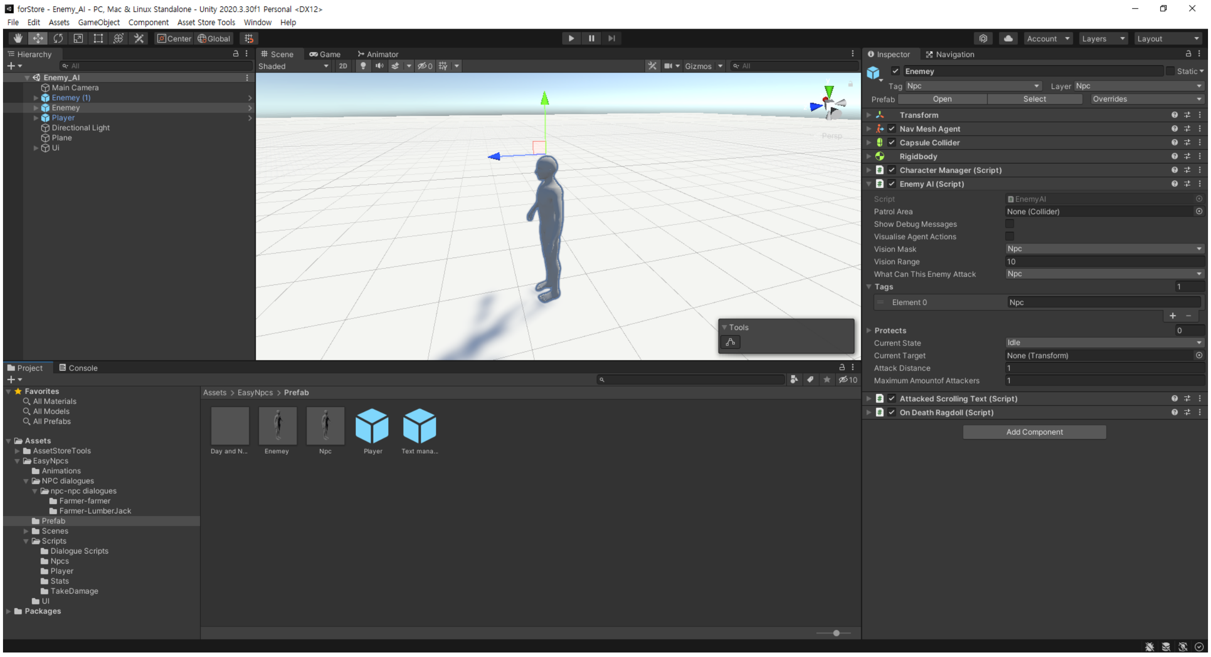
Adding enemy AI

This document will go through how you can add enemy AI to your game. The enemy prefab is stored inside EasyNpcs/Prefab. Click and drag the prefab to the scene.



Enemey

Static

Tag Npc

Layer Npc

Prefab Open Select Overrides

Script EnemyAI

Patrol Area None (Collider)

