ADVANCED ZOMBIE AI Documentation

By –Finite Machine
Studio

<u>Scripts Analysis</u>

The project contains the following scripts:-

Zombie scripts:

- **AdvancedZombieAI** : It is the master script. It controls and manager all zombie's functions provided in the project.

- **ZombieAttackHandler** : It controls zombie's attack functions.

- **ZombieChaseHandler** : It controls zombie's chase functions.

- **ZombieCrawlingHandler** : It controls zombie's crawling functions.

- **ZombieWanderingHandler** : It controls zombie's wandering functions.

Player scripts:

- **Player** : It controls player's functions related to zombie.

- **PlayerMovement** : It controls player's movement.

- **GunScript** : It is just a basic gun script only for the purpose of elaborating the functions of zombies.

Other scripts:

- **HeadIK :** It makes the zombie face the player while chasing/attacking.

- **Vault :** It controls the zombie vault behaviour.

- **Waypoints :** It is the zombie waypoint script.

Editor Script :

- **AdvancedZombieAIEditor :** AdvancedZombieAI editor script.

- **WaypointsEditor :** Waypoint editor script.

- **ZombieSpawnerEditor :** ZombieSpawner editor script.

- **ZombieMaker :** It controls 'Zombie AI Setup' window (Window/Advanced Zombie AI/Zombie AI Setup).

ZombieSpawner :

- It spawns zombies either on the event of an existing zombie's death or over time.

Requirements

Required Tags:

i.   **Zombie**: Assign this tag to your zombie game object.

ii.   **Player**: Assign this tag to your player game object.

Required Layers:

i. **Zombie**: Add this layer to your zombie game object.

ii. **Player**: Add this layer to your player game object.

(Note: If the project does not already contains these layers and tags, manually add them.)

Required Information:

Before using this Zombie AI package, it is recommended that users have the following:

- **Basic Unity Knowledge:** Users should have a basic understanding of Unity's interface, scene management, and GameObject manipulation.

- **Navigation Mesh Understanding:** Familiarity with Unity's navigation system and how to bake navigation meshes is beneficial for optimal use of the AI package.

- **Scripting Knowledge (Optional):** While not mandatory, having some knowledge of C# scripting within Unity can enhance customization options and integration with existing projects.

Setting Up Your Zombie AI

- Bake a navigation mesh from Windows/AI/Navigation.

- Open '**Zombie AI Setup**' window from Window/Advanced Zombie AI/Zombie AI Setup.
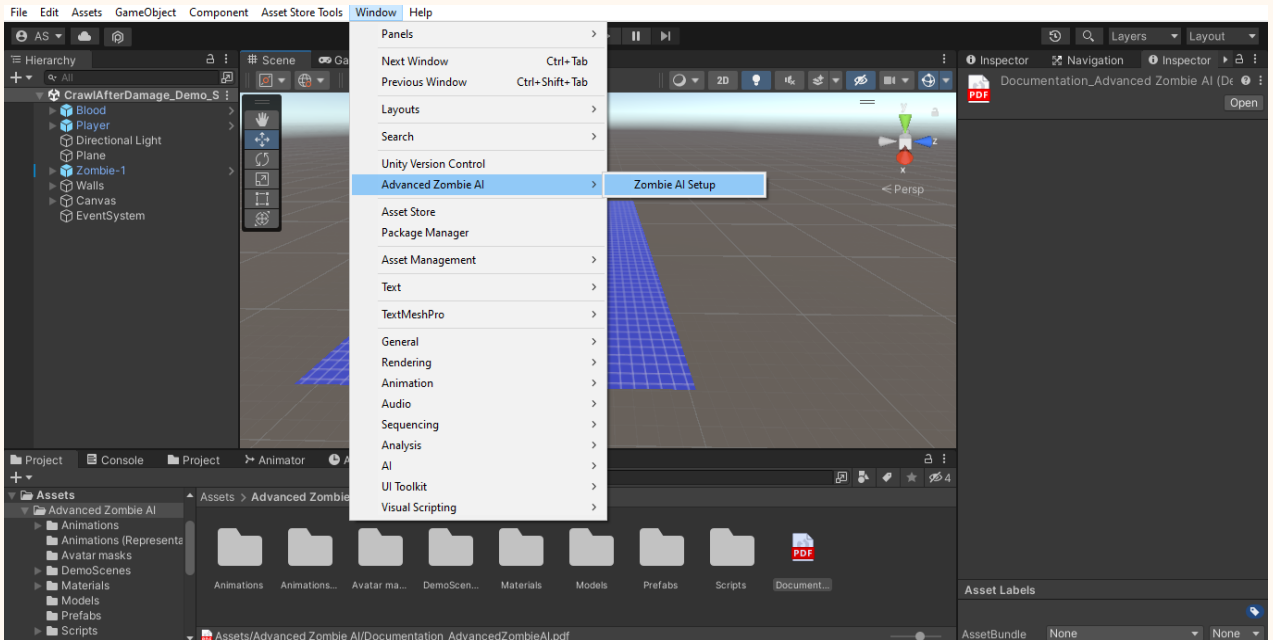
- Select the 'Zombie' animation override controller in the animation override controller field. Or you can also create your own by assigning 'Base_Zombie' as the controller.

