Chapter 1:Saying Hello to Unity and Android

Setting up the development environment

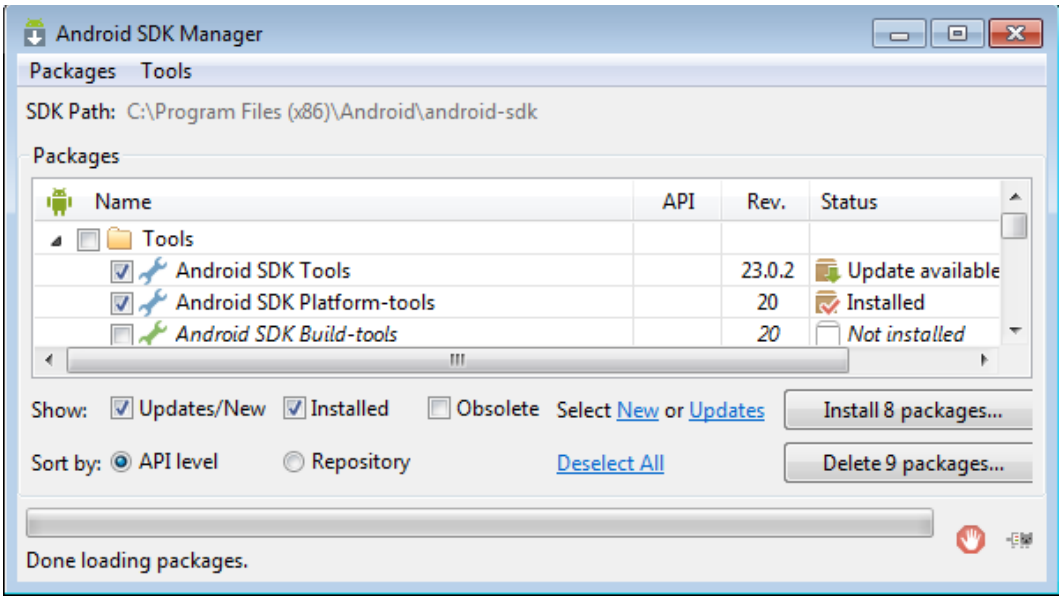
Installing the Android SDK

Other Download Options

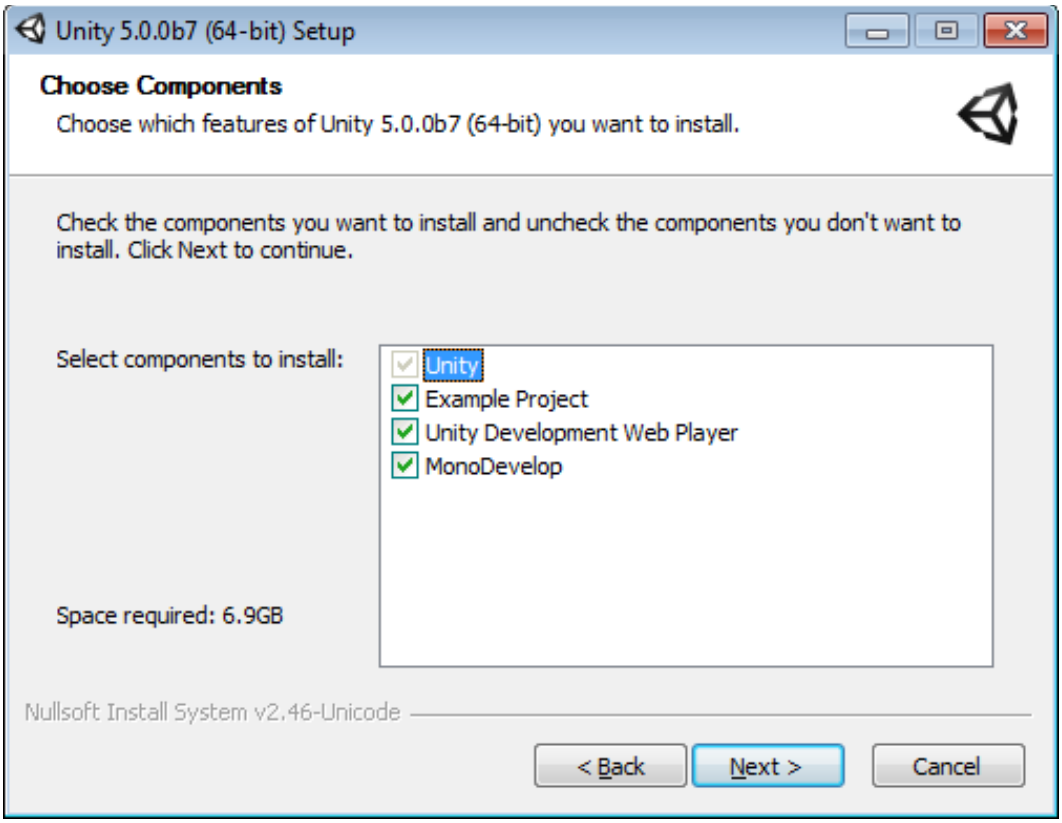
SDK Tools Only

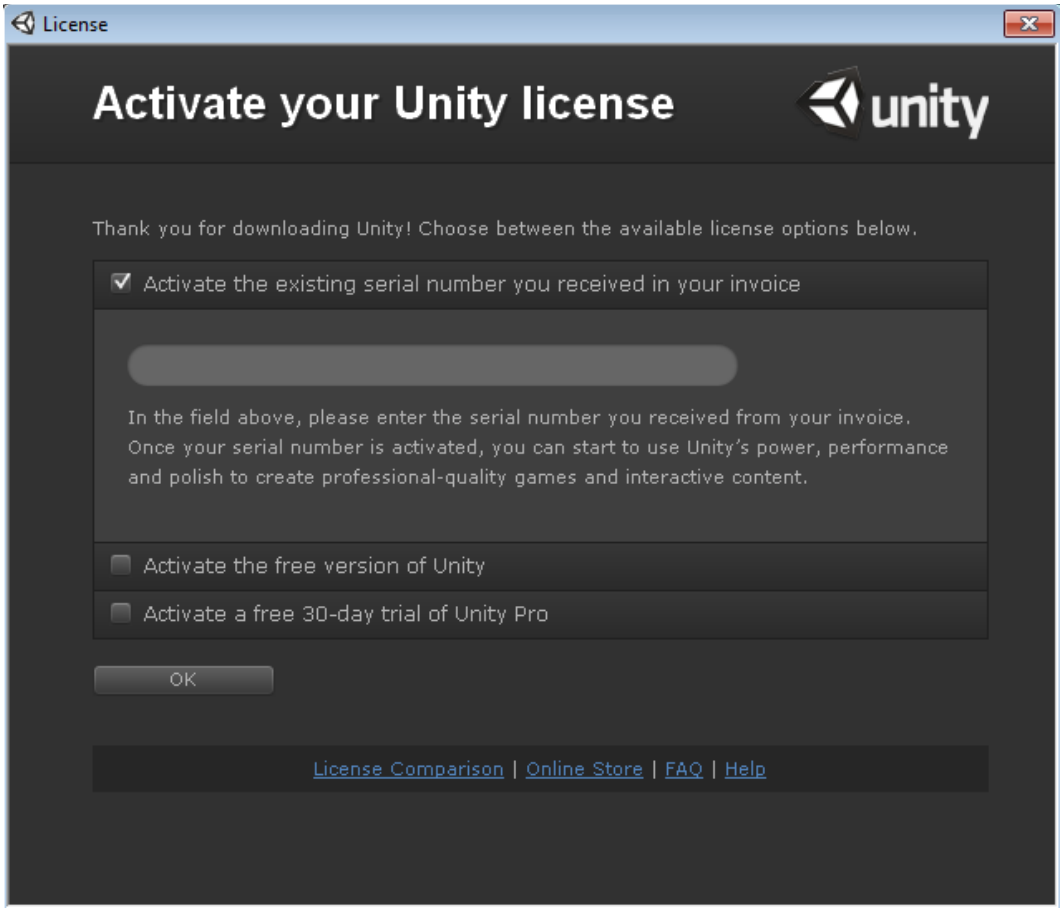
If you prefer to use a different IDE or run the tools from the command line or with build scripts, you can instead download the stand-alone Android SDK Tools. These packages provide the basic SDK tools for app development, without an IDE. Also see the SDK tools release notes.

Platform	Package	Size	SHA-1 Checksum
Windows	installer_r24.0.2-windows.exe (Recommended)	91428280 bytes	edac14e1541e97d68821fa3a709b4ea8c659e676
	android-sdk_r24.0.2-windows.zip	139473113 bytes	51269c8336f936fc9b9538f9b9ca236b78fb4e4b
Mac OS X	android-sdk_r24.0.2-macosx.zip	87262823 bytes	3ab5e0ab0db5e7c45de9da7ff525dee6cfa97455
Linux	android-sdk_r24.0.2-linux.tgz	140097024 bytes	b6fd75e8b06b0028c2427e6da7d8a09d8f956a86


Android SDK Manager
Packages
Tools
SDK Path: C:\Program Files (x86)\Android\android-sdk
Packages
Name
API
Rev.
Status
Tools
Android SDK Tools
23.0.2
Update available
Android SDK Platform-tools
20
Installed
Android SDK Build-tools
20
Not installed
Show:
Updates/New
Installed
Obsolete
Select New or Updates
Install 8 packages...
Sort by:
API level
Repository
Deselect All
Delete 9 packages...
Done loading packages.

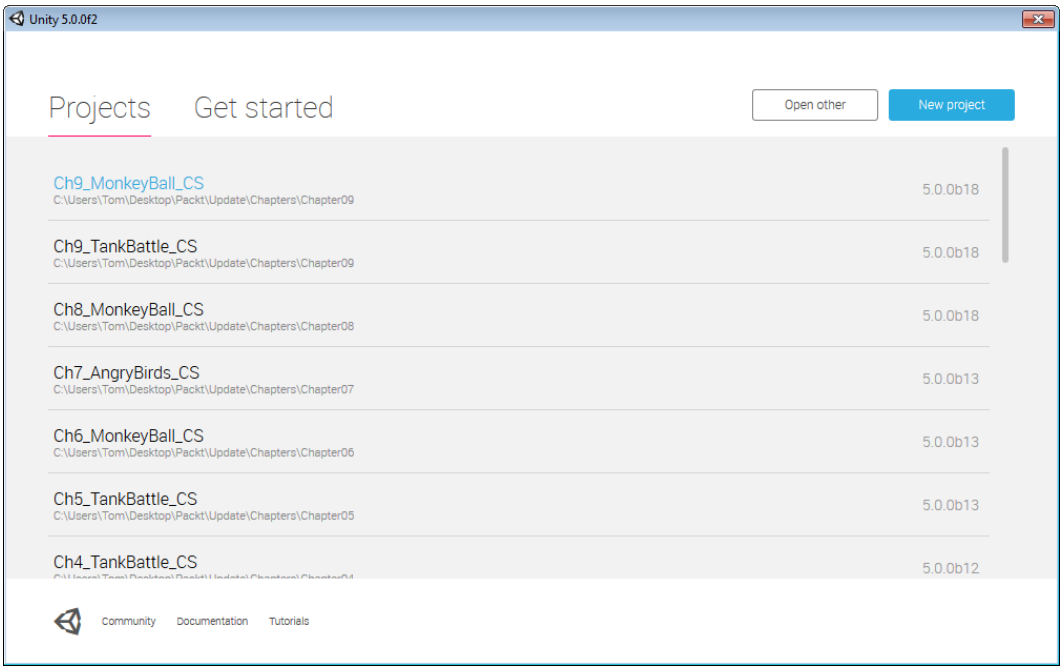
Installing Unity 3D

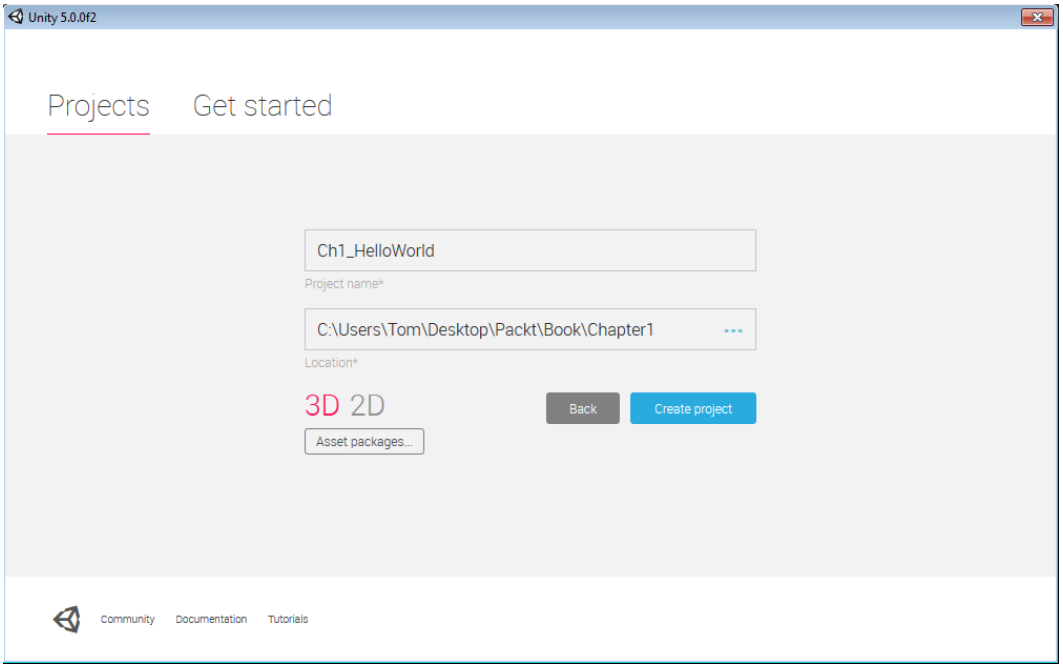



License
Activate your Unity license
unity
Thank you for downloading Unity! Choose between the available license options below.
Activate the existing serial number you received in your invoice
In the field above, please enter the serial number you received from your invoice.
Once your serial number is activated, you can start to use Unity's power, performance and polish to create professional-quality games and interactive content.
Activate the free version of Unity
Activate a free 30-day trial of Unity Pro
OK
License Comparison | Online Store | FAQ | Help

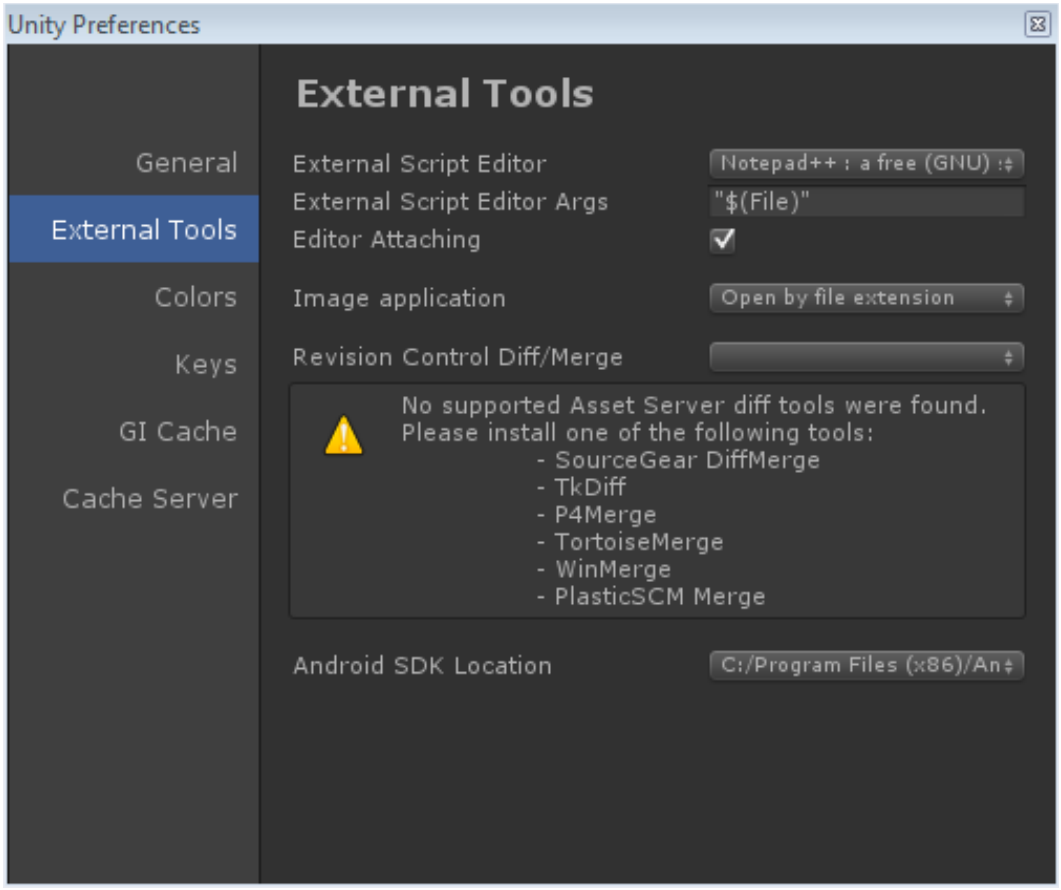
Building a simple application

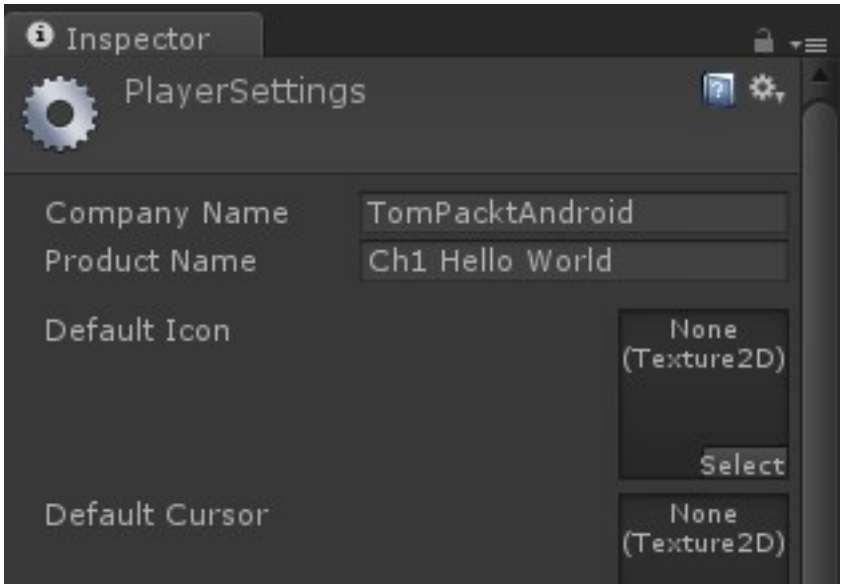
Hello World

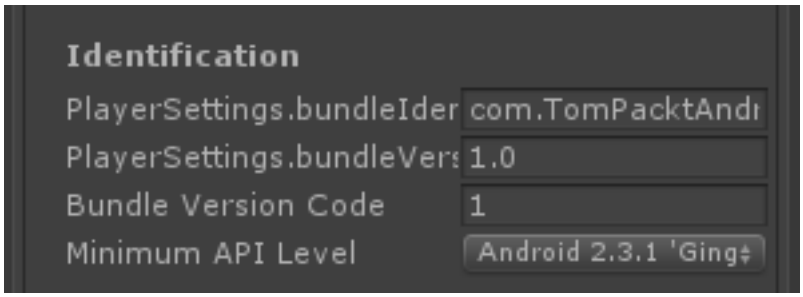



Unity 5.0.0f2
Projects
Get started
Ch1_HelloWorld
Project name*
C:\Users\Tom\Desktop\Packt\Book\Chapter1
Location*
3D 2D
Back
Create project
Asset packages...
Community
Documentation
Tutorials


Local/Global
Play
Step
Pause
Pan
Pivot/Center
Move
Rotate
Scale
Bounds
Game View
Hierarchy
Scene View
Inspector
Console
Project


Unity Preferences
External Tools
General
External Tools
Colors
Keys
GI Cache
Cache Server
External Script Editor
Notepad++ : a free (GNU) :
External Script Editor Args
"$(File)"
Editor Attaching
Image application
Open by file extension
Revision Control Diff/Merge
No supported Asset Server diff tools were found.
Please install one of the following tools:
- SourceGear DiffMerge
- TkDiff
- P4Merge
- TortoiseMerge
- WinMerge
- PlasticSCM Merge
Android SDK Location
C:/Program Files (x86)/An

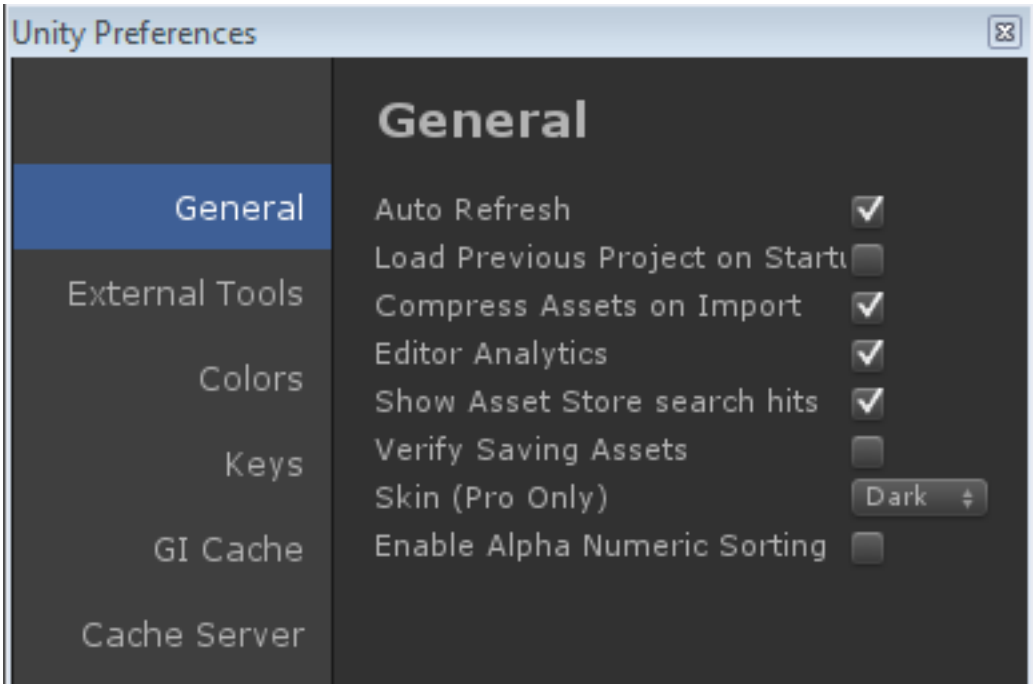

Inspector
PlayerSettings
Company Name
TomPacktAndroid
Product Name
Ch1 Hello World
Default Icon
None
(Texture2D)
Select
Default Cursor
None
(Texture2D)


