TANK WARS
TANK BUILDER

BY CHRISTOPHER ROSS

CONTENTS

INTRODUCTION

Thank you for purchasing the Tank Wars – Tank Builder! This documentation has been written to give you a detailed overview of the asset. The aim of the tank builder is to help you create a playable tank as quickly and efficiently as possible. It was developed with flexibility and customizability in mind allowing you to quickly add new and exciting options to your tank. Once complete, you may then play with it at the click of a button.

This manual will help you learn how the tank builder works, how to set it up properly, and how to use all the additional systems in place. While this manual cannot cover every possible eventuality, there are various methods of contacting me which can be seen in the contact section.

QUICK SETUP

To quickly step up your own tank, please follow the steps below:

STEP 1 - ADDING THE TANK

In the hierarchy, right click an open space and hover over Tank Wars.

Click the option "Create Tank".
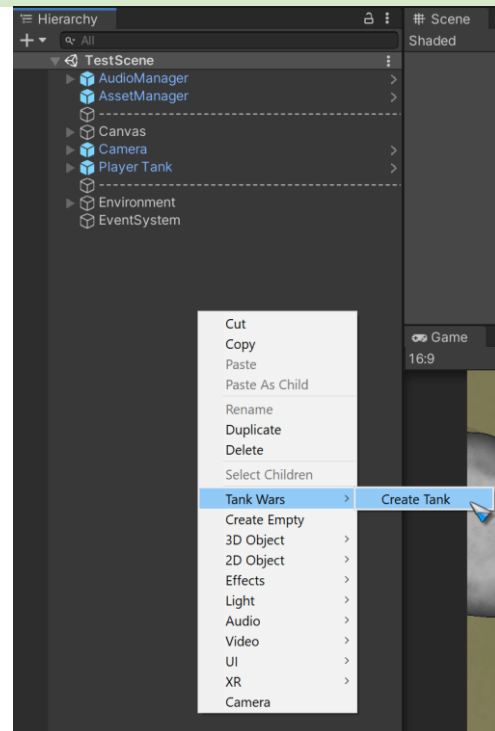
STEP 2 - SETTING THE SORTING LAYER

With the gizmos enabled, a new tank will have appeared with the name "New Tank". If the tank is not visible and only the outline (polygon collider gizmo) is seen as shown in image on the right, a sorting layer must be set.
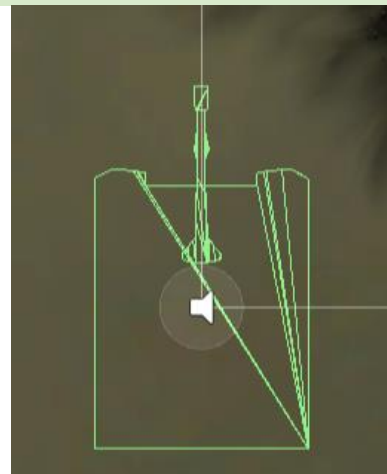
To change the tanks current sorting layer, click the sorting layer dropdown and choose between the existing options. To create a new sorting layer, click the "Add Sorting Layer" option. Once a sorting layer has been selected, click the "Set" button on the right.

If done correctly, your tank should automatically appear above the sprites that were covering it.

Inspector

☑ New Tank   ☐ Static ▾

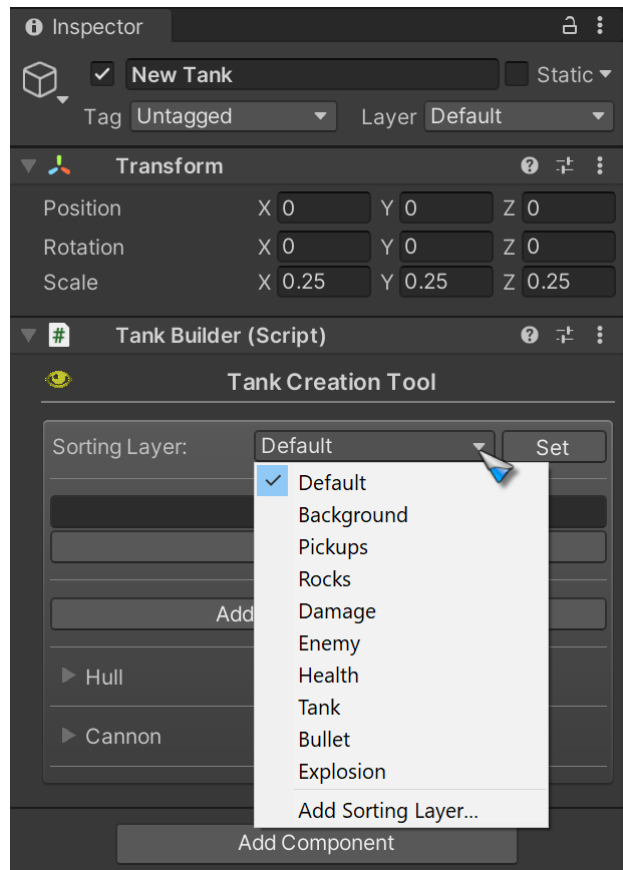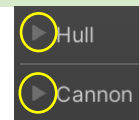Tag Untagged ▾   Layer Default ▾

