6CCGD003W

Network Games and Security

Tutorial 03

Adding Bots and Functionality

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Tutorial Objectives

1. To add a full gameplay loop to our game.

2. To add bots to our game.

3. To understand how the code works.

4. To tweak and extend the game.

Quick Note

- This week, instead of copying the code I will be providing it all as part of the included package.

- This is because there were many changes, and too much room for error in copying them all.

- The aim for the session is to fully understand the game flow and be able to extend the functionality, as this will be the focus of the coursework.

Tutorial Package

1. Continue from where you got up to last time.

2. If you’re up to date, download ‘Tutorial 03 Package’ from Blackboard and import the assets into your project.

New Prefabs

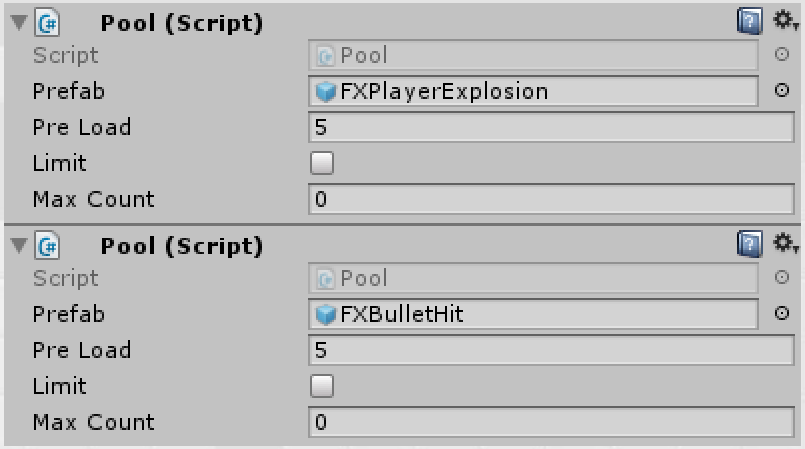
1. There are a few new prefabs we need to add to our scene. Add ‘UICanvas’ to the hierarchy which contains all of the game UI (as opposed to the world UI).

2. Add the ‘GameManager’ prefab as a child of the ‘Scripts’ object. This needs to speak to the ‘UICanvas’ we just added so drag that into the ‘UI’ variable.

3. Delete the old AudioManager object in the hierarchy and replace it with the new ‘AudioManager’ prefab. This contains audio sources for some new sounds.

New Pools

1. We also have two new types of particle effects that we will be using so we need to add the pools for them. Add two new pools for ‘FXPlayerExplosion’ and ‘FXBulletHit’ to the ‘Particles’ object.



Pool (Script)

Script: Pool

Prefab: FXPlayerExplosion

Pre Load: 5

Limit: □

Max Count: 0

Pool (Script)

Script: Pool

Prefab: FXBulletHit

Pre Load: 5

Limit: □

Max Count: 0

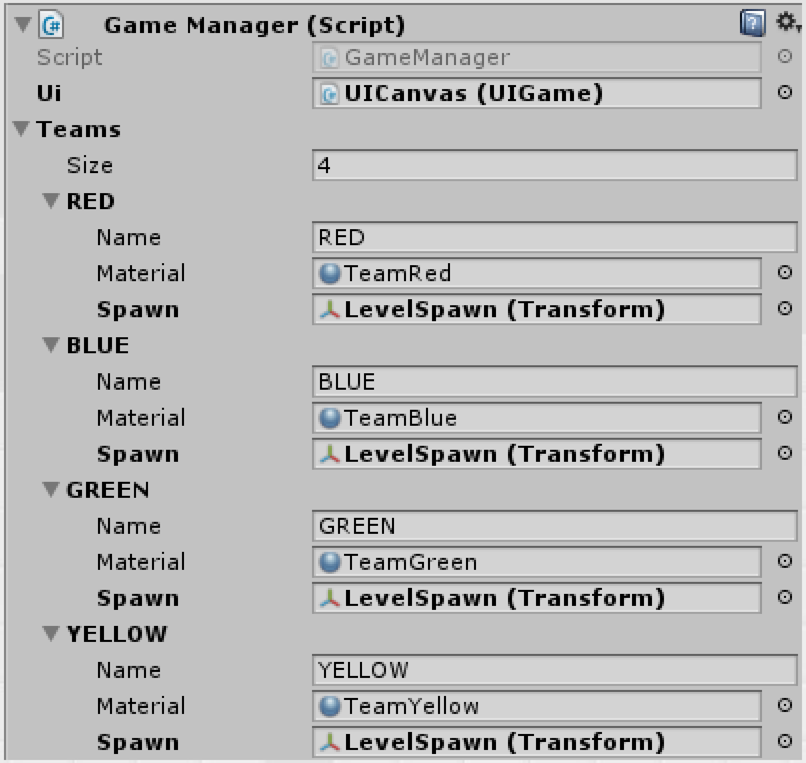
Spawners

1. Since we're going to be adding the ability for players to die, we need somewhere for them to respawn. Take four 'LevelSpawn' prefabs and place them in your arena (there are places marked out in the corners but you don't have to follow them).

2. You then want to set the material on each spawner to a different colour. The defaults are red, blue, green and yellow but you can change these as you wish.

Spawners

1. The GameManager needs to know about these spawners, so drag the appropriate spawner into each position on the GameManager as shown:



Game Manager (Script)

Script	GameManager
Ui	UICanvas (UIGame)
Teams	
Size	4
RED	
Name	RED
Material	TeamRed
Spawn	LevelSpawn (Transform)
BLUE	
Name	BLUE
Material	TeamBlue
Spawn	LevelSpawn (Transform)
GREEN	
Name	GREEN
Material	TeamGreen
Spawn	LevelSpawn (Transform)
YELLOW	
Name	YELLOW
Material	TeamYellow
Spawn	LevelSpawn (Transform)

Nav Mesh

1. We need a NavMesh for our bots to follow. Open the 'Navigation' window and then go to the 'Object' tab. Select 'Mesh Renderers' under 'Scene Filter' and then select the objects in your scene you want the bots to navigate (all of them). Then tick the 'Navigation Static' box before going to 'Bake' -> 'Bake'.

2. Delete the 'Player' from your scene as GameManager spawns one in for us now. We also need to create a new layer for the bots to search for each other. Go to 'Layers' (top right) and add a new layer called 'Player' in the first empty position.

Learning How it Works

1. Now comes the hard part, learning how everything works and why. The classes to focus on are ‘GameManager’, ‘UIGame’, ‘Player’, ‘PlayerBot’, ‘BotSpawner’, ‘Bullet’, ‘UIBillboard’ and ‘ParticleColor’.

2. Some are easier to follow than others. UIBillboard is a piece of functionality useful in many games, as are parts of some other classes too.

3. Use the documentation to see how things work, and ask me if you’re unsure of anything.

Tweaking and Extending

1. After playing a few games you may want to tweak some variables such as the number of bots or the delay between shots, or the colours of the teams.

2. There are infinite ways to customise the game to make it your own, although I recommend using source control or copying your build before making changes that are too wholesale, just in case you break the game.

Tweaking and Extending

- There are many ways you could extend the game. I would look at:

  - Improving the AI, make it move towards the nearest player rather than a point on the NavMesh.

  - Add powerups, a simple one would be a shield that appears as a separate bar above the health bar.

  - Other powerups could include different types of bullets; more powerful or even bouncing bullets would be great.