Scripting Basics

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Scripting in Unity

- Scripting allows developers to extend functionality
- Unity uses C#
- C# syntax is almost identical to what you learned in C++
- Typically scripts apply to a single game object

Scripts as Behavior Components

- Scripts can be added to objects as components
- Scripts are used to create behavior
  - Change size or color
  - Apply intelligence to an object

Variables

{type} variableName = {value};

```
1  using UnityEngine;
2  using System.Collections;
3
4  public class BasicScripting : MonoBehaviour {
5
6      int number = 2; // Created a integer number
7
8      string hello = "Hello World!"; // Created a String
9
10     double bigNumber = 12314.324234; // Created a Double
11
12     // Use this for initialization
13     void Start () {
14         Debug.Log (hello);
15     }
16
17     // Update is called once per frame
18     void Update () {
19
20     }
21 }
```

Functions

{type} functionName({type} inputVariable){ Do Something }

```
1  using UnityEngine;
2  using System.Collections;
3
4  public class BasicScripting : MonoBehaviour {
5
6      int number = 2; // Created a integer number
7
8      // Multiplies returns the passed in number multiplied by 2
9      int multiplyByTwo(int number){
10         return number * 2;
11     }
12
13     // Use this for initialization
14     void Start () {
15         Debug.Log (multiplyByTwo(number));
16     }
17
18     // Update is called once per frame
19     void Update () {
20
21     }
22 }
```

Conditionals

```
1  using UnityEngine;
2  using System.Collections;
3
4  public class BasicScripting : MonoBehaviour {
5
6      int number = 2; // Created a integer number
7
8      // Multiplies returns the passed in number multiplied by 2
9      int multiplyByTwo(int number){
10         return number * 2;
11     }
12
13     // Use this for initialization
14     void Start () {
15         int answer = multiplyByTwo (number);
16         if (answer > 0) {
17             Debug.Log ("Our answer is greater than zero!");
18         } else {
19             Debug.Log ("Our answer is less than zero :(");
20         }
21     }
22
23     // Update is called once per frame
24     void Update () {
25
26     }
27 }
28
```

Loops

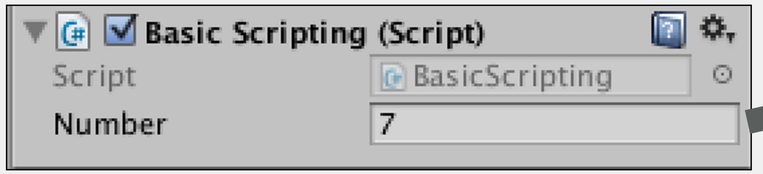
- Supports for, while, and do-while loops

```
1  using UnityEngine;
2  using System.Collections;
3
4  public class BasicScripting : MonoBehaviour {
5
6      int number = 5; // Created a integer number
7
8      // Use this for initialization
9      void Start () {
10         for (int i = 0; i < number; i++) {
11             Debug.Log ("Times through the loop" + i);
12         }
13     }
14
15     // Update is called once per frame
16     void Update () {
17
18     }
19 }
```

```
1  using UnityEngine;
2  using System.Collections;
3
4  public class BasicScripting : MonoBehaviour {
5
6      int number = 5; // Created a integer number
7
8      // Use this for initialization
9      void Start () {
10         int i = 0;
11         while (i < number) {
12             Debug.Log ("Times through the loop" + i);
13             i++;
14         }
15     }
16
17     // Update is called once per frame
18     void Update () {
19
20     }
21 }
```

Passing in Values Through Inspector

- Set a variable to public!




```
1  using UnityEngine;
2  using System.Collections;
3
4  public class BasicScripting : MonoBehaviour {
5
6      public int number; // Variable is now setable in Inspector
7
8      // Use this for initialization
9      void Start () {
10         for (int i = 0; i < number; i++) {
11             Debug.Log ("Times through the loop" + i);
12         }
13     }
14
15     // Update is called once per frame
16     void Update () {
17
18     }
19 }
```

Built in Unity Functions

- Awake()
- Start()
- Update()
- Other functions
  (http://docs.unity3d.com/ScriptReference/MonoBehaviour.html)

