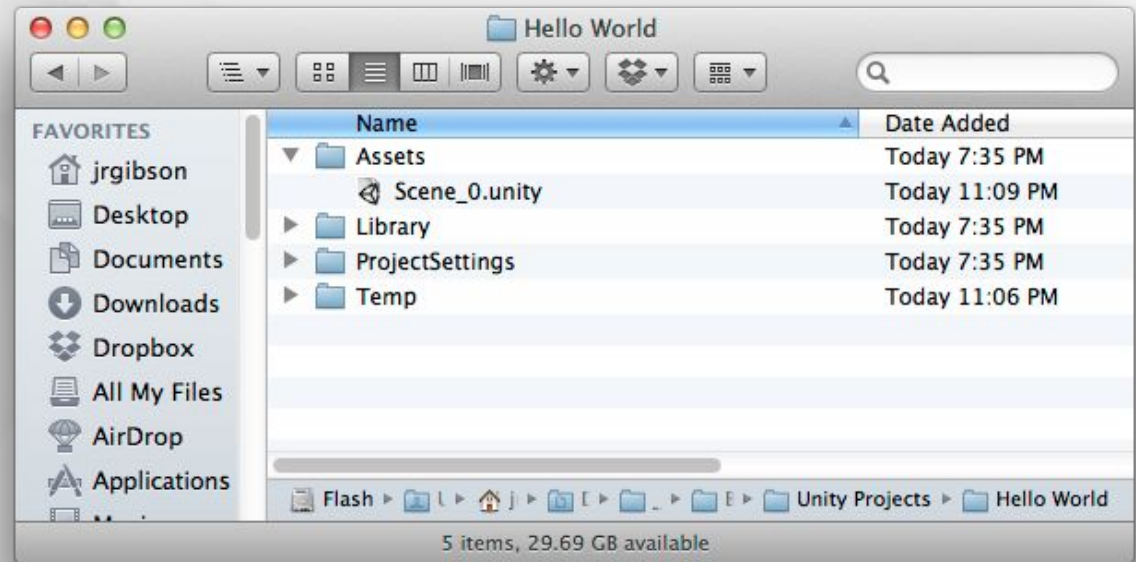
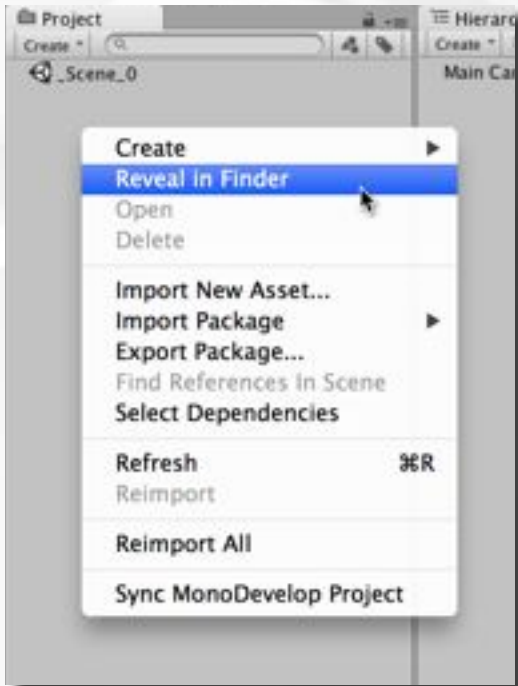
# Creating a Unity Project

- Set up defaults for 3D
- Click the *Create Project* or *Create* button
- Appendix A contains detailed instructions



# Creating a Unity Project

- The Project pane shows the contents of the Assets folder inside your Unity project folder
  - Right-click in the Project pane and choose *Reveal in Finder* (or *Show in Explorer*) from the pop-up menu