Show Debug Messages □

Visualise Agent Actions □

Vision Mask Npc

Vision Range 10

What Can This Enemy Attack Npc

Tags 1

Element 0 Npc

Protects 0

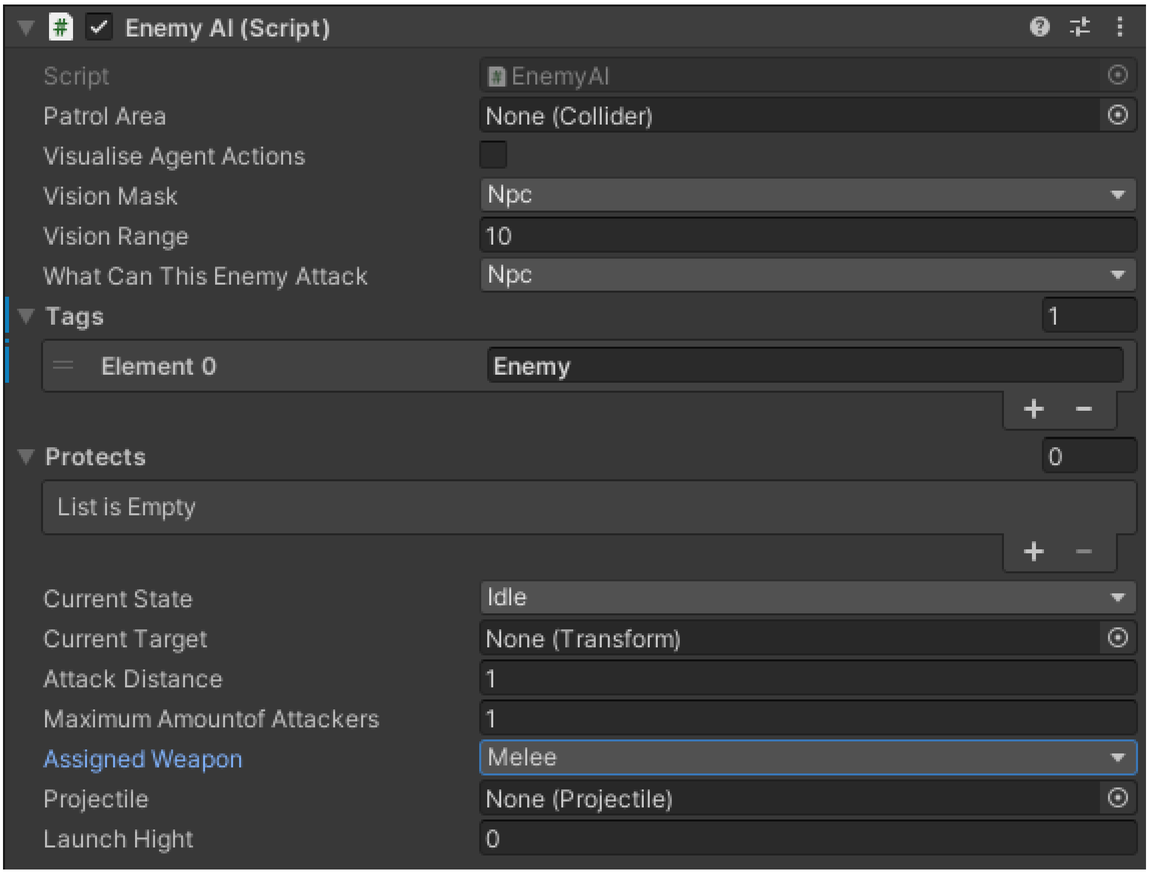
Current State Idle

Current Target None (Transform)

Attack Distance 1

Maximum Amountof Attackers 1

If you see the enemy prefab inside the inspector you'll see that it has an 'Enemy AI' component instead of 'NPC'. This is the script that handles the enemy AI as the 'NPC' component handles the npc AI.



Script EnemyAI

Patrol Area None (Collider)

Visualise Agent Actions □

Vision Mask Npc

Vision Range 10

What Can This Enemy Attack Npc

Tags 1

Element 0 Enemy

Protects 0

List is Empty

Current State Idle

Current Target None (Transform)

Attack Distance 1

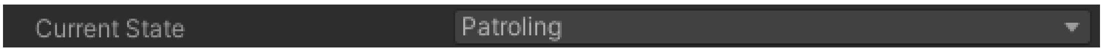
Maximum Amountof Attackers 1

Assigned Weapon Melee

Projectile None (Projectile)