Identification
PlayerSettings.bundleIder
com.TomPacktAndr
PlayerSettings.bundleVers
1.0
Bundle Version Code
1
Minimum API Level
Android 2.3.1 'Ging

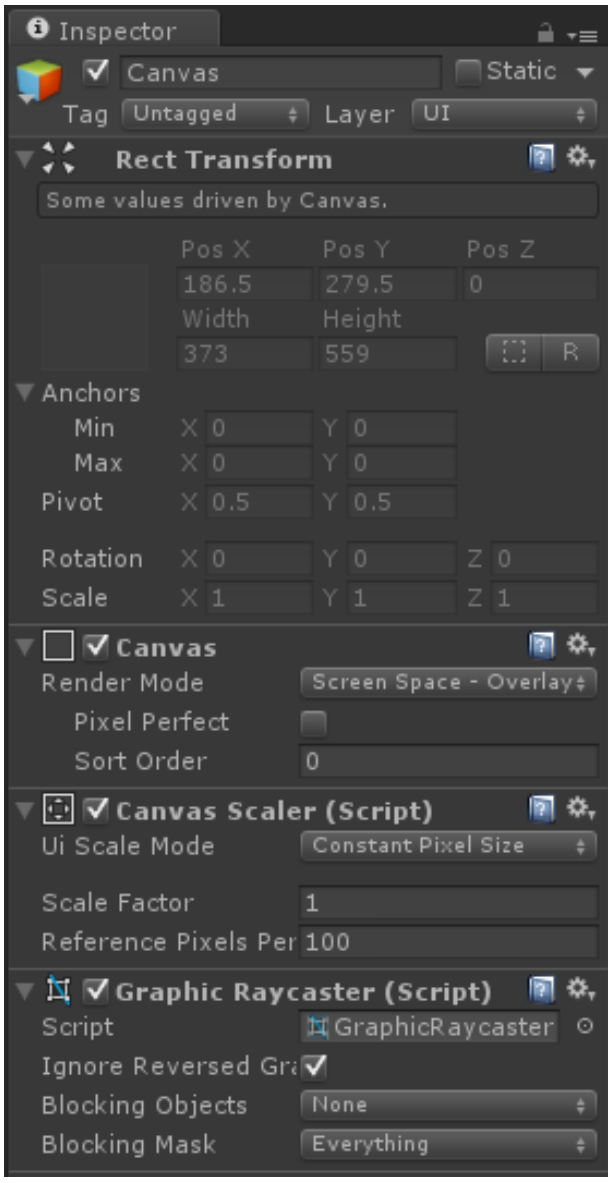
Chapter 2: Looking Good – The Graphical Interface

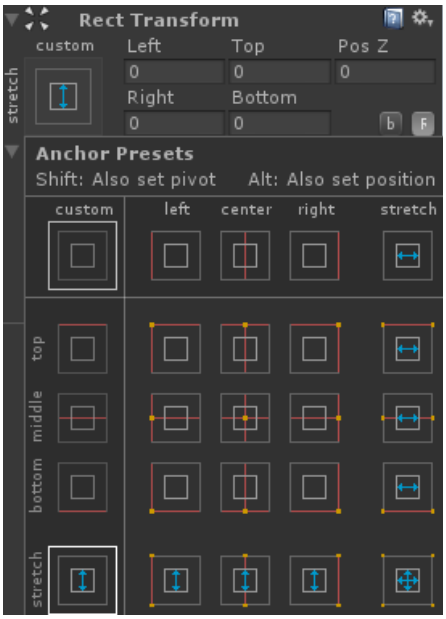
Creating a Tic-tac-toe game

The game board

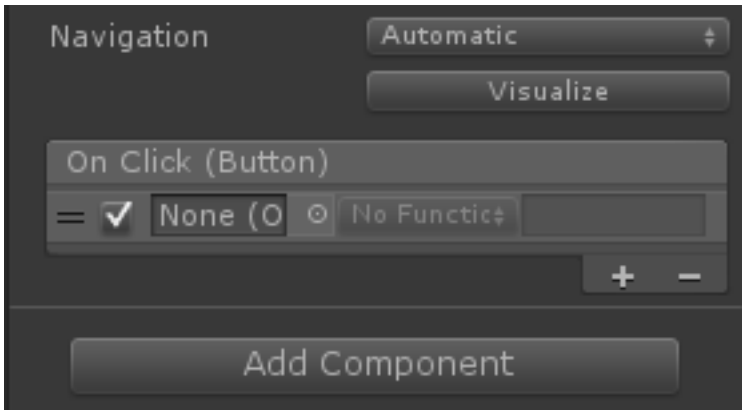


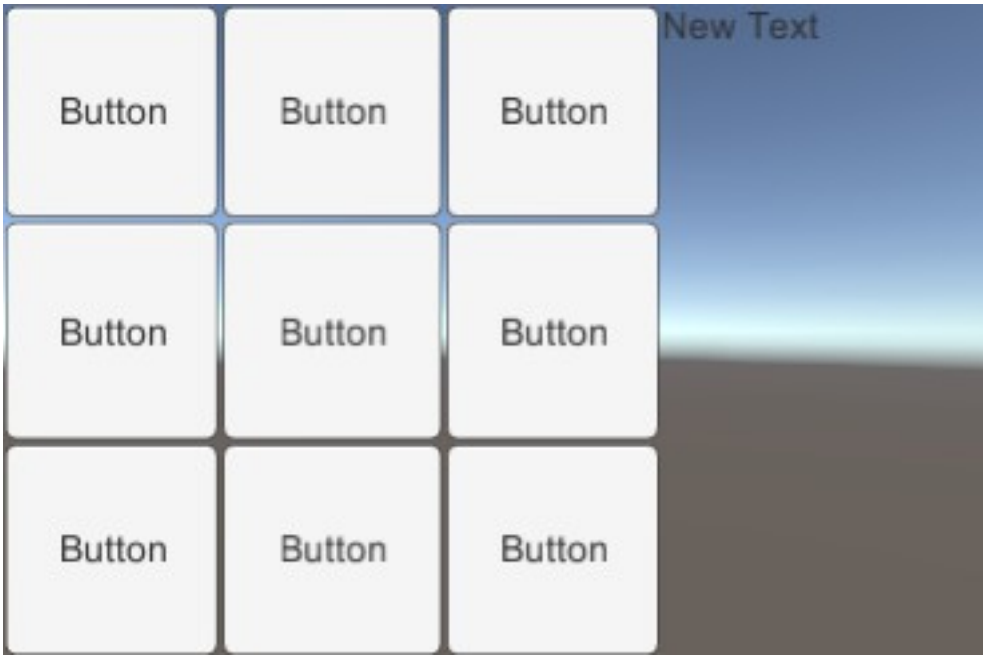
Creating the board




Rect Transform
custom
Left
Top
Pos Z
0
0
0
stretch
Right
Bottom
0
0
b
F
Anchor Presets
Shift: Also set pivot
Alt: Also set position
custom
left
center
right
stretch
top
middle
bottom
stretch