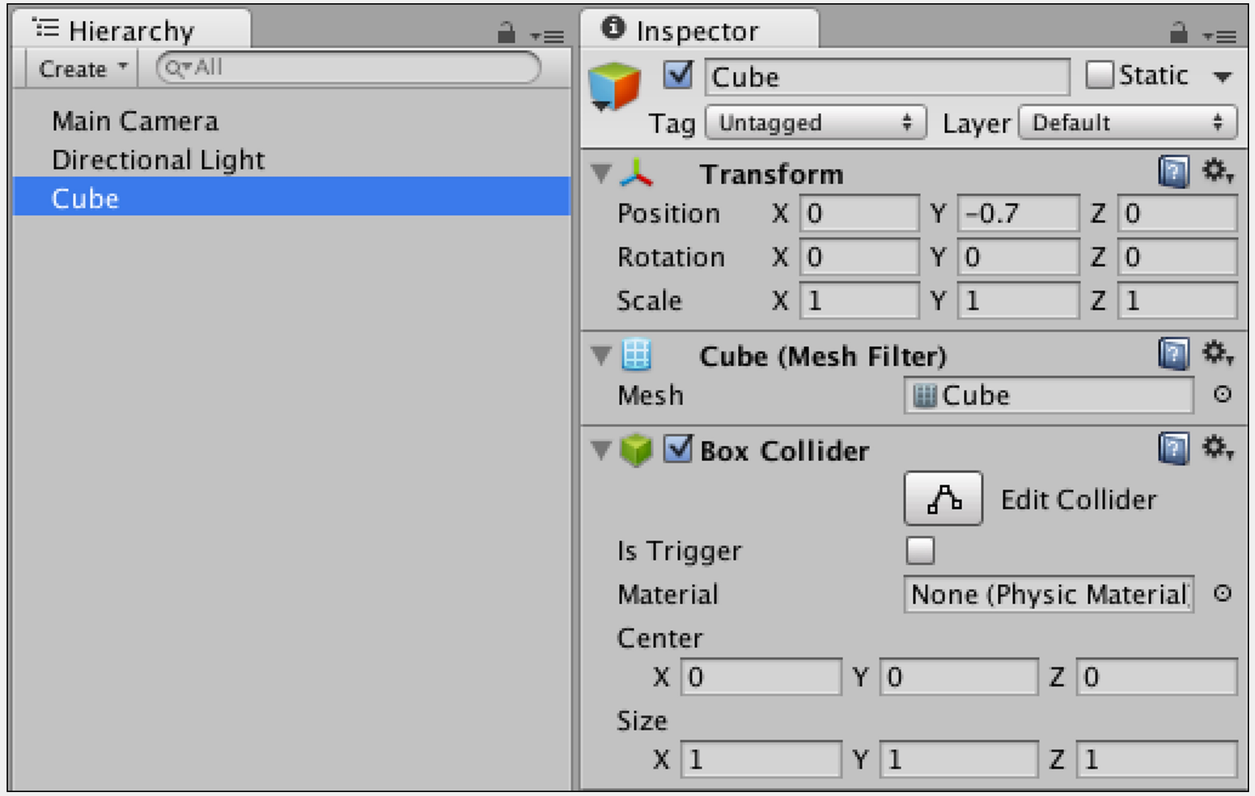
Awake Function

- A default function in Unity objects
- Should be treated like a class constructor
- Called once, only once, upon initialization

Start Function

- Called after Awake() upon the first frame if and only if the object is enabled
- Called once and only once
- Called before Update()

Getting a Component




```
1  using UnityEngine;
2  using System.Collections;
3
4  public class BasicScripting : MonoBehaviour {
5
6      public Color color; // Variable is now setable in Inspector
7
8      // Use this for initialization
9      void Start () {
10         Debug.Log (GetComponent<Transform> ().position);
11     }
12
13     // Update is called once per frame
14     void Update () {
15
16     }
17 }
```

Update Function

- Update() is called every frame when the object is enabled
- This is the most used function in Unity
- Time.deltaTime gives you the amount of time since Update() was called last. Use this for animating!

Translate and Rotate Objects

- The Transform Component of an object holds its Position, Rotation, and Scale

- Use GetComponent<>() to change these values

```
1  using UnityEngine;
2  using System.Collections;
3
4  public class BasicScripting : MonoBehaviour {
5
6      public Color color; // Variable is now setable in Inspector
7
8      // Use this for initialization
9      void Start () {
10         Debug.Log (GetComponent<Transform> ().position);
11     }
12
13     // Update is called once per frame
14     void Update () {
15
16     }
17 }
```

In Class Activity

- Modify existing scripts to see what happens
  - Dont be afraid to break things
- Create new scripts and functionality
- Be creative!