- Drag and drop your zombie game object from hierarchy in the drop zone and press "Setup Zombie AI". Subsequently, all the necessary components will be attached to your zombie game object.

- Now, your zombie has been succesfully created!

Understanding Override Controller

- **Attack**: Set your zombie attack animation. The zombie will play this animation when it is chasing the player and the player comes under its attack range.

- **Biting**: This Animation will play when the zombie as well as the player is standing still and the player is under the zombie's attack range. Select it as per your personal preferences but it is advisable to select a biting animation.

- **Chase**: This will be your zombie's chasing animation.

- **Cooldown**: This animation will be played during the cooldown of the zombie's attack. Select an idle animation for this

- **Crawl**: This is the zombie's crawling animation. This will play when the zombie is set to "Will Crawl After Depleting Health"(We will talk about it below) and has depleted his health and is not aware of the player.

- **Crawling Attack**: This is the zombie's attack animation while crawling. This will play when the zombie is set to "Will Crawl After Depleting Health" and has depleted his health and is attacking player.

- **Crawling Chase**: This is the zombie's chasing animation while it is crawling. This will play when the zombie is set to "Will Crawl After Depleting Health" and has depleted his health and is aware of player.
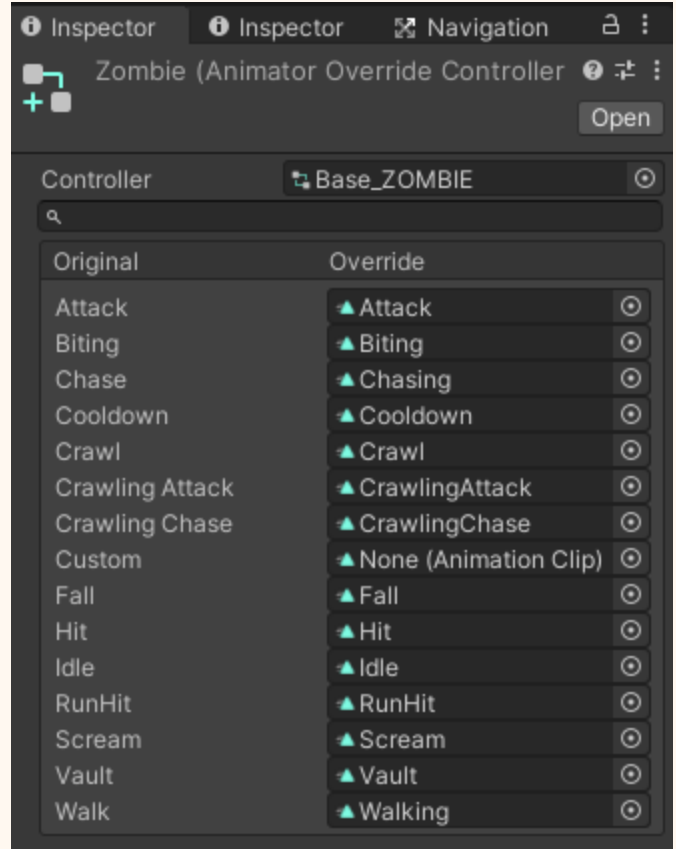
- **Custom**: You don't need to assign any animation to this field. This animation will play when a zombie is wandering across a waypoints and that waypoint's 'To Do' is set to custom. The animation assigned in the custom animation will override this base animation.

