

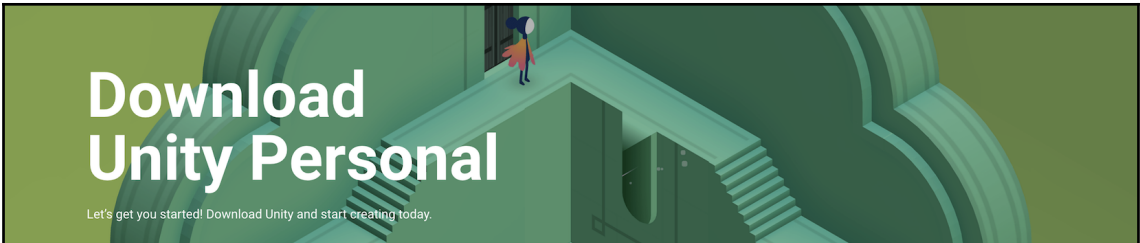
# Graphics Bundle

## Chapter 1: Getting to Know your Environment

The screenshot displays the Unity Store interface with three subscription options:

- FOR HOBBYISTS Plus**: ~\$25 per month with 1 year prepaid or \$33 paid monthly. Targeted at hobbyists wanting to accelerate learning and development.
- FOR TEAMS AND FREELANCERS Pro**: \$125 per month. Includes direct, priority access to Unity experts, advisors, and services for advanced support.
- FOR BEGINNERS Personal**: Available to use if your revenue or funding (based on self-funding) does not exceed \$100K per year.

Each plan includes a 'Show benefits' link and a 'Financial eligibility' section at the bottom. The Pro plan also features a 'Over \$1,200 in added value included' badge. A navigation bar at the top shows the Unity Store logo and search icons.



Are you a hobbyist aspiring to boost your skills and create faster with Unity? Get 12 months of Unity Game Dev Courses included free and get direct access to Unity experts through monthly Expert Live Sessions and our on demand Unity Success Advisor chat portal. Click to see all the other time-saving benefits with Unity Plus. [Learn more.](#)

**Accept terms**

By clicking, I confirm that I am eligible to use Unity Personal per the [Terms of Service](#), as I or my company meet the following criteria:

- Do not make more than \$100k in annual gross revenues, regardless of whether Unity Personal is being used for commercial purposes, or for an internal project or prototyping.
- Have not raised funds in excess of \$100K.
- Not currently using Unity Plus or Pro.

If you are not eligible to use Unity Personal, please [click here](#) to learn more about Unity Plus and Unity Pro.

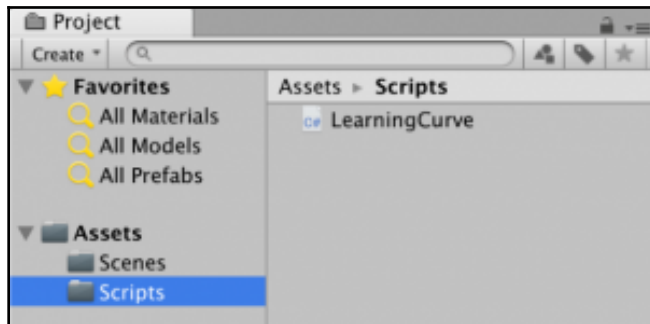
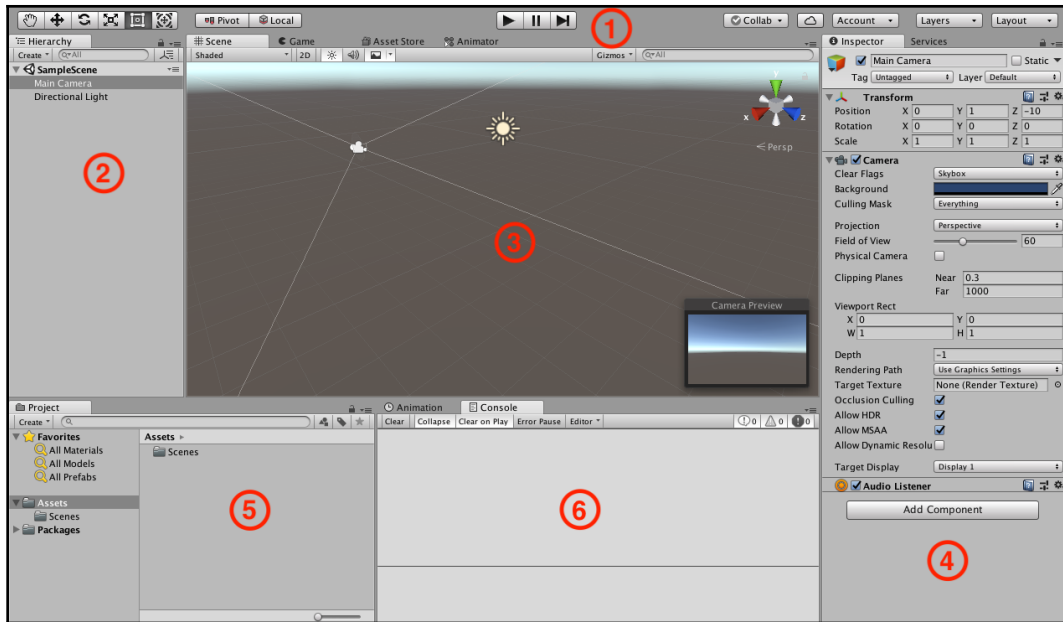
Download Installer for Mac OS X

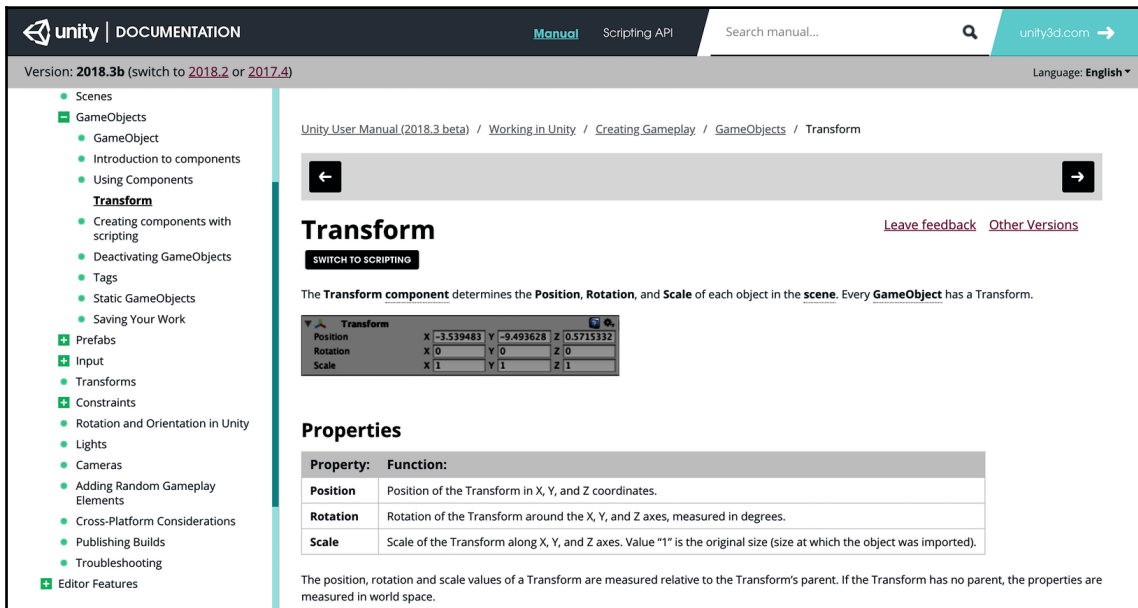
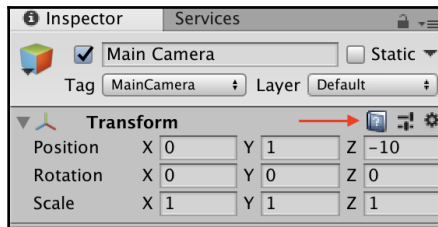
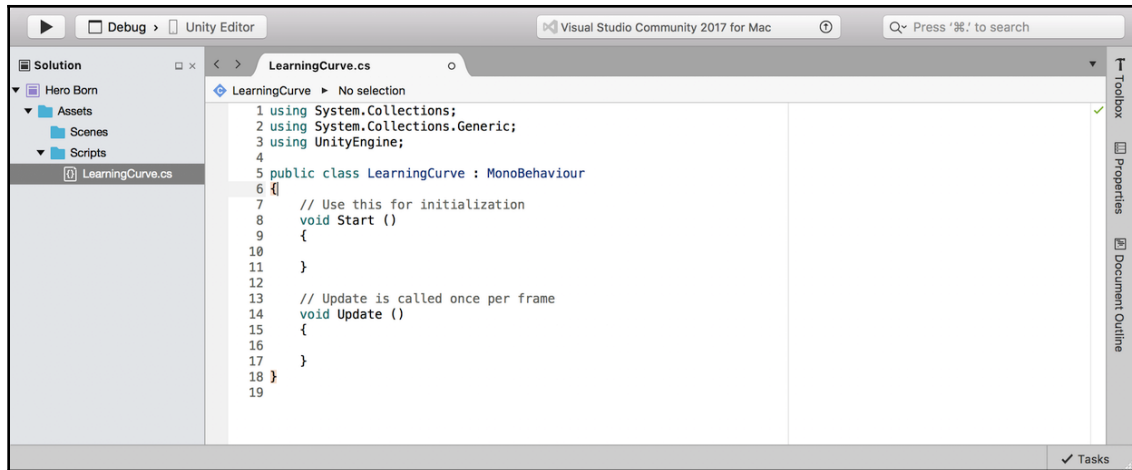
Download Unity Hub

Looking to download the installer for Windows?  
[Choose Windows](#)

A screenshot of the Unity Hub interface for creating a new project. The top navigation bar includes 'Projects' and 'Learn' on the left, and 'New', 'Open', and 'My Account' on the right. The main form contains the following fields and controls:

- Project name:** A text input field containing 'New Unity Project'.
- Template:** A dropdown menu currently set to '3D'.
- Location:** A text input field containing '/Users/harrisonferrone/Desktop/Unity' with a three-dot menu icon to its right.
- Organization:** A dropdown menu currently set to 'hferrone1'.
- Enable Unity Analytics:** A toggle switch that is currently turned 'ON' with a question mark icon.
- Buttons:** 'Add Asset Package' (disabled), 'Cancel' (disabled), and 'Create project' (active).





The screenshot shows the Unity documentation page for the **Transform** class. The top navigation bar includes the Unity logo, 'DOCUMENTATION', 'Manual', 'Scripting API', a search bar, and the URL 'unity3d.com'. Below the navigation bar, the version is noted as '2018.3b' with links to switch to '2018.2' or '2017.4'. A left-hand sidebar lists various Unity classes, with 'Transform' selected and highlighted. The main content area features the title 'Transform', its class hierarchy ('class in UnityEngine / Inherits from: Component / Implemented in: UnityEngine.CoreModule'), and links for 'Leave feedback' and 'Other Versions'. A 'SWITCH TO MANUAL' button is present. The 'Description' section explains that every object in a Scene has a Transform and provides details on its use for position, rotation, and scale. A code block shows a C# example of moving transform children upwards. At the bottom, a note refers to 'The component reference, Physics class'.

The screenshot shows the Microsoft documentation website for C# programming. The browser address bar displays 'https://docs.microsoft.com/en-us/dotnet/csharp/programming-guide/index'. The page has a search bar labeled 'Filter by title' and a main heading 'Language Sections'. A list of sections is provided, including 'C# Programming Guide', 'Inside a C# Program', 'Main() and Command-Line Arguments', 'Programming Concepts', 'Statements, Expressions, and Operators', 'Types', 'Classes and Structs', 'Interfaces', 'Enumeration Types', and 'Delegates'. The 'Strings' section is highlighted with a red box. On the right side, there is a 'In this article' section with links for 'Program sections', 'Language Sections', 'Platform Sections', and 'See Also'.

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Docs / .NET / C# Guide / Programming guide / Strings Feedback Edit Share Dark Sign in

Filter by title

Strings

How to: Determine Whether a String Represents a Numeric Value

## Strings (C# Programming Guide)

07/20/2015 • 11 minutes to read • Contributors all

A string is an object of type [String](#) whose value is text. Internally, the text is stored as a sequential read-only collection of [Char](#) objects. There is no null-terminating character at the end of a C# string; therefore a C# string can contain any number of embedded null characters ('\0'). The [Length](#) property of a string represents the number of `Char` objects it contains, not the number of Unicode characters. To access the individual Unicode code points in a string, use the [StringInfo](#) object.

### string vs. System.String

In C#, the `string` keyword is an alias for [String](#). Therefore, `String` and `string` are equivalent, and you can use whichever naming convention you prefer. The `String` class provides many methods for safely creating, manipulating, and comparing strings. In addition, the C# language overloads some operators to simplify common string operations. For more information about the keyword, see [string](#). For more information about the type and its methods, see [String](#).

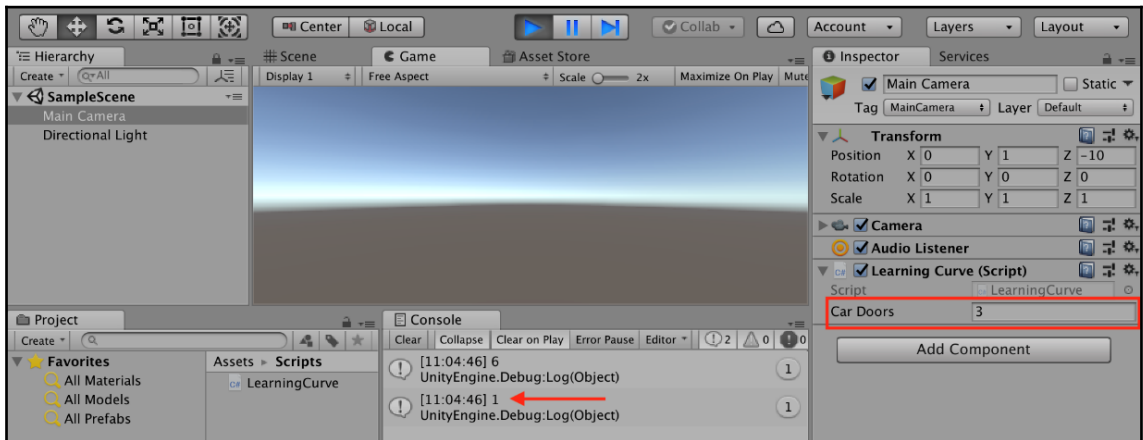
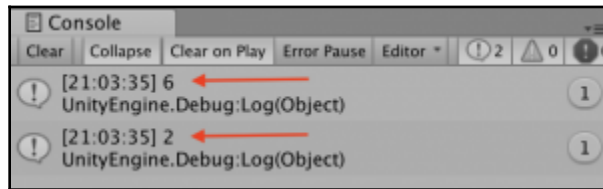
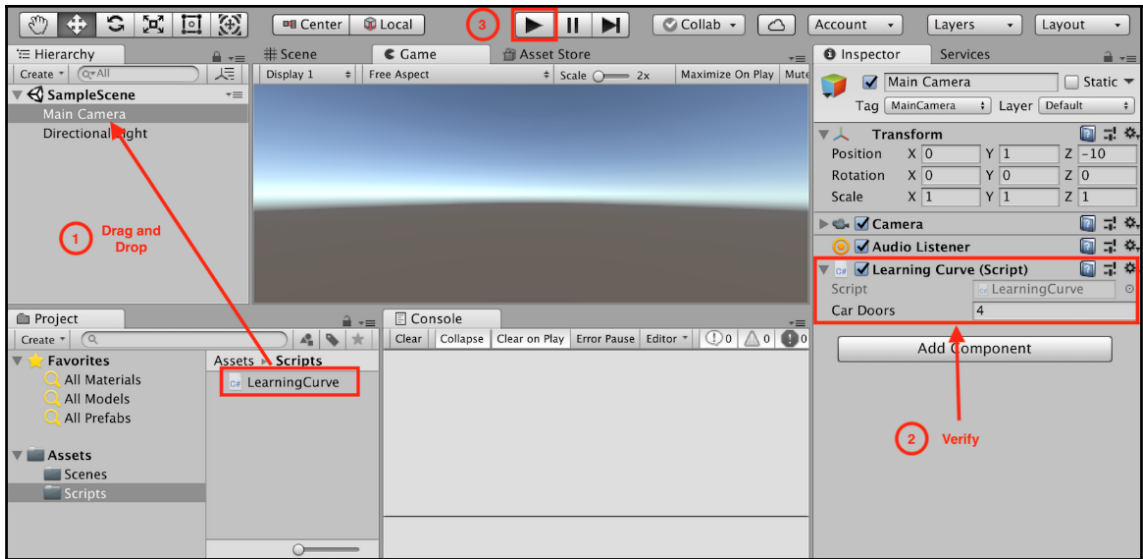
**In this article**