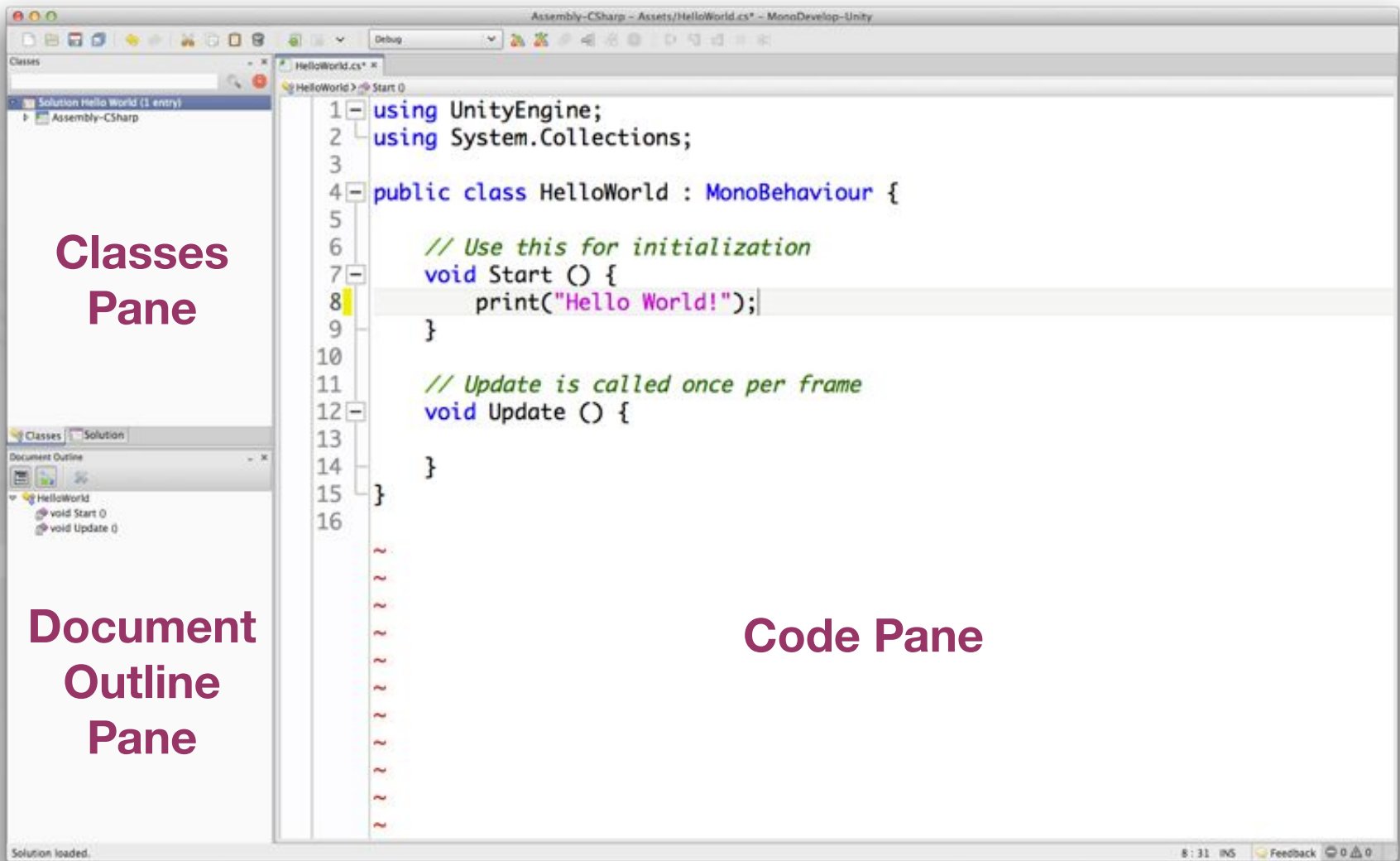


# MonoDevelop: Unity's Code Editor

- **Unity uses MonoDevelop for code editing**
  - MonoDevelop is a separate program developed by a different team
- **To open MonoDevelop, double-click any C# script in your Project pane**
  - This will launch MonoDevelop
  - Though the launch process takes some time
- **You must save a document in MonoDevelop for it to recompile and update in Unity**
- **On Windows, Microsoft Visual Studio may be used**
  - Instructions for this can be found online