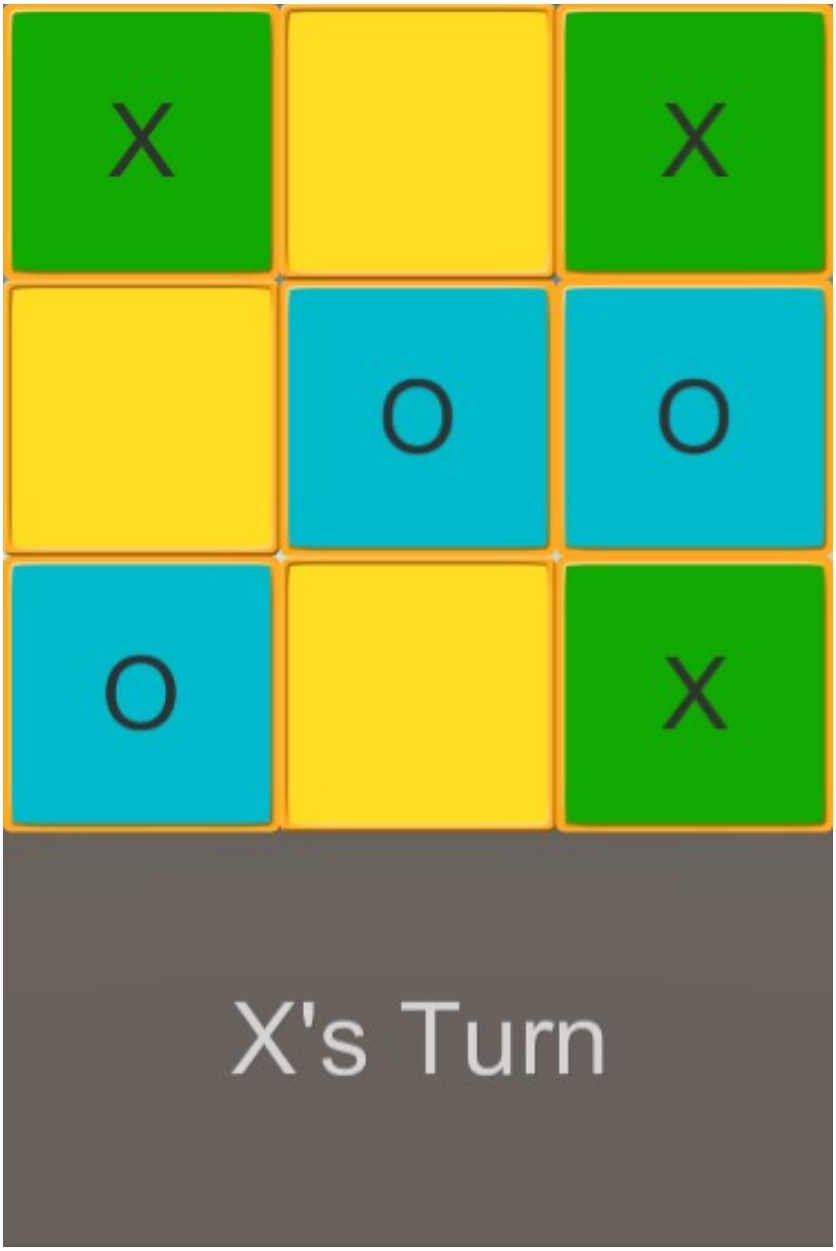
Controlling the game





Messing with fonts

Rotating devices

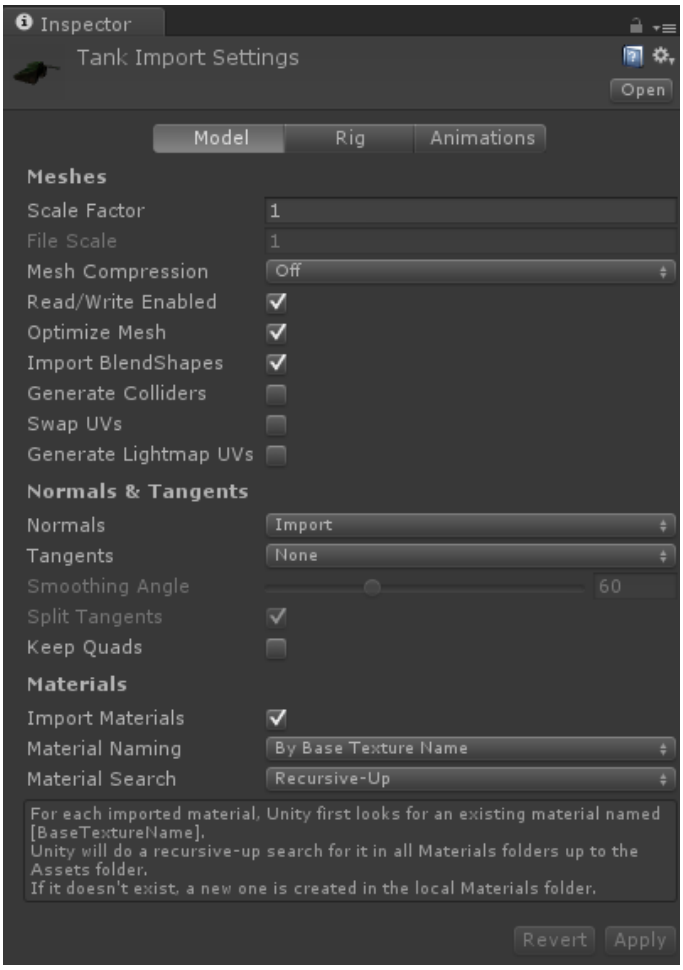


Menus and victory

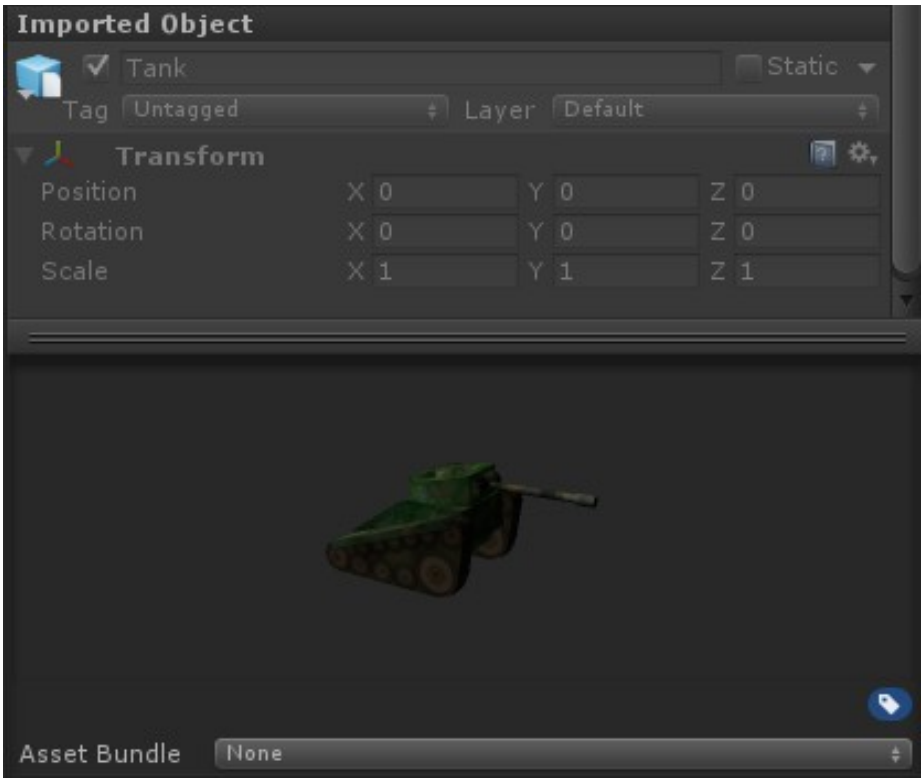
Setting up the elements

Chapter 3: The Backbone of Any Game – Meshes, Materials, and Animations

Tank import settings

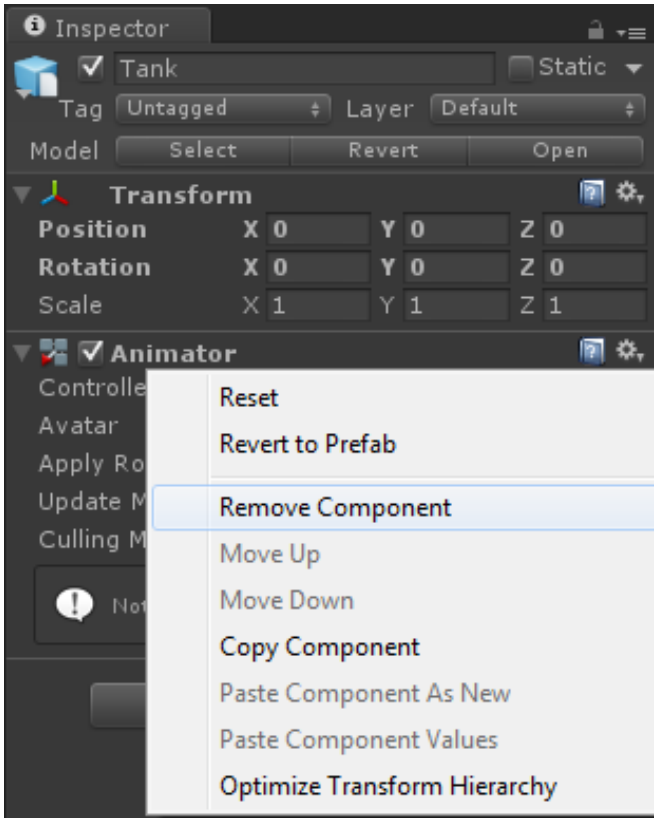


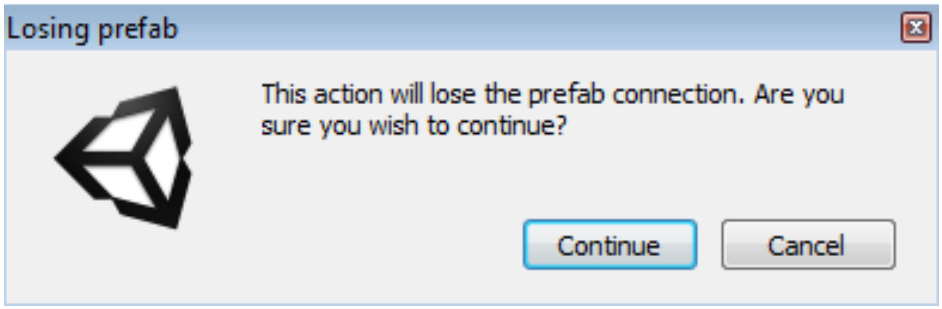
Revert and Apply buttons



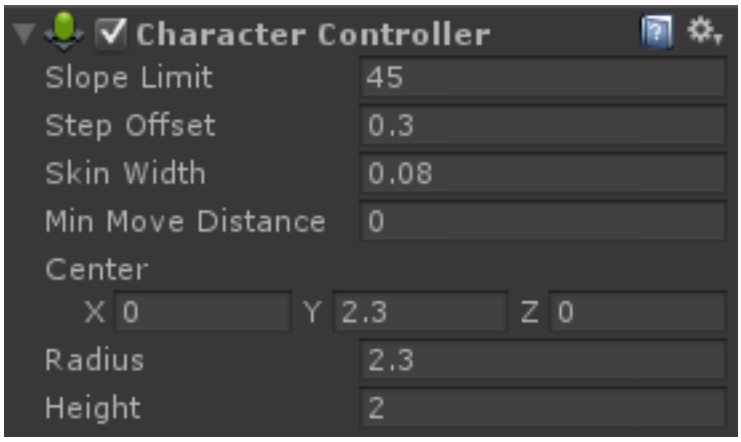
Setting up the tank

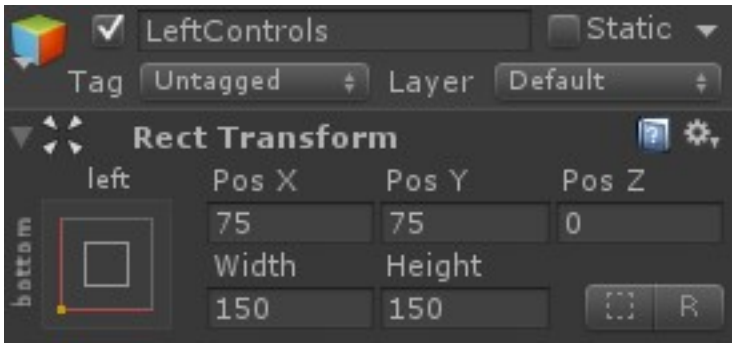
The tank

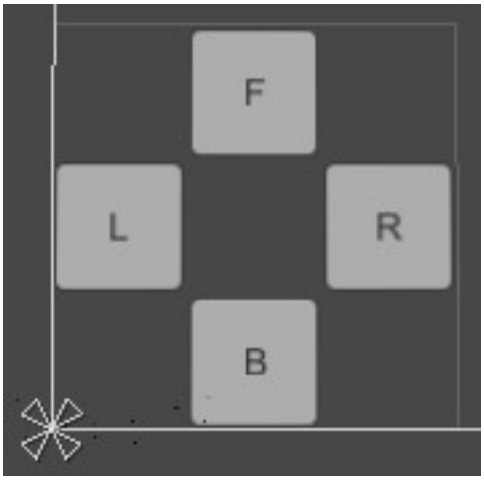




Putting the pieces together



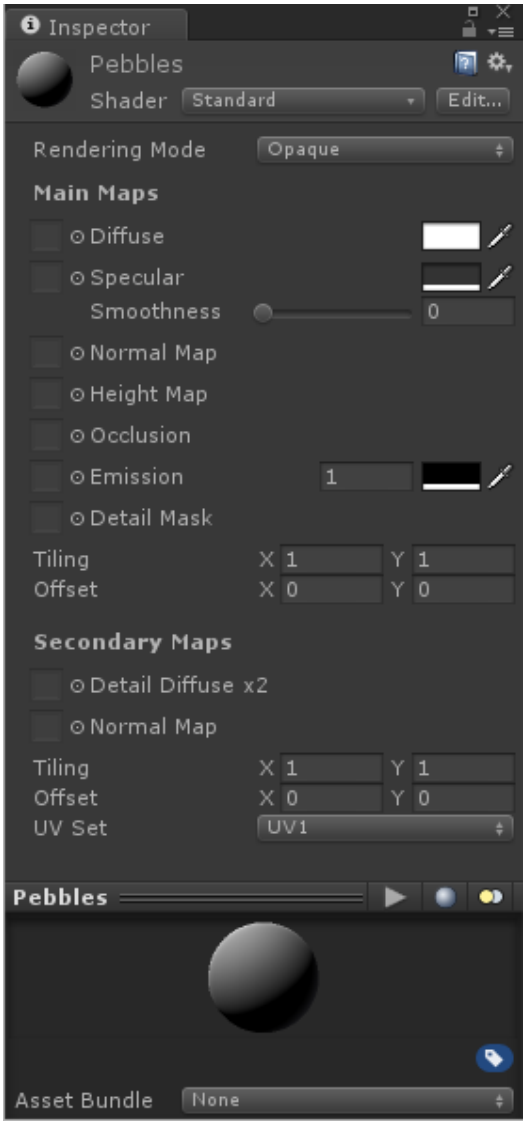



F
L
R
B

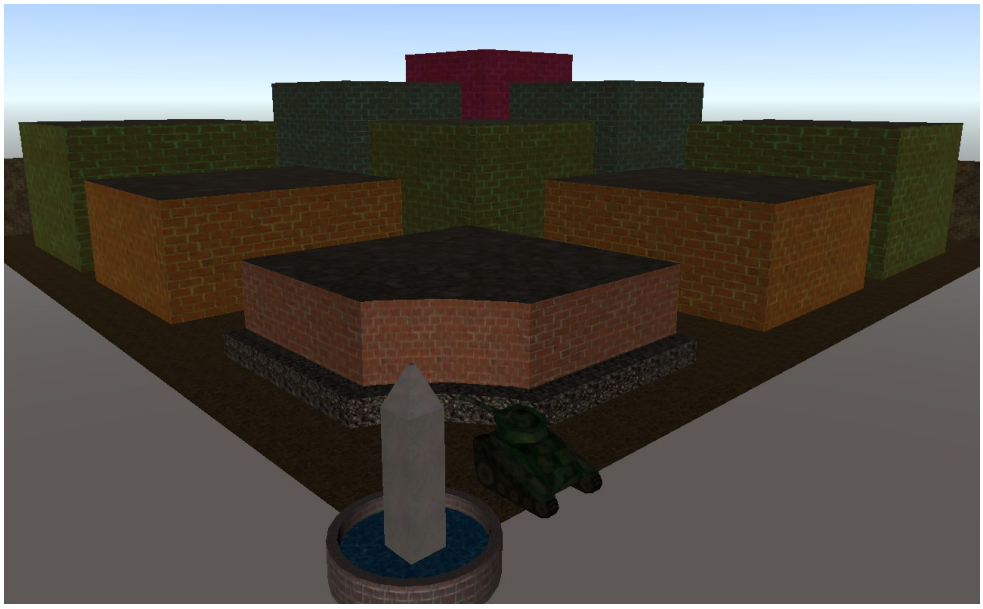

RightControls
Static
Tag
Untagged
Layer
Default
Rect Transform
right
bottom
Pos X
Pos Y
Pos Z
-75
75
0
Width
Height
150
150
R

Creating materials

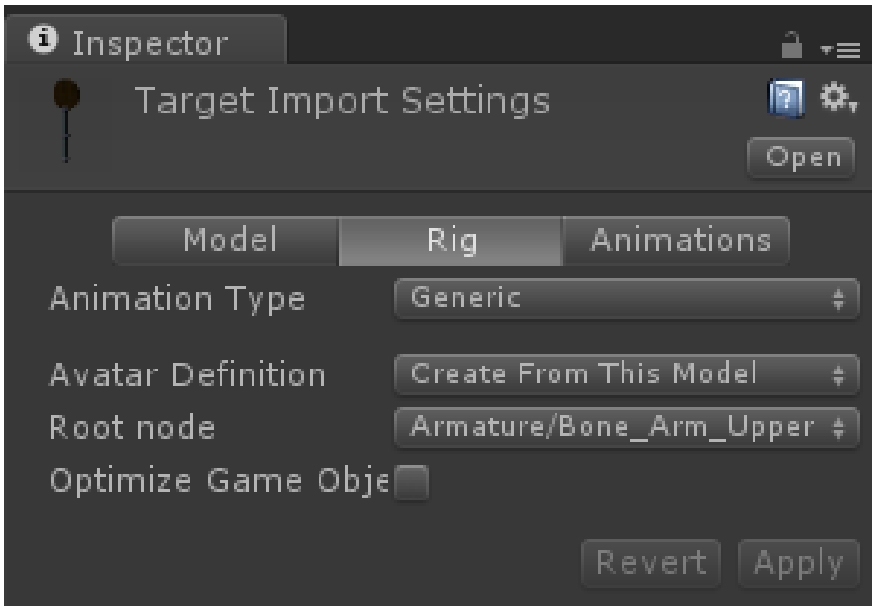
The city

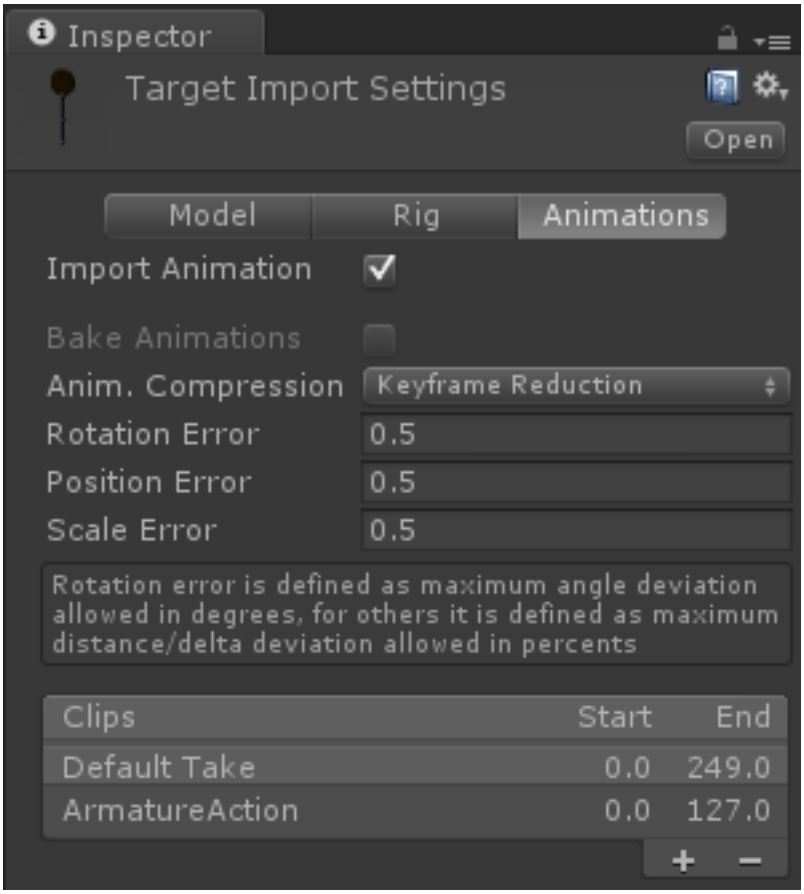


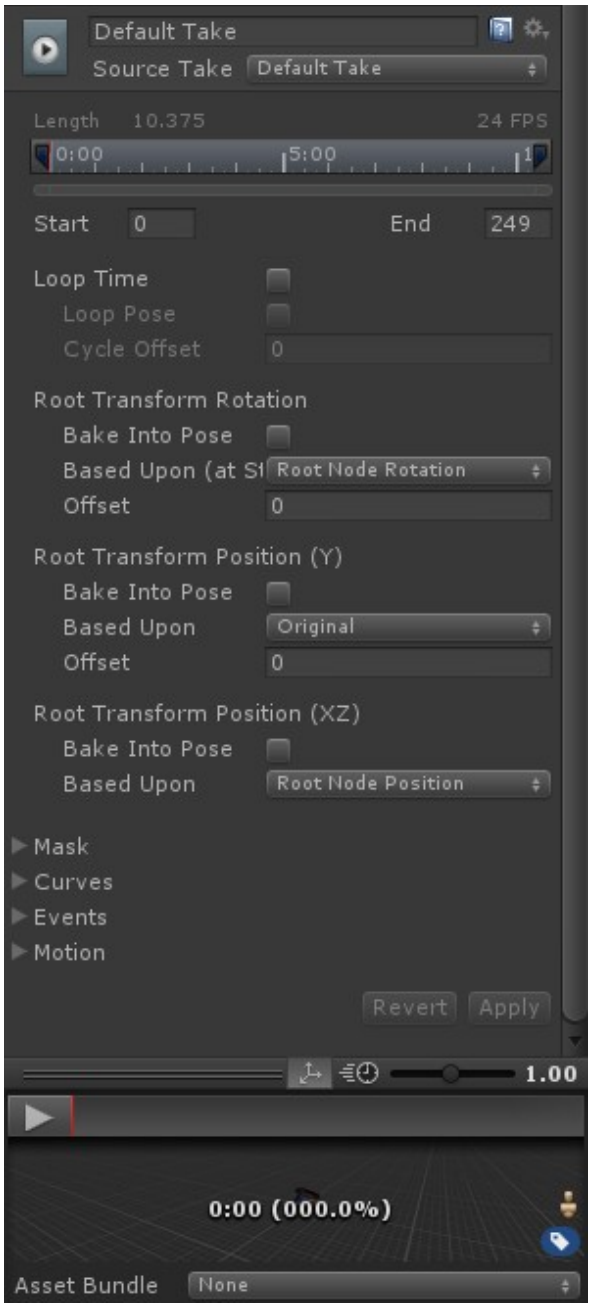
Secondary Maps



Animations in Unity

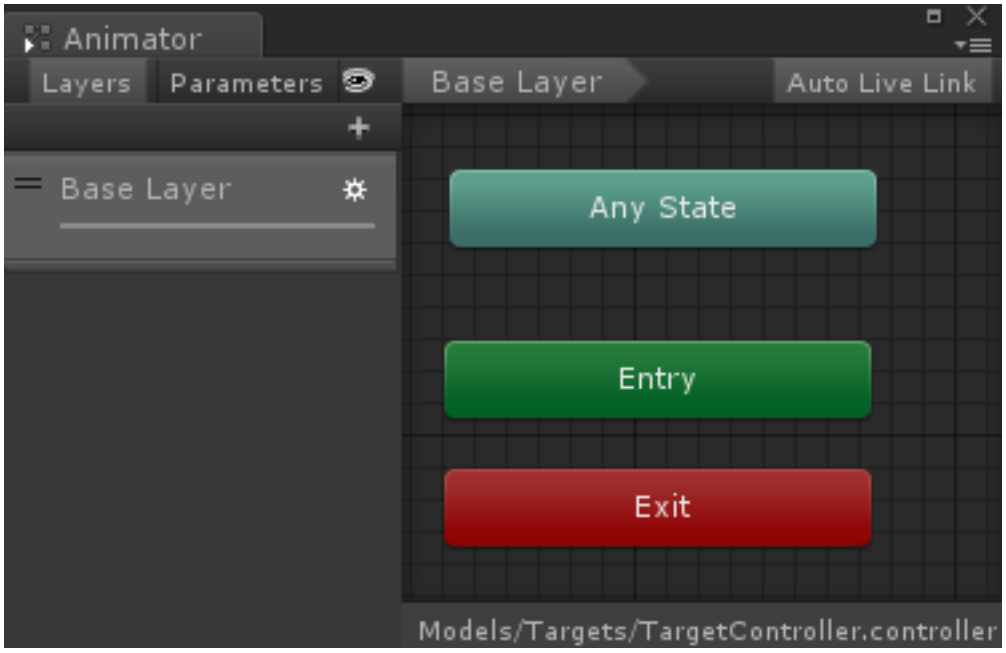


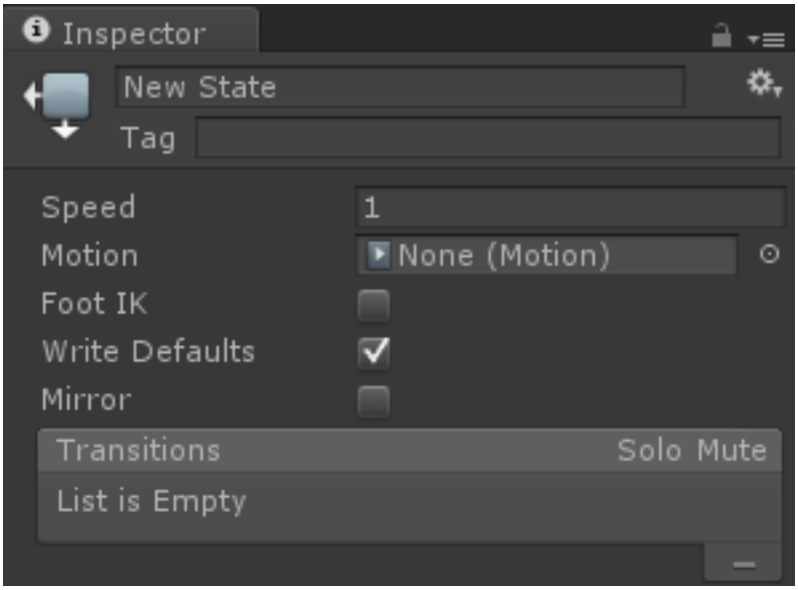

Inspector
Target Import Settings
Open
Model
Rig
Animations
Import Animation
Bake Animations
Anim. Compression
Keyframe Reduction
Rotation Error
0.5
Position Error
0.5
Scale Error
0.5
Rotation error is defined as maximum angle deviation allowed in degrees, for others it is defined as maximum distance/delta deviation allowed in percents
Clips
Start
End
Default Take
0.0
249.0
ArmatureAction
0.0
127.0

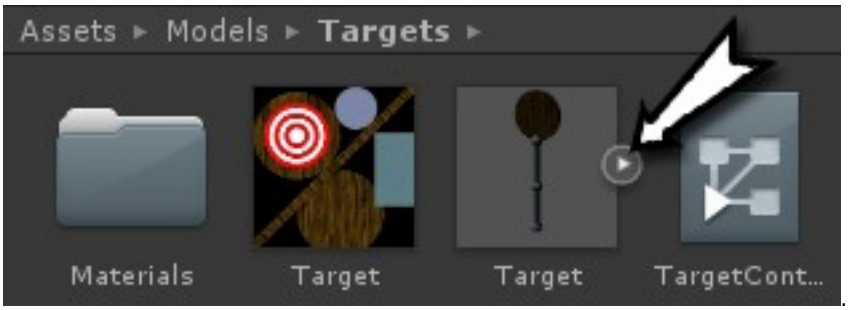

Default Take
Source Take
Default Take
Length 10.375
24 FPS
0:00
5:00
Start 0
End 249
Loop Time
Loop Pose
Cycle Offset 0
Root Transform Rotation
Bake Into Pose
Based Upon (at S
Root Node Rotation
Offset 0
Root Transform Position (Y)
Bake Into Pose
Based Upon
Original
Offset 0
Root Transform Position (XZ)
Bake Into Pose
Based Upon
Root Node Position
Mask
Curves
Events
Motion
Revert
Apply
1.00
0:00 (000.0%)
Asset Bundle
None

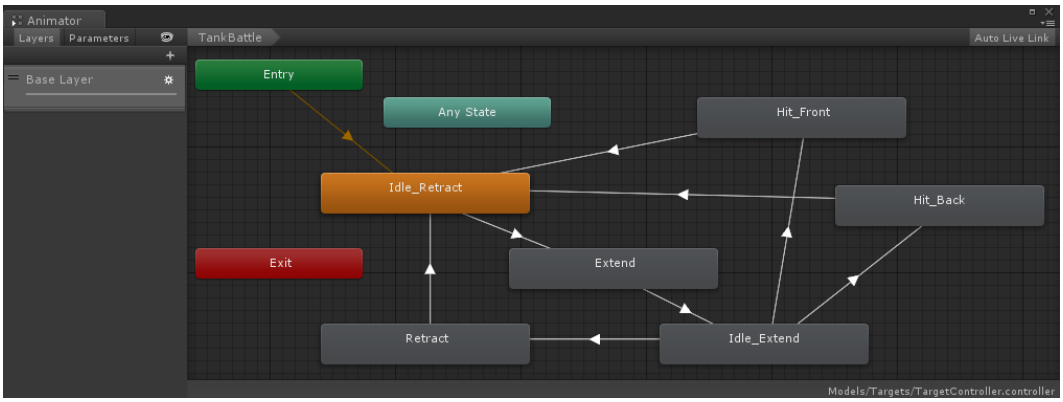
State machines to control animations in Unity

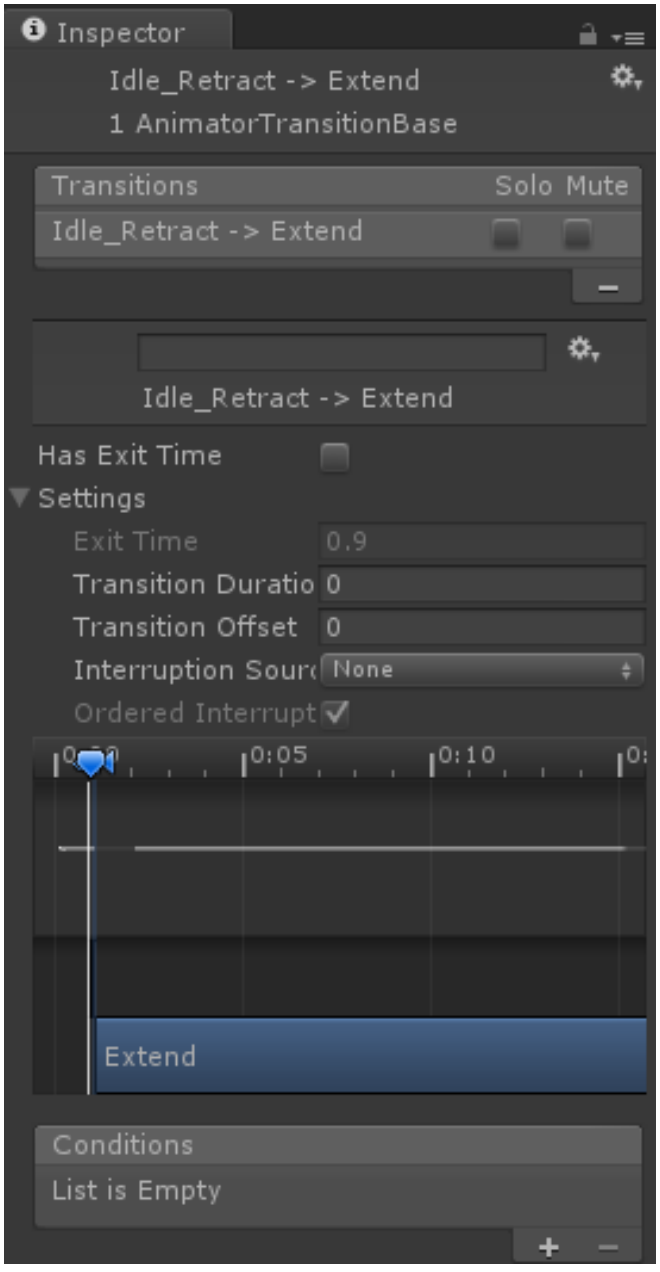
Target state machine






Assets ▸ Models ▸ Targets ▸
Materials
Target
Target
TargetCont...