- [string vs. System.String](#)
- [Declaring and Initializing Strings](#)
- [Immutability of String Objects](#)
- [Regular and Verbatim String Literals](#)
- [String Escape Sequences](#)
- [Format Strings](#)
- [Substrings](#)
- [Accessing Individual Characters](#)
- [Null Strings and Empty Strings](#)
- [Using StringBuilder for Fast String Creation](#)

## Chapter 2: The Building Blocks of Programming

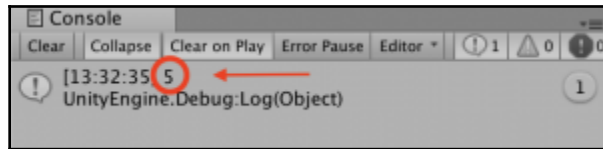


```
LearningCurve.cs
LearningCurve ▶ Update()
1 using System.Collections;
2 using System.Collections.Generic;
3 using UnityEngine;
4
5 public class LearningCurve : MonoBehaviour
6 {
7     public int carDoors = 4;
8
9     // Use this for initialization
10    void Start ()
11    {
12        Debug.Log(2 + 4);
13        Debug.Log(carDoors - 2);
14    }
15
16
17    // Update is called once per frame
18    void Update ()
19    {
20
21    }
22 }
```

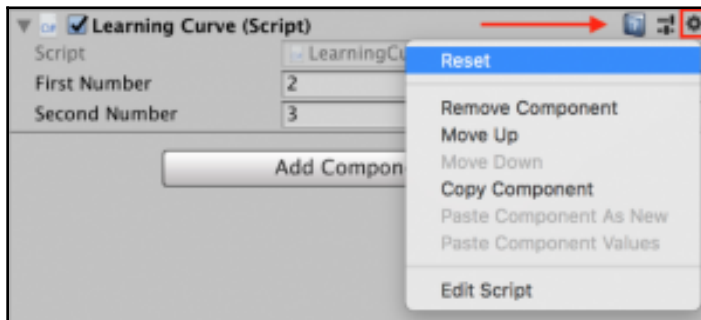




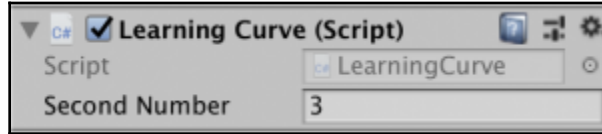
```
LearningCurve ▶ AddNumbers()  
1 using System.Collections;  
2 using System.Collections.Generic;  
3 using UnityEngine;  
4  
5 public class LearningCurve : MonoBehaviour  
6 {  
7     public int firstNumber = 2;  
8     public int secondNumber = 3;  
9  
10    // Use this for initialization  
11    void Start ()  
12    {  
13        AddNumbers(); ← Calling the method  
14    }  
15  
16    void AddNumbers()  
17    {  
18        Debug.Log(firstNumber + secondNumber); ← The method  
19    }  
20 }  
21
```



```
19    /// <summary>  
20    /// Adds the numbers.  
21    /// </summary>  
22    void AddNumbers()  
23    {  
24        Debug.Log(firstNumber + secondNumber);  
25    }
```



# Chapter 3: Diving into Variables, Types, and Methods

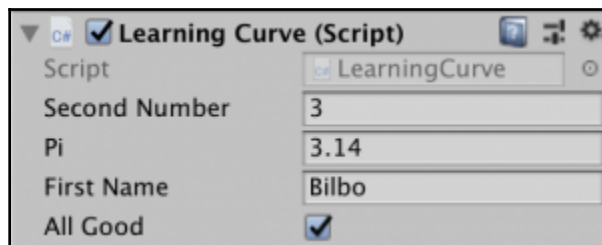


Type	Contents of the variable
int	A simple integer, such as the number 3
float	A number with a decimal, such as the number 3.14
string	Characters in double quotes, such as, "Watch me go now"
bool	A boolean, either <b>true</b> or <b>false</b>

```

5 public class LearningCurve : MonoBehaviour
6 {
7     private int firstNumber = 2;
8     public int secondNumber = 3;
9     public float pi = 3.14f;
10    public string firstName = "Bilbo";
11    public bool allGood = true;

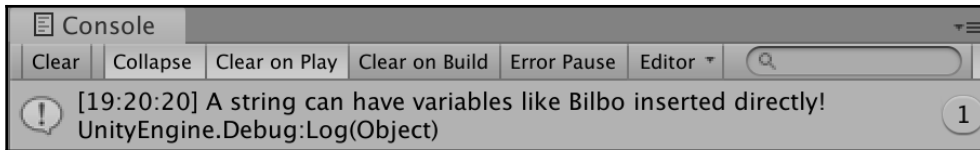
```



```

15 // Use this for initialization
16 void Start()
17 {
18     Debug.Log($"A string can have variables like {firstName} inserted directly!");
19 }

```



```

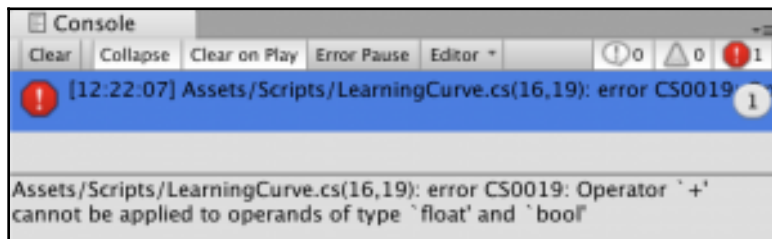
4
5 public class LearningCurve : MonoBehaviour
6 {
7     public string characterClass = "Ranger"; ← Class scope
8
9     // Use this for initialization
10    void Start ()
11    {
12        int characterHealth = 100; ← Local scope 1
13        Debug.Log(characterClass + " - HP: " + characterHealth);
14    }
15
16    void CreateCharacter()
17    {
18        int characterName = "Aragorn"; ← Local scope 2
19        Debug.Log(characterName + " - " + characterClass);
20    }
21 }
22

```

```

13    // Use this for initialization
14    void Start ()
15    {
16        Debug.Log(firstName + allGood);|
17    }

```



```

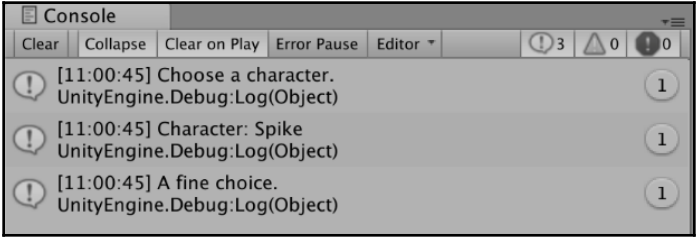
13    // Use this for initialization
14    void Start ()
15    {
16        |
17    }

```

```
// Use this for initialization
void Start ()
{
    GenerateCharacter();
}

public void GenerateCharacter()
{
    Debug.Log("Character: Spike");
}
```

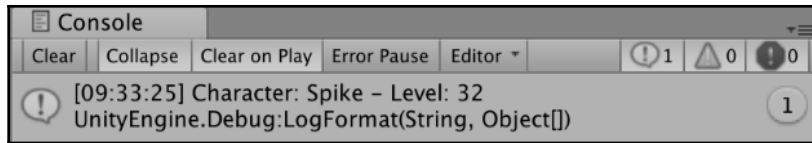
```
13 // Use this for initialization
14 void Start ()
15 {
16     Debug.Log("Choose a character.");
17     GenerateCharacter();
18     Debug.Log("A fine choice.");
19 }
20
21 public void GenerateCharacter()
22 {
23     Debug.Log("Character: Spike");
24 }
```



```
13 // Use this for initialization
14 void Start ()
15 {
16     int characterLevel = 32;
17     GenerateCharacter("Spike", characterLevel);
18 }
19
20 public void GenerateCharacter(string name, int level)
21 {
22     Debug.LogFormat("Character: {0} - Level: {1}", name, level);
23 }
```

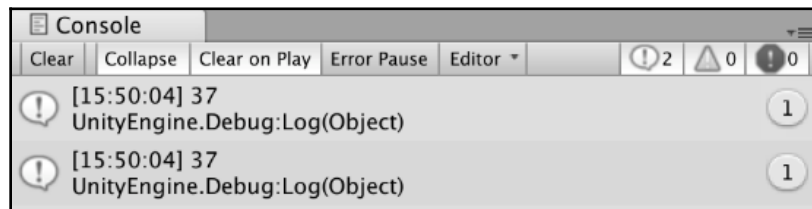
**Arguments** (pointing to "Spike" and characterLevel)

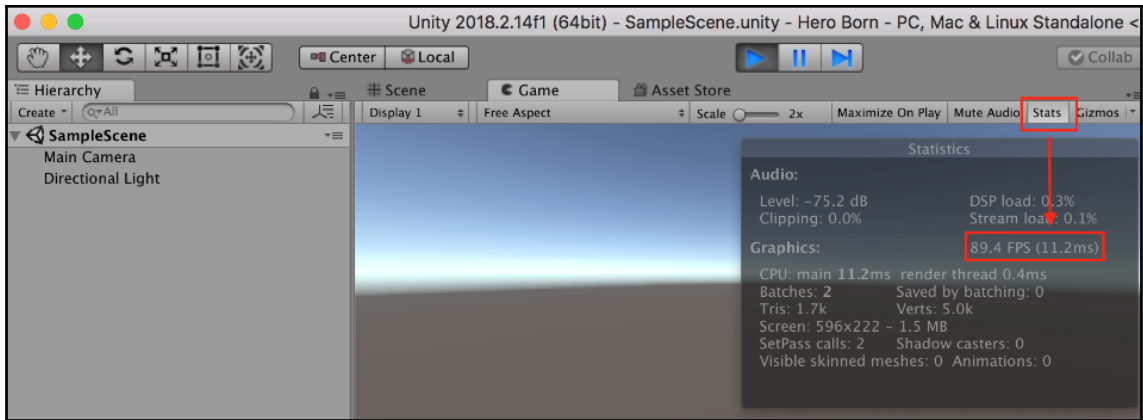
**Parameters** (pointing to string name and int level)



```
20 public int GenerateCharacter(string name, int level)
21 {
22     Debug.LogFormat("Character: {0} - Level: {1}", name, level);
23     return level + 5;
24 }
```

```
13 // Use this for initialization
14 void Start ()
15 {
16     int characterLevel = 32;
17
18     int nextSkillLevel = GenerateCharacter("Spike", characterLevel);
19     Debug.Log(nextSkillLevel);
20     Debug.Log(GenerateCharacter("Faye", characterLevel));
21 }
22
23 public int GenerateCharacter(string name, int level)
24 {
25     //Debug.LogFormat("Character: {0} - Level: {1}", name, level);
26     return level + 5;
27 }
```



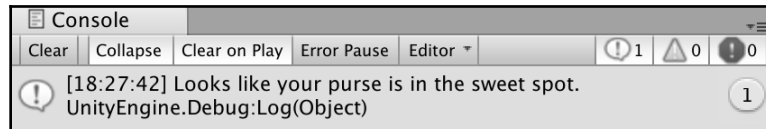


## Chapter 4: Control Flow and Collection Types

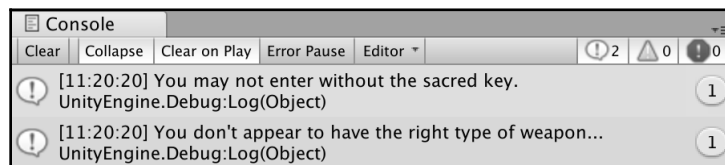
```
5 public class LearningCurve : MonoBehaviour
6 {
7     public bool hasDungeonKey = true;
8
9     // Use this for initialization
10    void Start()
11    {
12        if(hasDungeonKey)
13        {
14            Debug.Log("You possess the sacred key - enter.");
15        }
16    }
17 }
```

```
5 public class LearningCurve : MonoBehaviour
6 {
7     public bool hasDungeonKey = true;
8
9     // Use this for initialization
10    void Start()
11    {
12        if(hasDungeonKey)
13        {
14            Debug.Log("You possess the sacred key - enter.");
15        }
16        else
17        {
18            Debug.Log("You have not proved yourself worthy, warrior.");
19        }
20    }
21 }
```

```
5 public class LearningCurve : MonoBehaviour
6 {
7     public int currentGold = 32;
8
9     // Use this for initialization
10    void Start()
11    {
12        if(currentGold > 50)
13        {
14            Debug.Log("You're rolling in it - beware of pickpockets.");
15        }
16        else if (currentGold < 15)
17        {
18            Debug.Log("Not much there to steal.");
19        }
20        else
21        {
22            Debug.Log("Looks like your purse is in the sweet spot.");
23        }
24    }
25 }
```



```
5 public class LearningCurve : MonoBehaviour
6 {
7     public bool hasDungeonKey = false;
8     public string weaponType = "Arcane Staff";
9
10    // Use this for initialization
11    void Start()
12    {
13        if(!hasDungeonKey)
14        {
15            Debug.Log("You may not enter without the sacred key.");
16        }
17
18        if(weaponType != "Longsword")
19        {
20            Debug.Log("You don't appear to have the right type of weapon...");
21        }
22    }
23 }
```

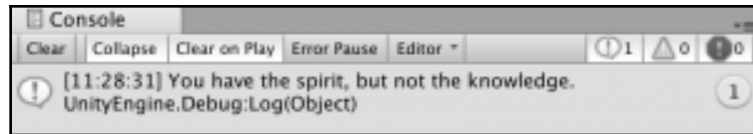




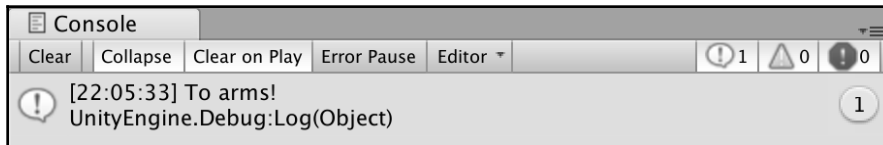
```
5 public class LearningCurve : MonoBehaviour
6 {
7     public bool weaponEquipped = true;
8     public string weaponType = "Longsword";
9
10    // Use this for initialization
11    void Start()
12    {
13        if(weaponEquipped)
14        {
15            if(weaponType == "Longsword")
16            {
17                Debug.Log("For the Queen!");
18            }
19        }
20        else
21        {
22            Debug.Log("Fists aren't going to work against armor...");
23        }
24    }
25 }
```

```
13     if(weaponEquipped && weaponType == "Longsword")
14     {
15         Debug.Log("For the Queen!");
16     }
```

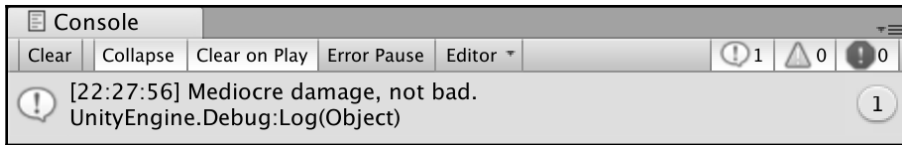
```
5 public class LearningCurve : MonoBehaviour
6 {
7     public bool pureOfHeart = true;
8     public bool hasSecretIncantation = false;
9     public string rareItem = "Relic Stone";
10
11    // Use this for initialization
12    void Start()
13    {
14        OpenTreasureChamber();
15    }
16
17    public void OpenTreasureChamber()
18    {
19        if (pureOfHeart && rareItem == "Relic Stone")
20        {
21            if(!hasSecretIncantation)
22            {
23                Debug.Log("You have the spirit, but not the knowledge.");
24            }
25            else
26            {
27                Debug.Log("The treasure is yours, worthy hero!");
28            }
29        }
30        else
31        {
32            Debug.Log("Come back when you have what it takes.");
33        }
34    }
35 }
```



```
5 public class LearningCurve : MonoBehaviour
6 {
7     // Use this for initialization
8     void Start()
9     {
10         string characterAction = "Attack";
11
12         switch(characterAction)
13         {
14             case "Heal":
15                 Debug.Log("Potion sent.");
16                 break;
17             case "Attack":
18                 Debug.Log("To arms!");
19                 break;
20             default:
21                 Debug.Log("Shields up.");
22                 break;
23         }
24     }
25 }
```