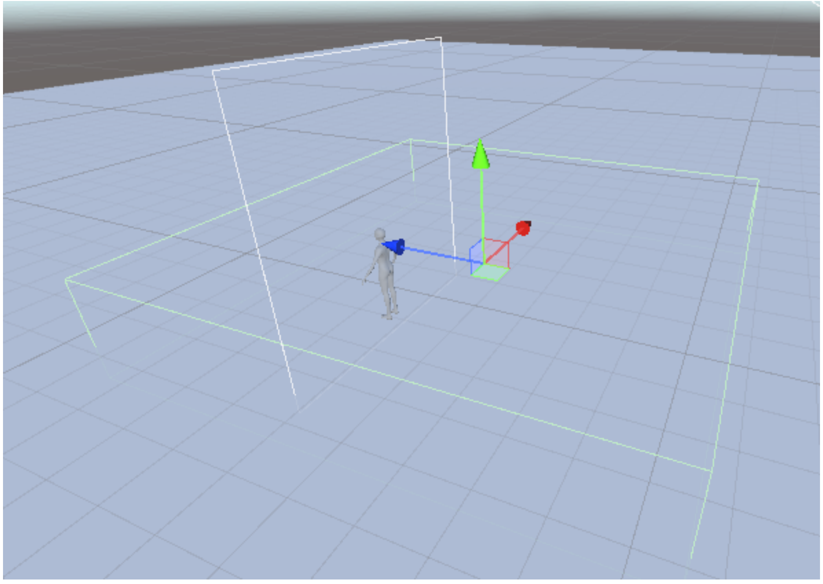
Launch Hight 0

If you currently hit play, you will see that the npc patrols here and there randomly. This is the default state of the enemy AI and is called the patrol state. While the npc is patrolling you will see that the ‘Current State’ variable is set to ‘Patrol’.

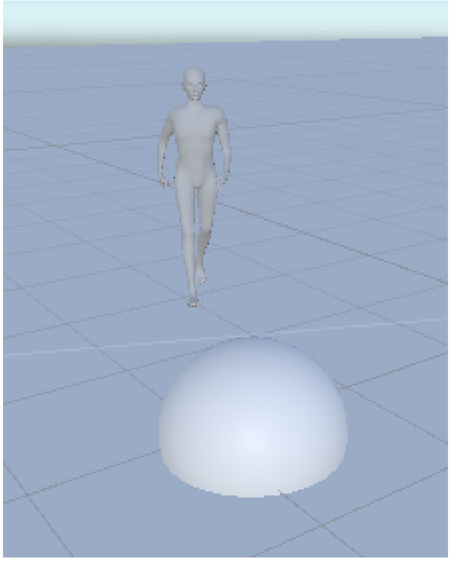


Current State Patroling

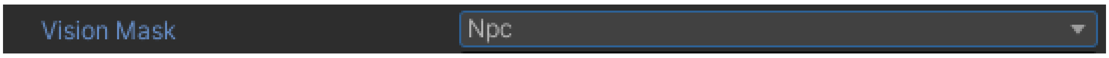
‘Current State’ represents what the current state of the AI is. By default, each patrol point is chosen randomly. But if you assign a collider to the ‘Patrol Area’, the npc will only patrol the areas the collider covers.



If you want to see where the npc destination is while patrolling you can turn on the ‘Visualize Agent Actions’. And you will be able to see the destination marked as a sphere.

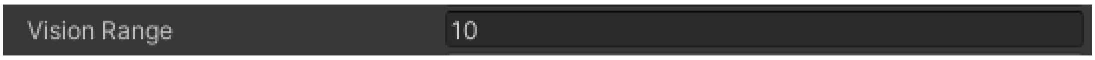


We need the npc to be able to sense the environments around him. We can choose what the npc will detect by the ‘Vision Mask’ variable.



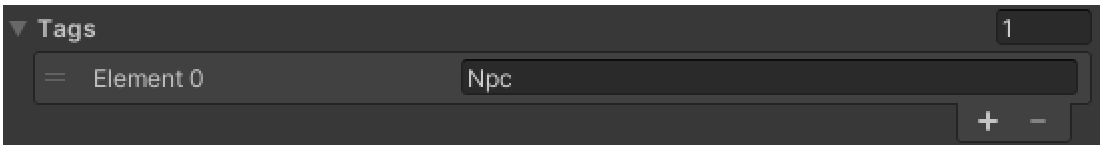
Vision Mask Npc

‘Vision Mask’ chooses which layers the npc can see. If the ‘Vision Mask’ is only assigned the ‘Npc’, it will only detect game objects which are under the layer ‘Npc. Multiple layers can be assigned to the ‘Vision Mask’ at once.
Next is choosing how far the npc can see. We can choose this by setting the values for the ‘Vision Range’ variable.