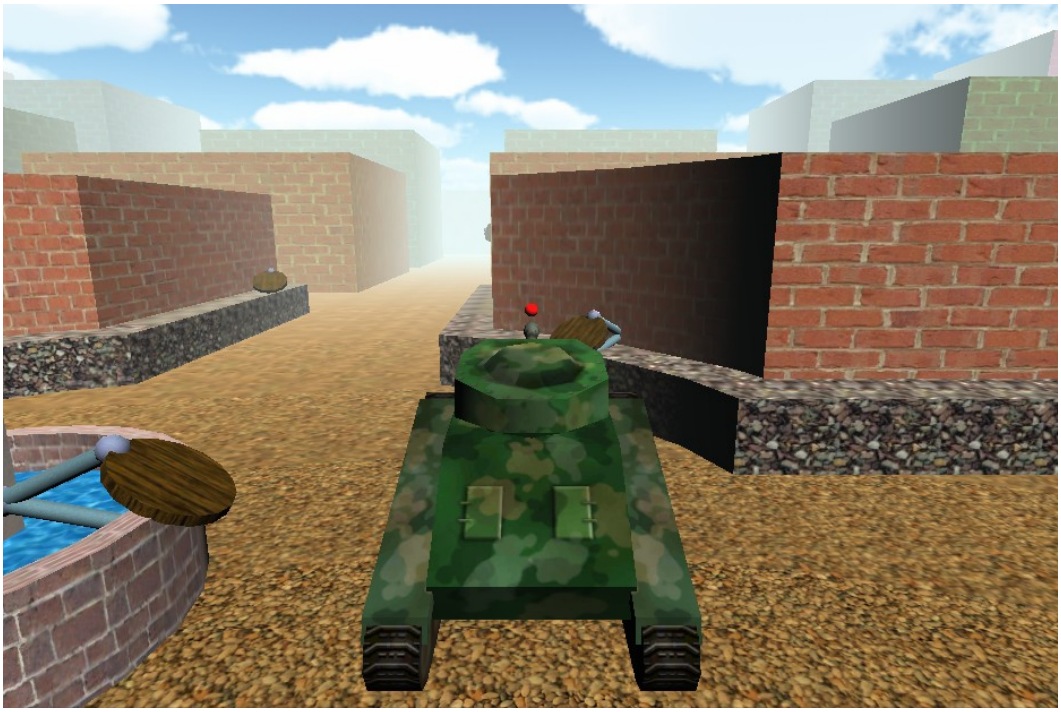

Animator
Layers
Parameters
TankBattle
Auto Live Link
Base Layer
Entry
Any State
Hit_Front
Idle_Retract
Hit_Back
Exit
Extend
Retract
Idle_Extend
Models/Targets/TargetController.controller


Inspector
Idle_Retract -> Extend
1 AnimatorTransitionBase
Transitions
Solo
Mute
Idle_Retract -> Extend
Idle_Retract -> Extend
Has Exit Time
Settings
Exit Time
0.9
Transition Duratio
0
Transition Offset
0
Interruption Sour
None
Ordered Interrupt
0:05
0:10
Extend
Conditions
List is Empty

Chapter 4: Setting the Stage – Camera Effects and Lighting

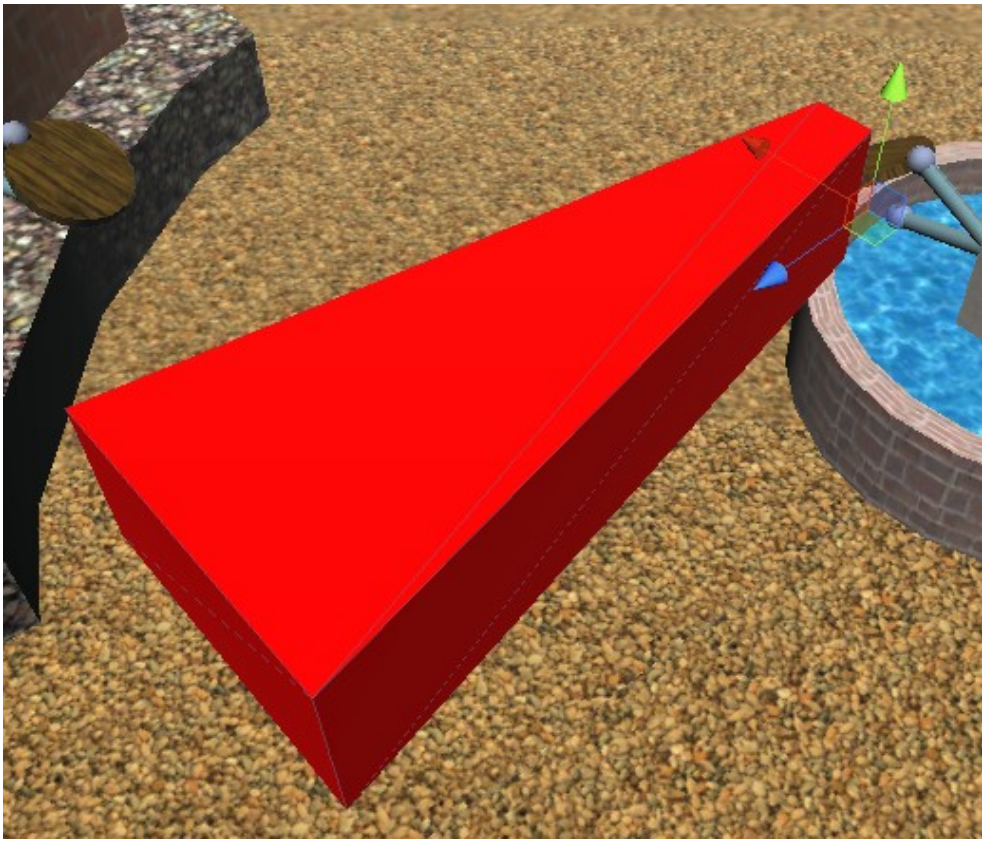
Camera effects

Skyboxes and distance fog



Target indicator

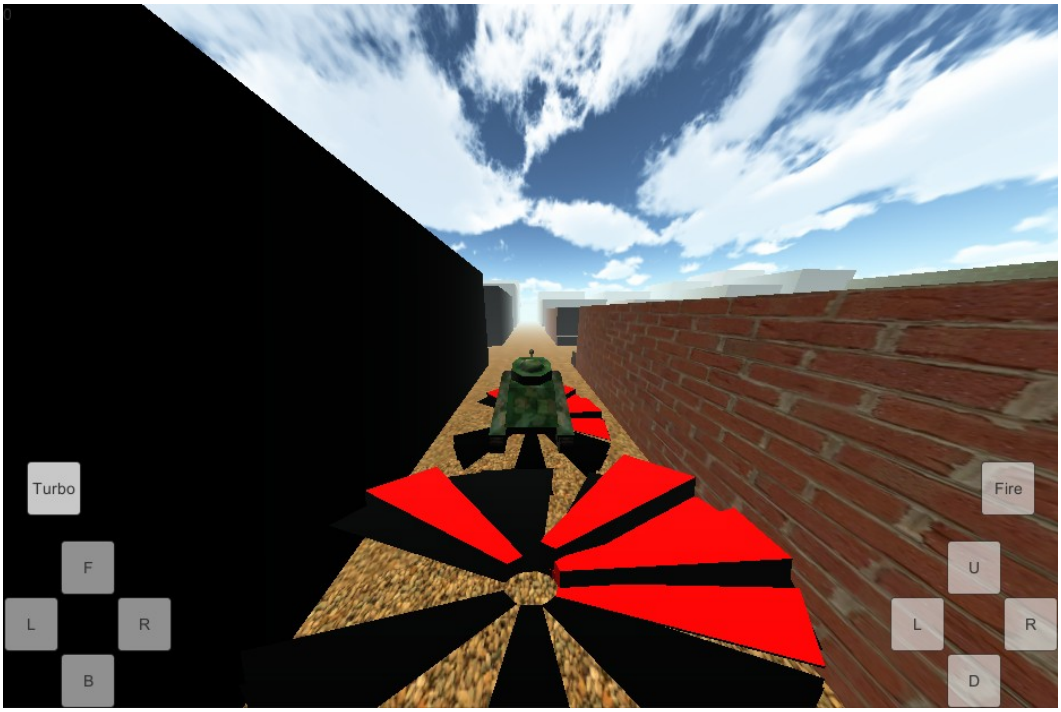
Creating the pointer



Working with a second camera


0
Fire
F
L
R
B
U
L
R
D

Turbo boost

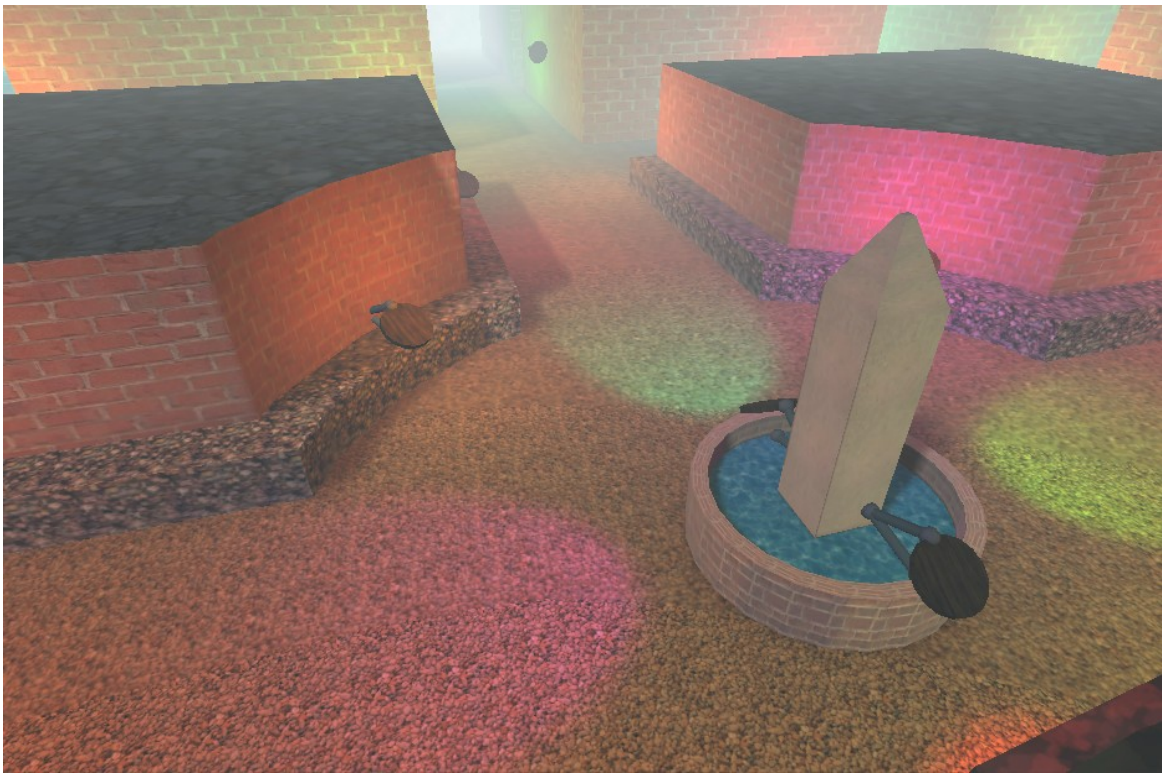


Lights

Adding more lights

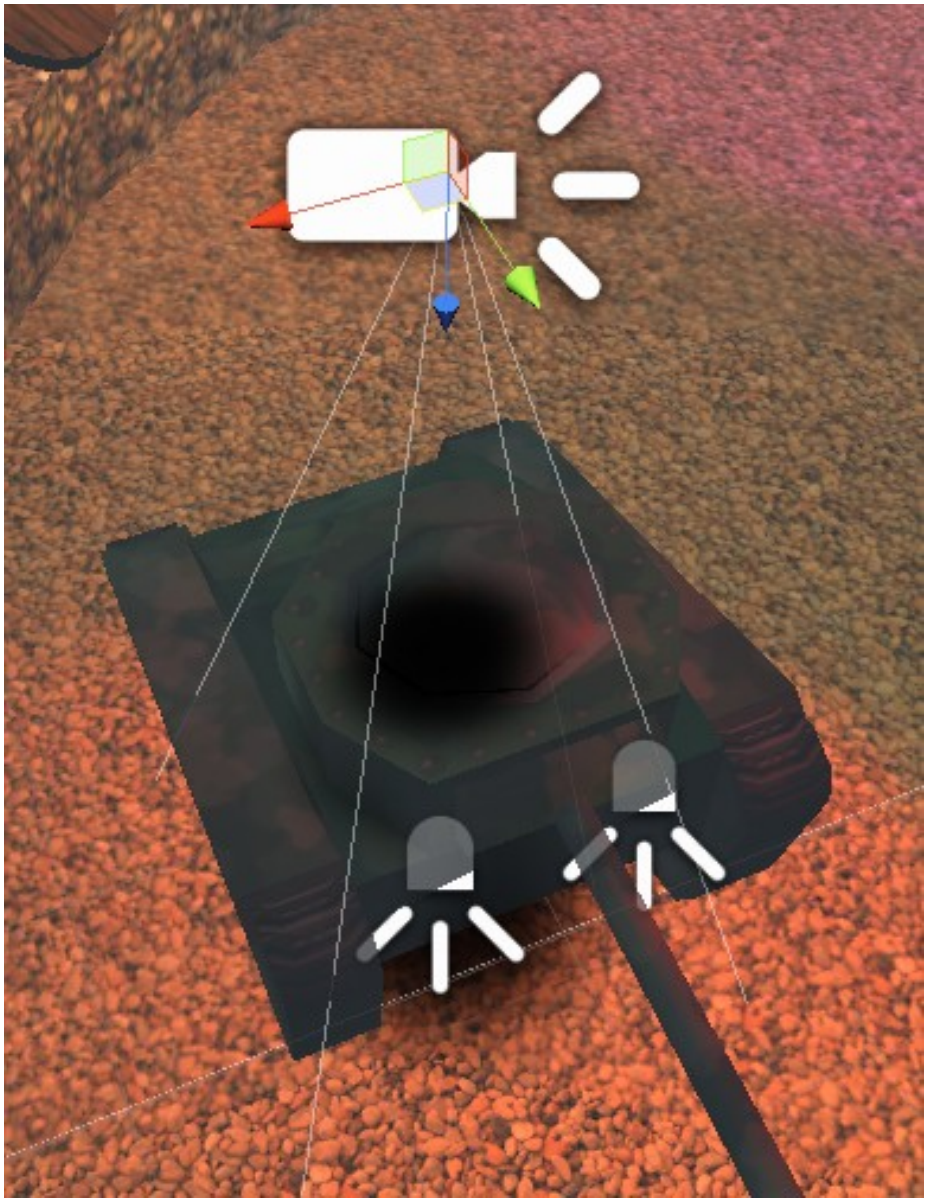
Lightmaps

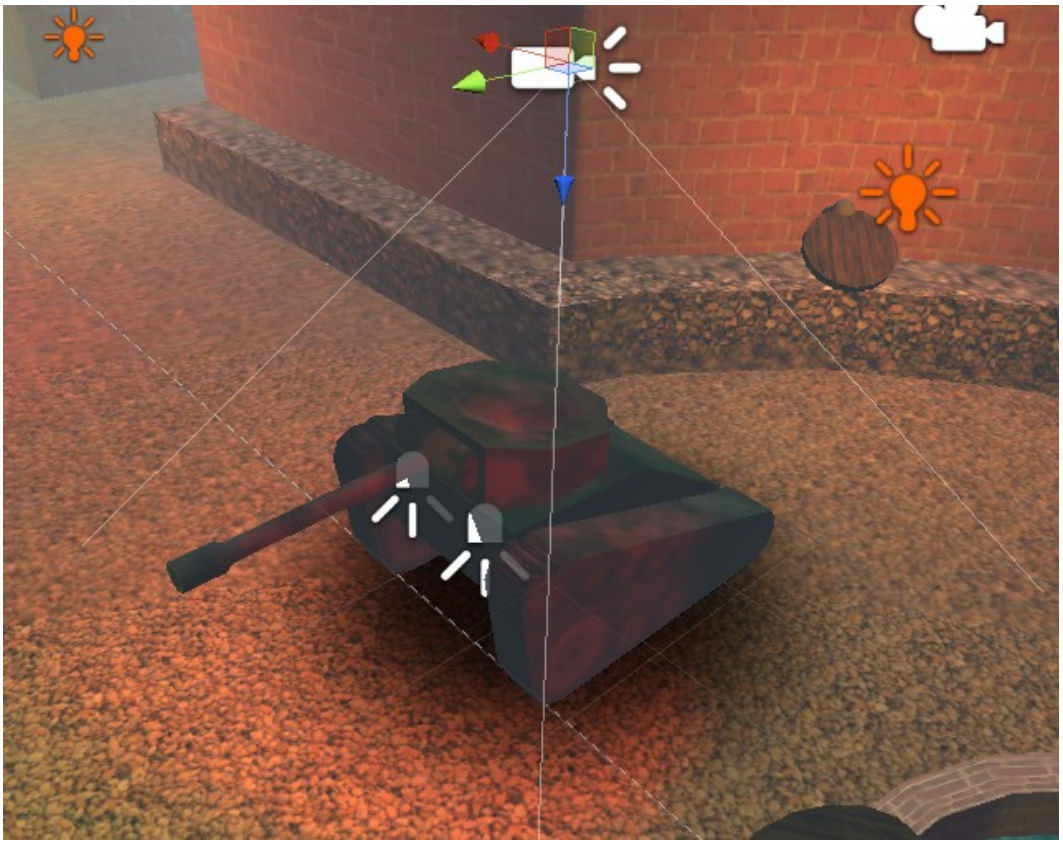

General GI Settings
Workflow
On Demand
Global Parameters
Default
Edit...
Sky Light
0.2
Realtime Sky
Albedo Scale
1
Indirect Scale
1
Realtime GI Settings
Realtime Resolution
1
texels per unit
Realtime Atlas Size
128
CPU Usage
Low (default)
Baked GI Settings
Directional Mode
Baked Resolution
30
texels per unit
Baked Atlas Size
1024
Padding
2
texels
Direct Scale
1
AO Exponent
1