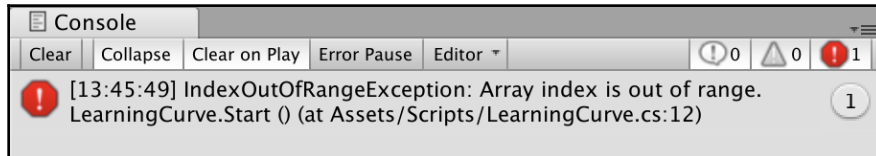
```
7     // Use this for initialization
8     void Start()
9     {
10         int diceRoll = 7;
11
12         switch(diceRoll)
13         {
14             case 7:
15             case 15:
16                 Debug.Log("Mediocre damage, not bad.");
17                 break;
18             case 20:
19                 Debug.Log("Critical hit, the creature goes down!");
20                 break;
21             default:
22                 Debug.Log("You completely missed and fell on your face.");
23                 break;
24         }
25     }
```



```

10                                     INDEX  0    1    2
11                                     ↓    ↓    ↓
12                                     int[] topPlayerScores = { 452, 713, 984 };

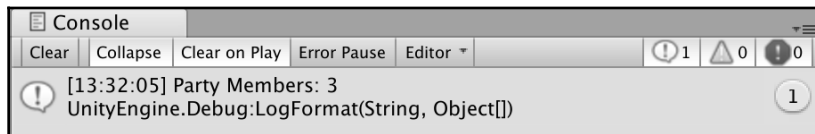
```



```

7 // Use this for initialization
8 void Start()
9 {
10     List<string> questPartyMembers = new List<string>()
11     { "Grim the Barbarian", "Merlin the Wise", "Sterling the Knight"};
12
13     Debug.LogFormat("Party Members: {0}", questPartyMembers.Count);
14 }
15 }

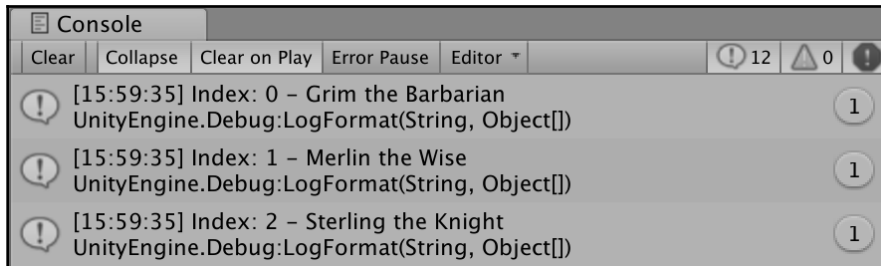
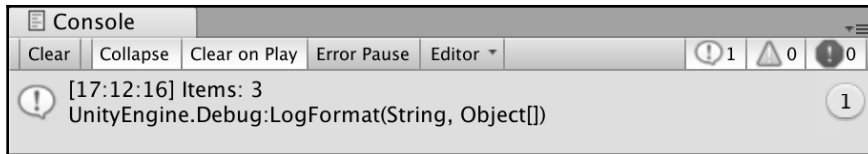
```



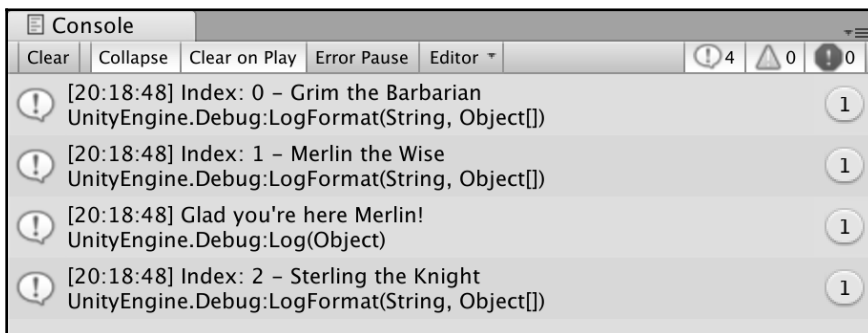
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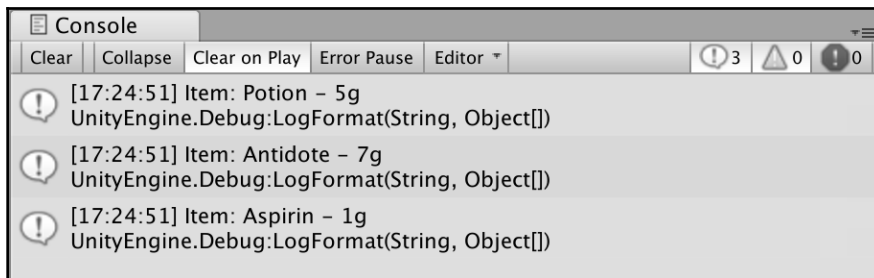
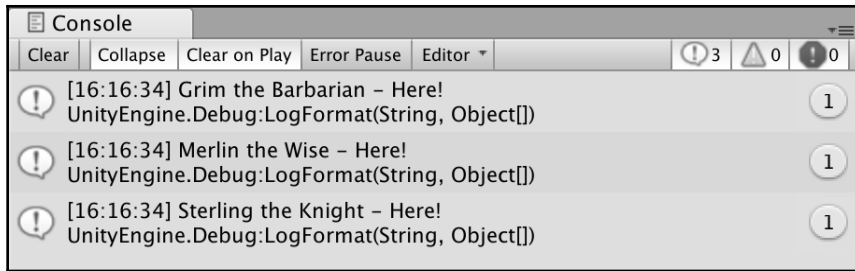
7 // Use this for initialization
8 void Start()
9 {
10     Dictionary<string, int> itemInventory = new Dictionary<string, int>()
11     {
12         { "Potion", 5 },
13         { "Antidote", 7 },
14         { "Aspirin", 1 }
15     };
16
17     Debug.LogFormat("Items: {0}", itemInventory.Count);
18 }
19 }

```

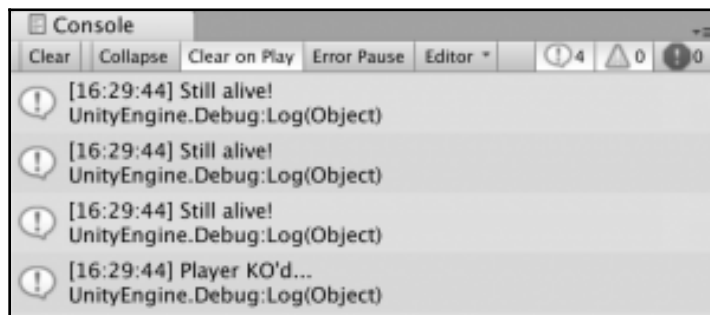