- **Fall**: This is the zombie's fall animation when the zombie is set to "Will Crawl After Depleting Health". This will play as soon as the zombie has depleted its health and will now crawl. Select a die animation as an override. The actual death does not have any animation but has a ragdoll.

- **Hit**: This animation will play when the zombie recieve a damage while it is not chasing the player.

- **Idle:** This animation will play when a zombie is wandering through a waypoint whose 'To Do' is set to Idle. Select an Idle animation for this.

- **RunHit**: This animation will play when the zombie recieves a damage while it is chasing the player

- **Scream:** This animation will play when a zombie is wandering through a waypoint whose 'To Do' is set to Scream. Select an screaming animation for this.

- **Vault:** This is the zombie's vaulting animation.

- **Walk**: This is the zombie's roaming animation. This will play when the zombie is not aware of player and is roaming randomly.

(**Note – We have provided representational animations for all these overrides. The animation are definitely not clean. They are only for the purpose of assisting the user for assigning the animations**)

Setting Up Your Scene

- Drag and Drop the following prefabs from the 'prefabs' folder into the game scene.
    - **i.** **Player**
    - **ii.** **ZombieSpawner (If you want)**
   - **iii.** **Player**
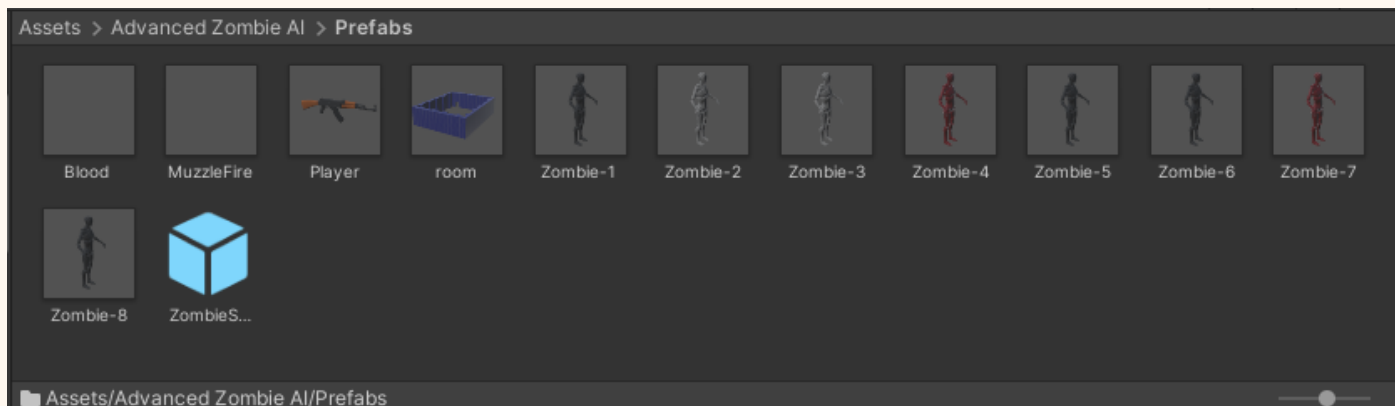
- Set the Player layer and tag as Player.
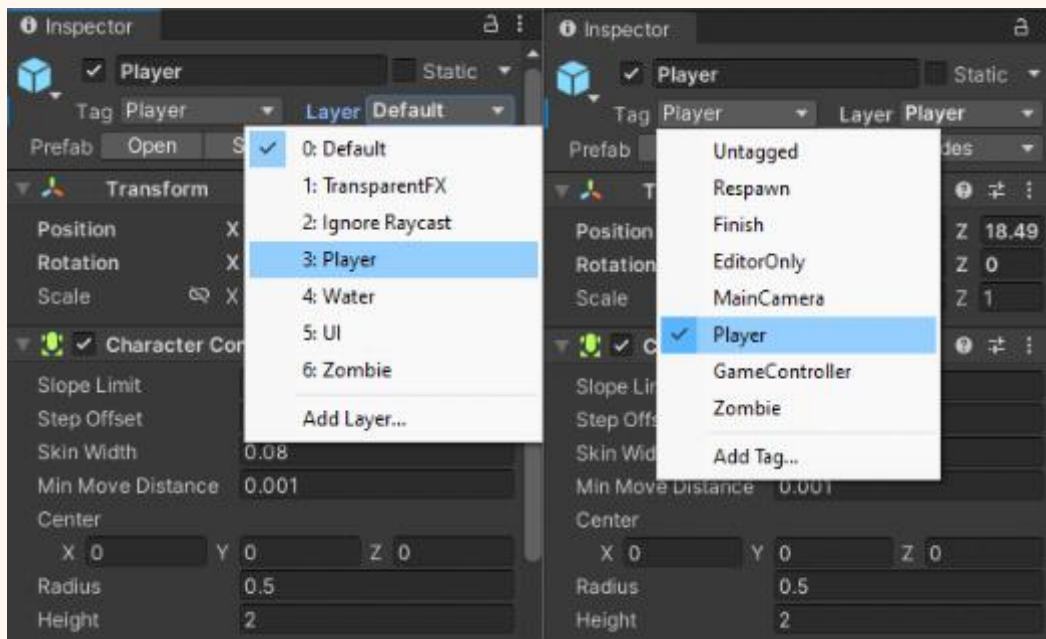
- Now In the Gun Script of your AK47 game object(which is the child of Main Camera under Player game Object) set the Zombie Layer as 'Zombie'. Add your gunshot sound in the Shoot Sound. Set appropriate Damage and range. The Sound Intensity is the radius of the area under which zombie can hear the gun shot if in case a the player shoot .Set Sound Intensity according to your game requirement. Give reference of the 'blood' game object to Blood.
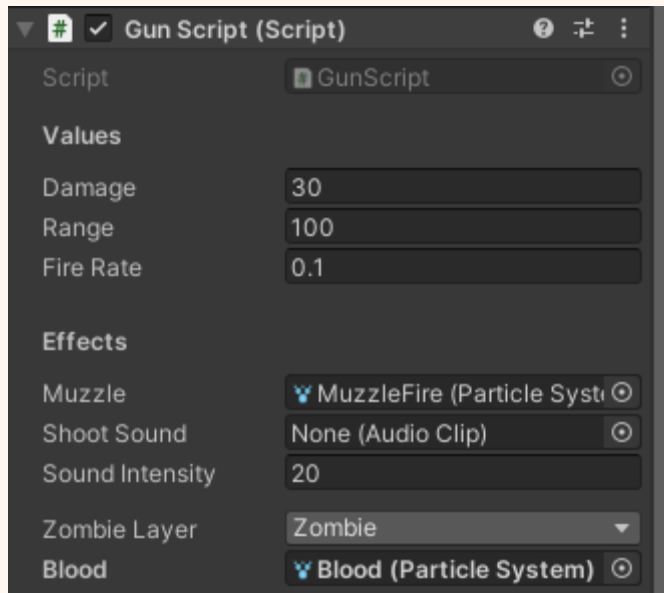
- Now, under the Zombie Prefabs of the ZombieSpawner script of the Zombie Spawner game object give reference to all the zombie prefabs you want to spawn.
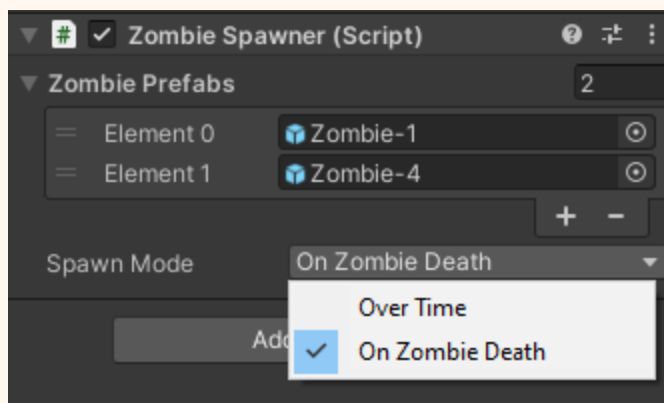
- You can select any of the two spawn mode(On Zombie Death or Over Time). The On Zombie Death spawn mode spawns zombie only when an existing zombie dies while the Over Time mode spawns zombie every once in a spawn interval. You can change the spawn interval as per your requirement.