Cookies

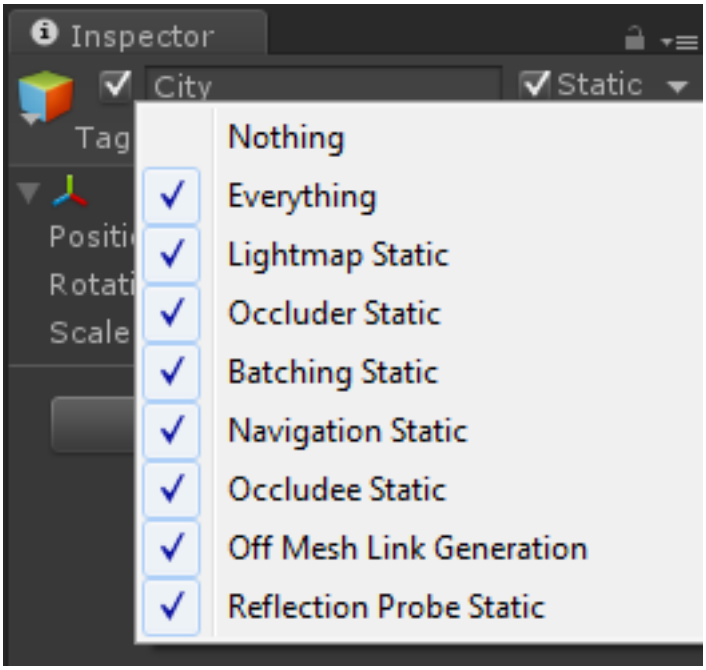
Blob shadows

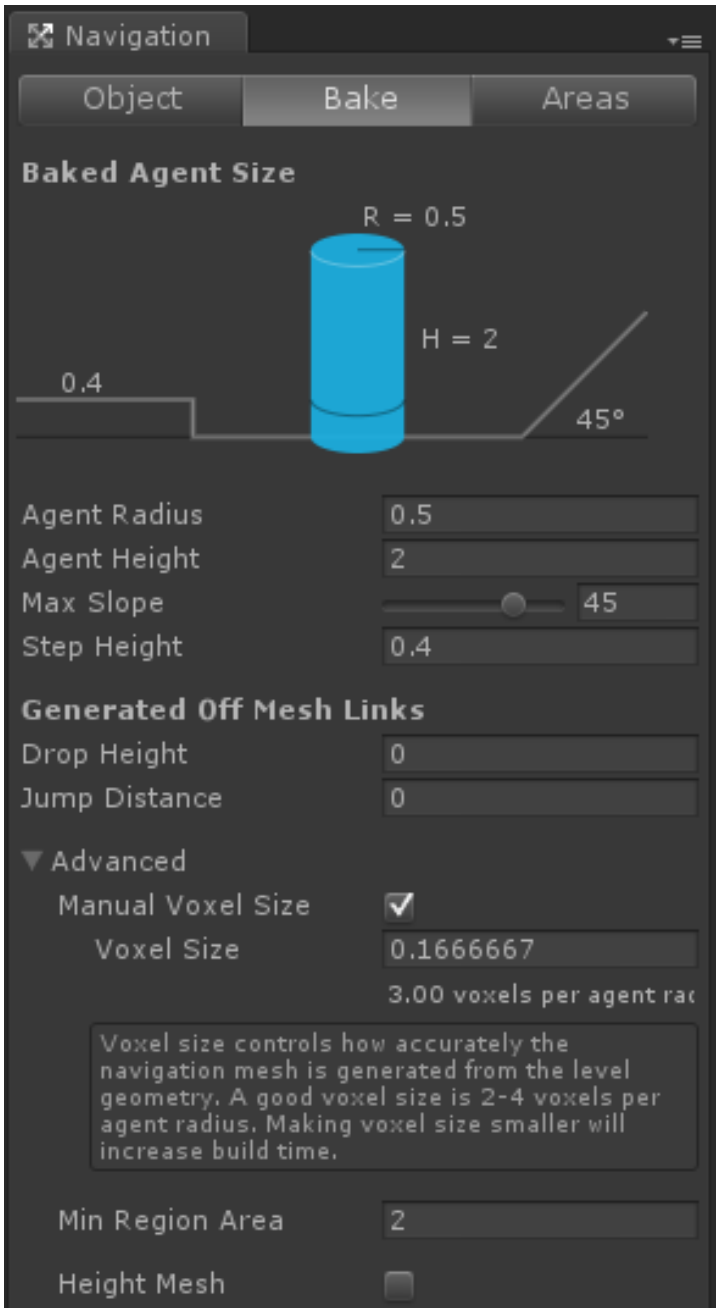


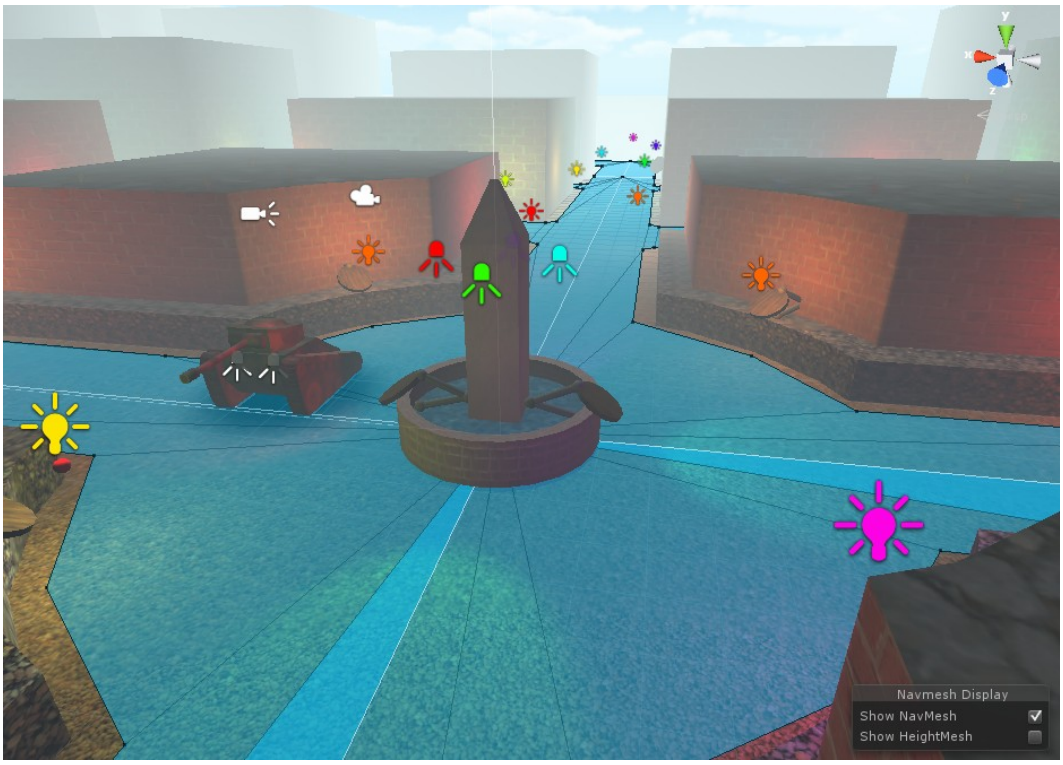


Chapter 5: Getting Around – Pathfinding and AI

The NavMesh



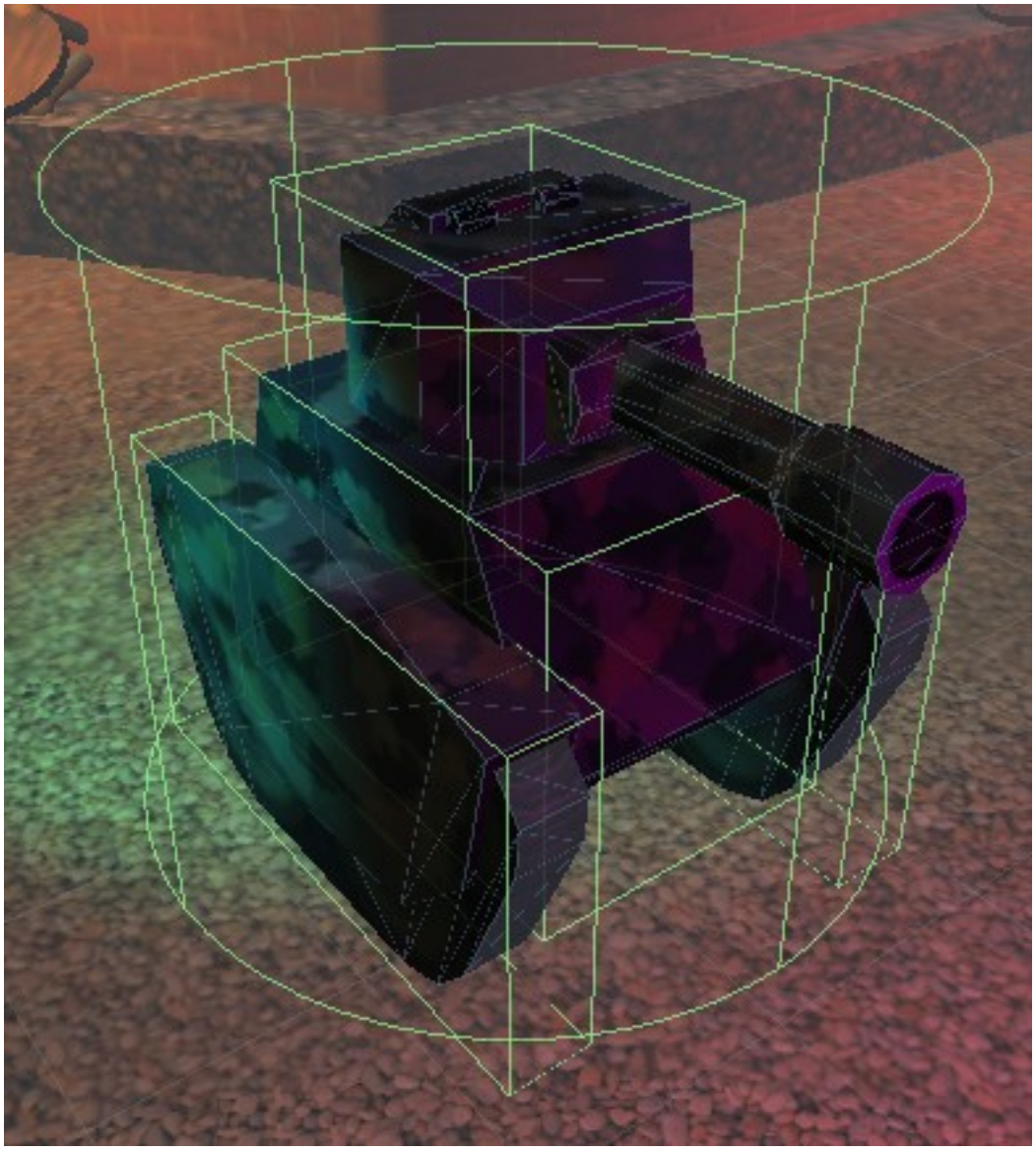

Navigation
Object
Bake
Areas
Baked Agent Size
R = 0.5
H = 2
0.4
45°
Agent Radius
0.5
Agent Height
2
Max Slope
45
Step Height
0.4
Generated Off Mesh Links
Drop Height
0
Jump Distance
0
Advanced
Manual Voxel Size
Voxel Size
0.1666667
3.00 voxels per agent rac
Voxel size controls how accurately the navigation mesh is generated from the level geometry. A good voxel size is 2-4 voxels per agent radius. Making voxel size smaller will increase build time.
Min Region Area
2
Height Mesh