Transform

Position	X 0	Y 0	Z 0
Rotation	X 0	Y 0	Z 0
Scale	X 0.25	Y 0.25	Z 0.25

Tank Builder (Script)

Tank Creation Tool

Sorting Layer: Default ▾   Set

✓ Default
Background
Pickups
Rocks
Damage
Enemy
Health
Tank
Bullet
Explosion
──────────
Add Sorting Layer…

▶ Hull

▶ Cannon

Add Component

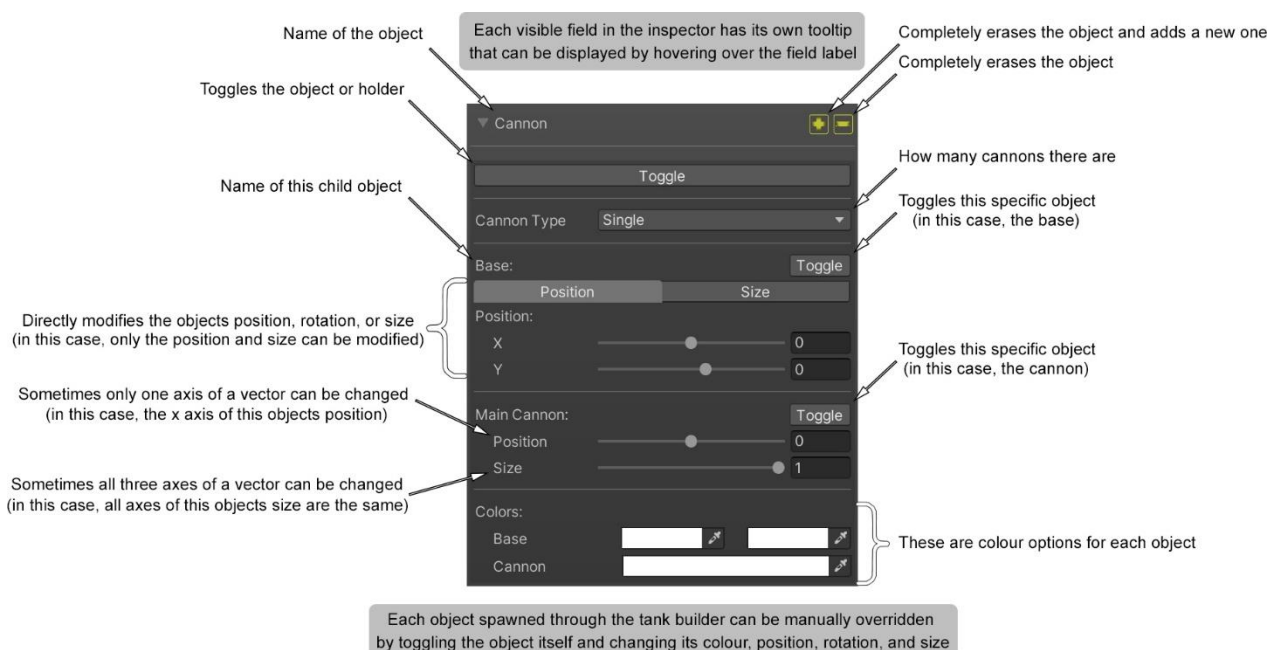## STEP 3 - OBJECT CONFIGURATION

A hull and cannon will already have been added and can now be seen along with the polygon collider gizmo. To configure these two objects, click the dropdown arrows as seen the image on the right.

