



Gabriel's guide on How to Create a new Structure



Structures are the main part of the game, to create a new one, you will need to create its assets, animations, sounds and program its behaviour. I put some systems in place to make the process very straightforward and easy to integrate with the game.

Every structure needs to extend from the "Structure" class. The base class has needed attributes such as references to its item asset, animator, a configurable sound, firing point, projectile prefab, etc. The Outline, Range Outline and shadow can be copied from any other existing structure, since it's the same for every structure. The base class has methods for checking if the structure can be placed or upgraded, placing it and taking buffs according to its current level and effects from items.

Each structure has the following attributes for playing the game:

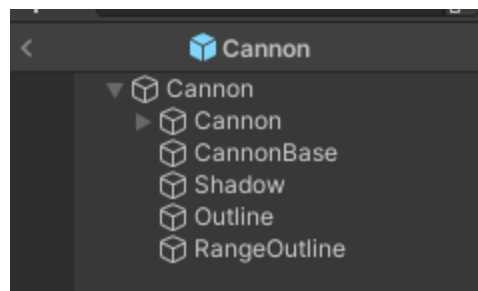
- **Margin:** The space in units the structure needs to fit in, so it doesn't overlap with other structures.
- **Orientation:** The way the structure is facing, some structures might have a Unique orientation and not be affected by it.
- **Range:** The radius in which the structure can detect enemies. (Some structures may ignore this stat and just shoot whenever).

Must Have References	
Item	Cannon (Structure It...
Animator	Cannon (Animator)
Fire Point	FiringPoint (Transfor...
Shadow	Shadow (Sprite Rend...
Outline	Outline (Sprite Rende...
Range Outline	RangeOutline (Sprite...
Prefab	CannonBall
Firing Sound	
Meta Attributes	
Can Attack	<input type="checkbox"/>
Target Object	None (Transform)
Margin	2
Unique Orientation	<input checked="" type="checkbox"/>
Orientation	UP
Structure Stats	
Level	1
Is Maxed	<input type="checkbox"/>
Stats	
Range	4
Damage	10
Attack Cooldown	3
Current Cooldown	0
Area Size	1
Projectile Speed	8
Duration	1
Projectile Amnt	1
Time Between Mul	0.5
Pass Through Amn	0

- Damage: The amount of damage to be dealt to enemies.
- Attack Cooldown: How many seconds the structure must wait to attack again.
- Current Cooldown: Counter constantly going. When it reaches 0, the structure can attack again and reset the counter.
- Area Size: The size of the projectiles. Starts as 1 but can go up with item buffs or level upgrades.
- Projectile speed: The speed of the projectile.
- Duration: The number of seconds the projectile will be active before disappearing.
- Projectile Amnt: The number of projectiles that the structure can shoot at a time.
- Time between multiple shots: If the number of projectiles is bigger than 1, how much time is in between the shots.
- Pass Through Amnt: How many enemies can the projectiles go through before breaking.

Steps to create a new structure:

1. Create a prefab with the must have elements.



2. Create a new class, give it the namespace "TowerSurvivors.Structures" and extend the "Structure class".

```

namespace TowerSurvivors.Structures
{
    Unity Script (1 asset reference) | 0 references
    public class Cannon : Structure
    {

```

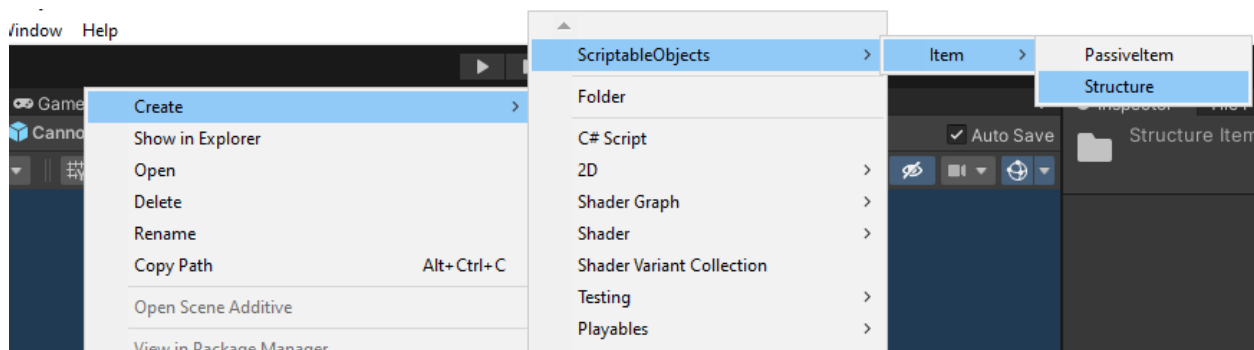
3. Override the FixedUpdate(), Attack() and SpawnProjectile() Methods to program behaviour. The methods ChangeOrientation() and Upgrade(Structure) can be overridden to add custom behaviour.

```
Unity Message | 1 reference
protected override void FixedUpdate()...

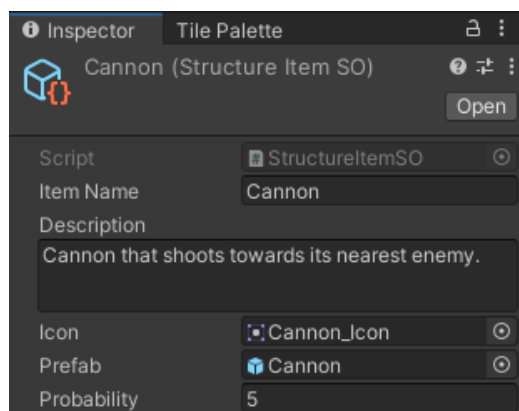
2 references
protected override void Attack()...

2 references
protected override IEnumerator SpawnProjectile(float delay)...
```