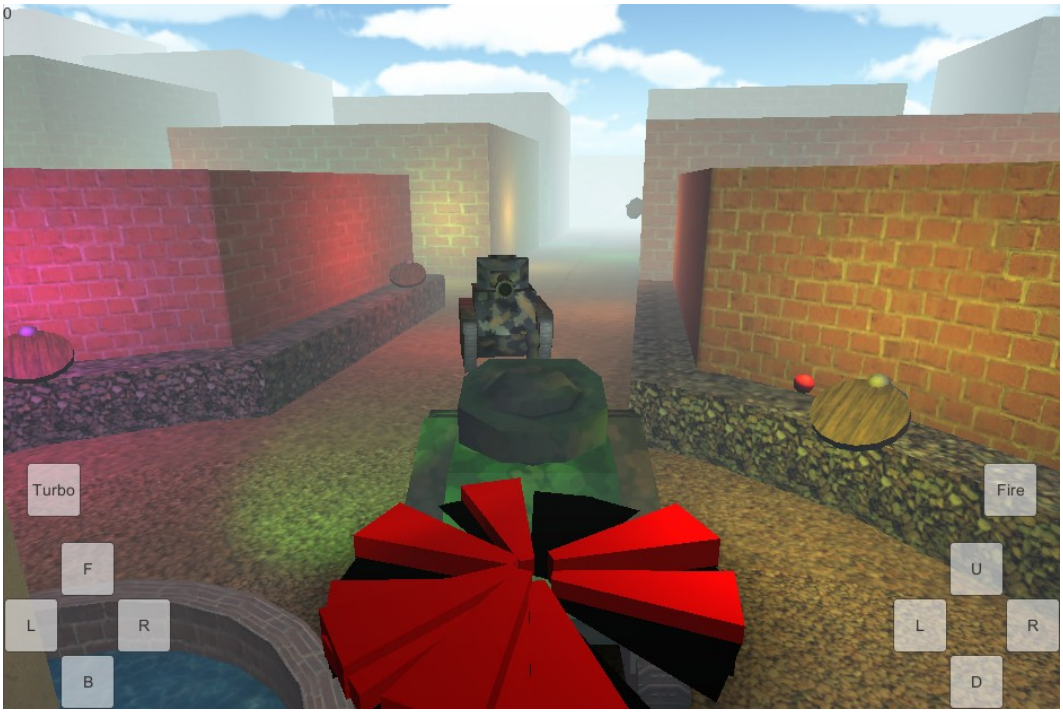

Navmesh Display
Show NavMesh
Show HeightMesh

The NavMeshAgent component

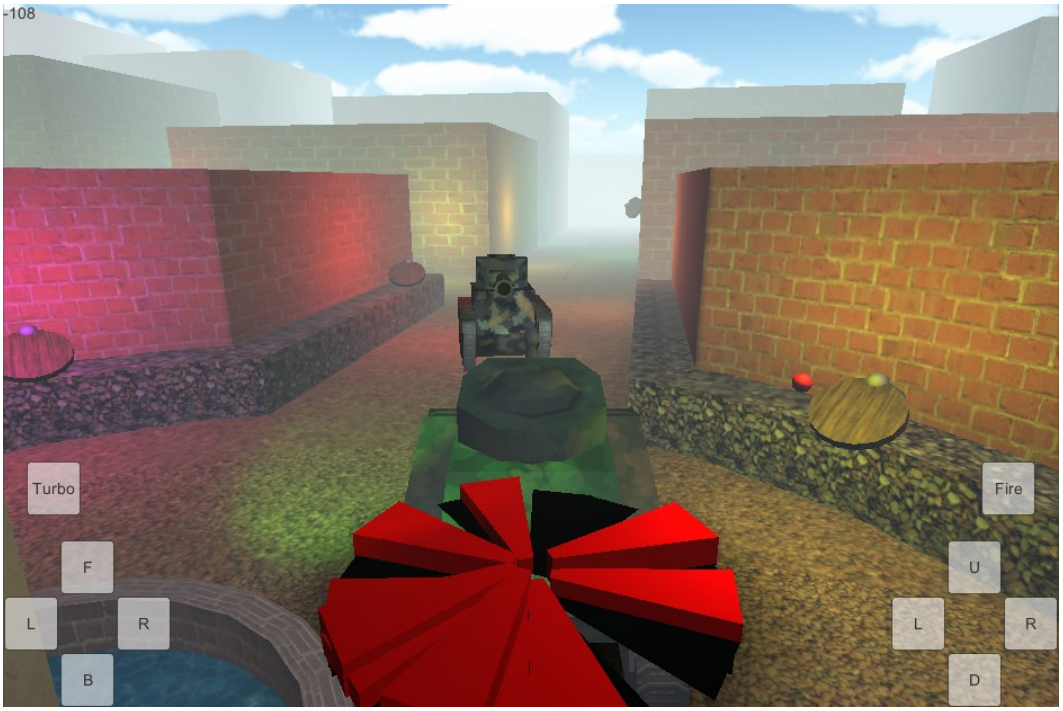
Making the enemy chase the player

Chasing the player




0
Turbo
F
L
R
B
Fire
U
L
R
D

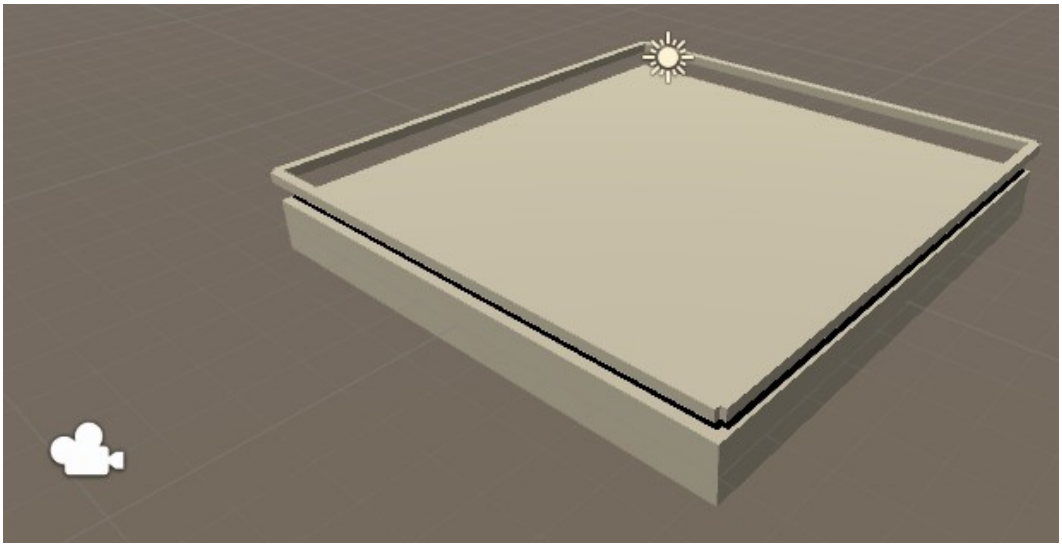
Being attacked by the enemy



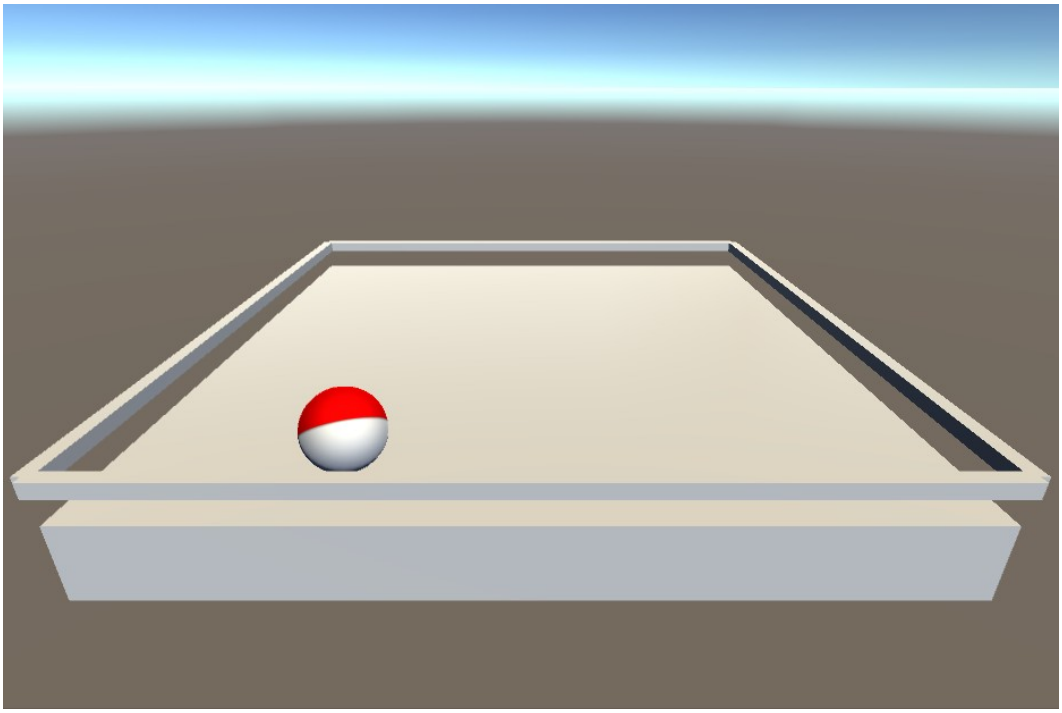
Spawning the enemy tanks

Chapter 6: Specialties of the Mobile Device – Touch and Tilt

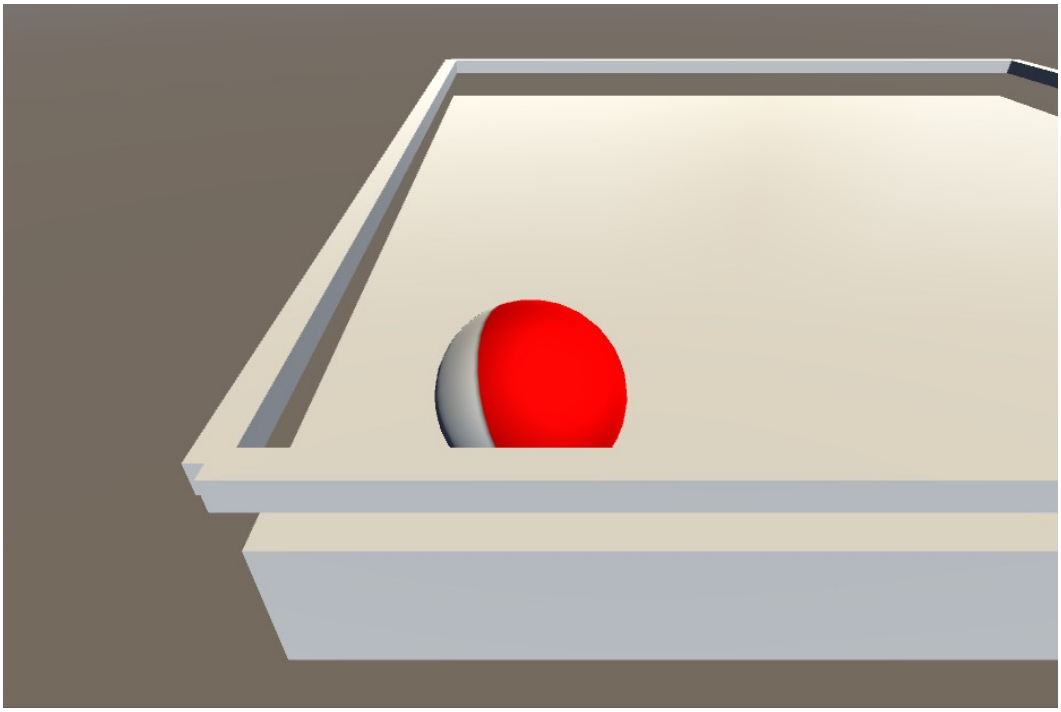
A basic environment



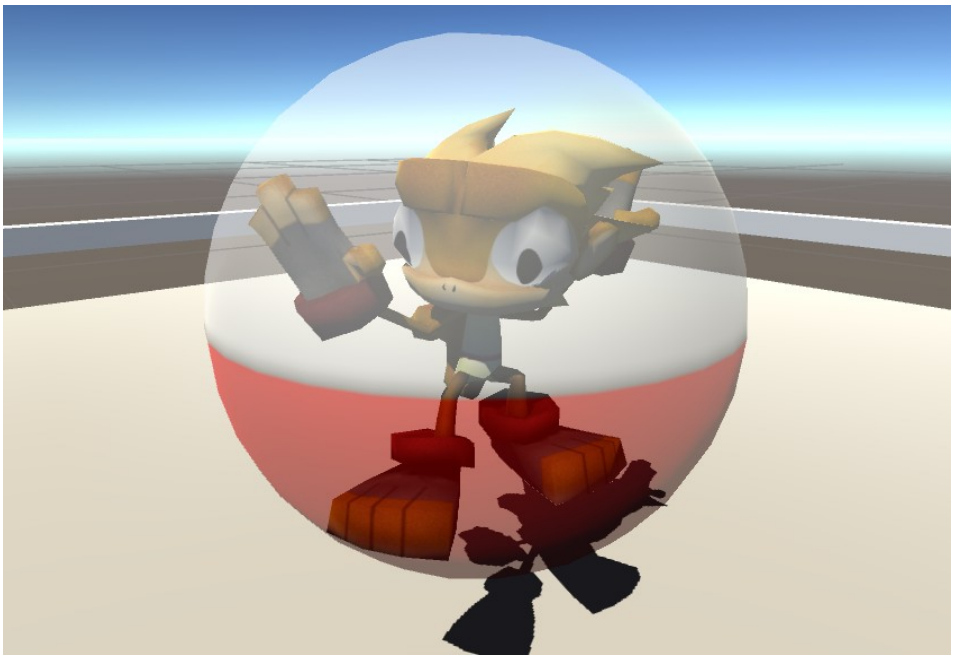
Controlling with tilt

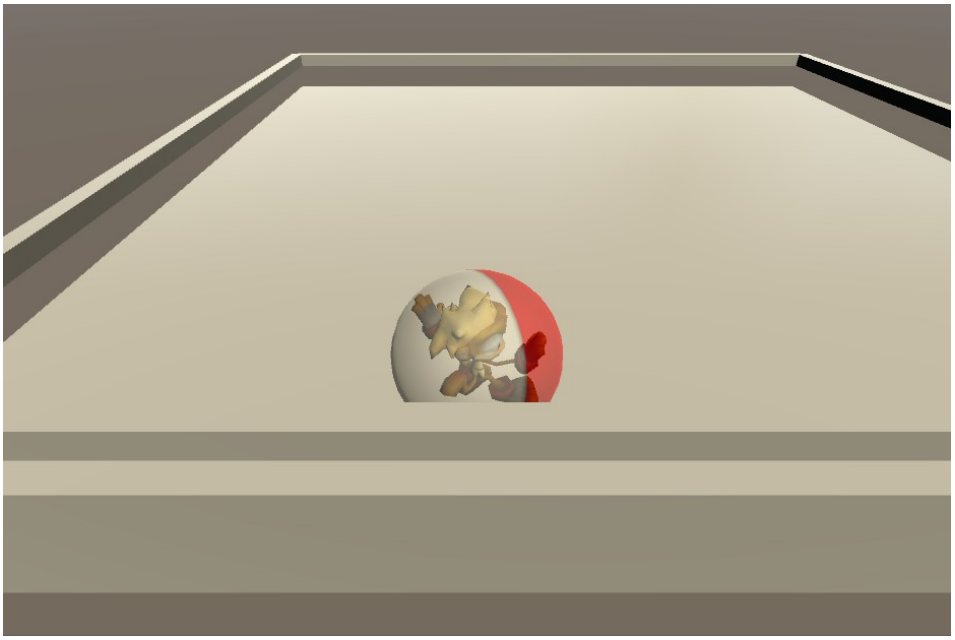


Following with the camera

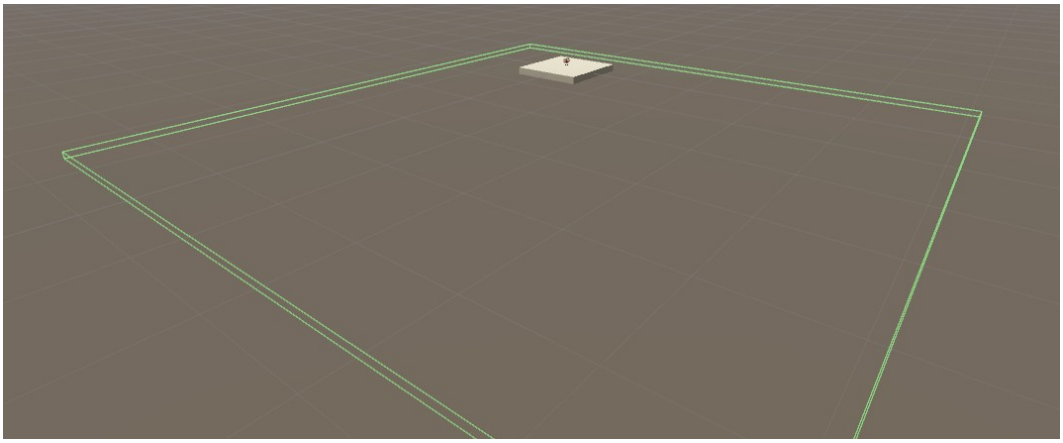


Adding the monkey

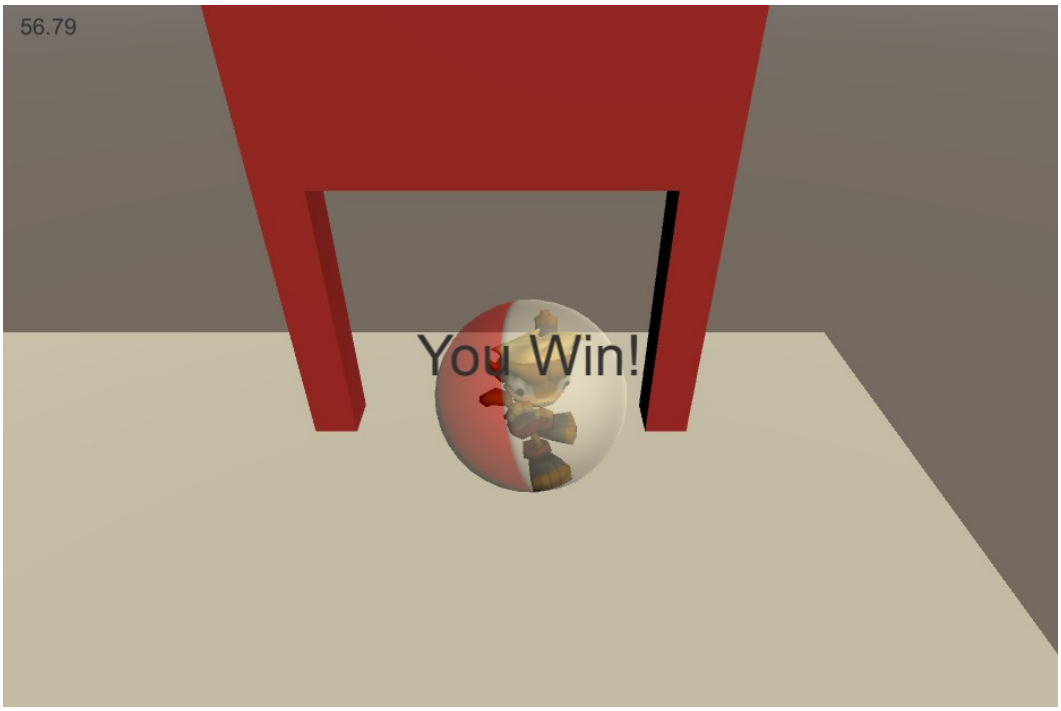




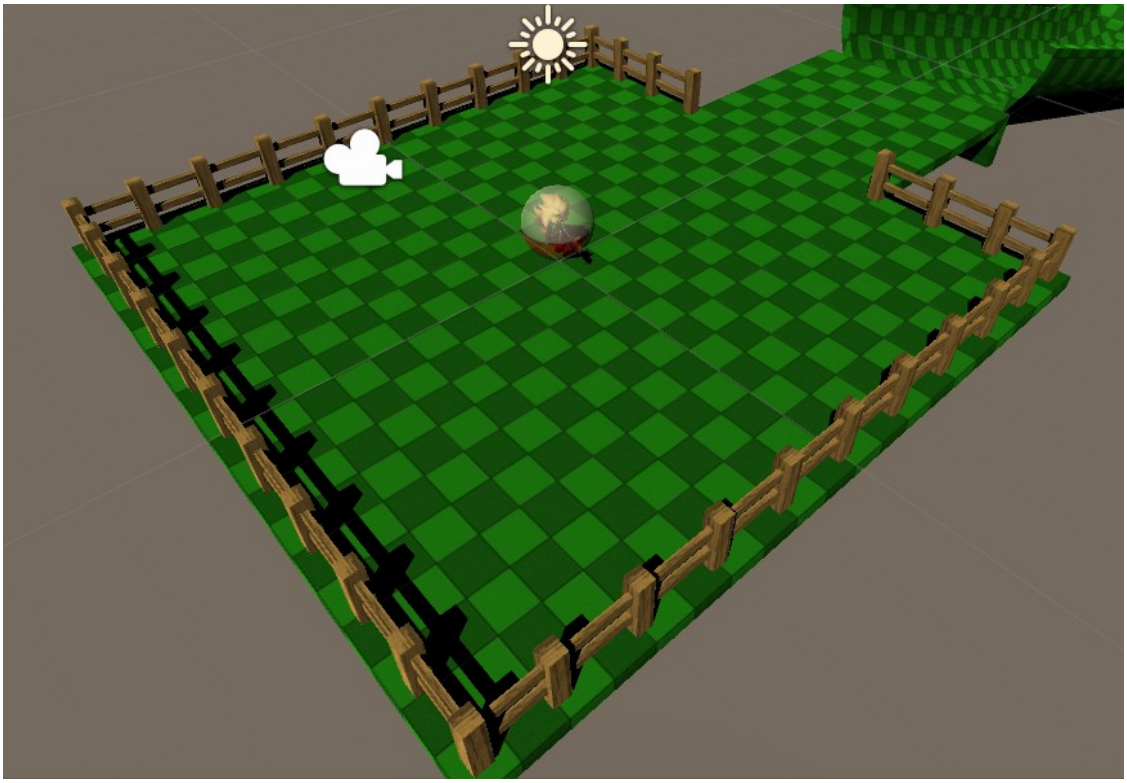
Keeping the monkey on the board

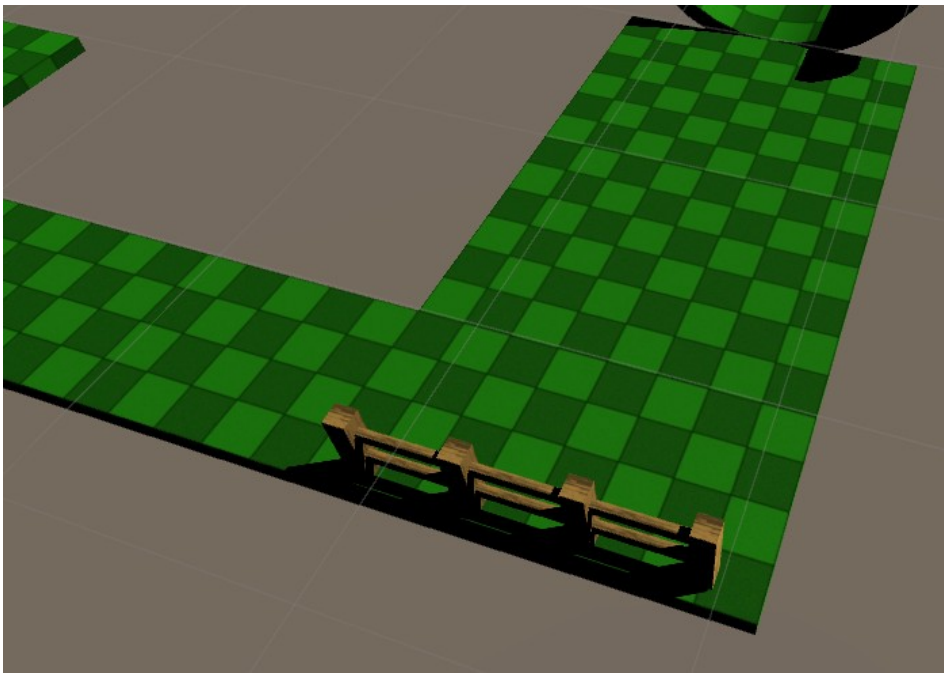


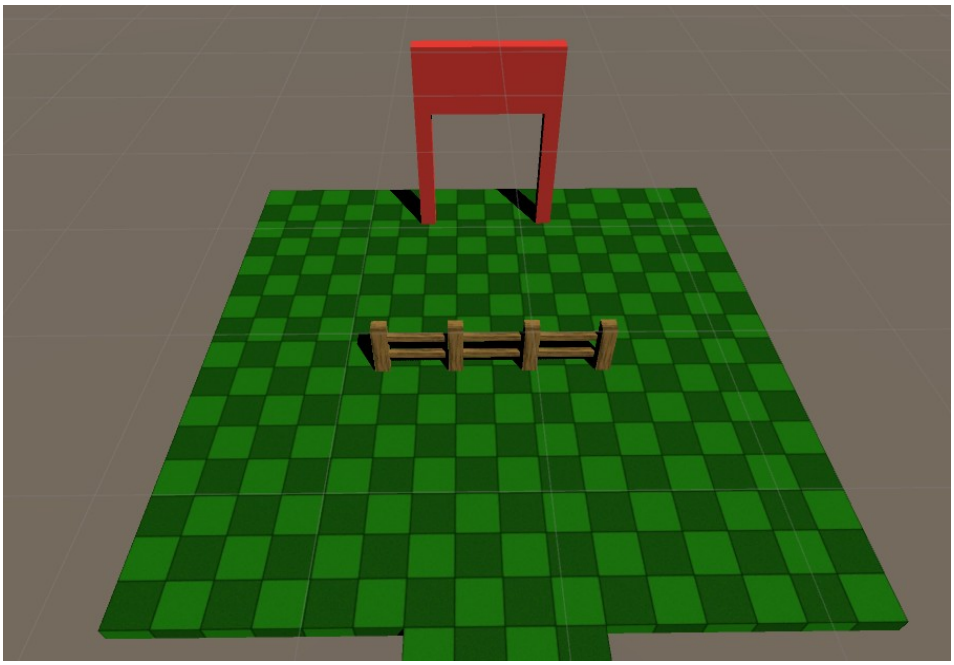
Winning and losing the game



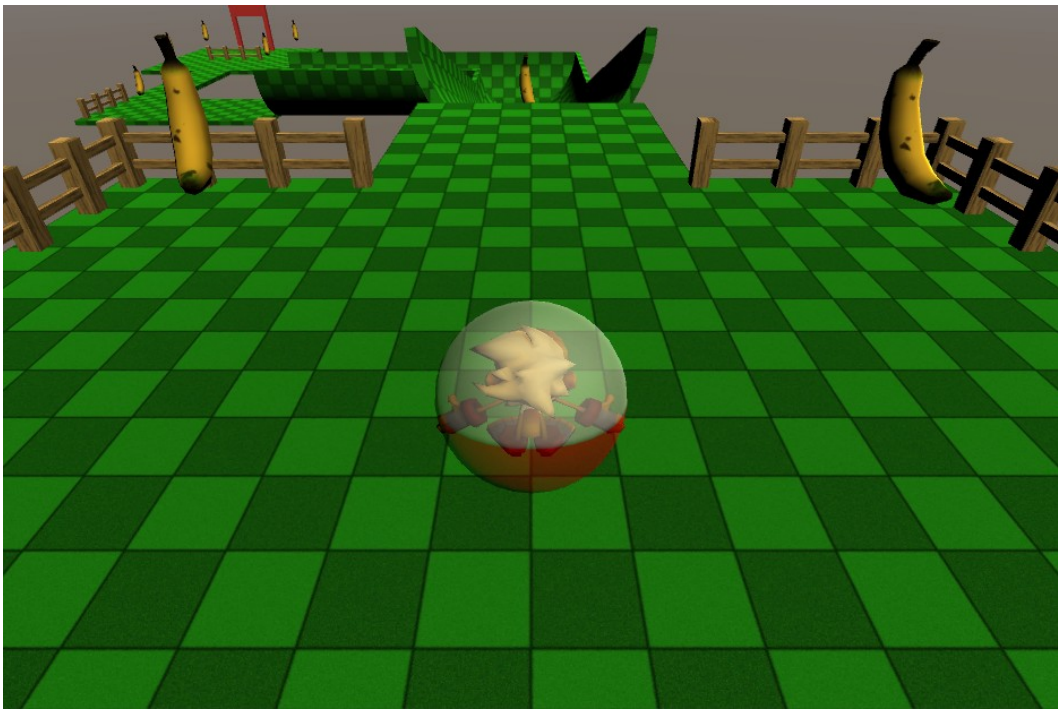
Putting together the complex environment