▶ Hull

▶ Cannon

Each element will come with its own set of options, below is an example of the cannon object:

Name of the object

Each visible field in the inspector has its own tooltip that can be displayed by hovering over the field label

Completely erases the object and adds a new one

Completely erases the object

Toggles the object or holder

▼ Cannon   ➕ ➖

Toggle

Name of this child object

Cannon Type   Single ▾

How many cannons there are

Toggles this specific object (in this case, the base)

Base: Toggle

Position   Size

Position:

Directly modifies the objects position, rotation, or size (in this case, only the position and size can be modified)

X   0
Y   0

Toggles this specific object (in this case, the cannon)

Sometimes only one axis of a vector can be changed (in this case, the x axis of this objects position)

Main Cannon: Toggle

Position   0
Size   1

Sometimes all three axes of a vector can be changed (in this case, all axes of this objects size are the same)

Colors:
Base
Cannon

These are colour options for each object

Each object spawned through the tank builder can be manually overridden by toggling the object itself and changing its colour, position, rotation, and size

STEP 4 - ACCESSORIES

With the base tank now coloured, accessories can be added:

In the **resources folder** within the **project tab**, go to the following directory:

"Resources\TankWars\Sprites"

Within this folder all accessory categories that came with this asset can be found. Many more categories can also be added by creating a new folder in that same directory and placing any number of Unity supported images inside. If a category is going to contain only one image, then the creation of a folder is not necessary.
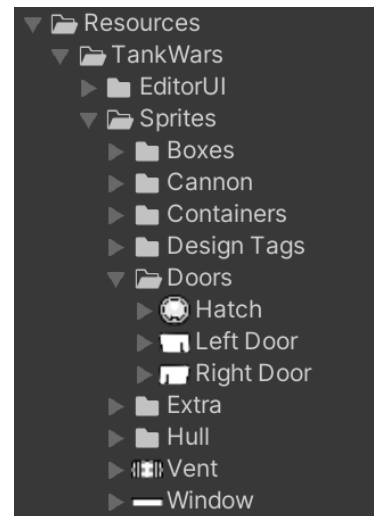
With all categories placed correctly in the sprites folder within the resources, the tank builder will automatically detect these and add them as assignable categories. Click the "Add Category" button and category can be chosen as seen in the image on the right.

If you do not wish to add a custom name to the category, the original folder name will be added instead.
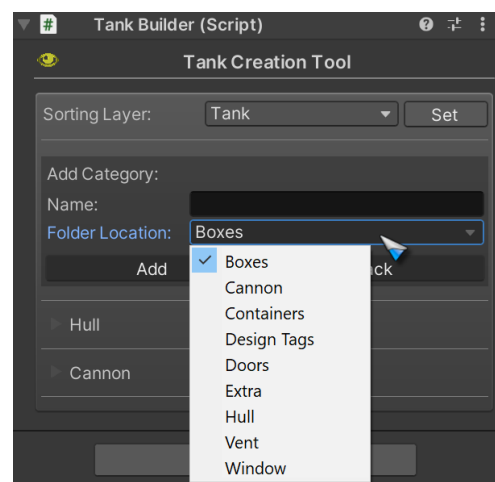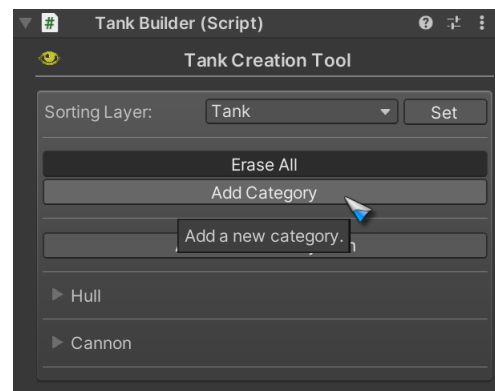
Once a category has been added, accessories can be placed on the tank by clicking the plus button and then the "New Accessory".
Alternatively, a copy of an existing accessory can be made through clicking the plus button located beside the accessories name.
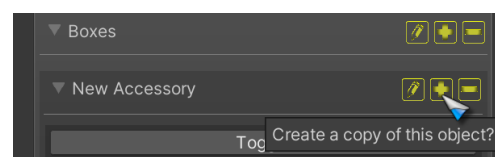
STEP 5 - TANK CONTROLLER

Once all the desired accessories have been added to your tank, a movement system can be added at the click of a button. Click the "Add Movement System" and two new components will immediately be added to your tanks game object as seen in the image to the right.

The Tank Controller component cannot work without a Rigidbody 2D component and thus it cannot be removed without first removing the Tank Controller.

Once the Tank Controller component has been added, you may feel that the inspector tab is becoming quite cluttered. The eye buttons at the top-right corner of each section can be clicked to hide all content within the section.