```
7 // Use this for initialization
8 void Start()
9 {
10     List<string> questPartyMembers = new List<string>()
11     { "Grim the Barbarian", "Merlin the Wise", "Sterling the Knight"};
12
13     for (int i = 0; i < questPartyMembers.Count; i++)
14     {
15         Debug.LogFormat("Index: {0} - {1}", i, questPartyMembers[i]);
16
17         if(questPartyMembers[i] == "Merlin the Wise")
18         {
19             Debug.Log("Glad you're here Merlin!");
20         }
21     }
22 }
```

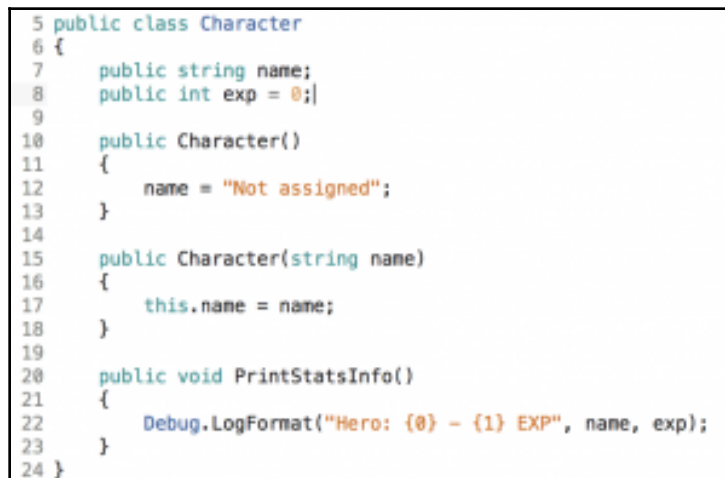
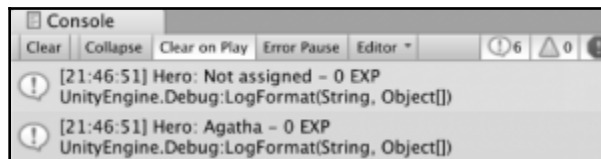
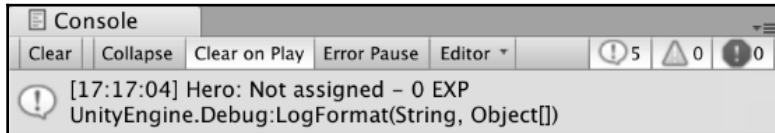
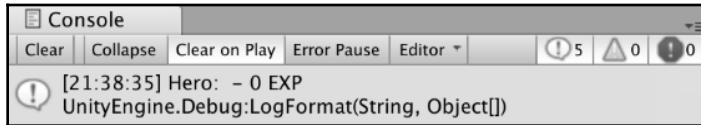


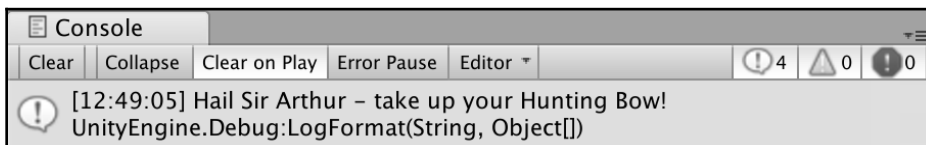
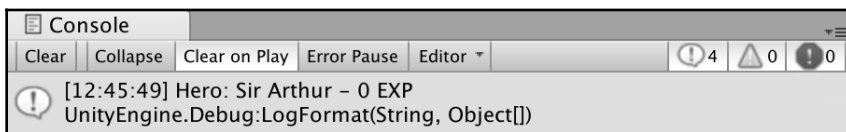
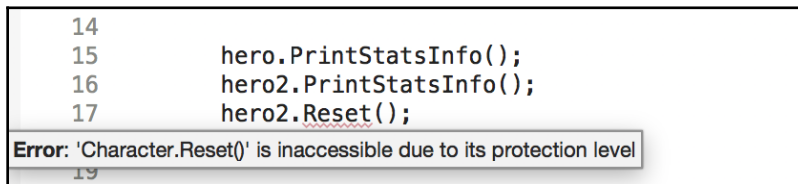
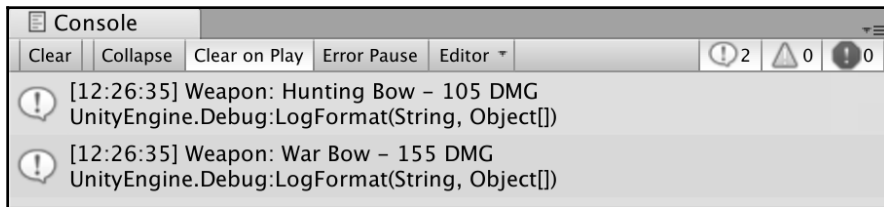
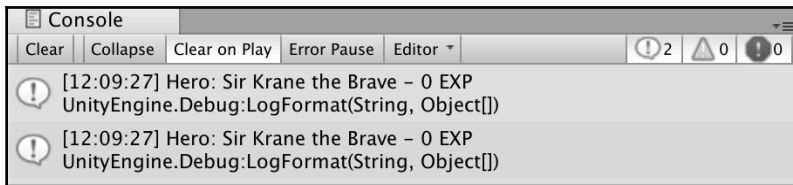
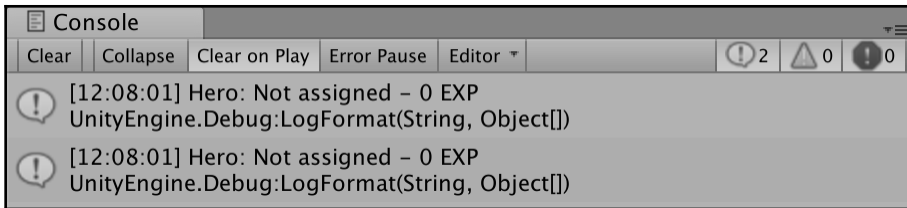


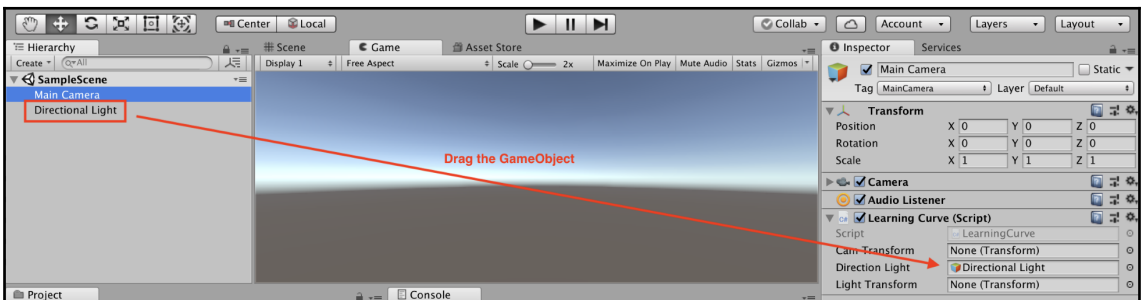
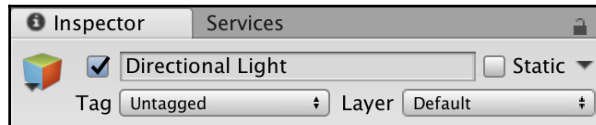
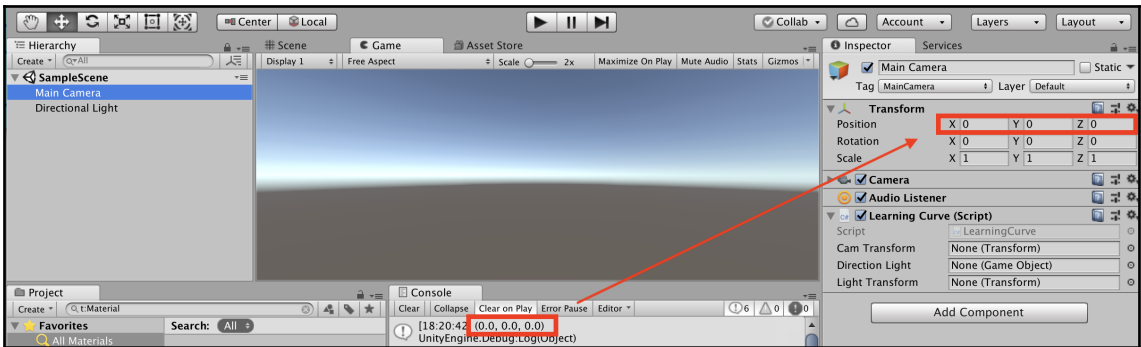
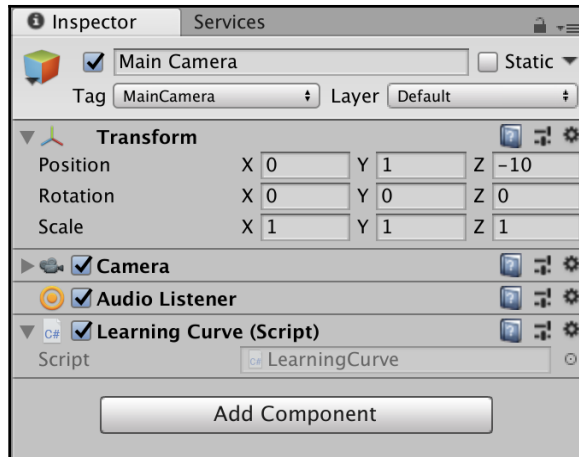
```
7 // Use this for initialization
8 void Start()
9 {
10     int playerLives = 3;
11
12     while(playerLives >| 0)
13     {
14         Debug.Log("Still alive!");
15         playerLives--;
16     }
17
18     Debug.Log("Player KO'd...");
19 }
20 }
```