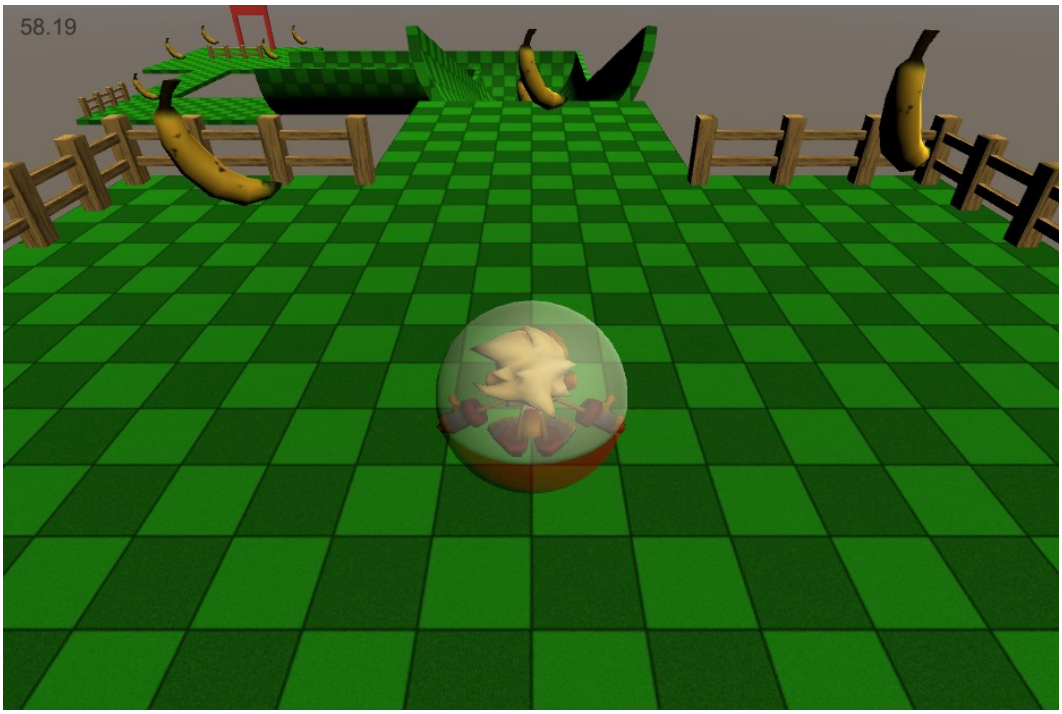




Adding bananas



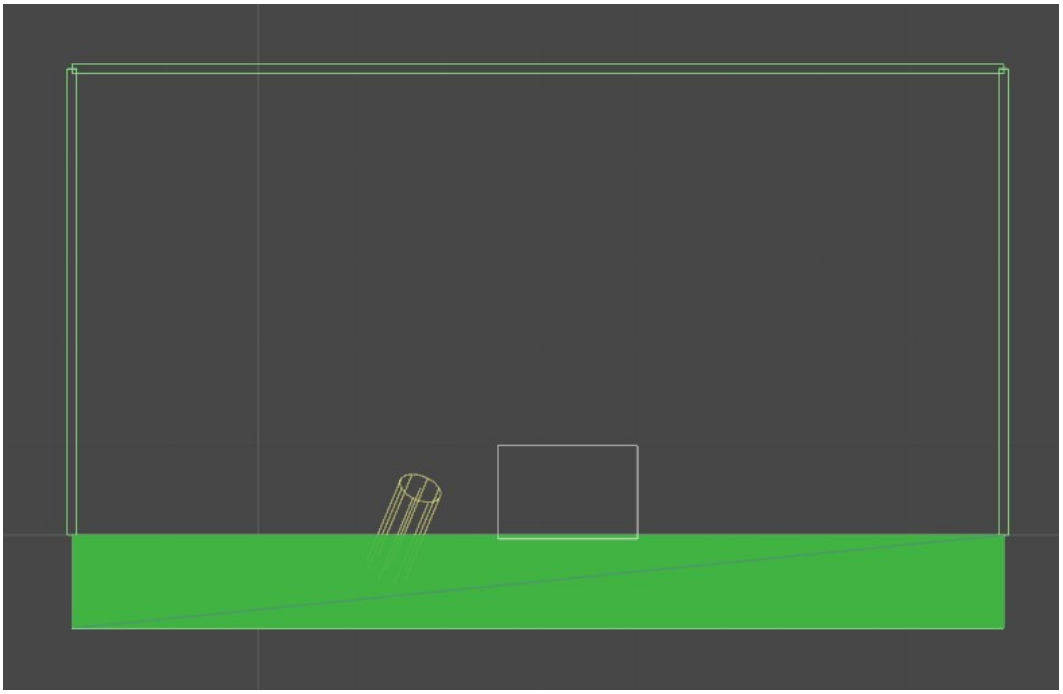
Collecting bananas with touch



Chapter 7: Throwing Your Weight Around – Physics and a 2D Camera

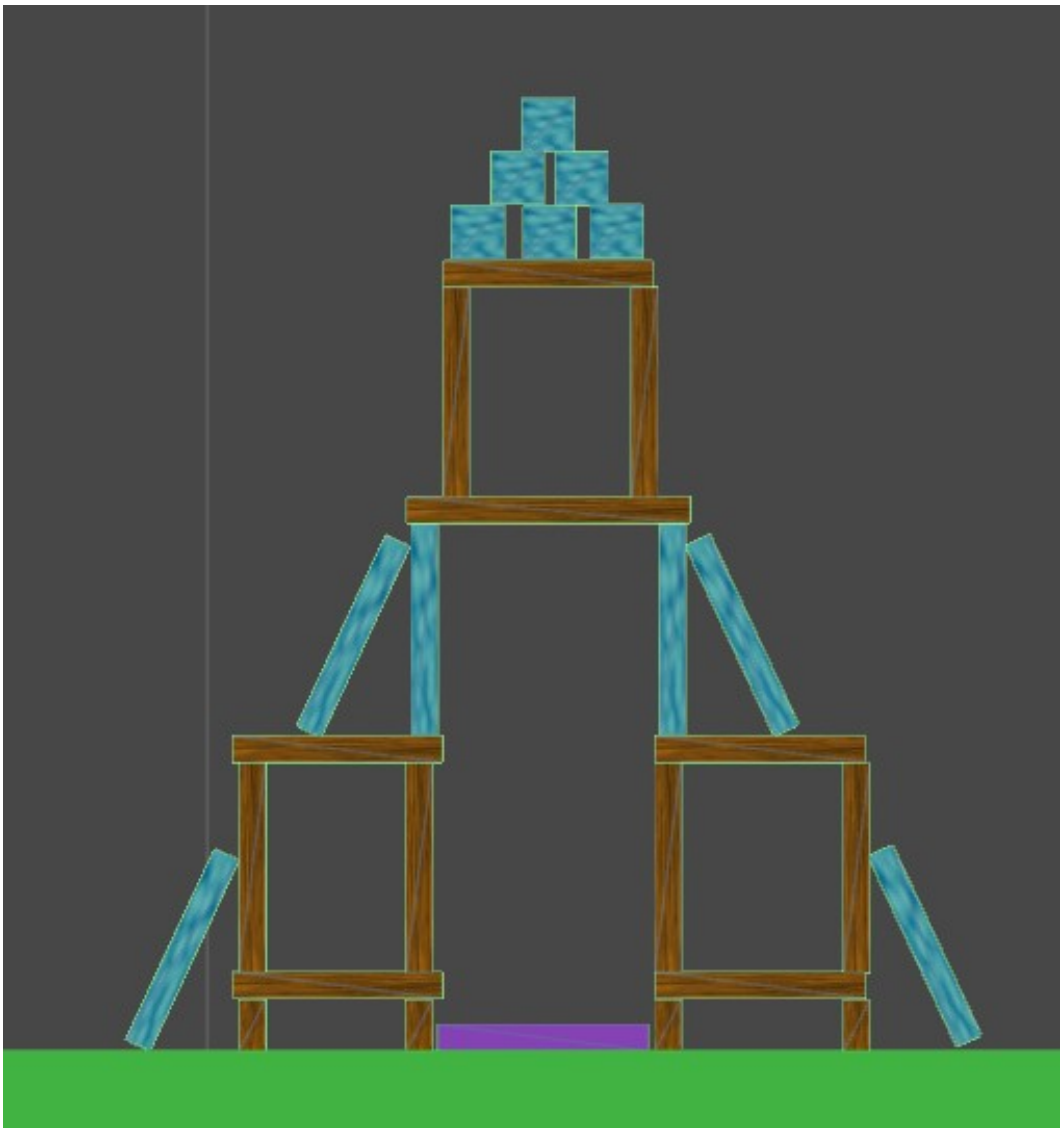
2D games in a 3D world

Setting up the development environment



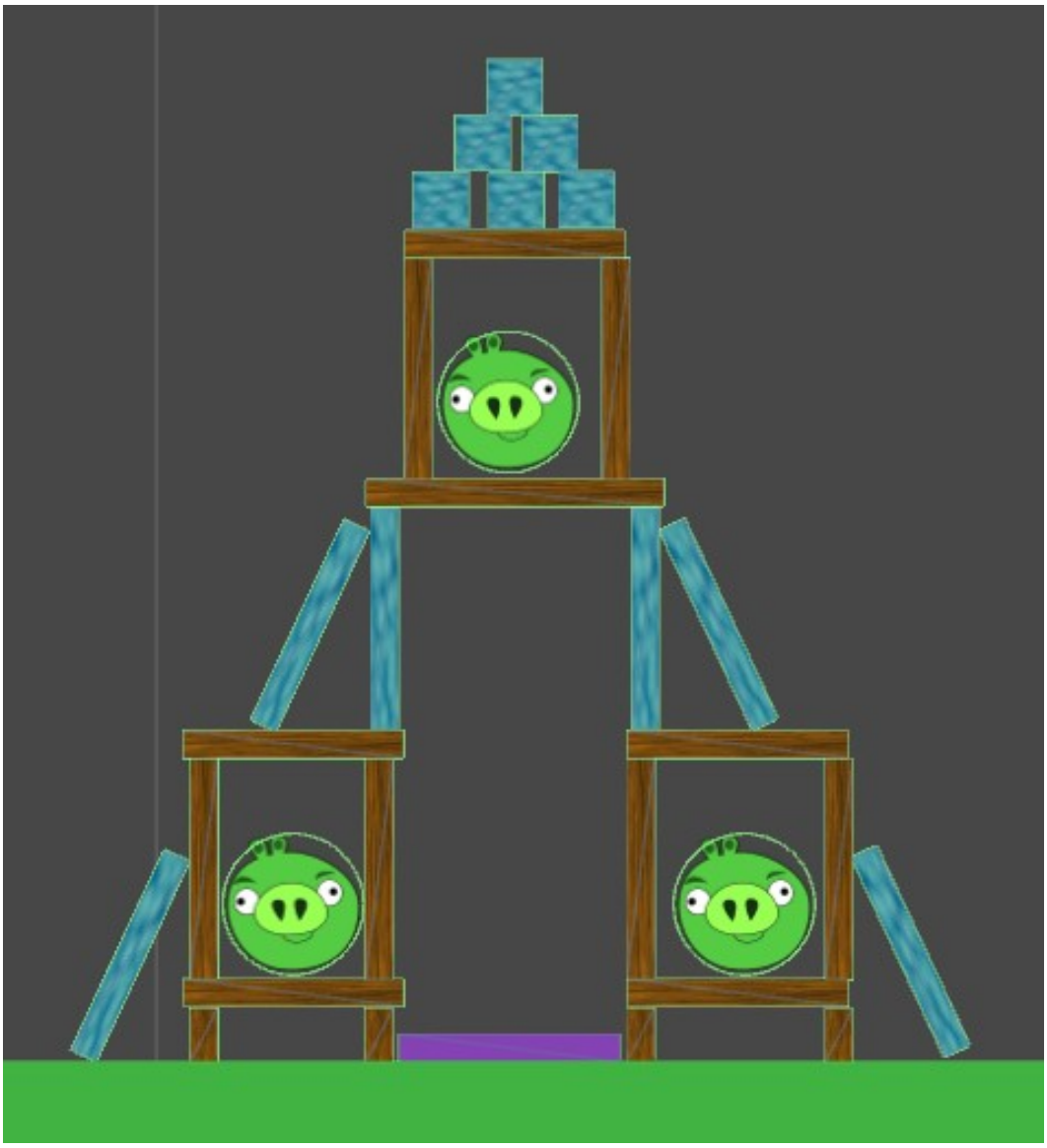
Physics

Building blocks



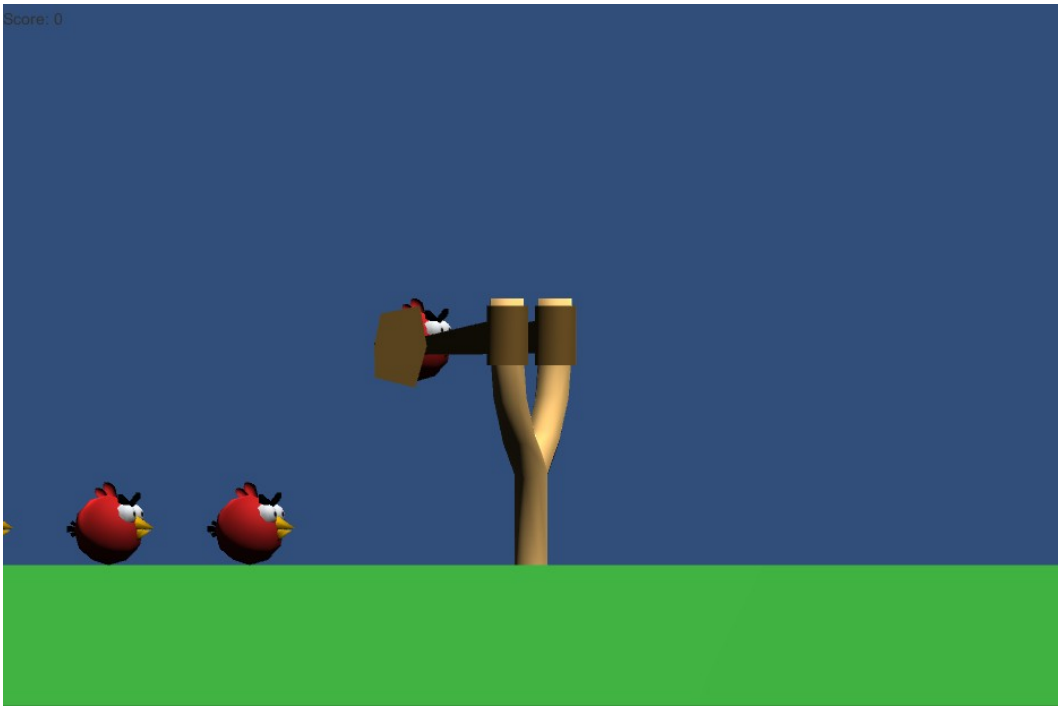
Characters

Creating the enemy

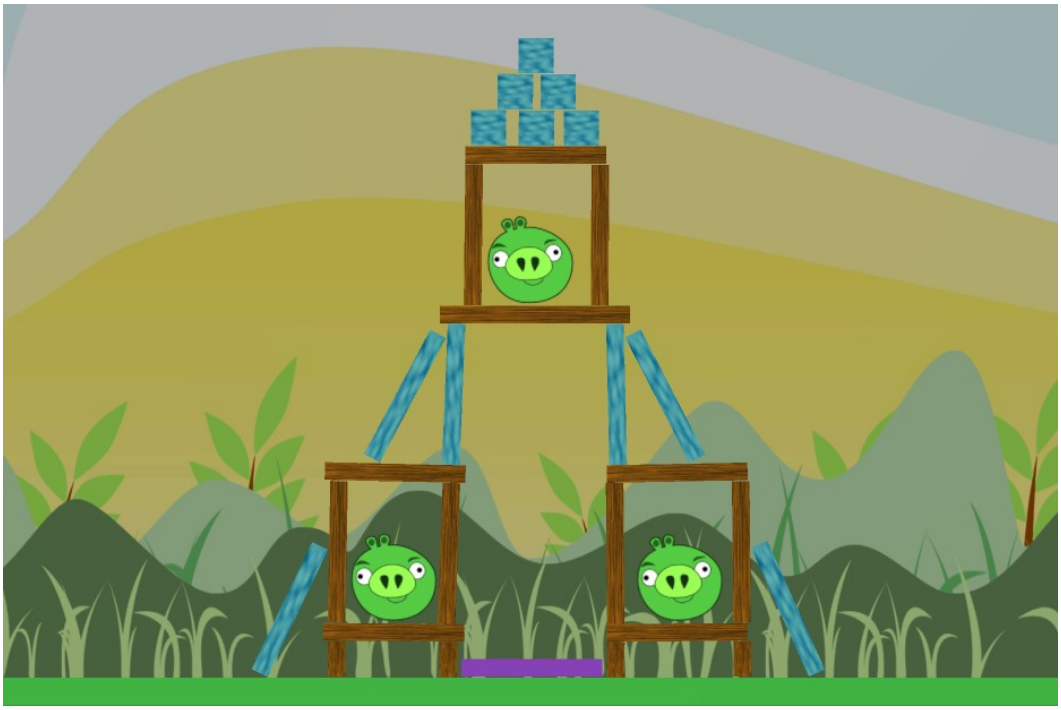


Controls

Attacking with a slingshot

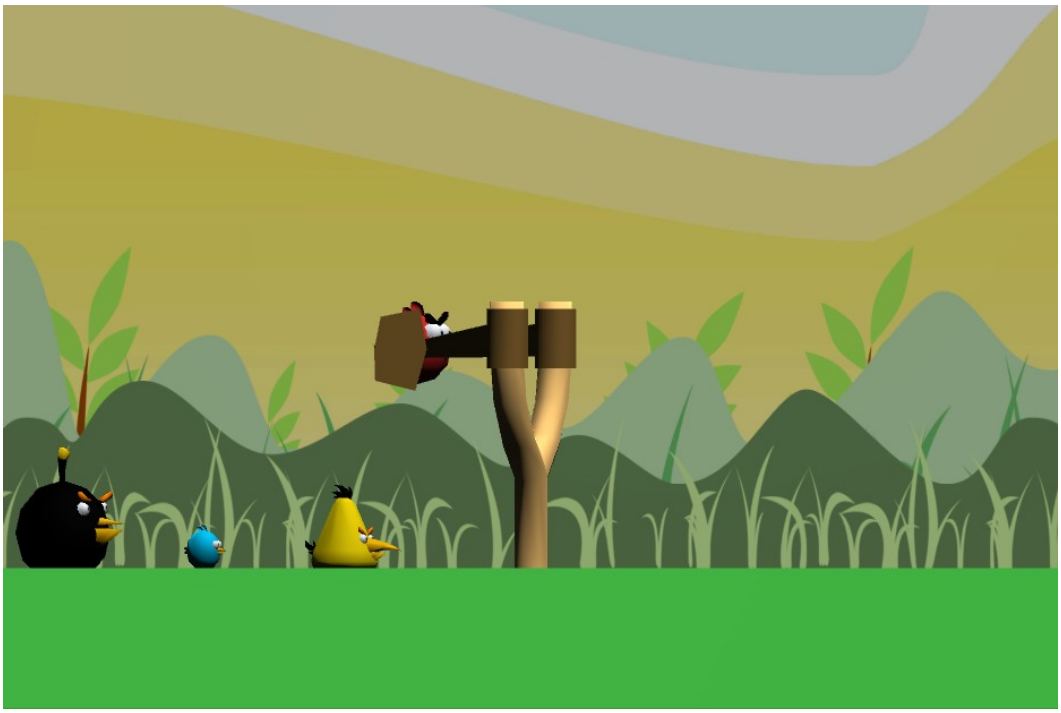


Creating the parallax background

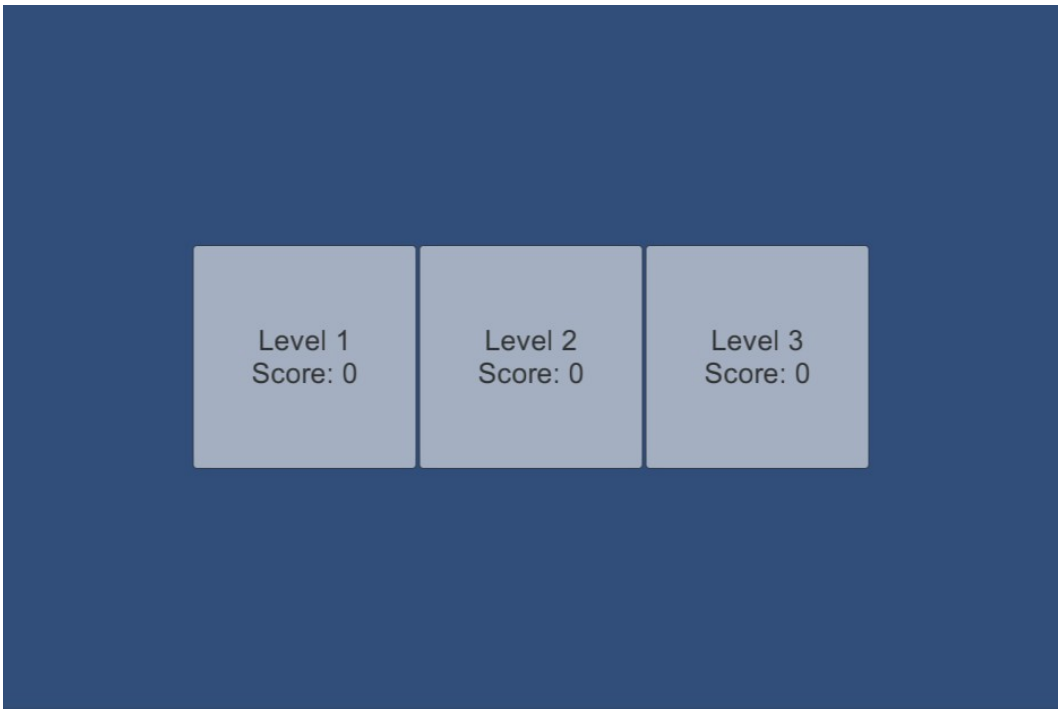


Adding more birds

The black bird



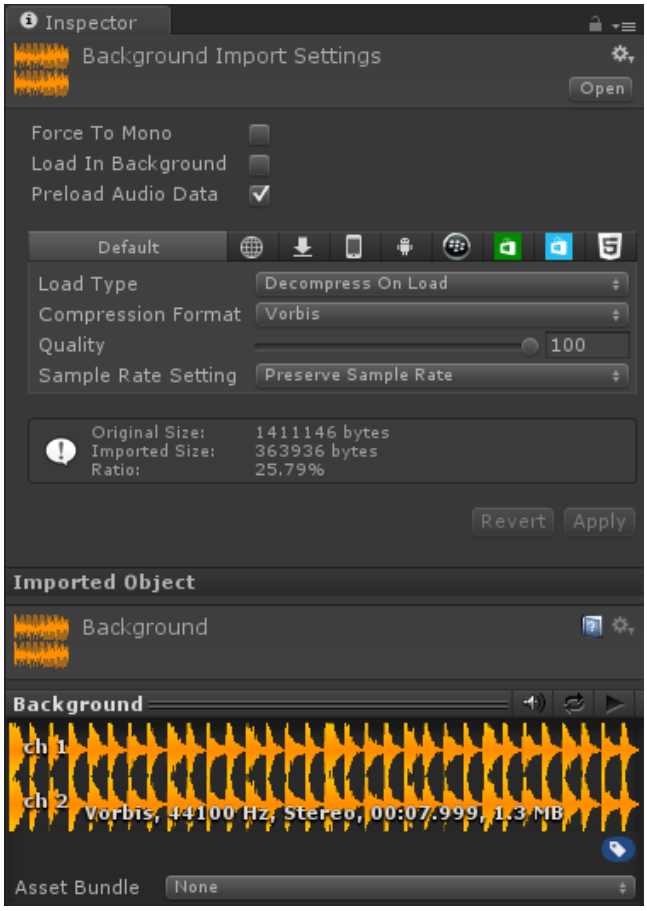
Level selection



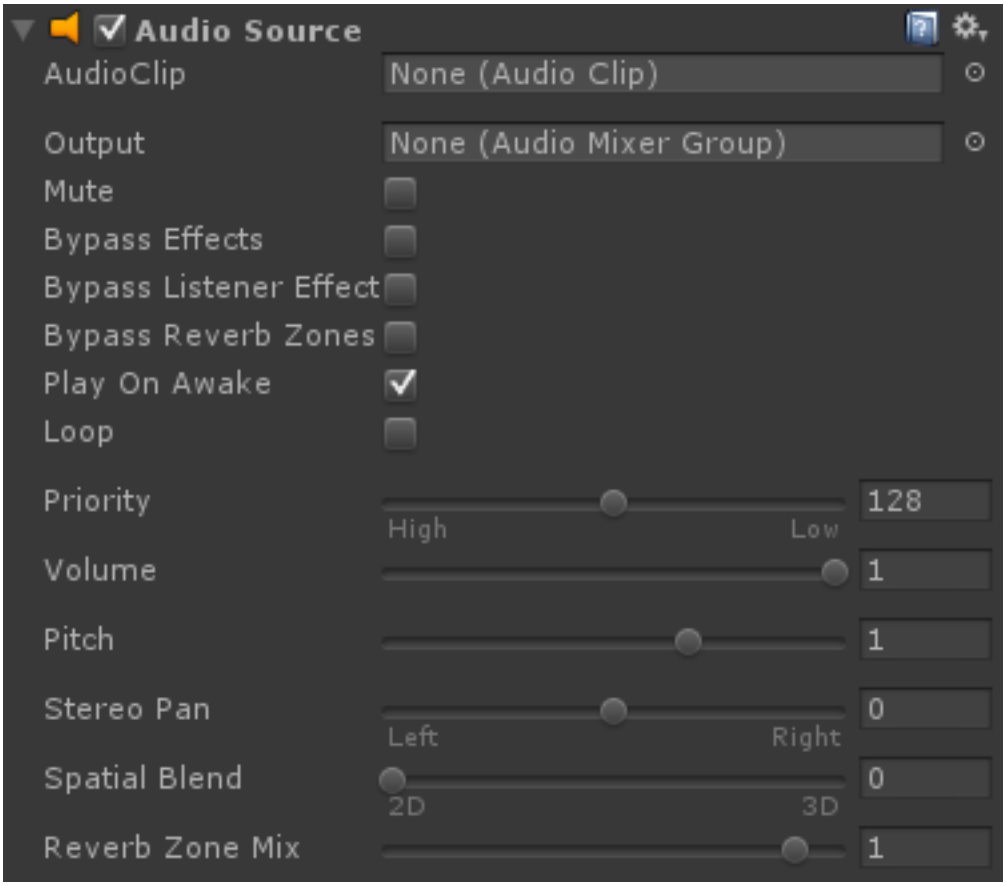
Chapter 8: Special Effects – Sound and Particles