Finally review and adjust all the settings present within the component to your needs.
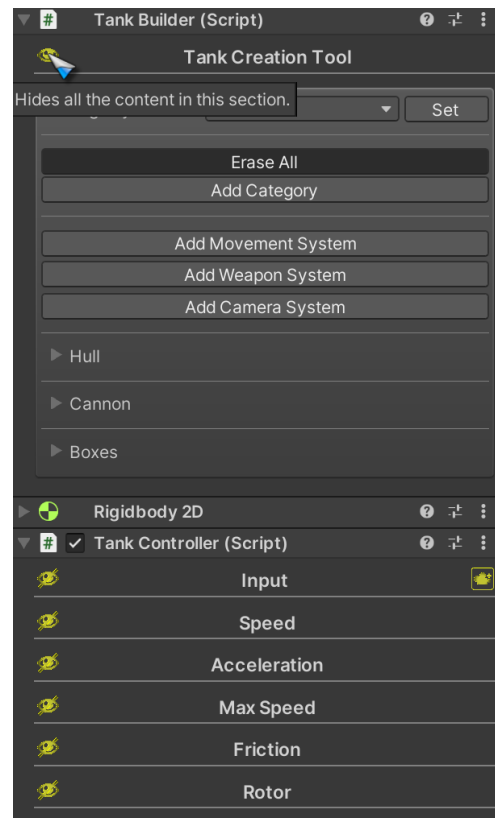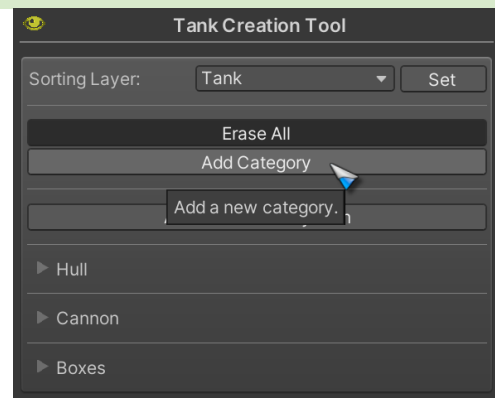
STEP 8 - WEAPON CONTROLLER

Depending on your choice of cannon type (single or double), a weapon slot will appear in the inspector as shown in the image to the right.

Weapons can be made at ease on the project tab by right clicking anywhere, selecting "Create", "Tank Wars", and then "New Weapon".

Alternatively, a premade weapon that comes ready-made with this asset can be selected instead. These premade weapons can be seen in the image below under weapons.
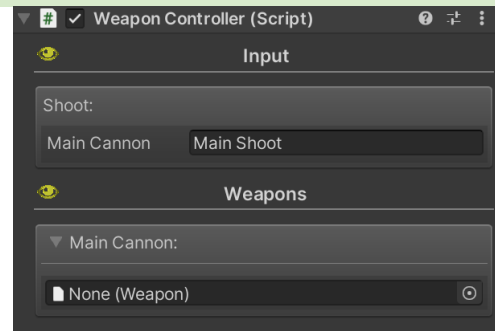
Note: The weapons are to be **dragged and dropped** from the project tab.
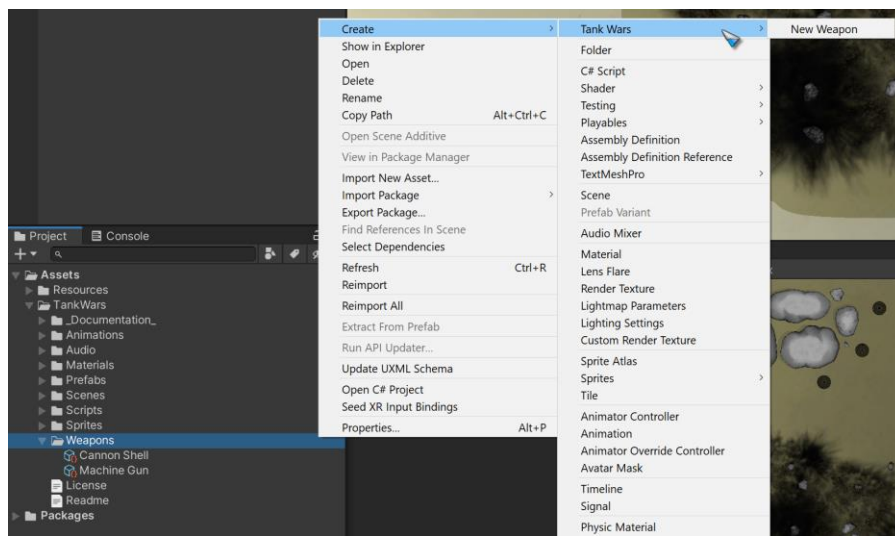
Tip: When changing the settings of a weapon, placing it in the weapon controller will provide better usability. For example: the shot sound requires the exact name of a sound. In the weapon controller the sound can be picked through a set of option is in dropdown menu.