# Chapter 5: Working with Classes, Structs, and OOP









# Chapter 6: Getting Your Hands Dirty with Unity

## Concept

Game prototype focused on stealthily avoiding enemies and collecting health items - with a little FPS on the side.

## Gameplay

Main mechanic centers around using line-of-sight to stay one step ahead of patrolling enemies and collecting required items.

Combat will consist of shooting projectiles at enemies, which will automatically trigger an attack response.

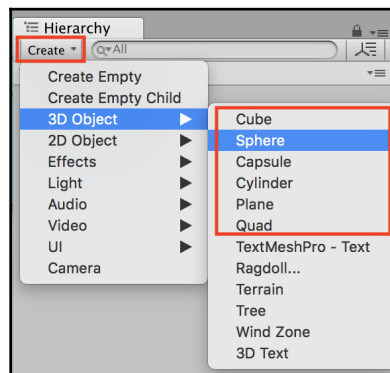
## Interface

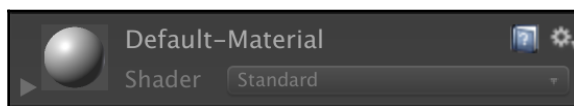
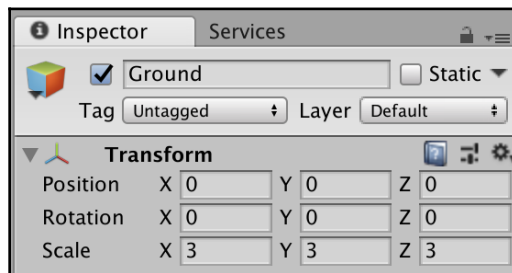
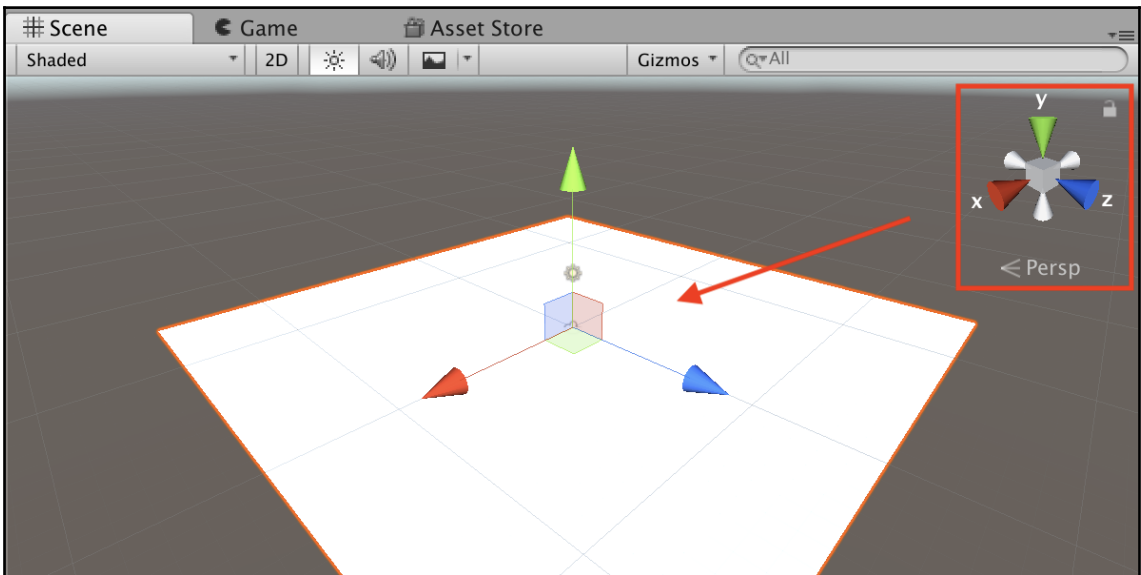
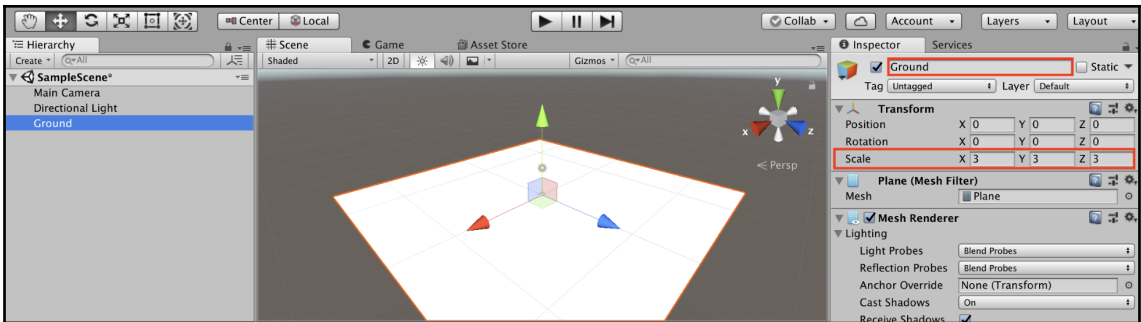
Control scheme for movement will be the WASD or arrow keys using the mouse for camera control. Shooting mechanic will use the Space bar, and item collection will work off of object collisions.

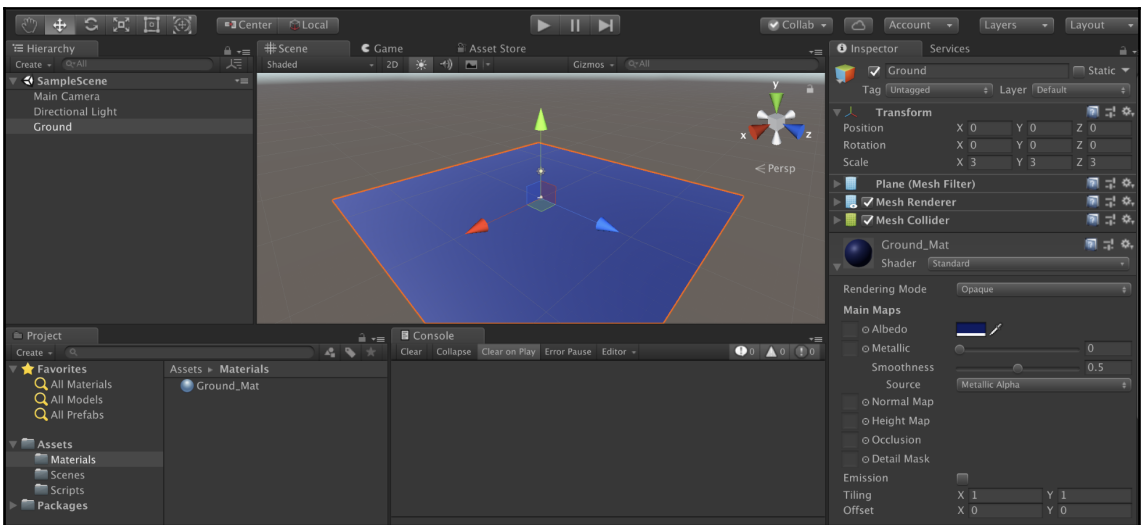
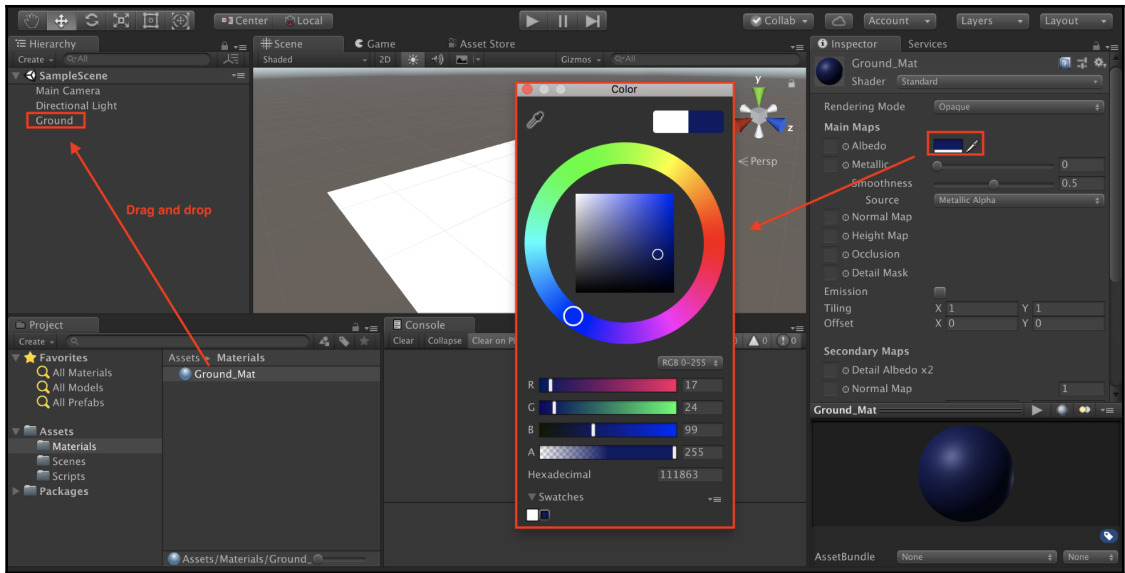
Simple HUD will show items collected and remaining ammo, as well as a standard health bar.

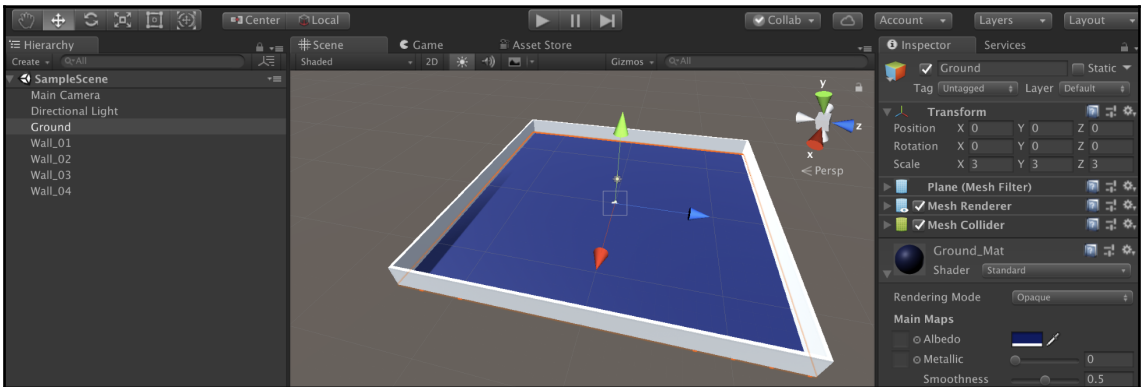
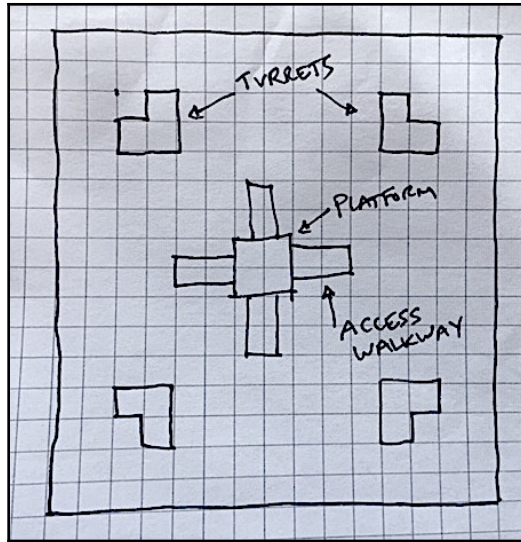
## Art Style

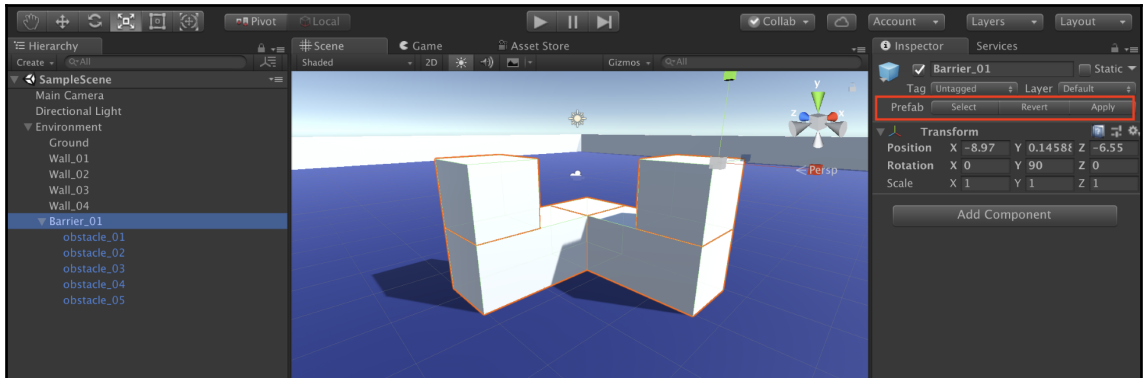
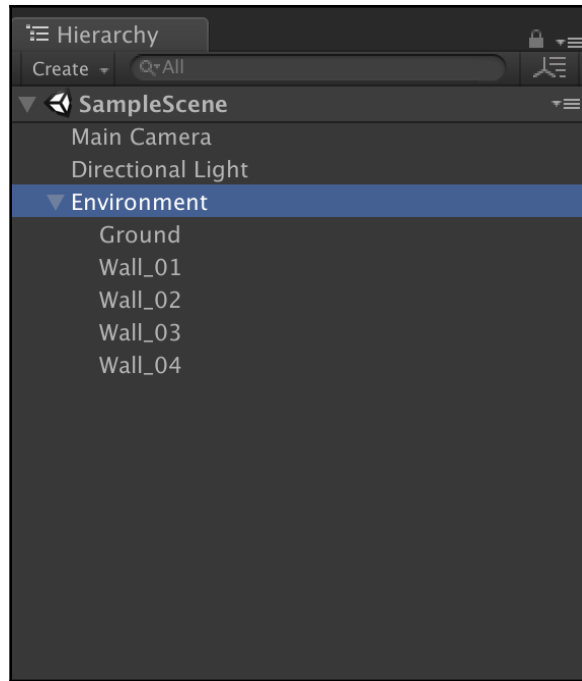
Level and character art style will be all primitive GameObjects for fast and efficient, no-frills development. These can be swapped out at a later date with 3D models or terrain environments if needed.