- Now, add ragdoll to your zombie game object. You can learn how to create a ragdoll from -

  https://docs.unity3d.com/Manual/wizard-RagdollWizard.html

  Now, you have successfully set up your scene

Advanced Zombie AI Field

- **Motion State** : Your Zombie's current motion state.

- **Action State :** Your Zombie's current action state.

- **Wander Settings :**

 **Wandering Speed** : This is the speed of the zombie while he is wandering and is not aware of the player.

  Wandering Mode : There are three modes under this enum - Random wandering, waypoint wandering and follow player. If the enum is set to Random Wandering then the zombie will roam randomly under its wandering radius. However if the enum is set to waypoint wandering then the zombie will roam along the waypoints which you would provide under "Waypoint to Wander" array and if the enum is set to follow player then the zombie will follow the player but it would not chase the player until it detects the player.

The Random Wandering has the following sub-fields:

- ❖ **Wandering Radius**: This is the radius of the area under which the zombie will wander randomly.

**The Waypoint Wandering has the following sub-fields:**

- ❖ **Waypoints To Wander** :If the zombie has been set for Waypoint Wandering then it will wander along these waypoints. How to create the waypoint? We will discuss about it below later.
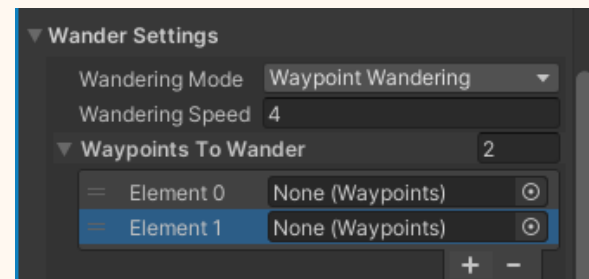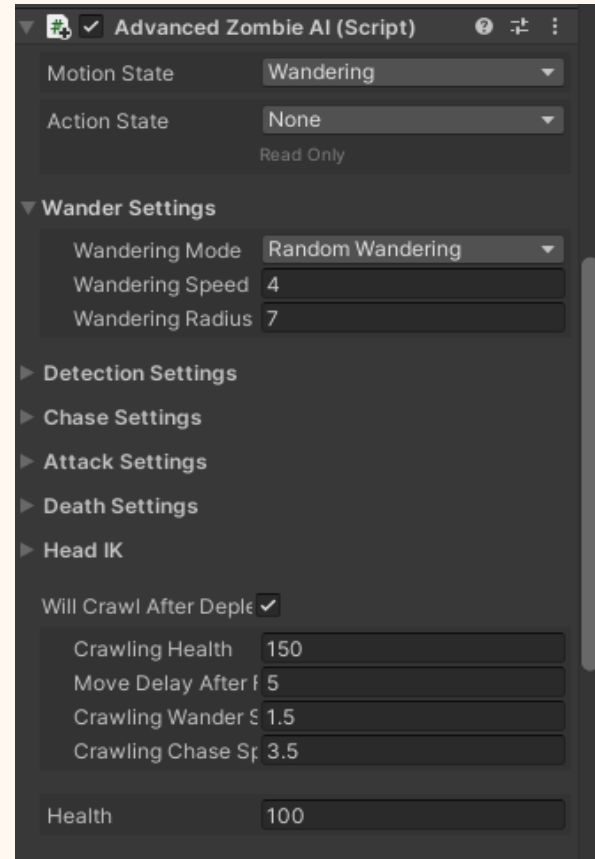
The Follow Player has the following sub-fields:

❖ **Follow Player Movement Offset :** This will add some random movement to the zombie while he is following the player and the 'Wandering Mode" enum is set to 'Follow Player' in order to make it appear more natural and realistic. Don't add a very high value as it will make it appear unrealistic. Similary don't add a very small value.
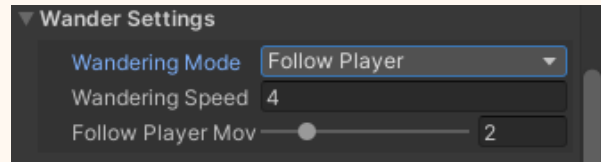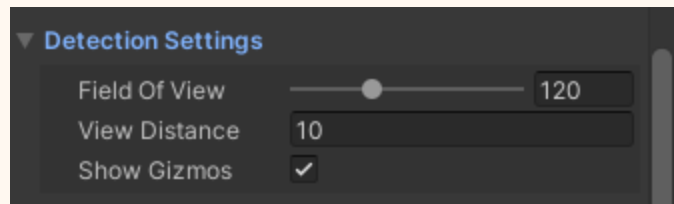
- **Detection Settings :**

    Field Of View : This is the field of view of your zombie

    View Distance : This is how far your zombie can see.

    Show Gizmos : As the name suggests, show gizmos of zombie's field of view and view distance

- **Chase Settings :**

    Chasing Speed : This is the speed of zombie while is is chasing the player

    Lose Player Time : The zombie will lose player (if chasing) if it does not detects the player till this time

    Random Movement Offset : This will add some random movement to the zombie while he is chasing the player in order to make it appear more natural and realistic. Don't add a very high value as it will make it appear unrealistic.

- **Attack Settings :**

    Attack Range: The minimum attack range of the zombie

    Attack Cooldown: It is the cooldown time between zombie's attacks in order to make it appear more natural and unique.
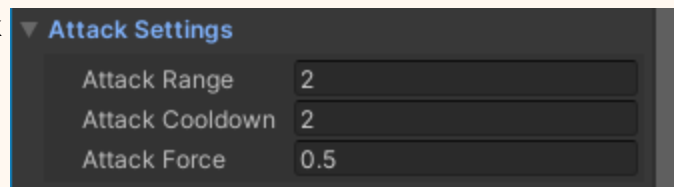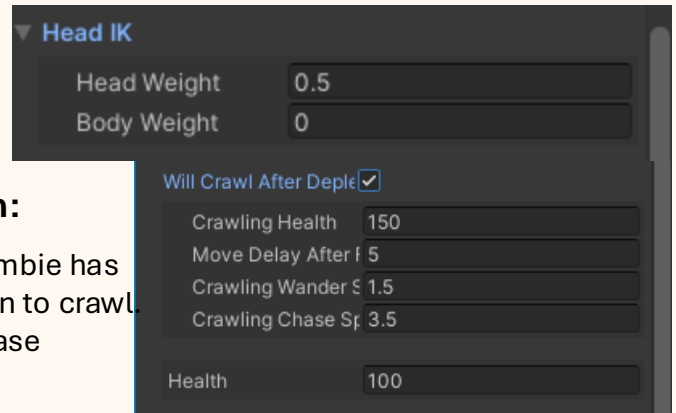
    Attack Force : It is the force applied by zombie when attacking the player. It's basically the speed of zombie while attacking as it makes it appear more natural

- **Head IK Settings :**

  Head Weight : Head IK weight.

