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Mobile Applications Development 3

Developer Diary

**Introduction:**

This is a developer diary to be maintained along with the development of my 4th year Mobile Applications project. We have been given the task of creating a 3D on rails shooter with the Unity engine. I received my design document from John Glynn, to develop a Virtua Cop inspired 3D on rails shooter.

**21/10/20**

I received the design document from John and created the git repository.

**26/10/20**

Due to some difficulties with git I moved to a new repository. I created the game title card and the main menu to access Single Player, Multiplayer, Leaderboard and Exit. Currently only Single Player works, bringing the user to a new scene.

**28/10/20**

The initial draft of the first map has been created, now the functionality of the gameplay can be started. From a lab I reused the code to make a circuit of the path I want the player to travel through the map with.

**29/10/20**

Added a waypoint tracker to the circuit to be used in conjunction with the circuit. For the first level, only simple targets will be used, they have a rigid body for the player to interact with.

Player can shoot a projectile “bullet” from any point of the screen.

**Ray ray = Camera.main.ScreenPointToRay(Input.mousePosition);**

The Ray can tell where the curser is and spawn a bullet using a Vector3 .

**Vector3 spawnPosition = Camera.main.ScreenToWorldPoint(new Vector3(Input.mousePosition.x, Input.mousePosition.y, Camera.main.nearClipPlane**));

**(1)**

**30/10/20**

I am unsure what I want the targets to do at this time so I created three target variants.

**Gib on collide** – Destroys the game object and creates a particle effect.

**Flip on collide** – The game object rotates on a hinge.

**Gravity on collide** – The game object simply floats off from it’s point of spawn.

**31/10/20**

Unfortunately, the circuit method will not suit the kind of gameplay I am hoping to get out of this. I am instead opting to use player animation. I have created an animation of how the player will navigate through the map.

**04/11/20**

After difficulty with the triggering the player animations I have refactored to use a node-based system. This is better in several ways. The nodes are treated like a linked list, moving from one to one. The design requires there to be some areas with a choice of path movement. With a node-based system I suspect this to be easier implemented by adding more nodes each being available to each node.

I have made a game object of each stage of enemies and an **AdvanceOnNoChildren** script. This allows the player to move to the next node when all the enemies in that area have been destroyed.

**if (transform.childCount <= 0)**

By making the enemies children of a Game Object, I can run code when enemies of a stage are destroyed.

**playerNodeMovement.MoveToNextNode();**

**enemyNodeMovement0.MoveToNextNode();**

**Rotation**

**Text

Description automatically generated**

**Position**

**Text

Description automatically generated**

The position and rotation of the node dictates the rotation and position for the player. **(2)**

The method being called is telling the player and enemy to their next node and will be called when all enemies in a stage are destroyed

**05/11/20**

The rotation along with the position of the node influences the player. I’m very happy with how the player movement has come out. With this I have the skeleton to create a first level draft.

Started Level 2

Added the first volatile enemies to the map, initially I used the animations for the enemies but ran into the same problems as I did with the player. So I am using the same node movement script and creating a separate node mesh for the enemies. Enemies now move into place when the player approaches.

Scaled the entire map up a little, this may be tweaked in the future when all the functionality has been added.

**17/10/20**

Added two scripts for the enemies. **ShootOnDelay** and **ThrowOnDelay**. Both of which I plan to use as different enemy attacks.

The player can destroy enemy projectiles to avoid being hit. Also added player health to the UI with an array of heart icons **(3).** As discussed with the designer the player starts with three health but that can go to a max of four. The designer all wants each enemy to do one damage to the player.

**18/10/20**

Player’s health now decreases when hit with an enemy projectile, when the player health reaches 0, the game will end and the player will be presented with a splash screen.

Added the remainder of the Level 2 player nodes, there is now a functional Level 2 from start to finish.

Added some more GUI objects:

**Pause menu** – When you hit esc the game is paused and player can select to resume or exit. As per design, this will need to be updated with an onscreen button to pause game.

**Time.timeScale = 0;**

Stops in game time **(4)**

**Countdown timer** – Simple timer which counts down to 0. After 10 seconds texts turns red, at 0 game will end.

**Ammo Counter** – As the player shoots, the ammo on screen will decrease.

**19/10/20**

Added first audio clip to the game over screen.

**audioSrc.PlayOneShot(gameOverMan);**

**PlayOneShot** allows audio to play but not disturb other audio clips playing. Later in development I will be adding multiple clips for enemies, items etc. **(5)**

**25/10/20**

Added canvas with two buttons when player reaches certain point to choose a direction in the intersection.

**public GameObject Left;**

**public GameObject Right;**

**public GameObject Cover;**

Each node has three additional node to travel to apart from their nextNode. Cover node can be called at any player node. Right and Left node can be called at Direction Choice stages. **(6)**

**02/12/20**

Text

Description automatically generatedThe AdvanceOnNoChildren script is on each of the stages along with each enemies movement in Level 2.

Each Stage Game Object must declare which enemies in the next stage should move. Each enemy then runs their script to move into the correct position.

**04/12/20**

Added small and large enemies with different health. As per the design document.

**Small robots** – 1 HP

**Medium robots** – 2 HP

**Large robots** – 5 HP

Graphical user interface, text, application

Description automatically generated

Every enemy carries Gib On Collide script which describes what an enemy does when shot and dies.

**Item:** Some enemies are hard coded to drop an item when dead, the type of item will be placed here

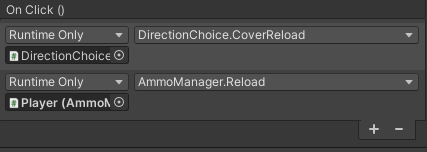
**Gib:** Particle effect to activate when enemy dies

**Audio Src / Death Clip:** The audio clip that will play when enemy dies

**Health:** How many times the enemy must be shot to active all these components

**09/12/20**

Added cover/reload button that carries two actions On Click(). **(7)**



**DirectionChoice.CoverReload:** Checks the node the player is in and moves to it’s Cover Node. In the scene I represent the green node as currentNode and blue as coverNode.

A picture containing building, outdoor, green

Description automatically generated

**AmmoManager.Reload():** Replenishes ammo to 6 and adds back the ammo GUI.

**11/12/20**

By now all the functionality I need for the game is complete. The next few days. I spend applying all these functions to Level 3.



I made these that stay consist in each level a prefab for each integration with Level 3. **(8)**

**References**

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