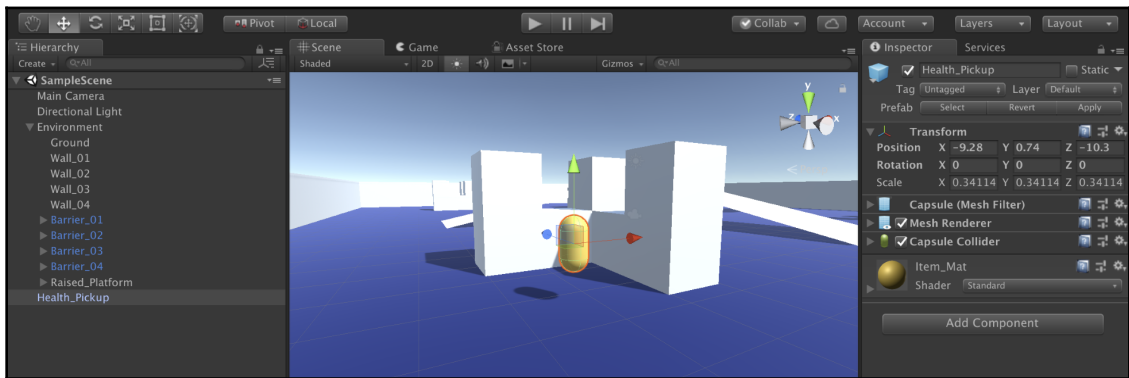
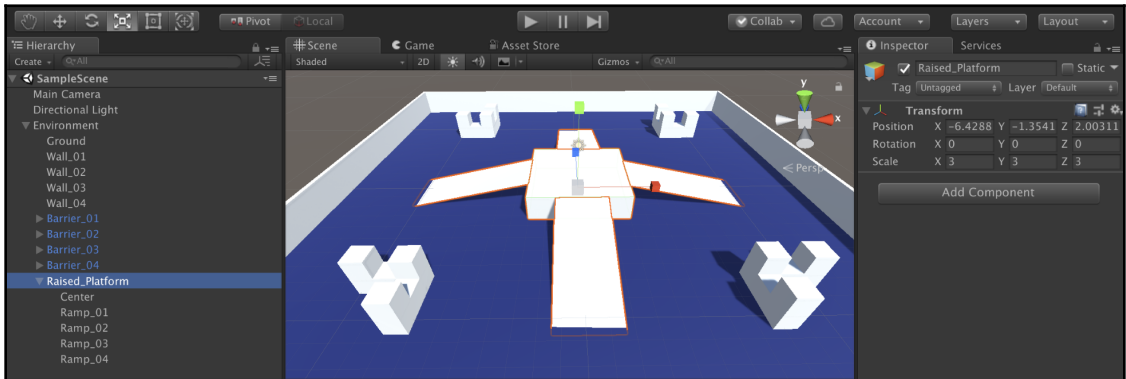
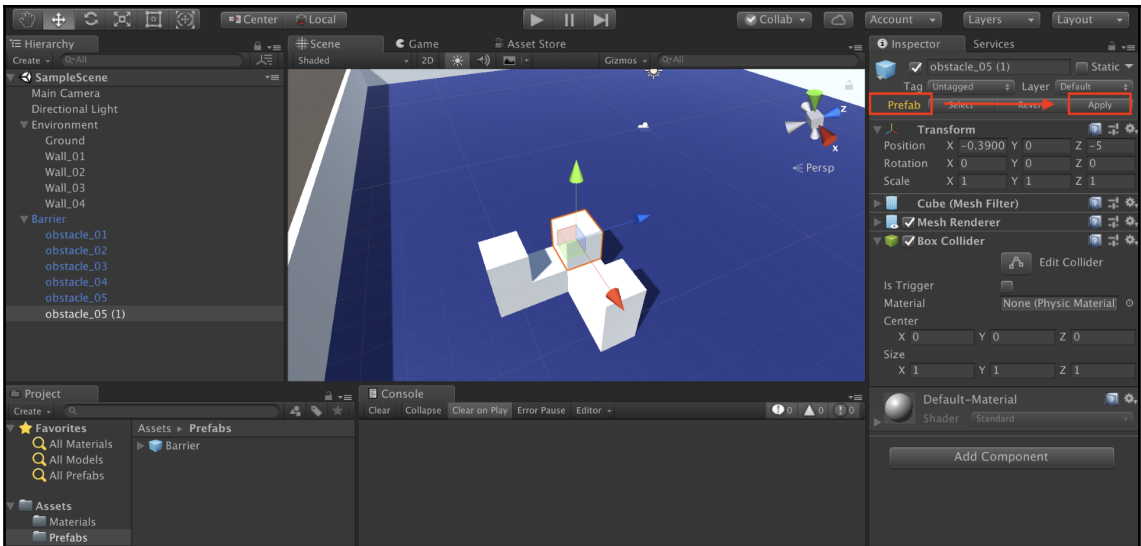


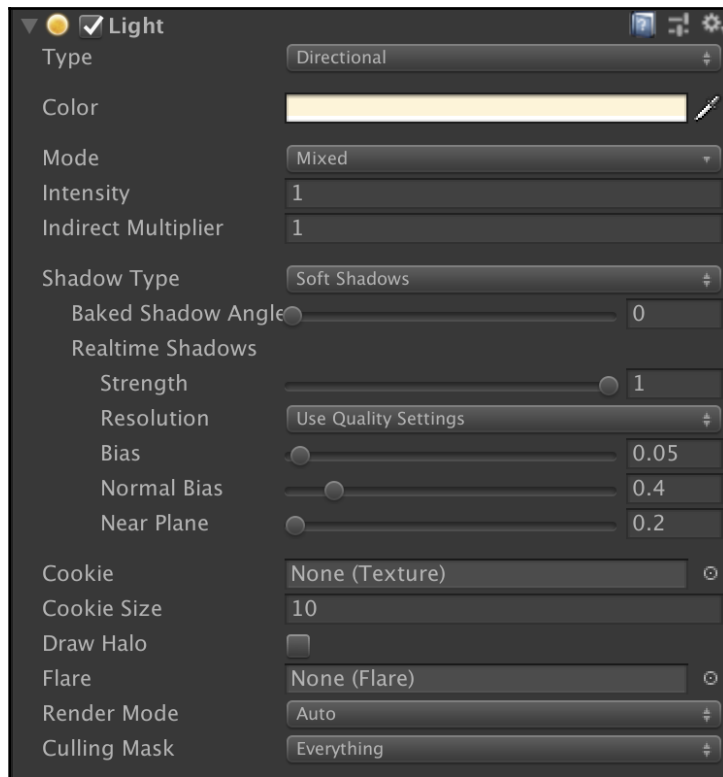
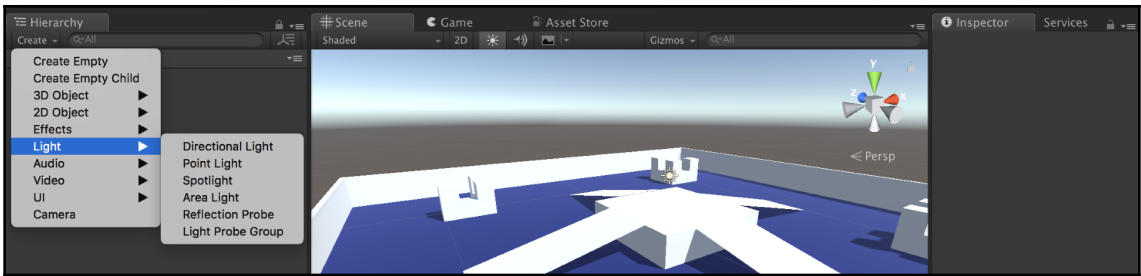


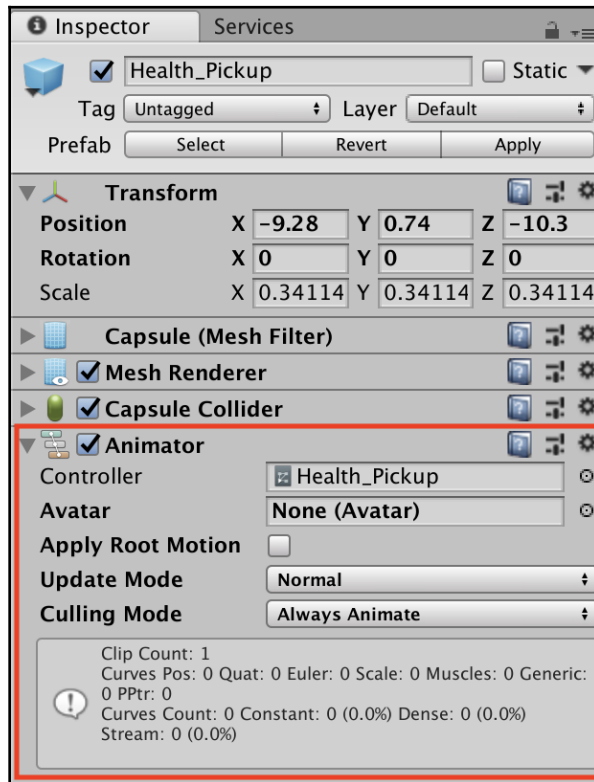
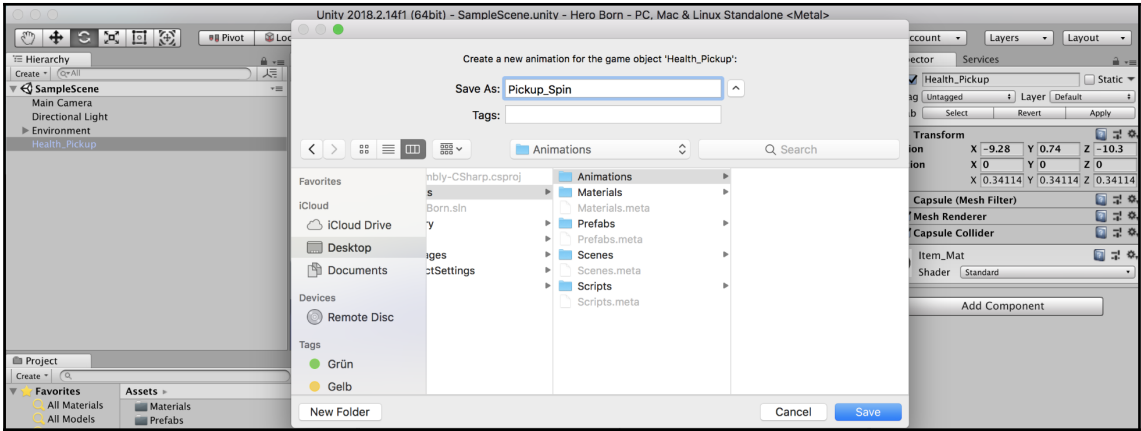




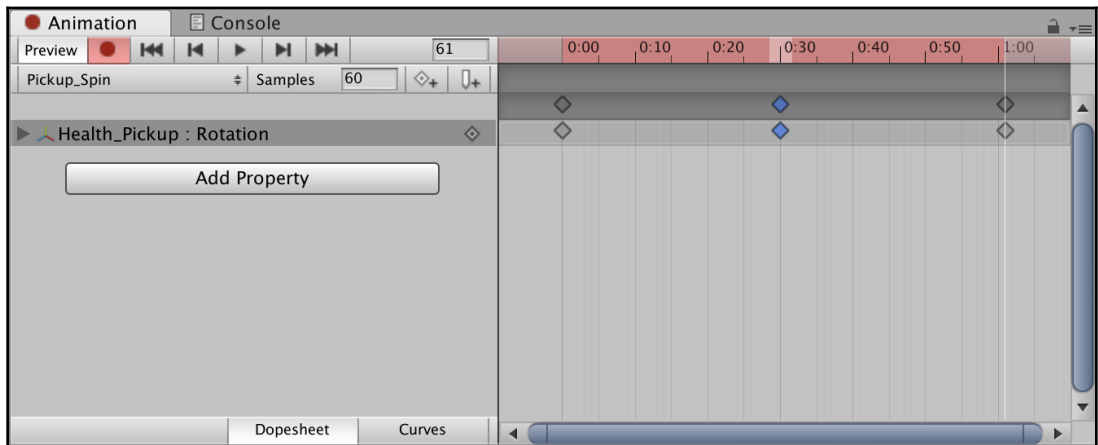
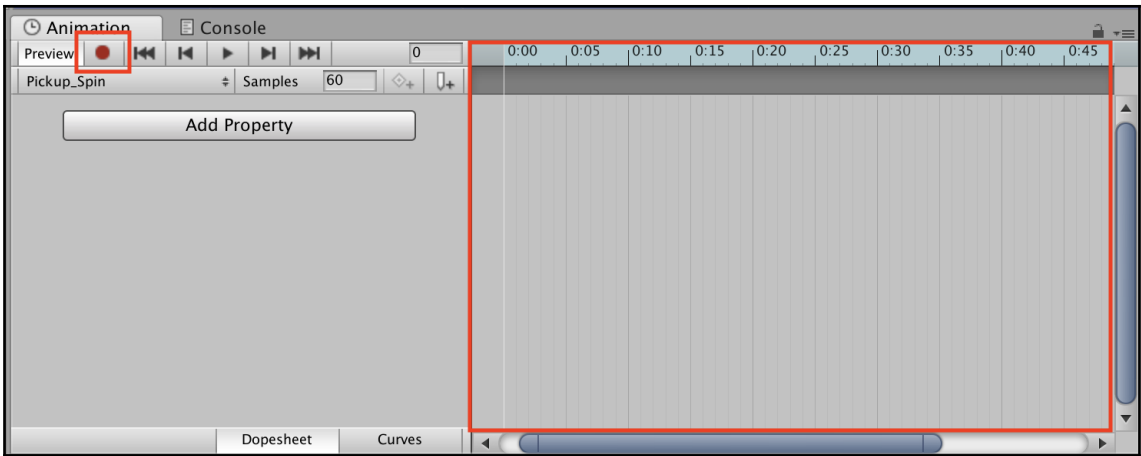


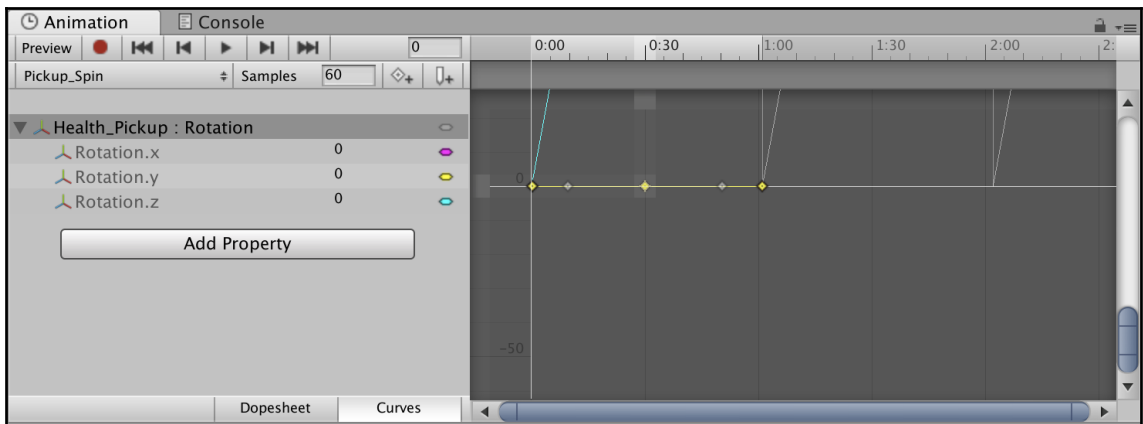
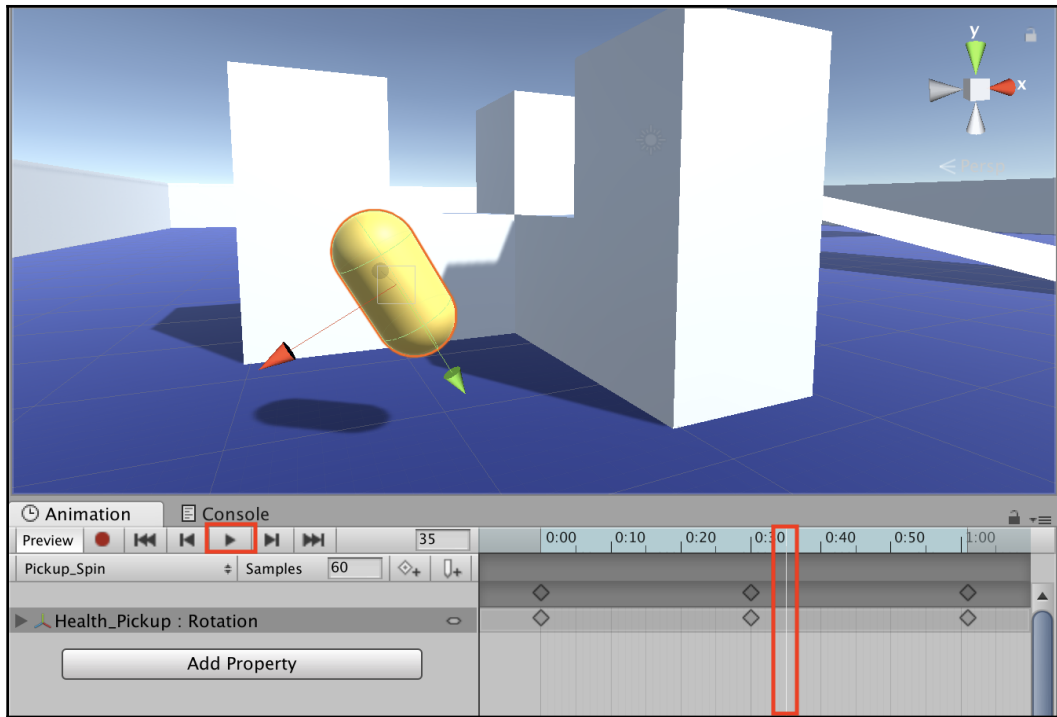


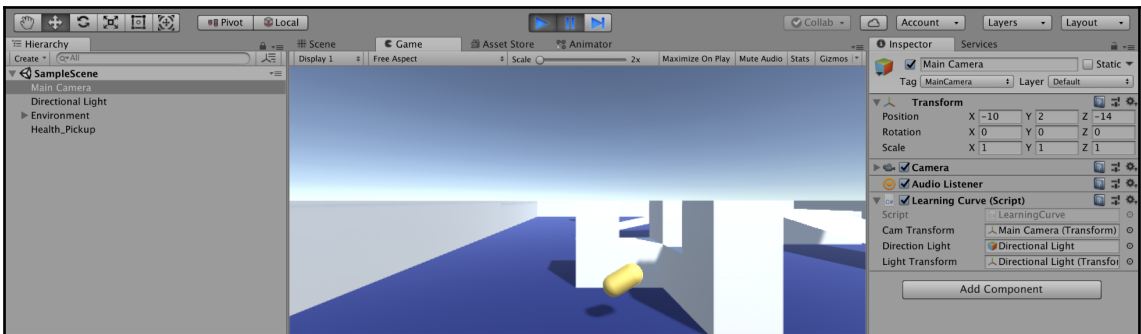
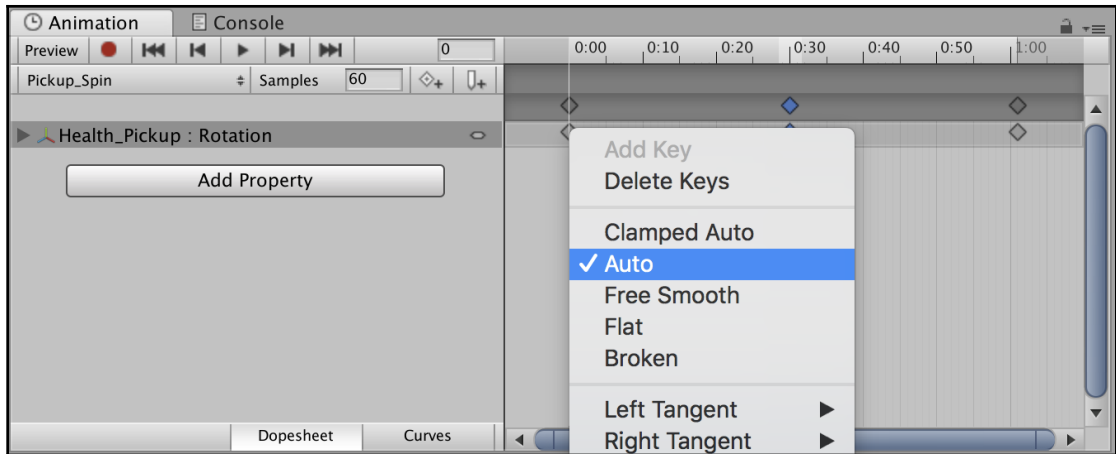


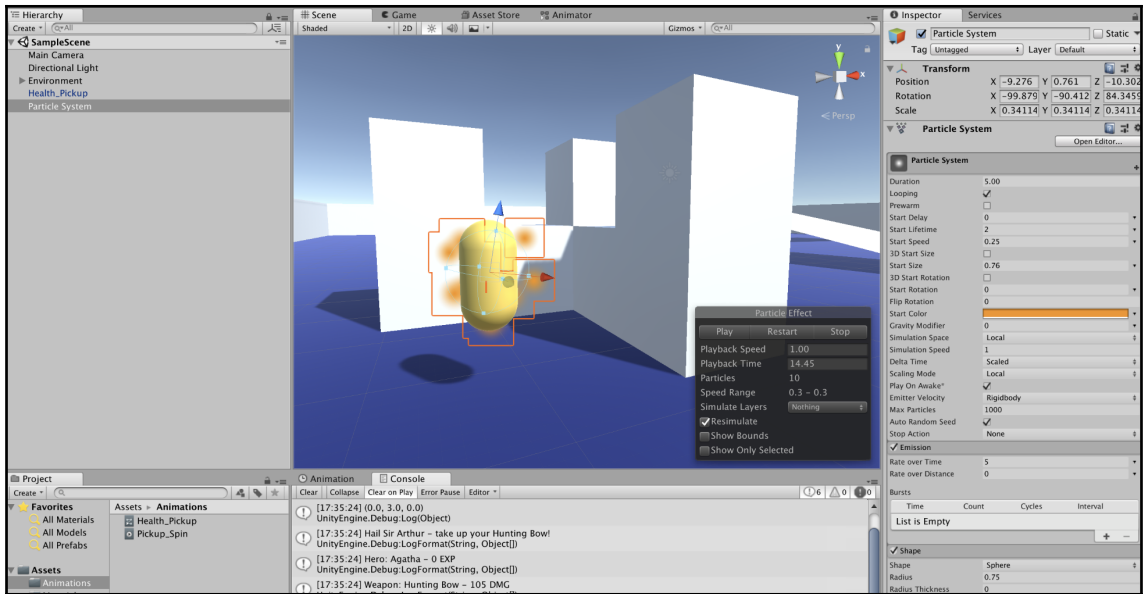




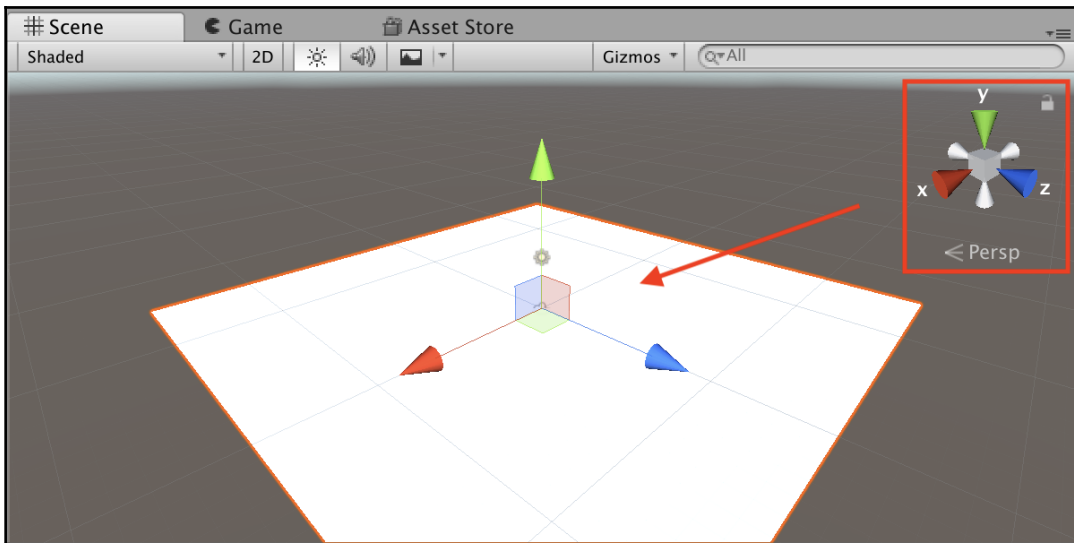
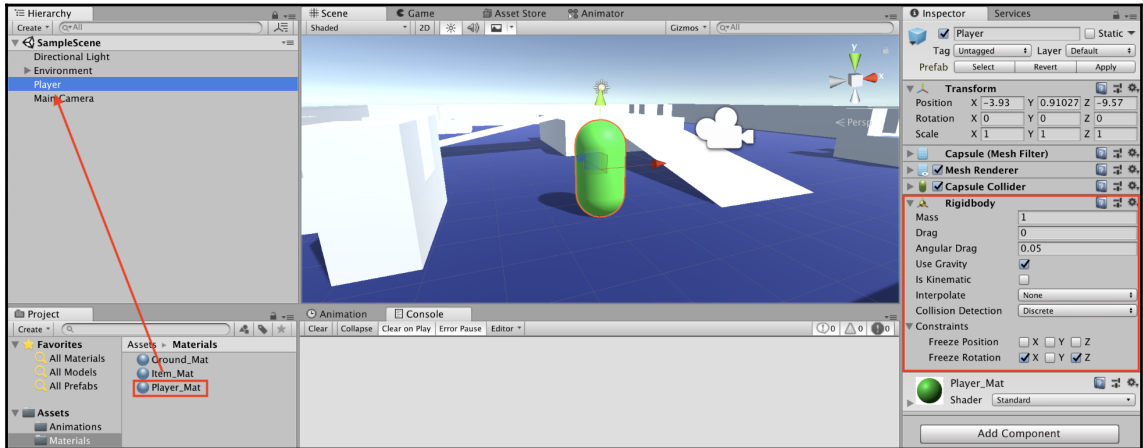


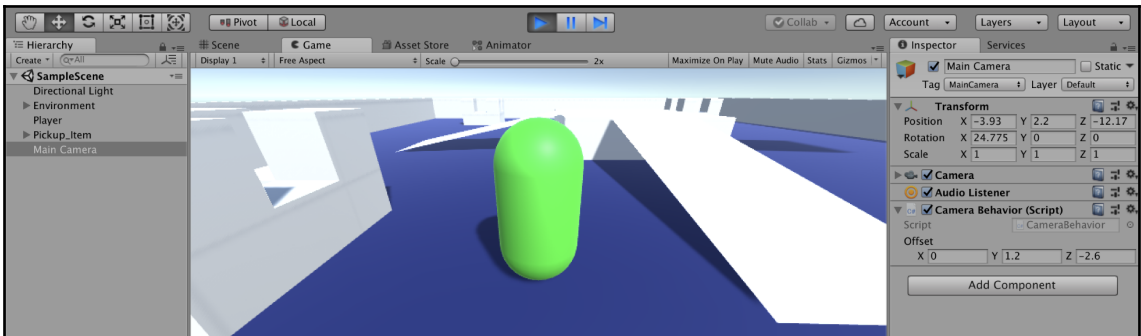
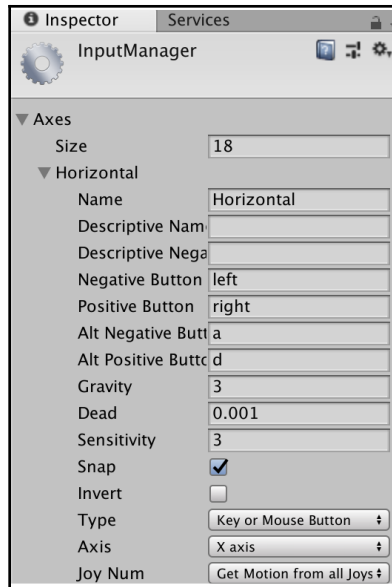







# Chapter 7: Movement, Camera Controls, and Collisions






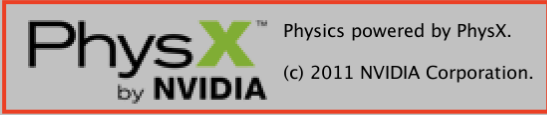


Version 2019.2.0a7

Gonzalez, Andres Rafael Diez, Andrew Alcott, Andrew Bowell, Andrew Carlston, Andrew Dennison, Andrew Donnell, Andrew Gross, Andrew Horobin, Andrew Innes, Andrew Jenkins, Andrew Kasbari, Andrew Konecny, Andrew Luke, Andrew Maneri, Andrew Milsom, Andrew Montgomery, Andrew Peynado, Andrew Selby, Andrew Slater, Andrew Spiering, Andrew Tang, Andrew Shvets, Andrius Keidonas, Andrius Kuznecovas, Andrius Mitkus, Andy Bauerle, Andy Brammall, Andy