2D Coin Collectable Tutorial

Coding

* *Note that for this tutorial, I am continuing from the 2D Top Down Movement Tutorial, so for this tutorial, you should have a player that can move from a top down angle. That’s it. Hopefully this clears up any potential confusion as to why I’m skipping creating a player. If you haven’t created a top down player before, complete the 2D Top Down Movement tutorial first before trying this one.*
* ***Creating a Coin:***
* Let’s begin by creating the coins you will be collecting! In your Hierarchy menu (the menu on the left hand side of the screen and above the Project menu), right click and select 3D Object, Sphere. Select your new sphere and head to the Inspector menu (the menu on the right hand side of the screen). Scroll down until you find the Sphere Collider. Delete this, as this collider is 3D, not 2D. To delete this, find the cog wheel on the right hand side of the Sphere Collider text and select Remove Component. Rename your sphere “Coin” by either renaming it in the Inspector menu (it should be the very first option below the Inspector text), or in the Hierarchy by clicking on “sphere” a couple of times. Place your sphere wherever you want in the scene by clicking on the move tool (these tools should be on the top left hand side of the screen, and the move tool is the second option from the left. Alternatively, you can press the W key as a shortcut), and dragging it.
* We should now create a material that makes our coin look like a…well, a coin of course! Head to your Project menu (the menu below the scene view, and below the Hierarchy) and right click. Select Create, Material, and move this into your Materials folder (if you have one, although you really should if you don’t). Select your new Material and rename it “Coin.” In the Inspector menu while you have your coin material selected, go to the Albedo and select the white colour box (this is found under main maps, and it is the first option down). Select the colour you want your coin to be. *I would personally go with yellow/gold.*
* Next, while having your coin selected from the Hierarchy, head to the Inspector menu and scroll to the very bottom where it says Add Component. Select this, and type “Circle Collider 2D.” The collision markers (the green outline) should automatically fit no matter how big your coin is (although it should preferably be smaller than your player). Tick the “Is Trigger” box (this should be found below the material box).
* Next, add a tag to the coin. To do this, while still selecting your coin, click the Untagged box that leads to a drop down menu (this should be found below the name for your coin, and above the transform options), select Add Tag, and under the Tags list, click the plus on the right hand side of the screen to create a new tag. Name this tag “Coin.” Select your coin from the Hierarchy again, and select Untagged once again, but this time select the Coin tag you have just created.
* Before we continue, select your Player from the Hierarchy and head to the Inspector menu. Select Add Component, Circle Collider 2D, and your player should now also have a collider attached to it.
* ***Making the Coin Collectable:***
* Coding Time! Head into your PlayerMovement script and create a new class in between the last two }’s in your code. To do this, type private void OnTriggerEnter2D(Collider2D other) and outside the brackets type { and the enter key. Your code (from FixedUpdate down) should look something like this:
* void FixedUpdate()  
   {  
   rb.MovePosition(rb.position + moveVelocity \* Time.fixedDeltaTime);  
    
   }  
    
   private void OnTriggerEnter2D(Collider2D other)  
   {  
    
   }
* In between the {}’s that you have just created for your new private class, type if (other.gameObject.CompareTag(“Coin”)) and then another { outside the brackets and press enter again.
* Inside these new {}’s you have just made, type Destroy(other.gameObject); and your overall code should now look something like this:
* public class PlayerController : MonoBehaviour  
  {  
   public float speed;  
    
   private Rigidbody2D rb;  
   private Vector2 moveVelocity;  
    
   void Start()  
   {  
   rb = GetComponent<Rigidbody2D>();  
   }  
    
   void Update()  
   {  
   Vector2 moveInput = new Vector2(Input.GetAxisRaw("Horizontal"), Input.GetAxisRaw("Vertical"));  
   moveVelocity = moveInput.normalized \* speed;  
   }  
    
   void FixedUpdate()  
   {  
   rb.MovePosition(rb.position + moveVelocity \* Time.fixedDeltaTime);  
    
