Unity3D Developer Test

Technical changes

- Calls to ***FindObjectOfType, FindChild*** and ***GetComponent*** have been moved from several class methods (including ***Update)*** to the ***Awake*** method. These calls are slow so it's better to do it once at the beginning of the execution.

- Direct calls between classes have been replaced by ***events*** and subscriptions. This way, ***coupling*** between classes is reduced and the code is more reusable (*See comments in code for more info*).

- ***Invoke*** call replaced by ***StartCoroutine*** . The Invoke methods are implemented by using reflection and have overhead. Coroutine, on the other hand, has very little or no overhead (depending on which StartCoroutine version you use).

- If we want to improve the performance (especially in mid-range and low-end devices), we should replace ***real-time shadows*** for ***projector shadows.*** Real-time shadows are CPU-intensive.

- ***Textures*** on characters are larger than necessary. As we can see in the Mipmaps draw mode in the Editor, 512x512 should be right (instead of 2048x2048) considering the actual distance from the camera.

- If we wanted to move the camera closer and further from the scene, it would be a good idea to use ***LOD groups*** for the meshes.

- New ***prefabs*** (enemies, player, patrol points,…) have been created in order to apply changes in all scenes automatically.

- ***Resources*** folder is only necessary if we need to use the method Resources.Load().
If we don't need to load assets dynamically, it's better to not have this folder because all the contents on this folder are added to the executable file and increases the size unnecessarily.

Features added

- ***Repeatable games***: Once player dies is able to restart the game.
- Ability to use ***different levels***. From the map scene, you can play any level.
- Use more animations: ***Run*** animation for the enemies and 2 different ***attacks.***
- Particle Systems: Added 2 particle systems on the enemies (2 different attacks).

Extra features added

- Menu scene and map scene added to use different levels.
- Enemy patrol logic added in order to use the run animation.
- Some sounds have been added (ambience, enemy guns).

Minor issues corrected

- Switching the platform to Android caused the lightmaps to be burned. Solved unchecking ***Use Direct3D 11*** in Build Settings > PC.

- Added a dummy script ***EnemyAnimatorScript*** to receive the ***AnimationEvents*** from the enemy FBX. When imported to this project, the FBX files are READ-ONLY, so the AnimationEvents cannot be deleted. I guess this events are used in the full project. In this project, these events generate warnings because there wasn't a method to receive them.

Annex

- Tested on mid-range device (Motorola Moto-G). Runs at 25 fps. Maybe some kind of optimization is required.

- As you can see in the ***git project,*** several commits have been done with the changes in code. I think it's very important to write the changes in order to other developers can see it.