Jepkes, Andy Keener, Andy Stark, Andy Stein, Andy Touch, Andy Wood, Angel Colberg, Angela Marian, Angela Park, Angela Pellegrino, Angela Wu, Angelo Ferro, Angie Cantwell, Angus Mackay, Ani Golovko, Anildas Haridas, Aniq Kamal, Ankit Dubey, Anna Cho, Anna Lachowicz  
Anna Szeto, Anne Duggan, Anne Evans, Anne Xie, Annie Liu, Anouska Smith, Ans Beaulieu, Anssi



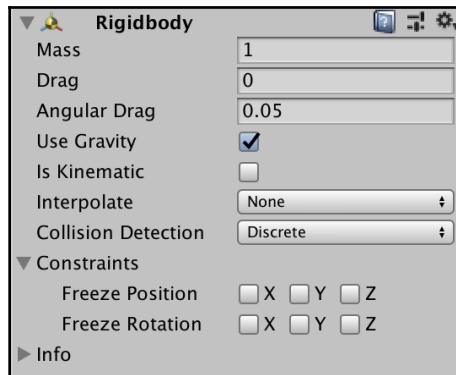
Scripting powered by The Mono Project.  
(c) 2011 Novell, Inc.



Physics powered by PhysX.  
(c) 2011 NVIDIA Corporation.

Microsoft Visual Studio Tools for Unity 1.4.0.3 enabled  
(c) 2019 Unity Technologies ApS. All rights reserved.

License type: Unity Pro, Team License, iOS Pro, Android Pro, Windows Store Pro  
Serial number: SB-2UZS-7DTV-SF5X-ADTZ-XXXX



**Rigidbody**

Mass: 1

Drag: 0

Angular Drag: 0.05

Use Gravity:

Is Kinematic:

Interpolate: None

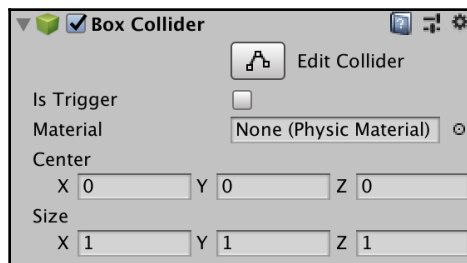
Collision Detection: Discrete

**Constraints**

Freeze Position:  X  Y  Z

Freeze Rotation:  X  Y  Z

Info



**Box Collider**

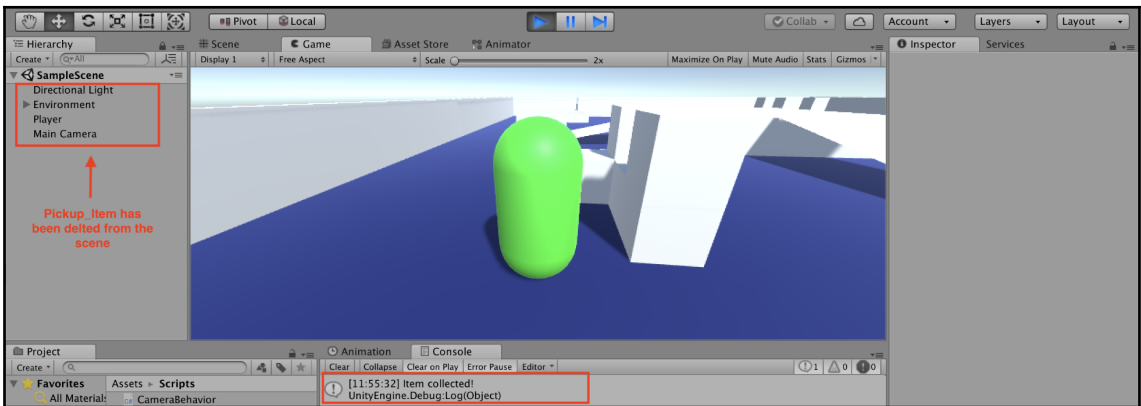
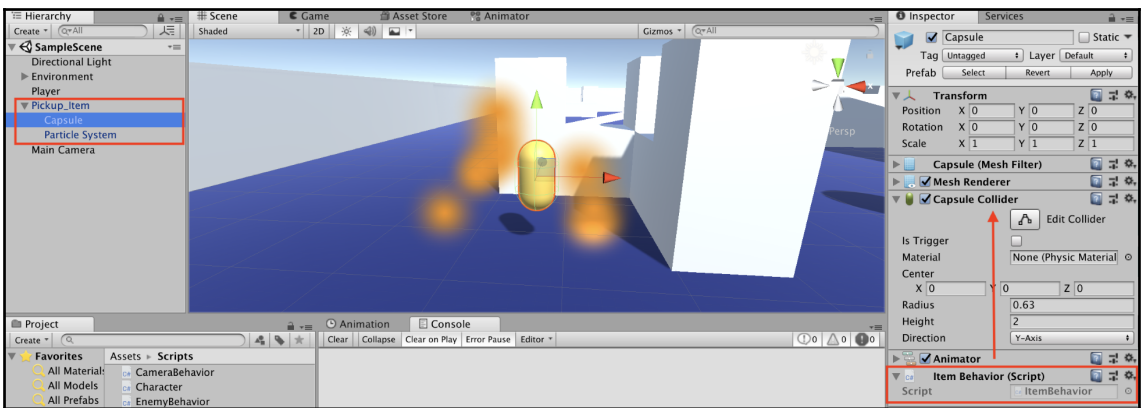
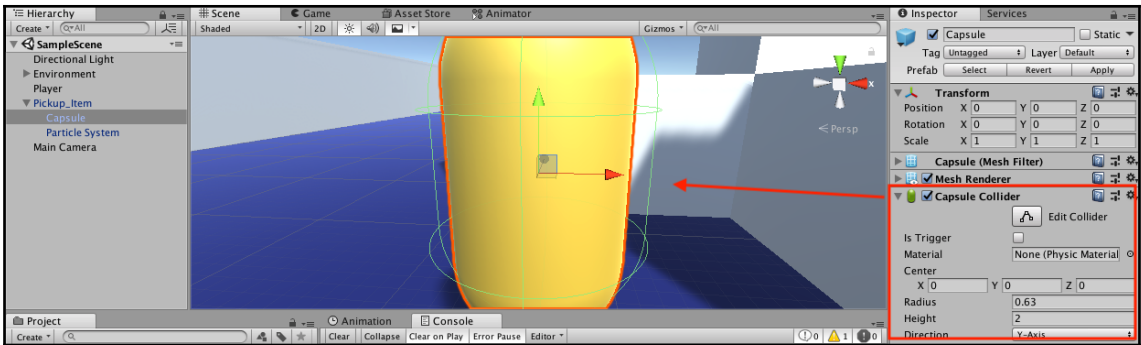
Edit Collider

Is Trigger:

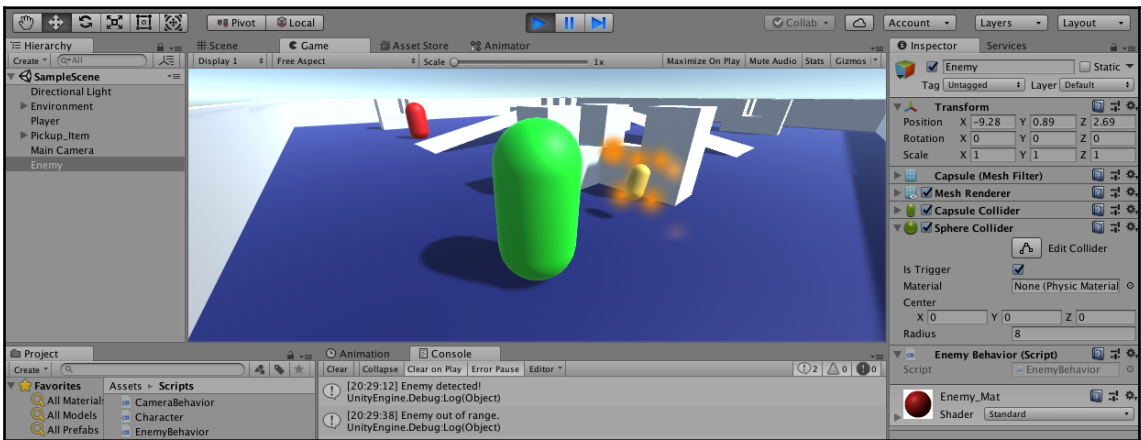
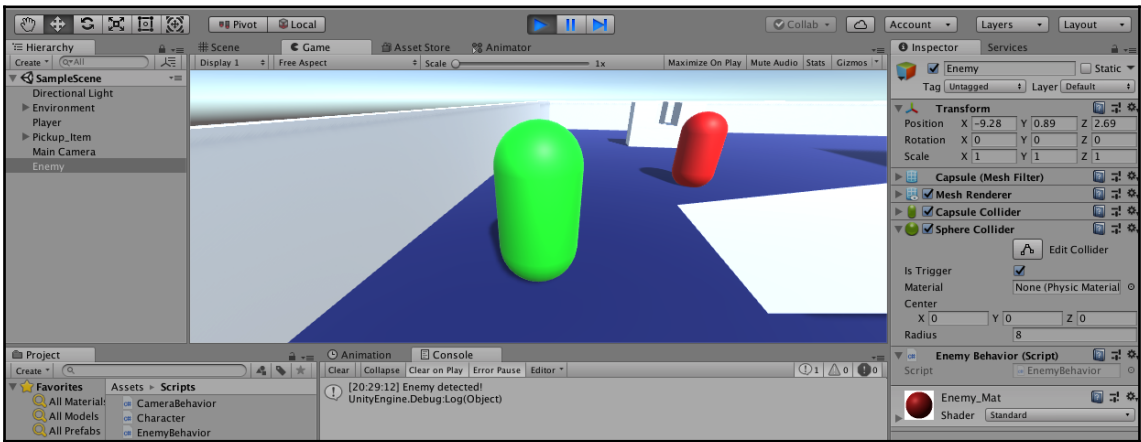
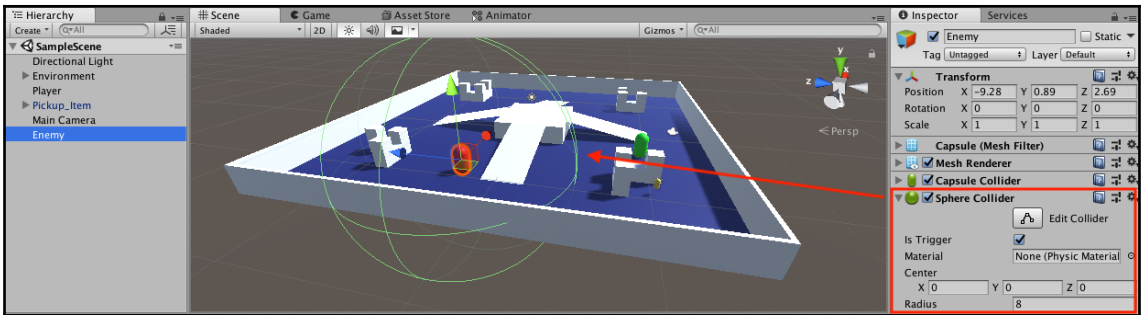
Material: None (Physic Material)

Center: X 0 Y 0 Z 0