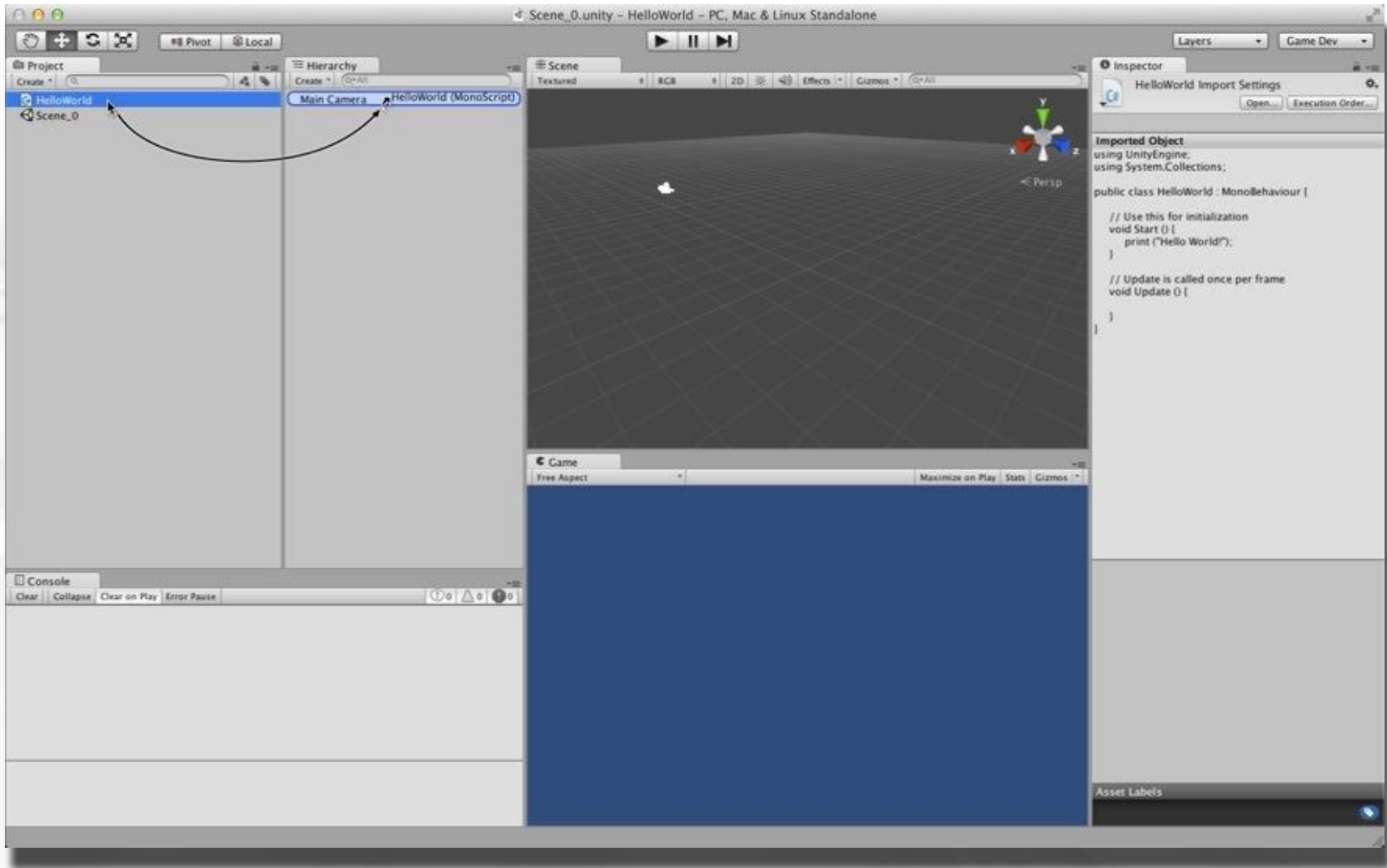


# MonoDevelop: Unity's Code Editor



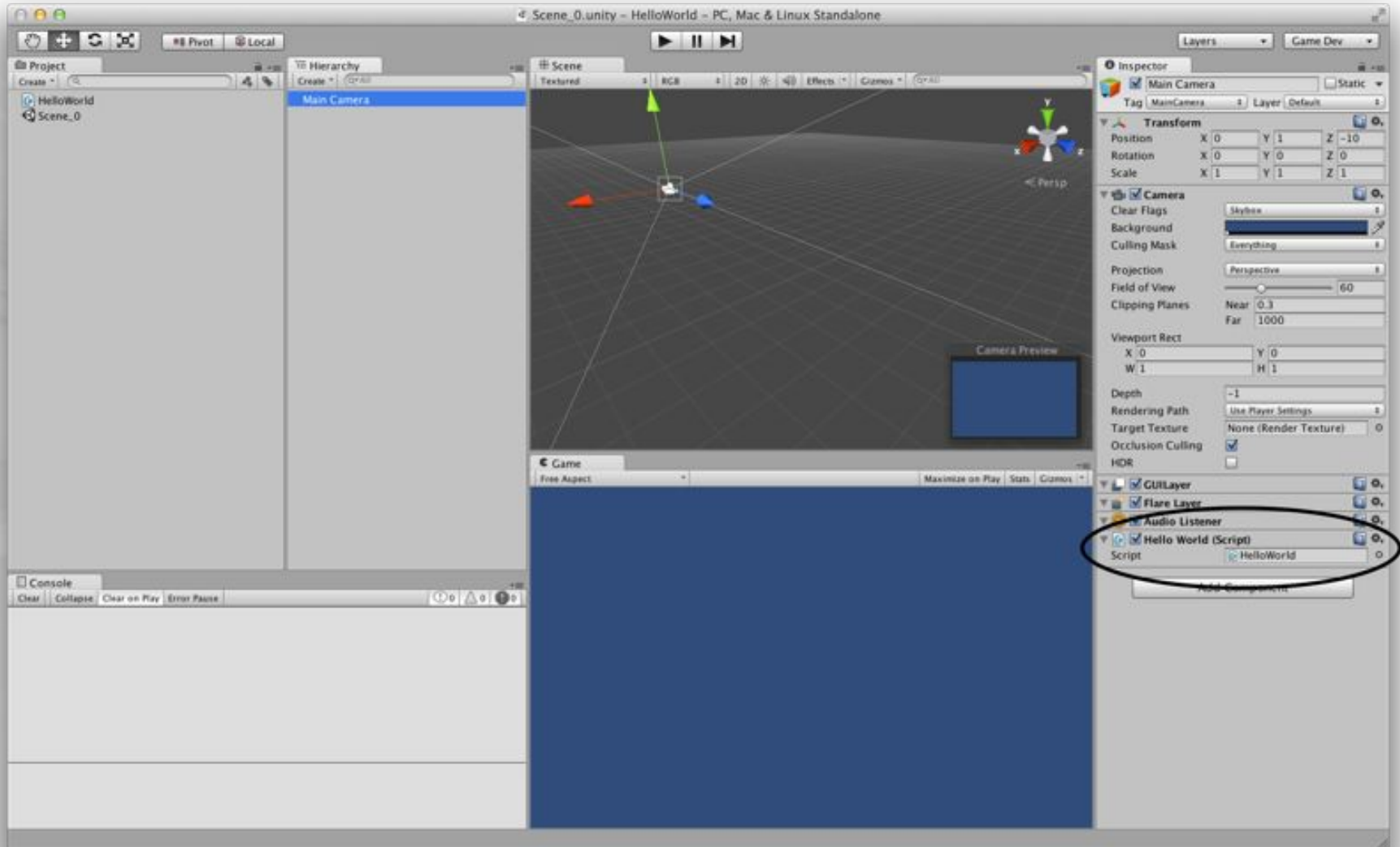
The MonoDevelop Window

# Attaching Scripts to GameObjects



To work in Unity, a C# script must be *attached* to a GameObject

# Attaching Scripts to GameObjects



This makes the script a *component* of the GameObject

# Start() and Update()

- **You make use of Start() and Update() in the HelloWorld project**
  - **void Start() {...}**
    - Called once
    - Called immediately before the first Update() is called
  - **void Update() {...}**
    - Called every frame
    - This can happen over 200 times per second!
  - **void Awake() {...}** (not used in HelloWorld, but important)
    - Called once
    - Called at the moment the GameObject is created
    - Guaranteed to be called before Start()