Project Access	Weapon Controller Access
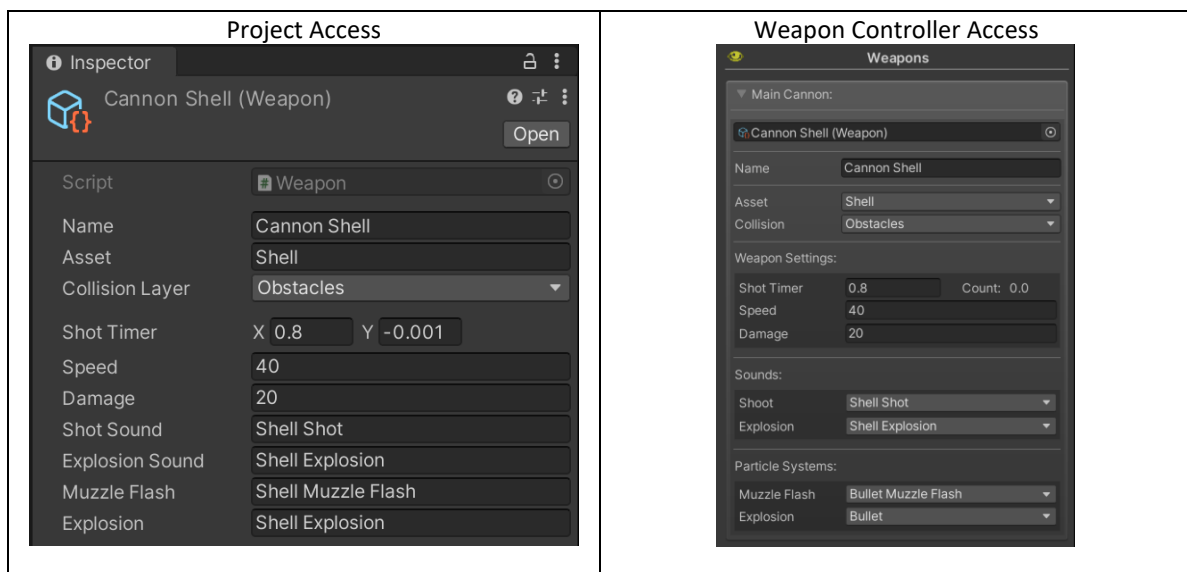
STEP 7 - AUDIO MANAGER

For the sounds to properly show up in the dropdown menus of the weapon controller, sounds must be added to the audio manager.

To add an audio clip, create the audio manager by right clicking the hierarchy, selecting "Tank Wars", and choosing "Create Audio Manager".

Once added, you will find that no sounds are currently available. One can be added by clicking the plus button at the top right corner of the component.

From there, an audio source will automatically be added, and its settings can be adjusted from the corresponding sound within the audio manager.

As soon as any sound has been added to the audio manager, the same sound will be detected by the weapon controller's dropdown menus.

Audio	+
▶ Shell Shot	
▶ Tank Explosion	
▶ Shell Explosion	
▶ Gun Shot	
▼ Mine Explosion	+ −

Name	Mine Explosion
Clip	♫ TankExplosion ⊙
Volume	0.5 | 0.9
Pitch	0.8 | 1.2
Loop	☐
Play	

Code Usage:

Audio Manager is a singleton → `AudioManager.Instance` ← Name of sound

A property can be made to automatically call instance → `AudioManager.PlaySound(weapon.ShotSound);`

STEP 8 - ASSET MANGER

The asset manager works in a similar way to the audio manager. This is an easy way to quickly instantiate prefabs at a certain position, rotation and size with a set duration of life.

A premade prefab of both the asset manager and audio manager can be found in the prefabs folder within the project tab.