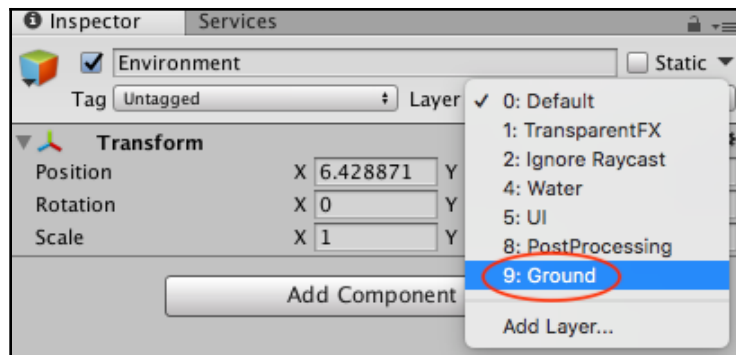
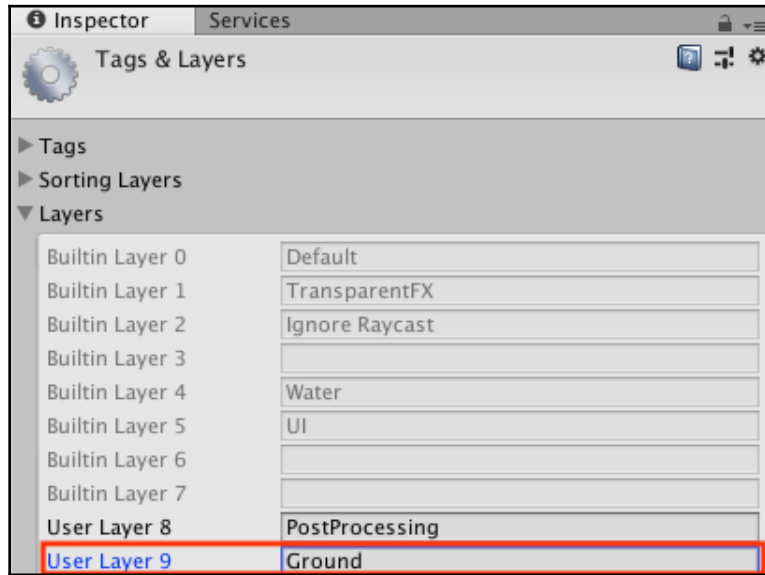
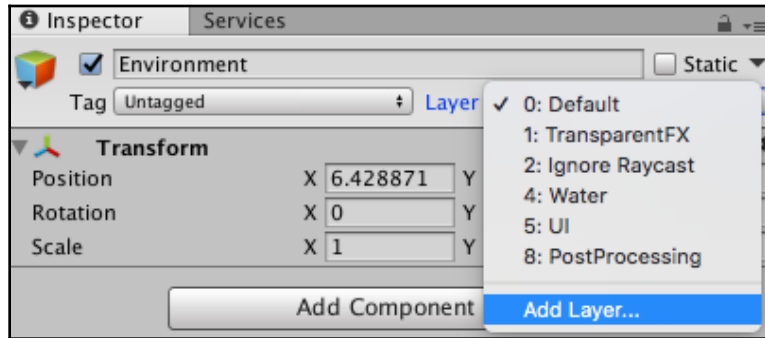
Size: X 1 Y 1 Z 1

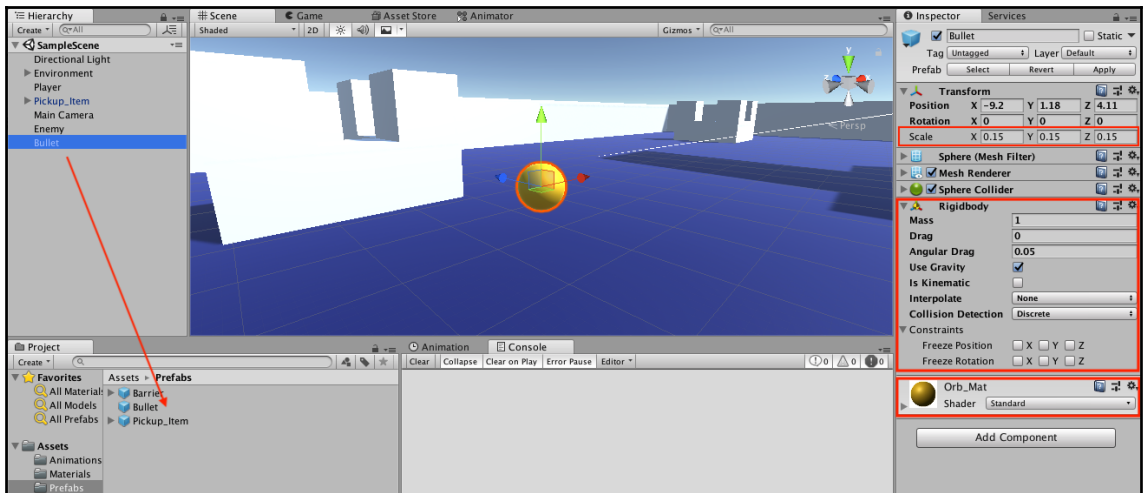
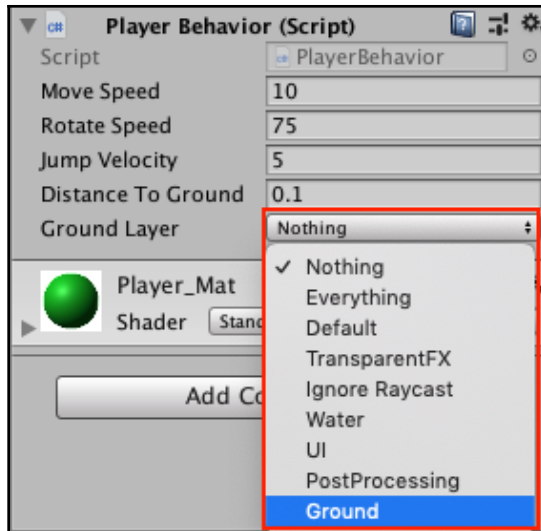


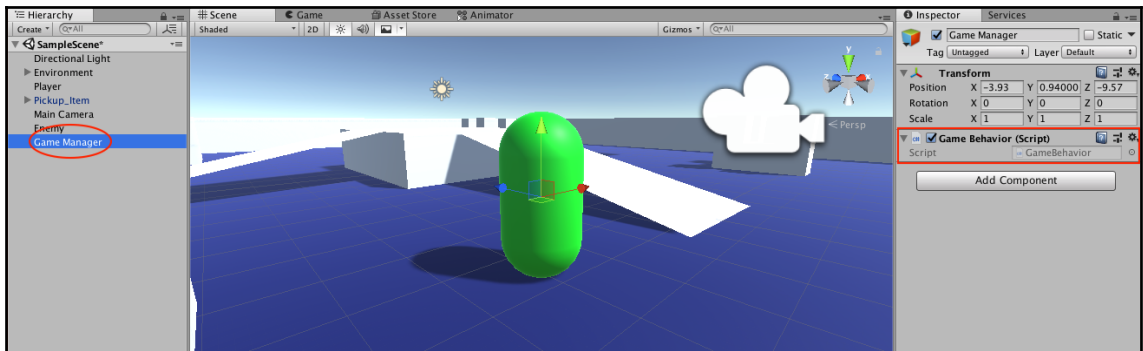
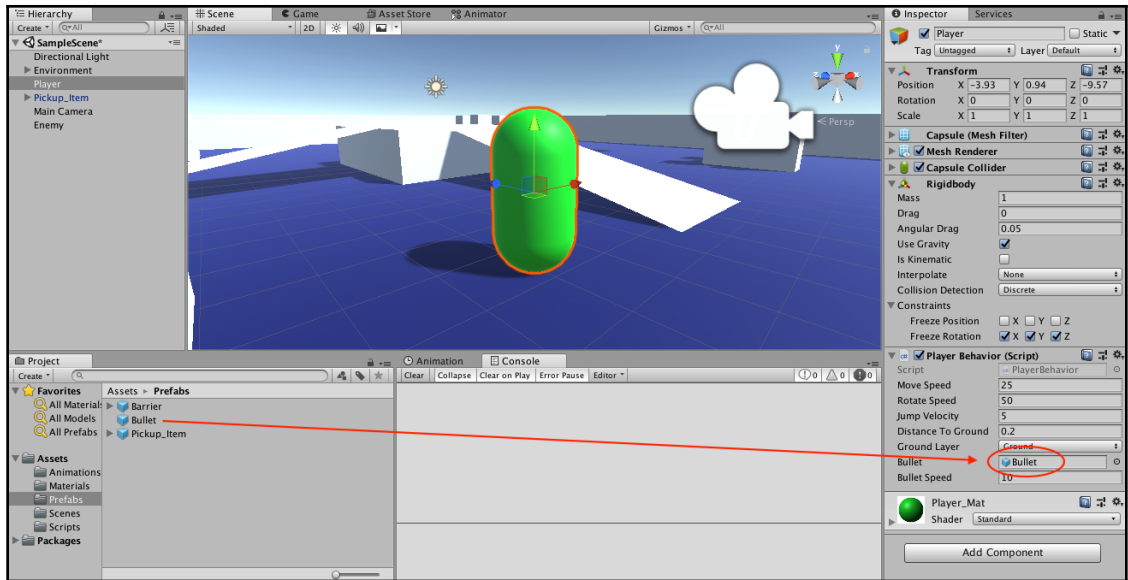


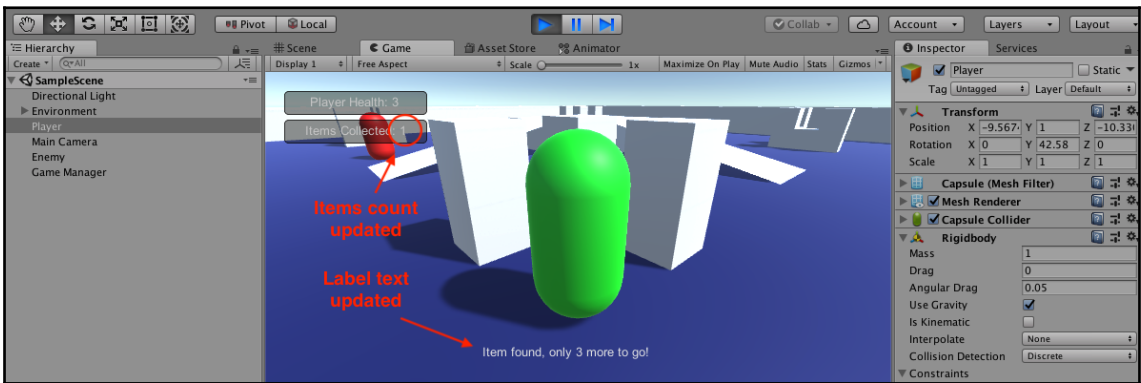
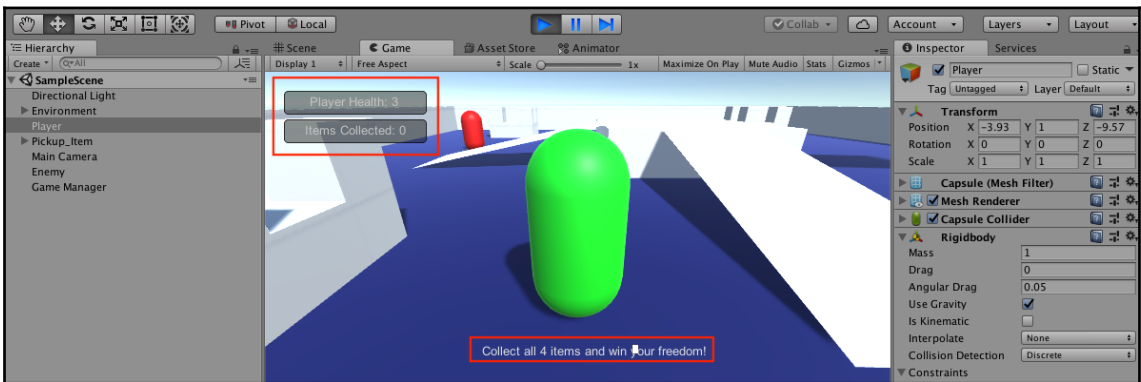
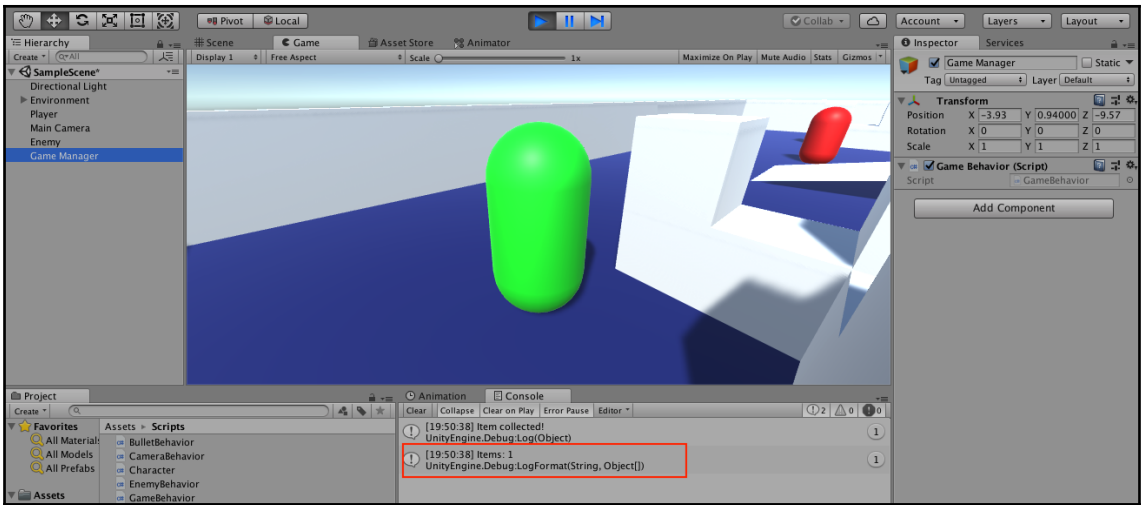


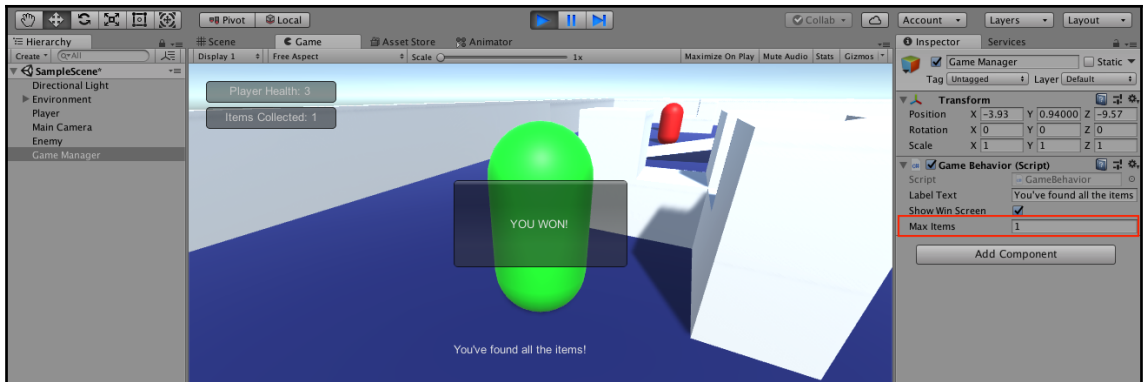
# Chapter 8: Scripting Game Mechanics



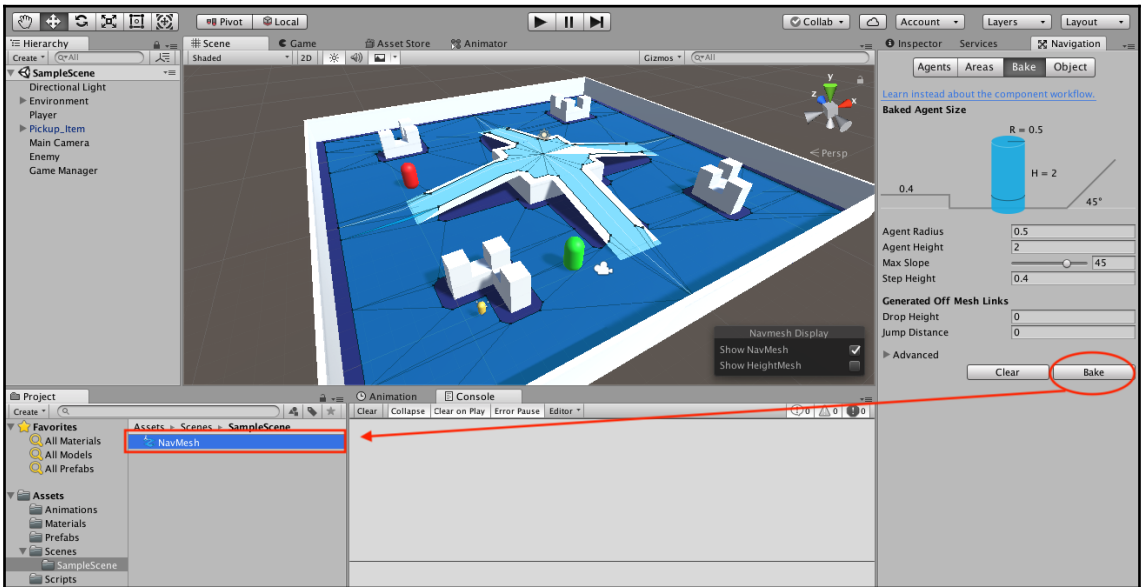
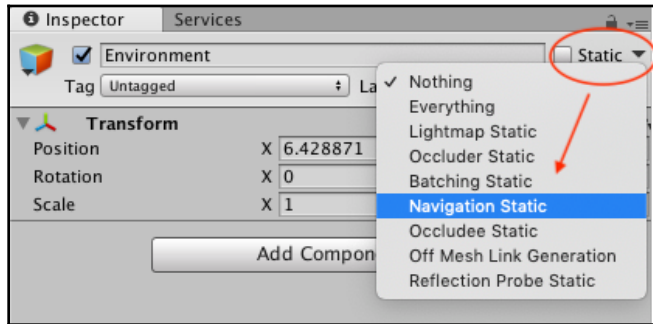


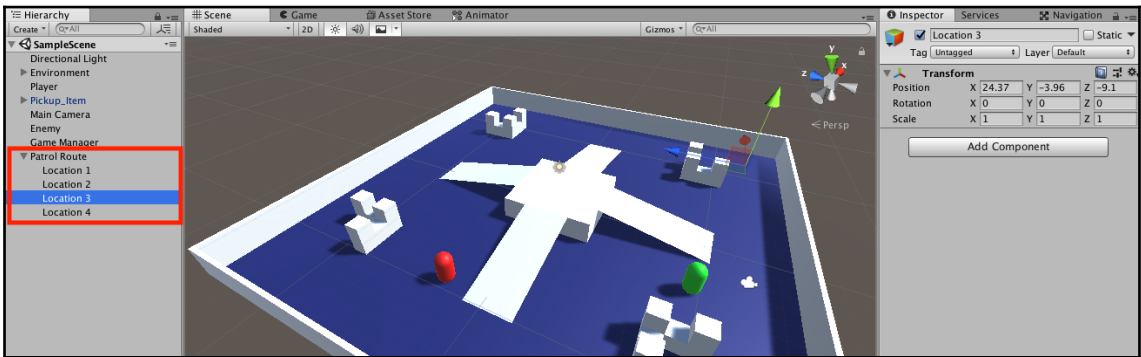
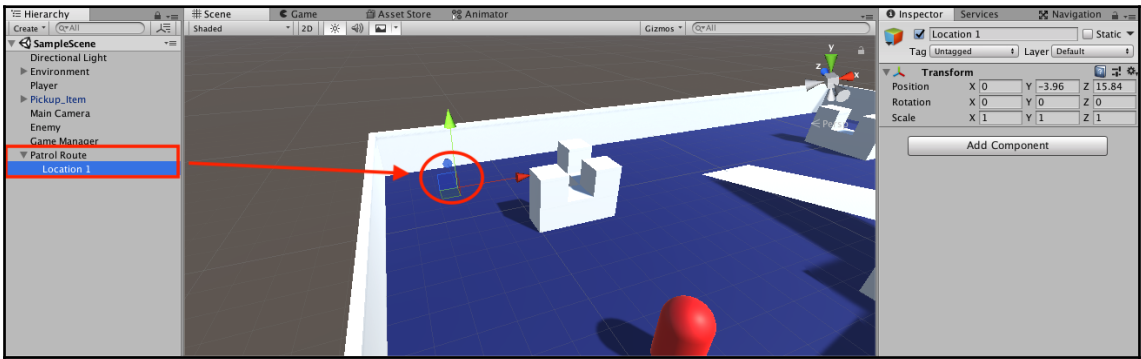
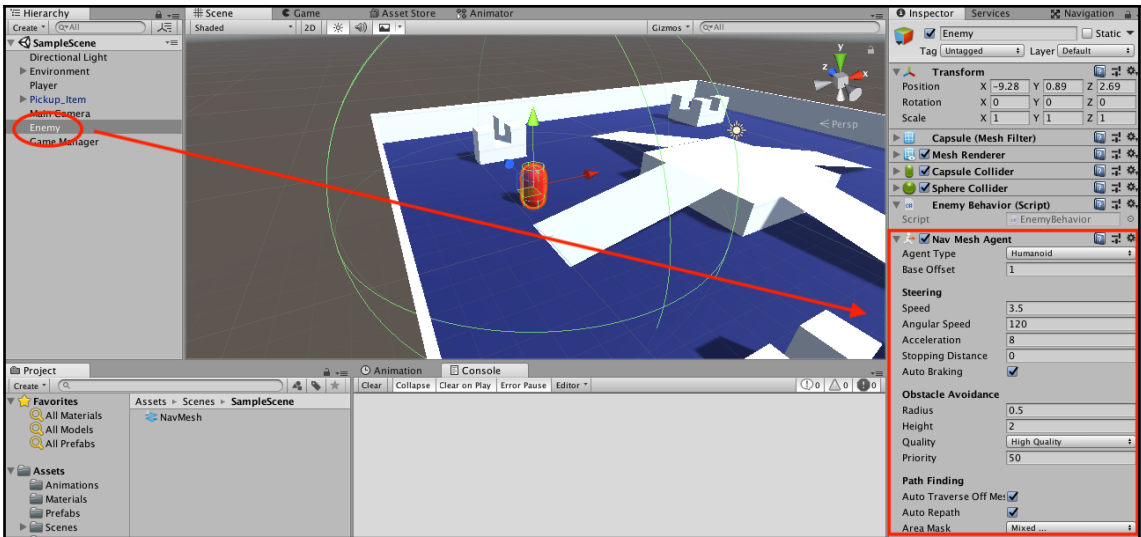




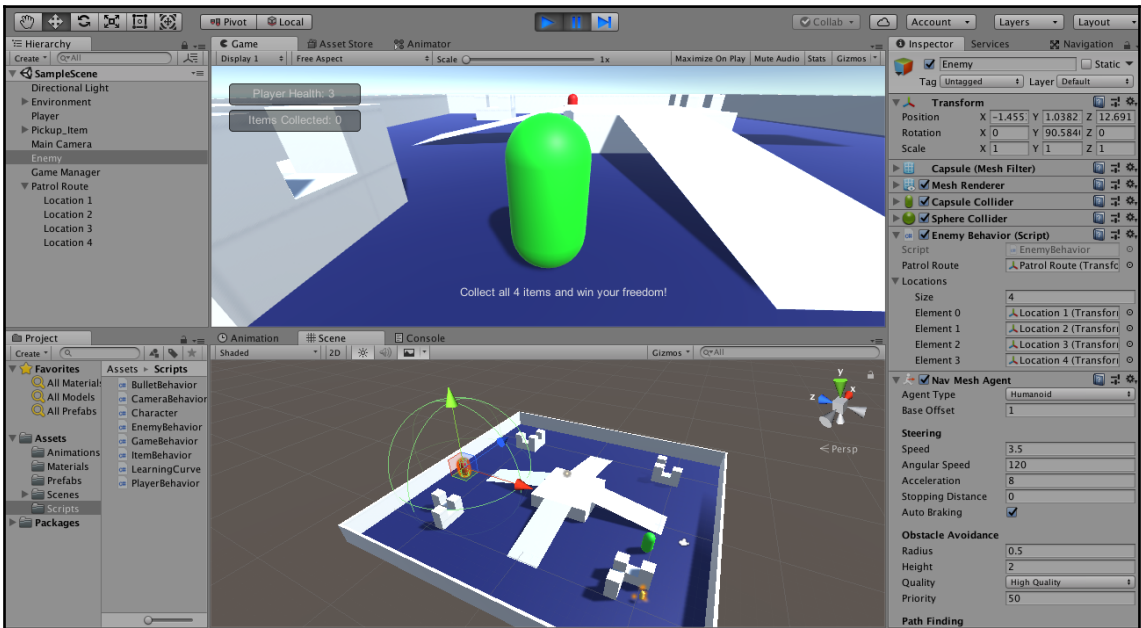
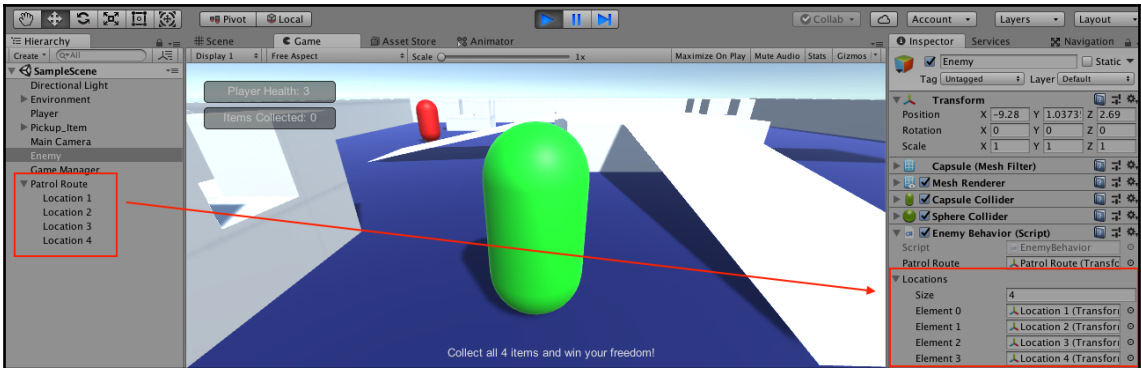
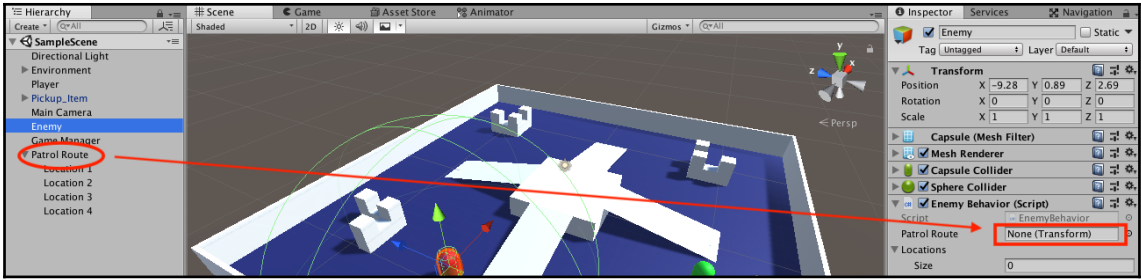


# Chapter 9: Basic AI and Enemy Behavior



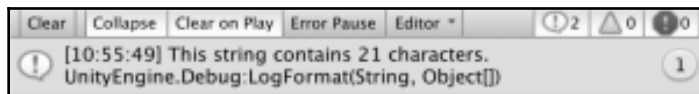
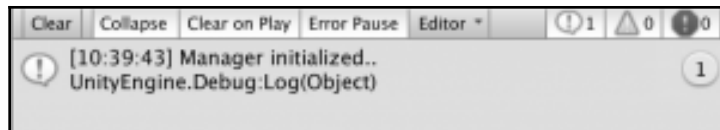
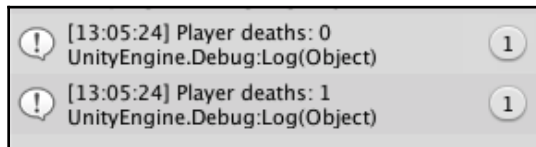






# Chapter 10: Revisiting Types, Methods, and Classes

```
if (showWinScreen)
{
    if (GUI.Button(new Rect(Screen.width/2 - 100, Screen.height/2 - 50, 200, 100), "YOU WON!"))
    {
        Utilities.RestartLevel();
    }
}
bool Utilities.RestartLevel(int sceneIndex) ▲ 2 of 2 ▼
```



# Chapter 11: Exploring Generics, Delegates, and Beyond