   }  
    
   private void OnTriggerEnter2D(Collider2D other)  
   {  
   if (other.gameObject.CompareTag("Coin"))  
   {  
   Destroy(other.gameObject);  
   }  
   }  
  }
* All your new code is saying is that when the player collides with an object that has the tag “Coin,” that object will be destroyed. Simple right?
* Save your code and head back into Unity. If you now run the game by selecting the play button, when your player collides with the coin it should be destroyed. If it isn’t but you’ve been following the code correctly, double check that you have a Circle Collider 2D on both your coin and your player.
* If your coin is not appearing when you run the game, select your coin from the Hierarchy and set the Z axis in the Transform menu in the Inspector to 0. This is because the Z axis is only used for 3D.
* ***Displaying your Score:***
* While we can now destroy a coin, it doesn’t mean much if there’s no display of your score. Head back to the Hierarchy menu and right click. Select UI, Text-TextMeshPro (if you don’t have this installed, you can download it from the Unity Asset Store). Press the F key in the scene while your Text is selected and you will be able to see your text. This is essential because it won’t be in the scene view. Instead, it will be on the canvas, which should automatically be created when you create a new text object for the first time.
* In order to change this, we need to select the Canvas from the Hierarchy, and head to the Inspector menu. Scroll down until you see the Canvas options. Find Render Mode (it should be the first option down), and change it to “Screen Space - Camera.” Then, underneath this, you will see an option called Render Camera. Drag your Main Camera from the Hierarchy to the Render Camera option (make sure you still have your Canvas selected, otherwise this won’t work). Your new text should now appear where your game is located (Press F again if you want to get back quickly).
* Select your Text in the Hierarchy, and scroll down in the Inspector menu and you will see a large box under Text Mesh Pro UGUI (Script). Rename this text “Score: 0,” and drag your text to the top left hand side of the screen by selecting the move tool (press the W key), and dragging it using the mouse. Now we need to create a script that states when a coin is destroyed, it increases the score.
* ***Creating your Score Counter:***
* Create a new Game Object by right clicking in the Hierarchy menu and selecting Create Empty. Click on this new empty game object and call it “Score Manager.” Create a new Script by right clicking in the Project menu (the menu below the Hierarchy menu) select Create, C# Script and call it “ScoreManager.” Drag it into your Scripts folder, then drag the script from your Scripts folder to your Score Manager object while it is still selected. Double click the script to open it in Visual Studio.
* Once you are in Visual Studio, create a new line underneath using UnityEngine; and type using TMPro; so you first code should look something like this:
* using System.Collections;  
  using System.Collections.Generic;  
  using UnityEngine;  
  using TMPro;  
    
  public class ScoreManager : MonoBehaviour  
  {  
   // Start is called before the first frame update  
   void Start()  
   {  
     
   }  
    
   // Update is called once per frame  
   void Update()  
   {  
     
   }  
  }
* Underneath the first { and above // Start is called before the first frame update, type public static ScoreManager instance;
* Below this, type public TextMeshProUGUI text;
* Below this, type int score;
* Your code should now look like this:
* using System.Collections;  
  using System.Collections.Generic;  
  using UnityEngine;  
  using TMPro;  
    
  public class ScoreManager : MonoBehaviour  
  {  
   public static ScoreManager instance;  
   public TextMeshProUGUI text;  
   int score;  
    
   // Start is called before the first frame update  
   void Start()  
   {  
     
   }  
    
   // Update is called once per frame  
   void Update()  
   {  
     
   }  
  }
* Inside the Start method (aka in between the {}’s below void Start), type if (instance == null), then type { and the enter key.
* Then inside your new {}’s, type instance = this; After this, delete the Update method, i.e from // Update is called once per frame to the second } from the bottom. Replace this with public void ChangeScore (int coinValue), followed by { and press enter to create a new class. Your code should look like this:
* using System.Collections;  
  using System.Collections.Generic;  
  using UnityEngine;  
  using TMPro;  
    
  public class ScoreManager : MonoBehaviour  
  {  
   public static ScoreManager instance;  
   public TextMeshProUGUI text;  
   int score;  
    