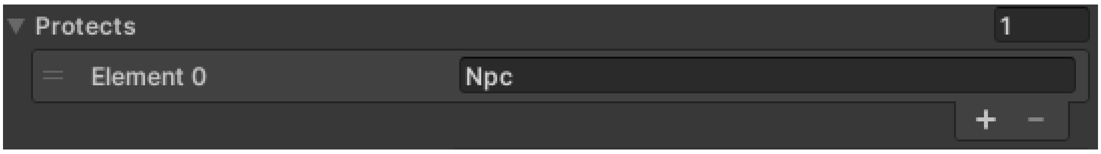
Vision Range 10

If we want the npc to attack we need to choose what the npc should attack. We choose it by the ‘What Can This Enemy Attack’ variable. ‘What Can This Enemy Attack’ handles tags. For instance, if a game object has a tag labeled ‘animal’ and it is one of the tags chosen inside ‘What Can This Enemy Attack’ the npc will take the game object labeled as the enemy.



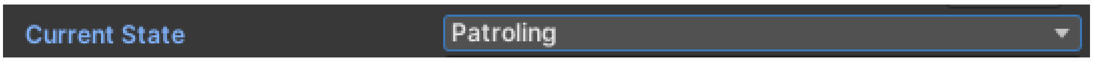
Tags 1
Element 0 Npc

Do not get confused with ‘Vision Mask’. ‘Vision Mask’ chooses what the npc can see and is handled by layers. While ‘What Can This Enemy Attack’ chooses what the npc can attack and is handled by tags. So if the layer of a game object is not inside the ‘Vision Mask’ but the tag is inside ‘What Can This Enemy Attack’ the npc will not be able to attack the game object because it cannot see it.
You can also have the npc protect other npcs. For instance, a guard will attack the culprit who is attacking villagers. The guards will not attack unless the killer npc starts to attack other npcs. But once he does the guards will be out to put a stop to it. We can assign tags to the ‘Protect’ variable to have the npc protect other specific npcs.



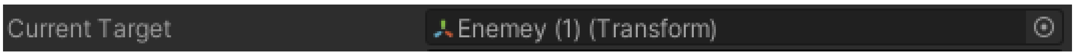
Protects 1
Element 0 Npc

You can see the current state of the enemy AI by ‘Current State’.



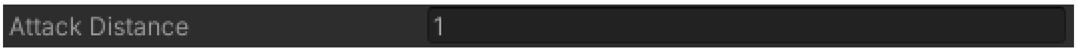
Current State Patroling

You can see the current target of the enemy AI by ‘Current Target’.



Current Target Enemey (1) (Transform)

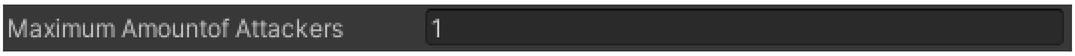
Set the distance of how far the enemy can attack by ‘Attack Distance’.



Attack Distance 1

‘Maximum Amount Of Attackers’ is for when groups of AI are fighting at the same time.
When groups of AI fight at the same time a lot of npc might choose the same npc as a target which will result in the npcs being too crowded inside one area.

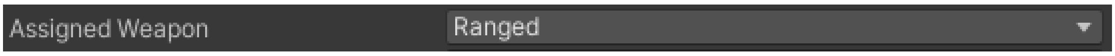
This is where the ‘Maximum Amount Of Attackers’ kicks in. The smaller the amount of ‘Maximum Amount Of Attackers’ is the amount of per enemy that can focus on the same target will be fewer. For instance, if the value is a 1 and a target already has an enemy locked on to it the other enemies inside the scene which also have a value of 1 will not lock on to the already locked target.



Maximum Amountof Attackers 1

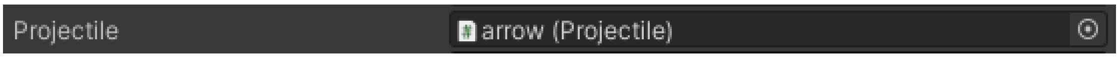
2. Having enemy AI shoot projectiles

We can have the AI shoot projectiles instead of going in melee combat. Like when we want to have a bowman instead of a normal foot soldier. First, we change the ‘assigned weapon’ variable to ‘ranged’.