Assets	+
▶ Shell	
▶ Tank Explosion	
▼ Mine Explosion	+ −

Name	Mine Explosion
Prefab	🎲 Explosion 5 ⊙

Size:
X	1 | 1
Y	1 | 1
Infinite Life	☐
Life Duration	2

▶ Shell Explosion	
▶ Bullet	
▶ Shell Muzzle Flash	
▶ Bullet Muzzle Flash	
▶ Bullet Ricochet	
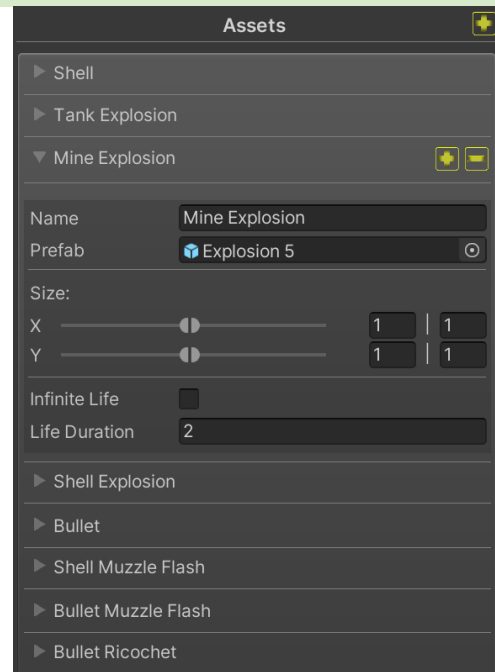
Code Usage:

Position when spawned

`AssetManager.SpawnObject(weapon.Asset, firePointPosition, firePointRotation);`

Asset Name   Rotation when spawned

Tank Creation Tool

Sorting Layer:	Tank ▼	Set

Erase All
Add Category

Add Movement System
Add Weapon System
Add Camera System

The final element is the camera controller which can be added by clicking the "Add Camera System" button located alongside the other system buttons.

A new game object will appear in the hierarchy with the name "Camera".
This game object will have a component on it called the camera controller, if the tank controller has not been automatically added, the tank button in the top right corner will allow it to be manually input.

Once the game object has been created, the play button on the editor can be pressed and the tank will play exactly as seen in the demo and video.

Targeting

Target:	⚘ Player Tank (Trar ⊙	Reset

Rotate With Target? ☐
Offset: X 0   Y 0
Camera Distance ────────●── 30

Far Look? ☐
Far Look Speed ──────●──── 10
Far Look Distance ──────●── 15

Input

Cursor Not Locked
Cursor Unlock Key Escape ▼

Joystick:

Invert:	Horizontal ☐	Vertical ☐
Horizontal	Right Joystick Horizontal	
Vertical	Right Joystick Vertical	

Dead Zone Threshold ──────●── 0.2

Actions:

Far Look	Far Look

Movement

▼ Smooth Movement ☑

Follow Method	Smooth Damp ▼
Damp Time	───●───── 0.25

▼ Smooth Rotation ☑

Time	───●───── 2.5

TAGS & LAYERS & SORTING LAYERS

Within this project, the obstacle user layer is used by the weapons to detect what the ammo can hit. The mine tag is used in the ammo controller to explode the mine.

Note: *Ensure the rock and mine prefabs are layered as an obstacle, and the mine is tagged as a mine.*

▼ Tags	
Tag 0	Mine
	+. −

▼ Sorting Layers	
= Layer	Default
= Layer	Background
= Layer	Rocks
= Layer	Mine
= Layer	Tank
= Layer	Bullet
= Layer	Explosion
	+ −

| ▼ Layers	
Builtin Layer 0	Default
Builtin Layer 1	TransparentFX
Builtin Layer 2	Ignore Raycast
Builtin Layer 3	
Builtin Layer 4	Water
Builtin Layer 5	UI
Builtin Layer 6	
Builtin Layer 7	
User Layer 8	Obstacles
User Layer 9	
User Layer 10	
User Layer 11	
User Layer 12	
User Layer 13	
User Layer 14	
User Layer 15	
User Layer 16	
User Layer 17	
User Layer 18	
User Layer 19	
User Layer 20	
User Layer 21	
User Layer 22	
User Layer 23	
User Layer 24	
User Layer 25	
User Layer 26	
User Layer 27	
User Layer 28	
User Layer 29	
User Layer 30	
User Layer 31	

INPUT MANAGER (OLD)

Below is all the default setting for the old input manager found in the project settings:

OVERVIEW

Click the desired input in the image below:
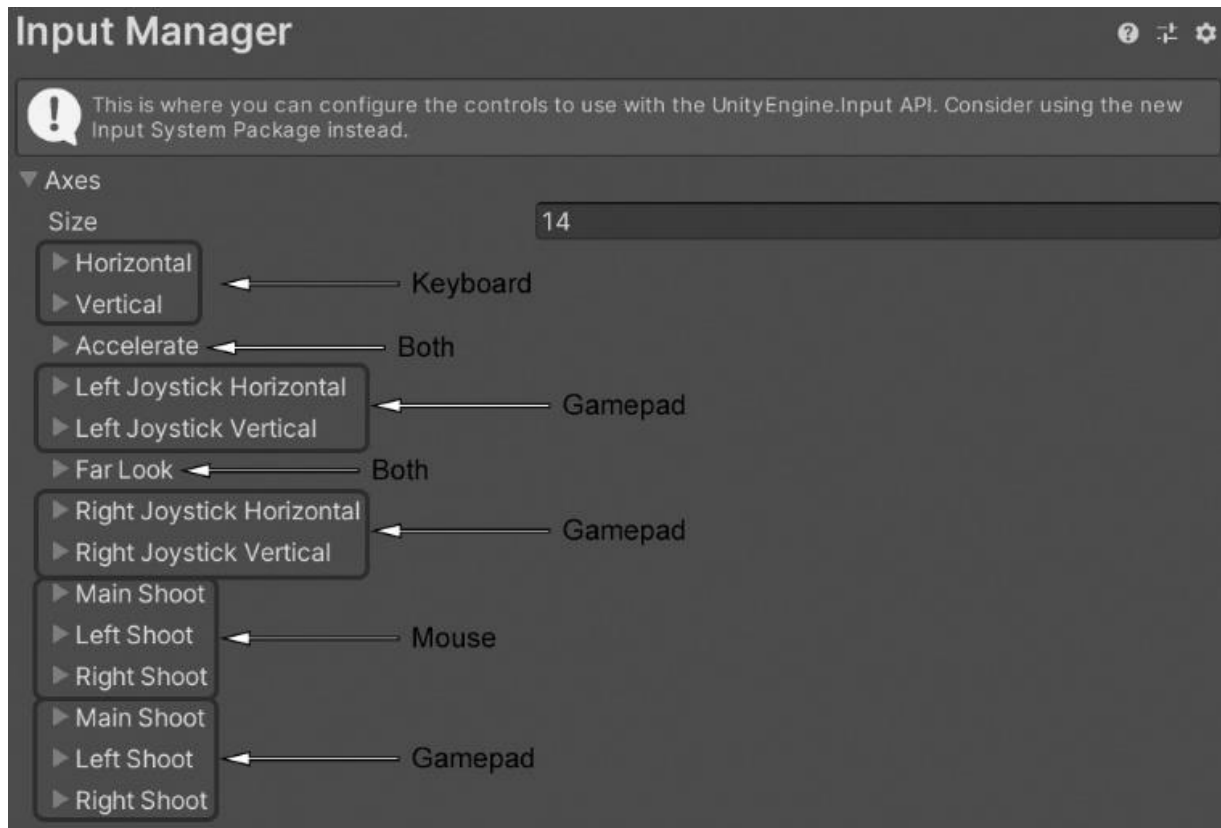
Horizontal	
Name	Horizontal
Descriptive Name	
Descriptive Negative Name	
Negative Button	left
Positive Button	right
Alt Negative Button	a
Alt Positive Button	d
Gravity	3
Dead	0.001
Sensitivity	3
Snap	✔
Invert	
Type	Key or Mouse Button
Axis	X axis
Joy Num	Get Motion from all Joysticks

Vertical	
Name	Vertical
Descriptive Name	
Descriptive Negative Name	
Negative Button	down
Positive Button	up
Alt Negative Button	s
Alt Positive Button	w
Gravity	3
Dead	0.001
Sensitivity	3
Snap	✔
Invert	
Type	Key or Mouse Button
Axis	X axis
Joy Num	Get Motion from all Joysticks

Accelerate

Name	Accelerate
Descriptive Name	
Descriptive Negative Name	
Negative Button	
Positive Button	left shift
Alt Negative Button	
Alt Positive Button	joystick button 0
Gravity	1000
Dead	0.001
Sensitivity	1000
Snap	☐
Invert	☐
Type	Key or Mouse Button ▼
Axis	X axis ▼
Joy Num	Get Motion from all Joysticks ▼