4. Once the behaviour is ready, create an Item Asset by Right click -> Create -> ScriptableObjects -> Item -> Structure.



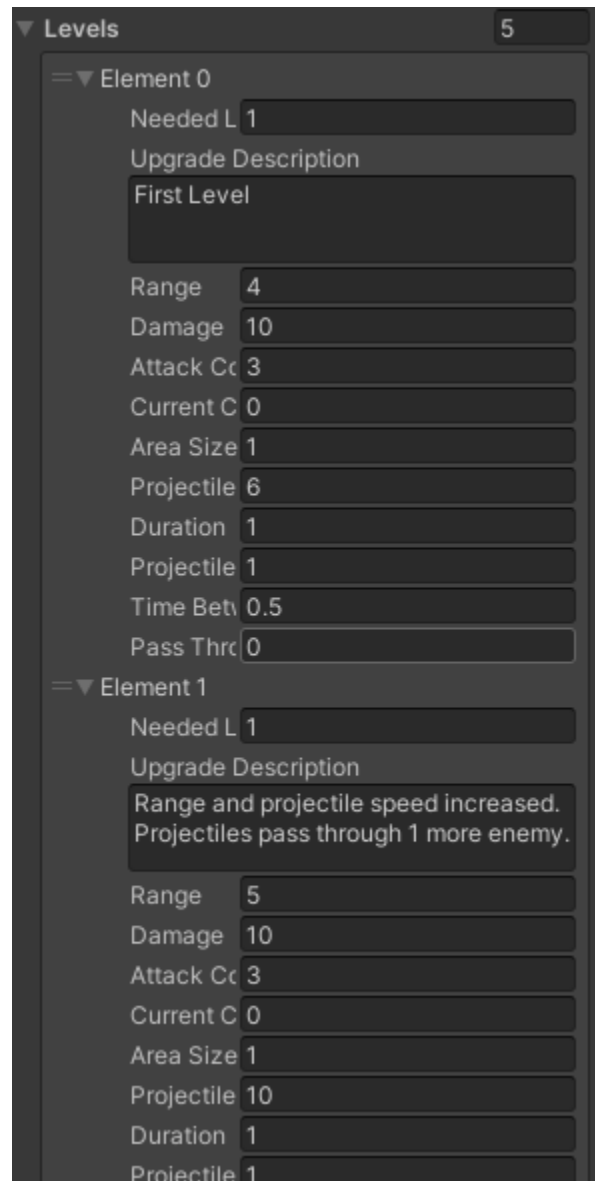
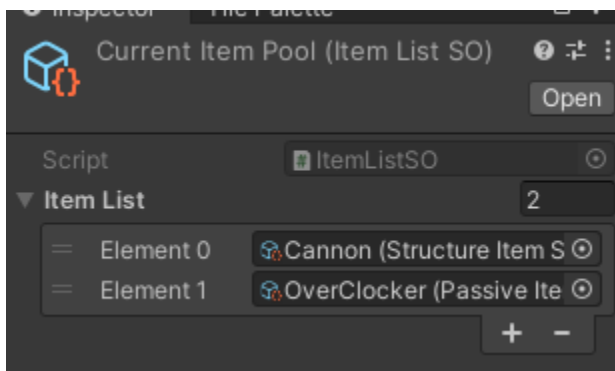
5. Configure the asset with the item name, description, probability and reference the prefab just created.



6. Add levels by creating items in the array, setting each attribute. Once created the first one, copy and paste another one to make it easier and add a description for each level up consisting of which attributes changed from the previous one.
7. Go back to the structure prefab and add the reference of the item asset in the "item" field.



8. To add the structure to the item pool, look for the asset named "CurrentItemPool" located in Assets -> Items.
9. Add the item asset to the Item list.



That's it!