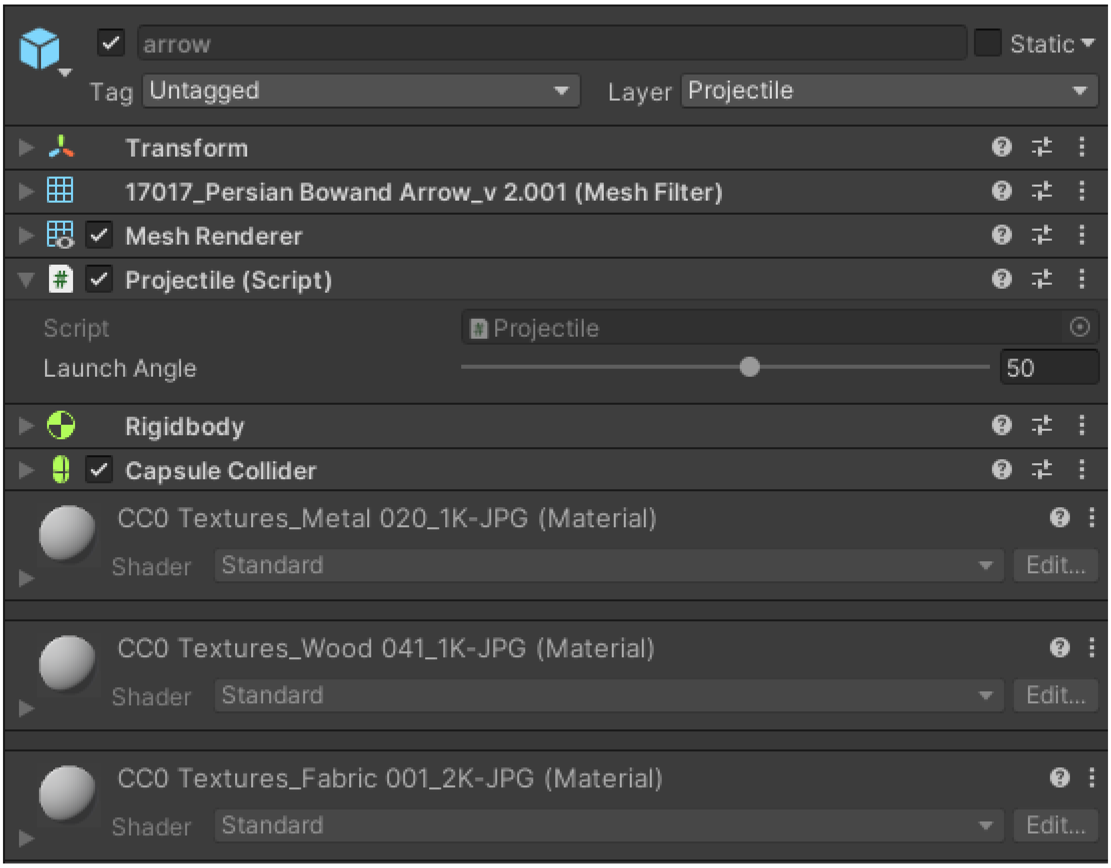
Assigned Weapon Ranged

This will initialize that the Ai is to shoot projectiles when attacking. Meanwhile, the ‘melee’ value has the npc to attack without projectiles. However, it is possible to change the range further and have the ‘melee’ AI attack in range without shooting projectiles.
Then we assign the ‘projectile’ gameObject. You can find the ‘arrow’ projectile inside EasyNpcs/Prefab.



Projectile arrow (Projectile)

Instead of the arrow gameObject itself, the ‘Projectile’ script is assigned which is assigned to the arrow.



☑ arrow □ Static

Tag Untagged Layer Projectile

Transform

17017_Persian Bowand Arrow_v 2.001 (Mesh Filter)

☑ Mesh Renderer

☑ Projectile (Script)

Script Projectile

Launch Angle 50

Rigidbody

☑ Capsule Collider

CC0 Textures_Metal 020_1K-JPG (Material)

Shader Standard

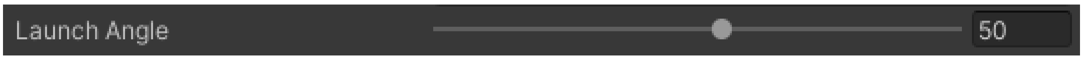
CC0 Textures_Wood 041_1K-JPG (Material)