  Body Weight : Body IK weight.

- **Will Crawl After Depleting Health:**

   If this is enabled then when the zombie has
  depleted its health then it will began to crawl.
  It will initiate attacks and would chase
  player while crawling.

  Crawling Health: This is the health of the zombie while crawling. If the zombie is set
  to Will Crawl After Depleting Health and has depleted its health to zero then any
  further damages to the zombie will deplete its Crawling Health. If the Crawling Health
  reaches to zero then the zombie will ultimately die.

  Move Delay After Fall: The zombie will not move until this time after falling.

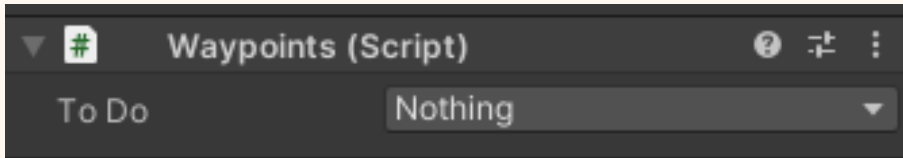 **Crawling Wander Speed** : Zombie Crawling wander speed.

  Crawling Chase Speed : Zombie Crawling chasing speed.
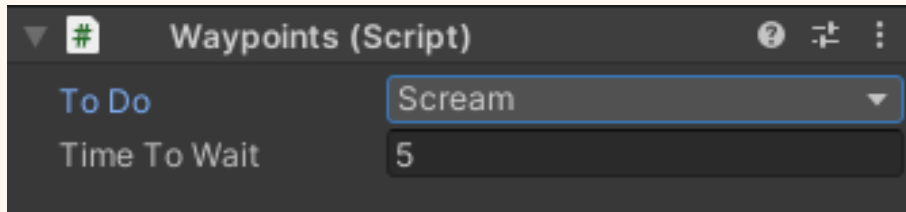
- **Health :**

  The Zombie's health.

Create Waypoints

- Create Empty game objects in your scene. Rename them as Waypoint (Optional).

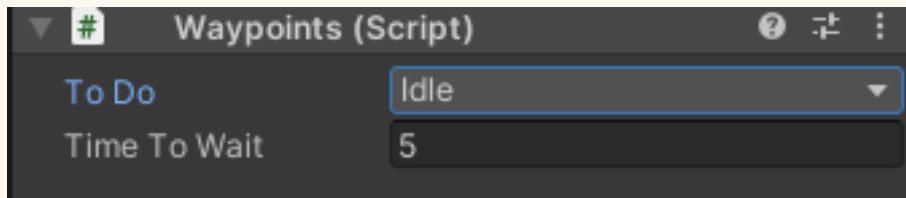- Add 'Waypoints script to the empty game object.

- **To Do :** The zombie with wandering mode set as waypoint wandering may do the following actions when it passes through these waypoints as per the enum:
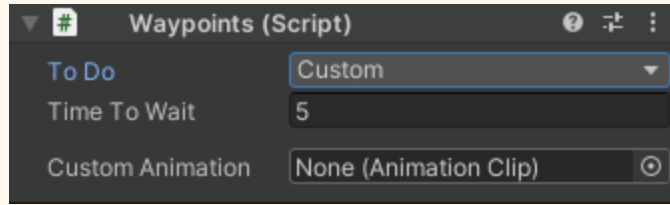
  ➢ **Scream**

  It will play the screaming animation and will wait on the waypoint until time to wait.

  ➢ **Idle**

  It will stay Idle in its position at the waypoint for time to wait seconds.

➢ **Custom**

You can make it play any animation when it passes through that waypoint. You just need to assign it in the custom animation field.

As a result the zombie will play the animation and will wait for "Time To Wait" seconds.

<u>Now You Are All Good To Go!!</u>

We have tried our best to clear all the doubts.

However if you are still facing some sort of issues   then feel free to contact us on:

finitemachinestudios@gmail.com

<u>Thanks For Choosing us</u>

-Finite Machine Studios