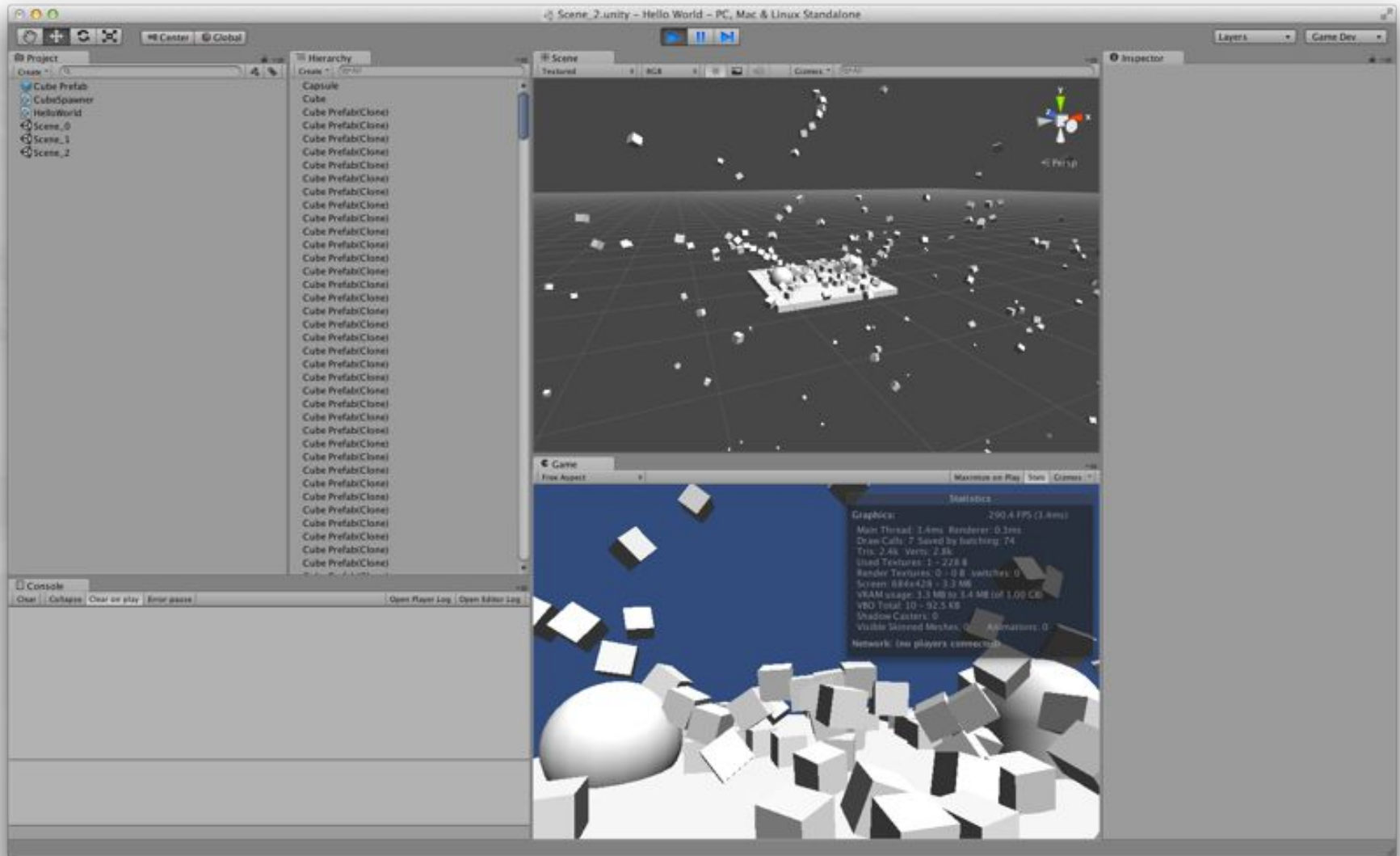
# GameObject Prefabs and Instantiation

- **A *prefab* is a mold from which GameObject instances can be made**
  - Created by dragging a GameObject from the Hierarchy pane into the Project pane
  - Can be assigned to a script variable in the Inspector pane
    - `public GameObject      gameObjectPrefab;`
  - Then, an instance of the prefab can be created in code
    - `Instantiate( gameObjectPrefab );`
- **This is used in HelloWorld to create thousands of instances of a Cube GameObject prefab**

# The HelloWorld Project

- **Output "Hello World!" to the Console pane**
  - Once using Start()
  - Many times using Update()
- **Create a Cube prefab that reacts to gravity & physics**
- **Instantiate an instance of the Cube prefab**
  - Once using Start()
  - Many times using Update()
    - This will create a cascade of thousands of Cube instances
  - **Over other physically-modeled objects**

# The HelloWorld Project



The final HelloWorld scene

# Chapter 18 – Summary

- **Hello World is a common first program to make in any new language**
- **Unity projects are stored as many files in project folders on your hard drive**
- **MonoDevelop is used to edit code for Unity**
- **Scripts must be attached to GameObjects to run**
- **Start(), Update(), and Awake() are called at different times and have different uses**
- **GameObject prefabs can be instantiated many times**