Shader Standard

CC0 Textures_Fabric 001_2K-JPG (Material)

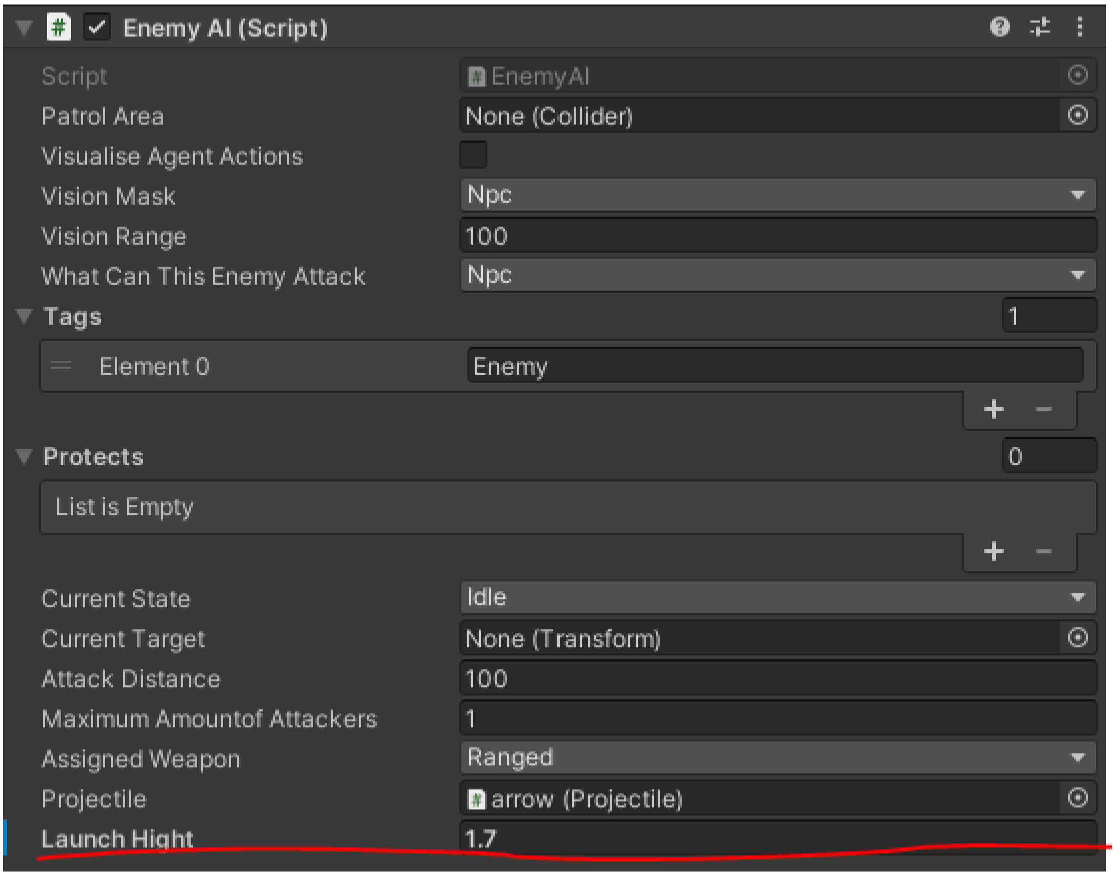
Shader Standard

The ‘Projectile’ component handles the launch of the arrow. When launching the arrow it is handled by the velocity of the rigidBody. In other words, it is handled by physics. The launch angle of when the projectile is fired can be handled by the ‘launch angle’.



Launch Angle 50

The height of the projectile when it is launched can be handled by the ‘launch height’ in the ‘Enemy AI’ component.



Enemy AI (Script)

Script: EnemyAI

Patrol Area: None (Collider)

Visualise Agent Actions: □

Vision Mask: Npc

Vision Range: 100

What Can This Enemy Attack: Npc

Tags: 1

Element 0: Enemy

Protects: 0

List is Empty

Current State: Idle

Current Target: None (Transform)

Attack Distance: 100

Maximum Amountof Attackers: 1

Assigned Weapon: Ranged

Projectile: arrow (Projectile)

Launch Hight: 1.7