**GAMEDEVREJECTS:**

**C# Programming**

**Default Functions: void Start, void Update & void Awake**

**Orlando Unity3d Development Meetup**

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# **The Default Execution Order functions : Void Start() & Void Update()**

Let's start talking about The Default execution order functions in terms of 1)What they are, and 2)What they do ? **A function is a block of reusable code (statements) which can be called to perform repeated tasks in the program.**

At this point. One thing to understand about C#. As well as being an Object Orientated Programming Language (i.e. where the program is structured into classes and objects). **C# is also an “imperative language”. Meaning inside the "function block" the code or statements are still executed in the order they are written.**

In unity functions are also referred to as methods. The difference between a method and a function is that **a method is a function that exists inside of a class**. **A function is a function that exists outside of a class**.

Now, when you create a new script in unity. By default, you will be given two standard functions (or methods) **void Start() & void Update(). Void Start() & void Update()** are known as the default execution order event functions.

The **void Start()** function is called only once during the lifetime of your script.

Whereas **void Update()** **is called at each frame**.

Now a **“Frame”** is a screen update => **the processing your CPU does to draw an image to your screen**. The Start function always, always gets called before the update function...because logically the starting event must occur at least once before the frame can be updated.

The only other function that gets called before the Start function is the Awake function, which will explain shortly.

The update is the most used function to implement any kind of game behaviour.

# **Create a program to call void Start() & void Update() functions**

[ Navigate to SCENE window ] -- (IN).HIERARCHY -- (Right Click).Create Empty => / GameObject /

(IN).PROJECT -- Assets -- \_SCRIPTS -- (Right Click).Create.C# Script => / NewBehaviourScript -- (Rename).FunctionsEx1/

(IN).\_SCRIPTS -- (Select).FunctionsEx1.(Drag and Drop) =>/ (Onto).HIERARCHY.GameObject/

(IN).\_SCRIPTS =>/(Select).FunctionsEx1.(Double Left Click) -- VSCODE/

To show this…in our script, we will create a script attach it to an empty GameObject to call the void Start() & void Update() functions. Then using Debug.Log output "some message content" to the unity console window, as follows…

using System.Collections;

using System.Collections.Generic;

using UnityEngine;

public class FunctionsEx1 : MonoBehaviour

{

    // Start is called before the first frame update

    void Start()

    {

        Debug.Log("I have started !");

    }

    // Update is called once per frame

    void Update()

    {

        Debug.Log("I am updating !");

    }

}

# **Void Update()**

To demonstrate how the void Update() function is called every frame we are going to apply a game behaviour by translating (moving) a Game Object every frame as follows:

using System.Collections;

using System.Collections.Generic;

using UnityEngine;

public class FunctionsEx1 : MonoBehaviour

{

    public float speed = 0.1f;

    // Start is called before the first frame update

    void Start()

    {

        //

    }

    // Update is called once per frame

    void Update()

    {

        transform.Translate(speed,0,0);

        Debug.Log($"Object is moving every frame with speed = {speed}");

    }

}

# **The Awake Function (Void Awake)**

Why do we use the Awake function ? **The Awake is used to initialize any variables or game state before the game gets started**. The Start function can only be called in the same frame as the Awake function if the script has been enabled in the Inspector. Like the Start function. The Awake function gets called “once” during the lifetime of the script.

**The Awake function always get called “first” before the Start function.** **The Start function always occurs "after" the Awake function.** An important point to note is that **the Awake function gets called regardless the script is activated (enabled ) or Not in the inspector**. By activated we mean the script has a check mark against it in the inspector.

# **Create a Program to demo. the execution order of the default func.: void Awake(), Start() & Update()**

Therefore we can demonstrate the default execution order of the void Awake(), Start(), Update() functions by creating the following program…

[ Navigate to SCENE window ] -- (IN).HIERARCHY -- (Right Click).Create Empty => / GameObject /

(IN).PROJECT -- Assets -- \_SCRIPTS -- (Right Click).Create.C# Script => / NewBehaviourScript -- (Rename).FunctionsEx1/

(IN).\_SCRIPTS -- (Select).FunctionsEx1.(Drag and Drop) =>/ (Onto).HIERARCHY.GameObject/

(IN).\_SCRIPTS =>/(Select).FunctionsEx1.(Double Left Click) -- VSCODE/

using System.Collections;

using System.Collections.Generic;

using UnityEngine;

public class FunctionsEx3 : MonoBehaviour

{

    void Awake()

    {

        Debug.Log("1st event - I am awake !");

    }

    // Use this for initialization

    void Start ()

    {

        Debug.Log("2nd Event - I have just started once !");

    }

   // Update is called once per frame

    void Update ()

    {

        Debug.Log("3rd Event - I am updating every frame !");

    }

}

# **Glossary**

# **Resources**

/END