Left Joystick Horizontal

Name	Left Joystick Horizontal
Descriptive Name	
Descriptive Negative Name	
Negative Button	
Positive Button	
Alt Negative Button	
Alt Positive Button	
Gravity	0
Dead	0.19
Sensitivity	1
Snap	☐
Invert	☐
Type	Joystick Axis ▼
Axis	X axis ▼
Joy Num	Get Motion from all Joysticks ▼

Left Joystick Vertical

Name	Left Joystick Vertical
Descriptive Name	
Descriptive Negative Name	
Negative Button	
Positive Button	
Alt Negative Button	
Alt Positive Button	
Gravity	0
Dead	0.19
Sensitivity	1
Snap	☐
Invert	✓
Type	Joystick Axis ▼
Axis	Y axis ▼
Joy Num	Get Motion from all Joysticks ▼

Far Look

Name	Far Look
Descriptive Name	
Descriptive Negative Name	
Negative Button	
Positive Button	f
Alt Negative Button	
Alt Positive Button	joystick button 4
Gravity	0
Dead	0.19
Sensitivity	1
Snap	☐
Invert	☐
Type	Key or Mouse Button
Axis	5th axis (Joysticks)
Joy Num	Get Motion from all Joysticks

Right Joystick Horizontal

Name	Right Joystick Horizontal
Descriptive Name	
Descriptive Negative Name	
Negative Button	
Positive Button	
Alt Negative Button	
Alt Positive Button	
Gravity	0
Dead	0.1
Sensitivity	1
Snap	☐
Invert	☐
Type	Joystick Axis
Axis	4th axis (Joysticks)
Joy Num	Get Motion from all Joysticks

Right Joystick Vertical

Name	Right Joystick Vertical
Descriptive Name	
Descriptive Negative Name	
Negative Button	
Positive Button	
Alt Negative Button	
Alt Positive Button	
Gravity	0
Dead	0.1
Sensitivity	1
Snap	☐
Invert	☑
Type	Joystick Axis
Axis	5th axis (Joysticks)
Joy Num	Get Motion from all Joysticks

Main Shoot

Name	Main Shoot
Descriptive Name	
Descriptive Negative Name	
Negative Button	
Positive Button	mouse 0
Alt Negative Button	
Alt Positive Button	
Gravity	0
Dead	0.1
Sensitivity	1
Snap	☐
Invert	☐
Type	Key or Mouse Button
Axis	5th axis (Joysticks)
Joy Num	Get Motion from all Joysticks

Left Shoot

Name	Left Shoot
Descriptive Name	
Descriptive Negative Name	
Negative Button	
Positive Button	mouse 0
Alt Negative Button	
Alt Positive Button	
Gravity	0
Dead	0.1
Sensitivity	1
Snap	☐
Invert	☐
Type	Key or Mouse Button
Axis	5th axis (Joysticks)
Joy Num	Get Motion from all Joysticks

Right Shoot

Name	Right Shoot
Descriptive Name	
Descriptive Negative Name	
Negative Button	
Positive Button	mouse 1
Alt Negative Button	
Alt Positive Button	
Gravity	0
Dead	0.1
Sensitivity	1
Snap	☐
Invert	☐
Type	Key or Mouse Button
Axis	5th axis (Joysticks)
Joy Num	Get Motion from all Joysticks

Main Shoot

Name	Main Shoot
Descriptive Name	
Descriptive Negative Name	
Negative Button	
Positive Button	
Alt Negative Button	
Alt Positive Button	
Gravity	0
Dead	0.1
Sensitivity	1
Snap	☐
Invert	☐
Type	Joystick Axis
Axis	9th axis (Joysticks)
Joy Num	Get Motion from all Joysticks

Left Shoot

Name	Left Shoot
Descriptive Name	
Descriptive Negative Name	
Negative Button	
Positive Button	
Alt Negative Button	
Alt Positive Button	
Gravity	0
Dead	0.1
Sensitivity	1
Snap	☐
Invert	☐
Type	Joystick Axis
Axis	9th axis (Joysticks)
Joy Num	Get Motion from all Joysticks

Right Shoot

Name	Right Shoot
Descriptive Name	
Descriptive Negative Name	
Negative Button	
Positive Button	
Alt Negative Button	
Alt Positive Button	
Gravity	0
Dead	0.1
Sensitivity	1
Snap	☐
Invert	☐
Type	Joystick Axis
Axis	10th axis (Joysticks)
Joy Num	Get Motion from all Joysticks

DEMO

Demo

VIDEO TUTORIALS

YouTube Video

CONTACT

Please see my portfolio in the link below and I can be contacted either through LinkedIn or Twitter:

Portfolio