   // Start is called before the first frame update  
   void Start()  
   {  
   if(instance == null)  
   {  
   instance = this;  
   }  
   }  
     
   public void ChangeScore (int coinValue)  
   {  
    
   }  
    
  }
* Inside your new class (aka between the {}’s you have just created), type score += coinValue; and below this type text.text = “Score: ” + score.ToString(); Your ChangeScore class should now look like this:
* public void ChangeScore (int coinValue)  
   {  
   score += coinValue;  
   text.text = “Score: " + score.ToString();  
   }
* Save your code and head back into Unity. Drag your Text object from the Hierarchy to the Score Manager text box under the Inspector menu (make sure you have Score Manager selected in the Hierarchy, and the text box should be underneath the ScoreManager script). Create another script by right clicking in the Project menu, select Create, C# Script, and call it Coin. Drag this new Coin script into the Coin game object in the Inspector menu (make sure you have the Coin game object selected). Once the new script is attached, double click it to open it up in Visual Studio.
* Once your Coin script is open in Visual Studio, delete lines 7 to 17. In between the {]’s left, type public int coinValue = 1; and beneath this, type private void OnTriggerEnter2D(Collider2D other) followed by { and press enter *(note that if you type void and start to type OnTriggerEnter2D, if you select this from a drop down menu, it will automatically fill in for you. But you will need to change collision to other).* Your code should now look like this:
* using System.Collections;  
  using System.Collections.Generic;  
  using UnityEngine;  
    
  public class Coin : MonoBehaviour  
  {  
   public int coinValue = 1;  
    
   private void OnTriggerEnter2D(Collider2D other)  
   {  
    
   }  
  }
* In between the new {}’s you have just made inside your new class, type if(other.gameObject.CompareTag(“Player)) and type { and press enter.
* In between these {}’s, type ScoreManager.instance.ChangeScore(coinValue); Your code should now look like this:
* using System.Collections;  
  using System.Collections.Generic;  
  using UnityEngine;  
    
  public class Coin : MonoBehaviour  
  {  
   public int coinValue = 1;  
    
   private void OnTriggerEnter2D(Collider2D other)  
   {  
   if (other.gameObject.CompareTag("Player"))  
   {  
   ScoreManager.instance.ChangeScore(coinValue);  
   }  
   }  
  }
* Save your script and head back into Unity. Before playing your game, make sure that your player character has the tag “Player” attached to it. To change this, select the Tag drop down menu in the Inspector (this is the first option in the Inspector, and above the Transform menu) while selecting the Player, and simply select the tag, Player. Play the game and you should now be able to see your score counter increasing when you collect a coin. Congratulations! :D
* ***Full Code:***
* Player Controller:
* using System.Collections;  
  using System.Collections.Generic;  
  using UnityEngine;  
    
  public class PlayerController : MonoBehaviour  
  {  
   public float speed;  
    
   private Rigidbody2D rb;  
   private Vector2 moveVelocity;  
    
   void Start()  
   {  
   rb = GetComponent<Rigidbody2D>();  
   }  
    
   void Update()  
   {  
   Vector2 moveInput = new Vector2(Input.GetAxisRaw("Horizontal"), Input.GetAxisRaw("Vertical"));  
   moveVelocity = moveInput.normalized \* speed;  
   }  
    
   void FixedUpdate()  
   {  
   rb.MovePosition(rb.position + moveVelocity \* Time.fixedDeltaTime);  
    
   }  
    
   private void OnTriggerEnter2D(Collider2D other)  
   {  
   if (other.gameObject.CompareTag("Coin"))  
   {  
   Destroy(other.gameObject);  
   }  
   }  
  }
* Score Manager:
* using System.Collections;  
  using System.Collections.Generic;  
  using UnityEngine;  
  using TMPro;  
    
  public class ScoreManager : MonoBehaviour  
  {  
   public static ScoreManager instance;  
   public TextMeshProUGUI text;  
   int score;  
    
   // Start is called before the first frame update  
   void Start()  
   {  
   if(instance == null)  
   {  
   instance = this;  
   }  
   }  
     
   public void ChangeScore (int coinValue)  
   {  
   score += coinValue;  
   text.text = "Score: " + score.ToString();  
   }  
    
  }
* Coin:
* using System.Collections;  
  using System.Collections.Generic;  
  using UnityEngine;  
    
  public class Coin : MonoBehaviour  
  {  
   public int coinValue = 1;  
    
   private void OnTriggerEnter2D(Collider2D other)  
   {  
   if (other.gameObject.CompareTag("Player"))  
   {  
   ScoreManager.instance.ChangeScore(coinValue);  
   }  
   }  
  }
* Video that this tutorial was inspired by:
* <https://www.youtube.com/watch?v=DZ-3g31jk90>