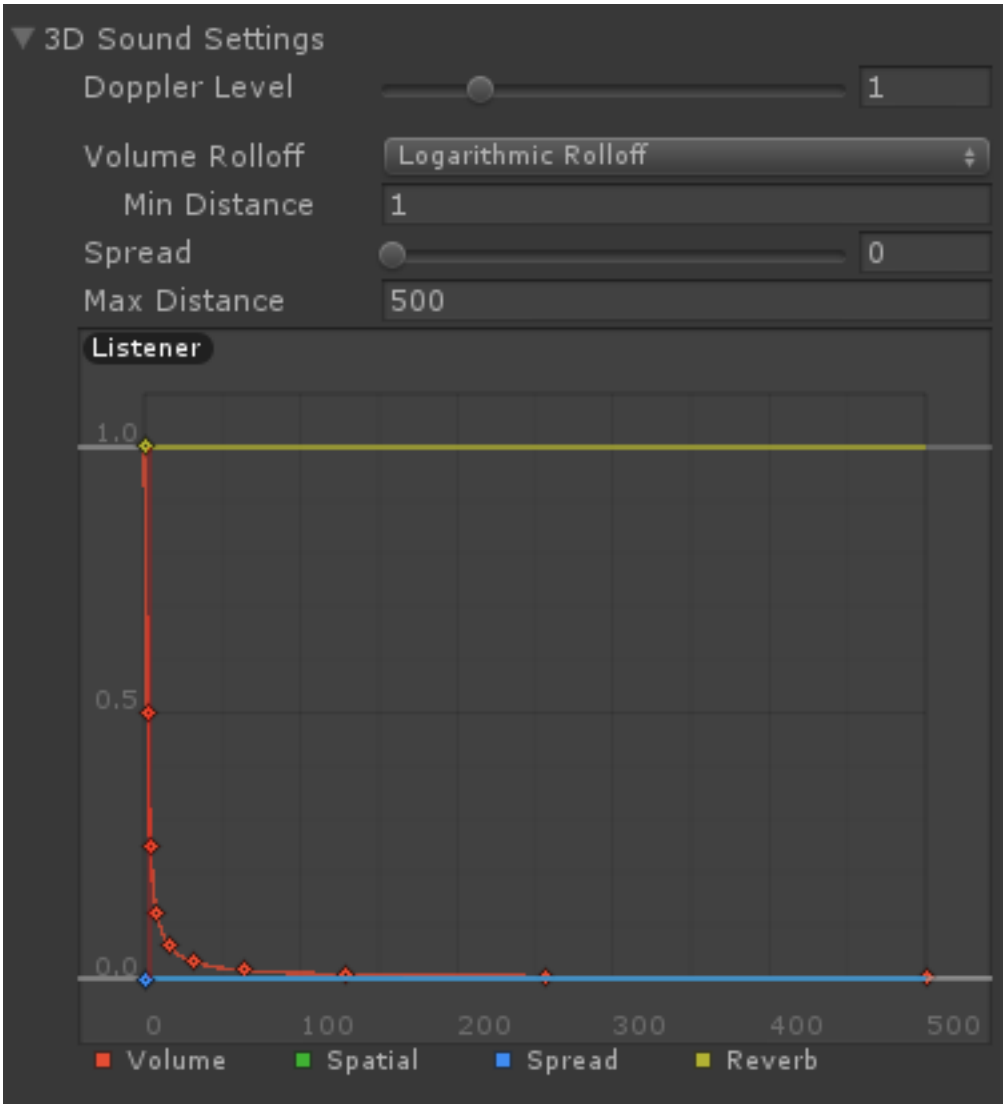
Understanding audio

Import settings



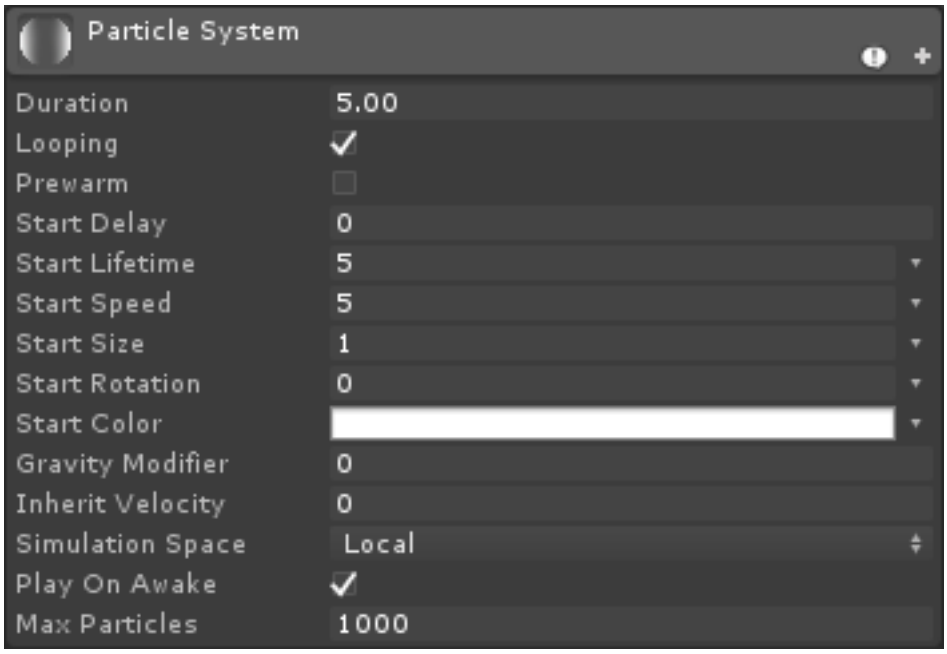
Audio Source

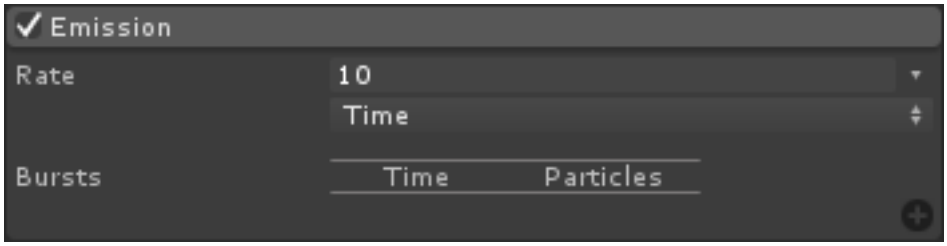


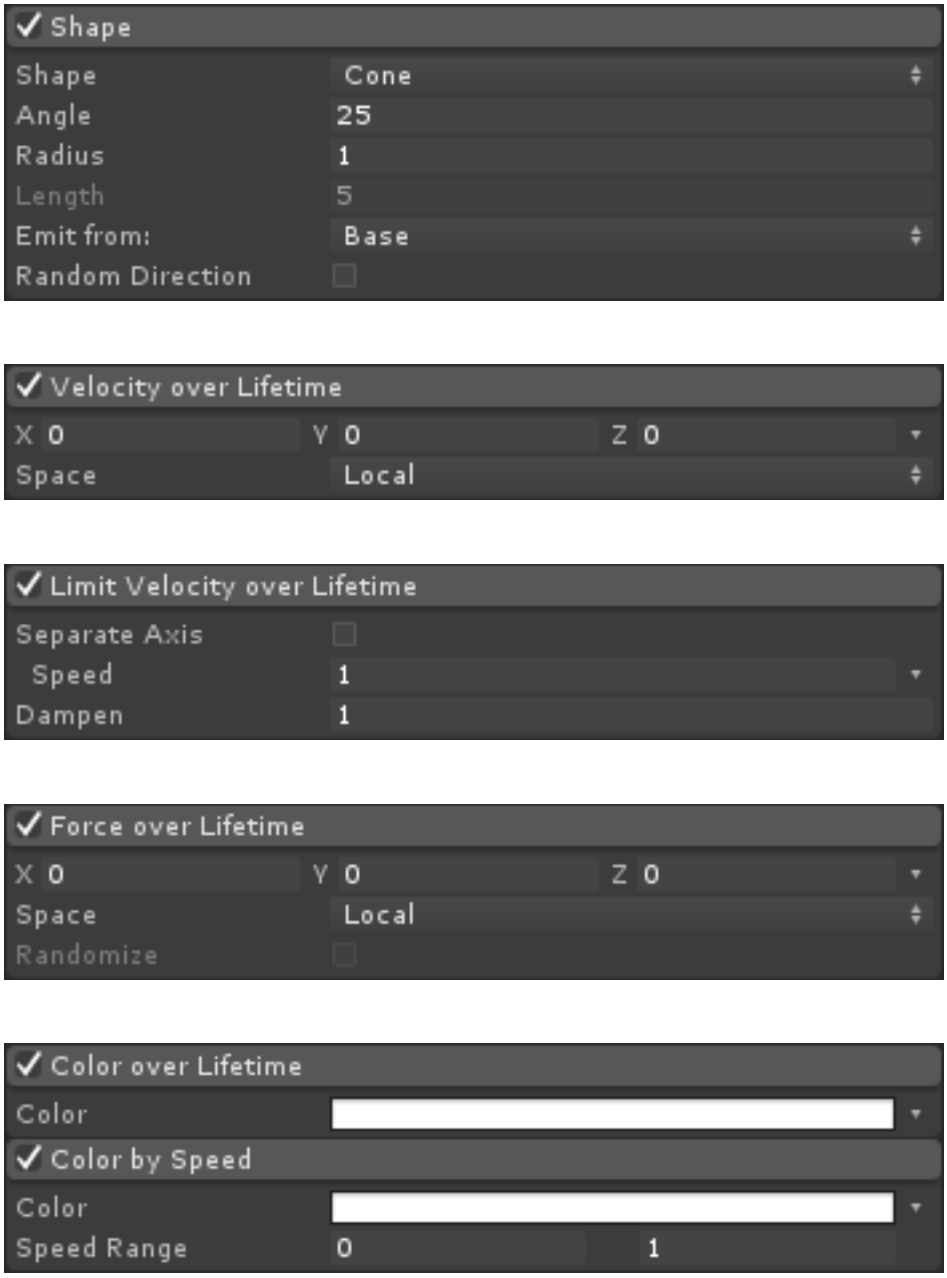

3D Sound Settings
Doppler Level
1
Volume Rolloff
Logarithmic Rolloff
Min Distance
1
Spread
0
Max Distance
500
Listener
1.0
0.5
0.0
0
100
200
300
400
500
Volume
Spatial
Spread
Reverb

Understanding particle systems

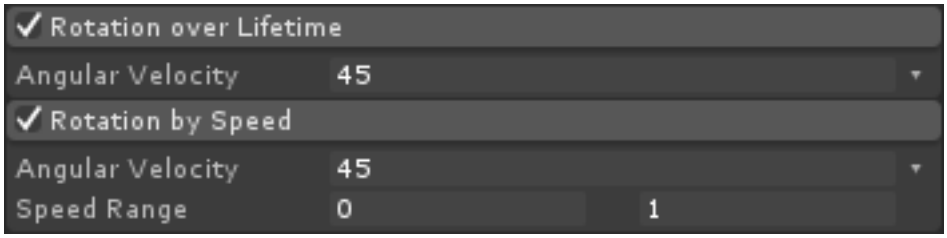
Particle system settings



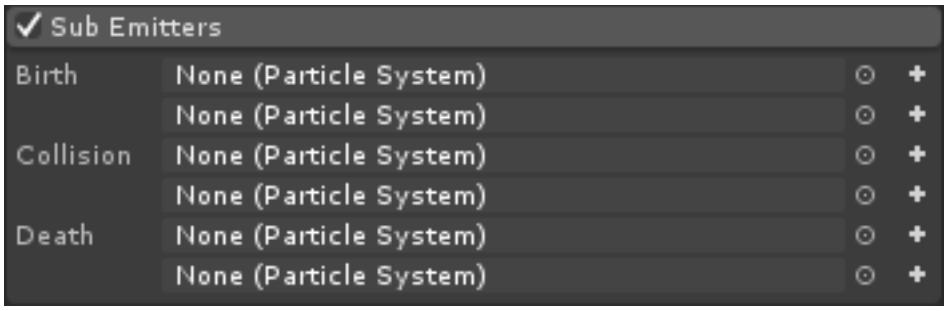


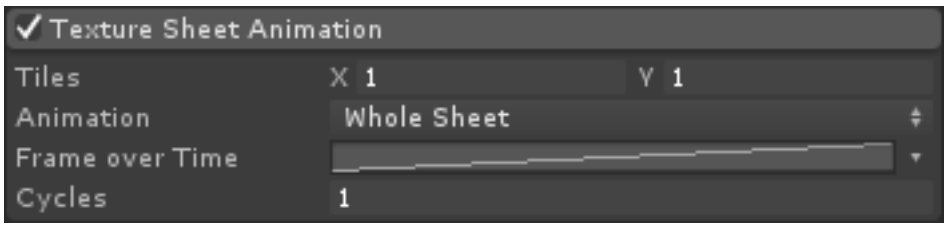

Shape
Shape
Cone
Angle
25
Radius
1
Length
5
Emit from:
Base
Random Direction
Velocity over Lifetime
X 0
Y 0
Z 0
Space
Local
Limit Velocity over Lifetime
Separate Axis
Speed
1
Dampen
1
Force over Lifetime
X 0
Y 0
Z 0
Space
Local
Randomize
Color over Lifetime
Color
Color by Speed
Color
Speed Range
0
1

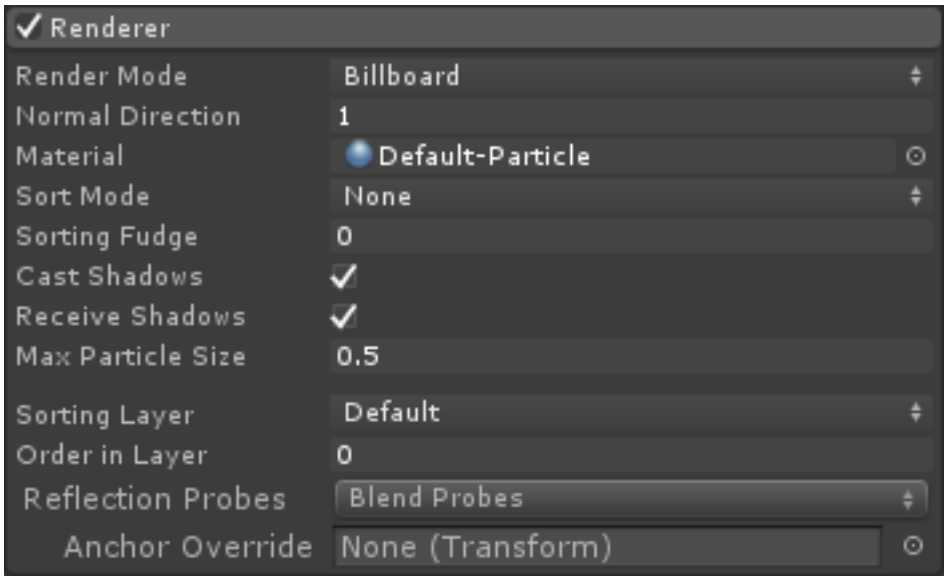

Size over Lifetime
Size
Size by Speed
Size
Speed Range
0
1


Rotation over Lifetime
Angular Velocity
45
Rotation by Speed
Angular Velocity
45
Speed Range
0
1

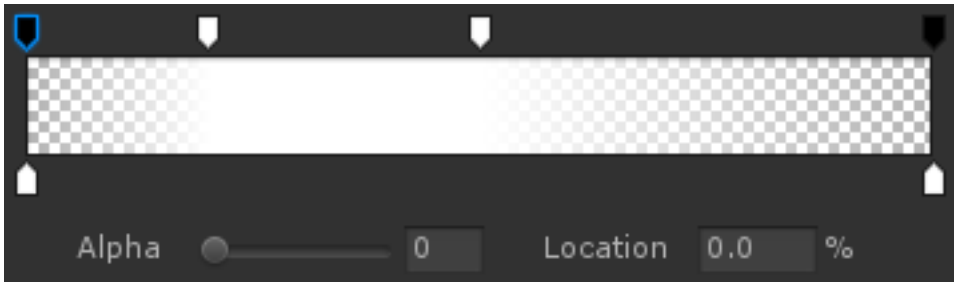

External Forces
Multiplier
1
Collision
Planes
Planes
None (Transform)
Visualization
Solid
Scale Plane
1.00
Dampen
0
Bounce
1
Lifetime Loss
0
Min Kill Speed
0
Particle Radius
0.01
Send Collision Message

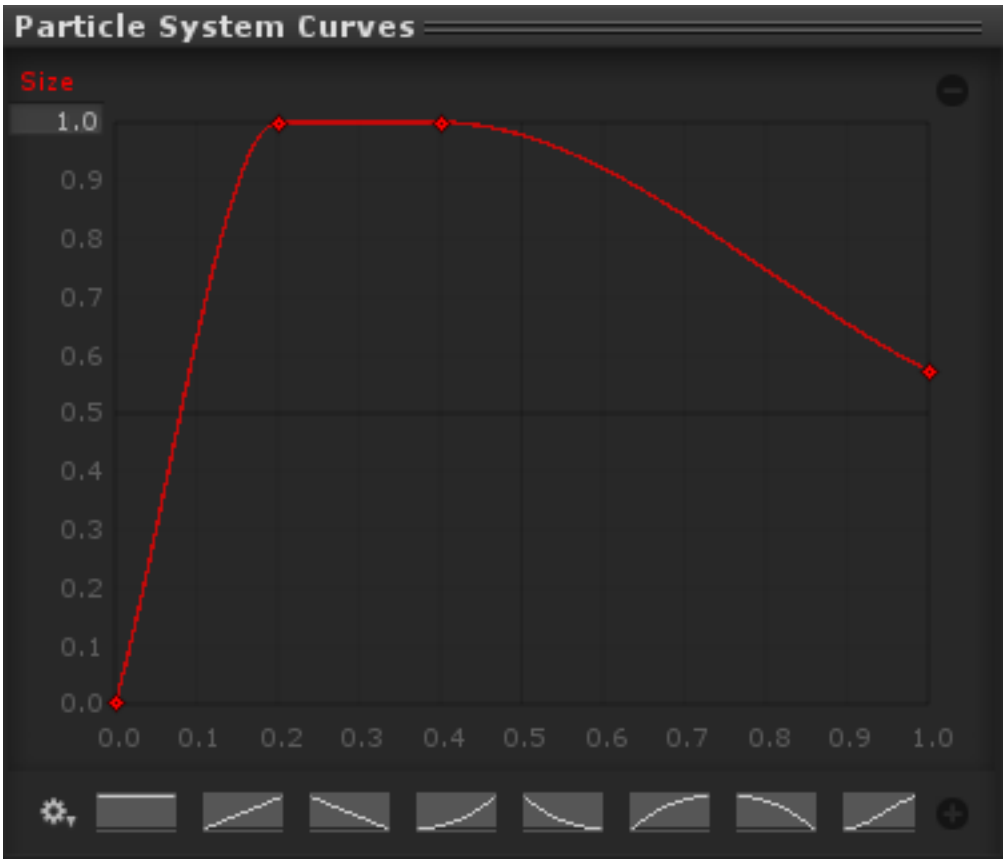

Sub Emitters
Birth
None (Particle System)
None (Particle System)
Collision
None (Particle System)
None (Particle System)
Death
None (Particle System)
None (Particle System)

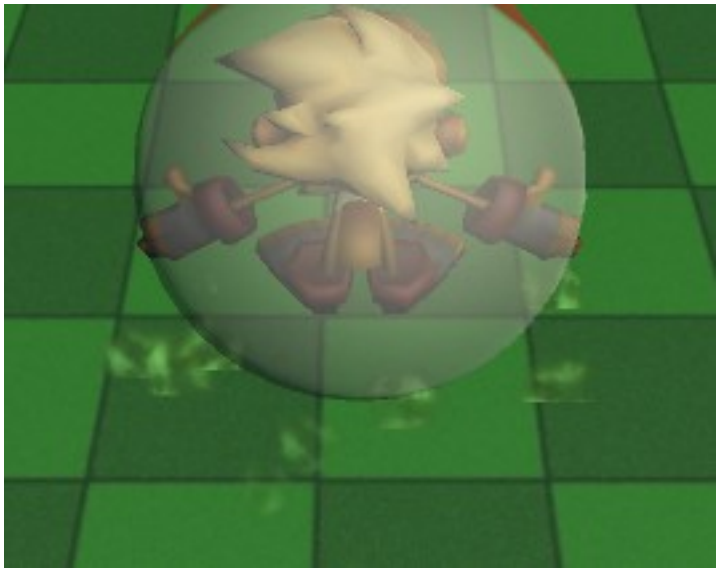

Texture Sheet Animation
Tiles
X 1
Y 1
Animation
Whole Sheet
Frame over Time
Cycles
1


Renderer
Render Mode
Billboard
Normal Direction
1
Material
Default-Particle
Sort Mode
None
Sorting Fudge
0
Cast Shadows
Receive Shadows
Max Particle Size
0.5
Sorting Layer
Default
Order in Layer
0
Reflection Probes
Blend Probes
Anchor Override
None (Transform)

Creating dust trails

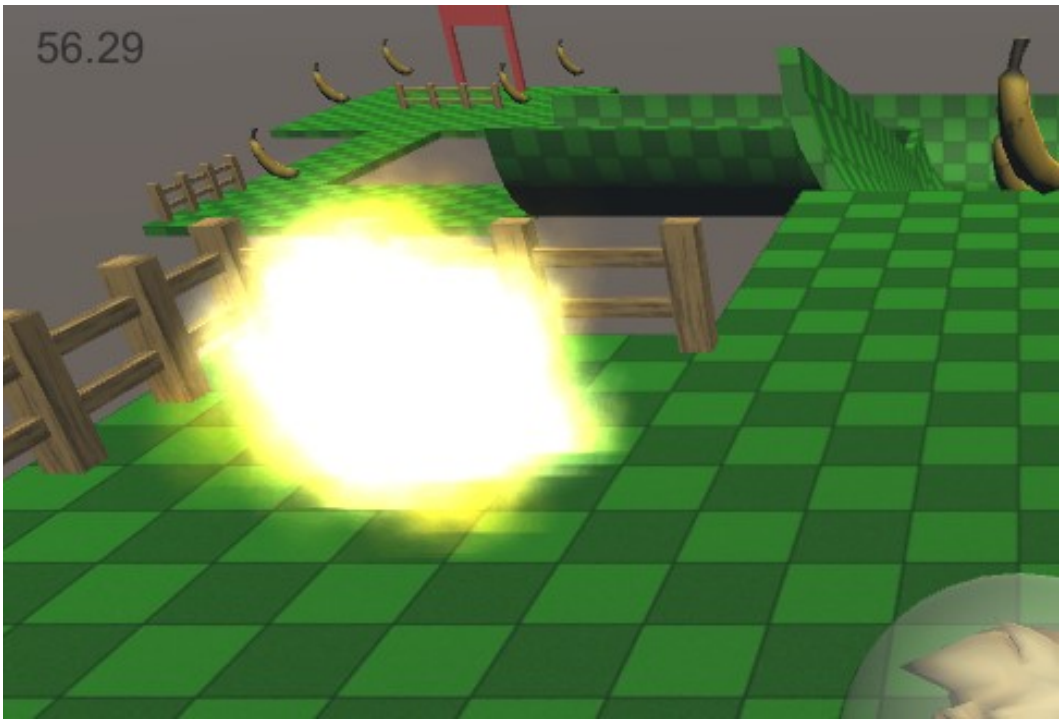






Putting it together

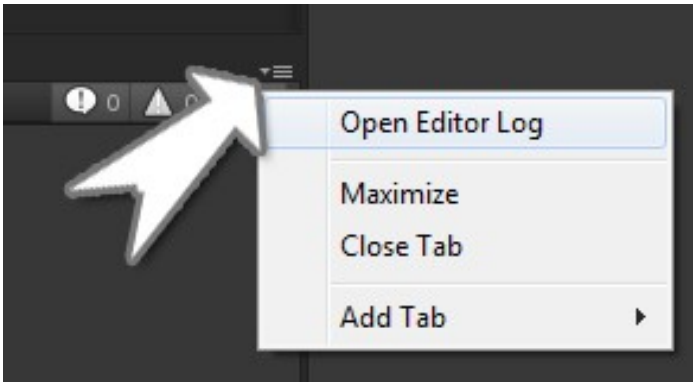
Exploding bananas



Chapter 9: Optimization

Minimizing the application footprint

Editor log

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Textures       1.9 mb     26.6%
Meshes         160.2 kb   2.2%
Animations     0.0 kb     0.0%
Sounds         0.3 kb     0.0%
Shaders        834.9 kb   11.3%
Other Assets   10.2 kb    0.1%
Levels         124.1 kb   1.7%
Scripts        231.8 kb   3.1%
Included DLLs  3.9 mb     54.6%
File headers   20.8 kb    0.3%
Complete size  7.2 mb     100.0%

Used Assets, sorted by uncompressed size:
 835.0 kb         11.3% Resources/unity_builtin_extra
 682.7 kb         9.3% Assets/Models/Monkey/Monkey.psd
 682.7 kb         9.3% Assets/Models/Banana/Banana.psd
 170.7 kb         2.3% Assets/Models/Map/Grass.psd
 170.7 kb         2.3% Assets/Models/Fence/Wood.psd
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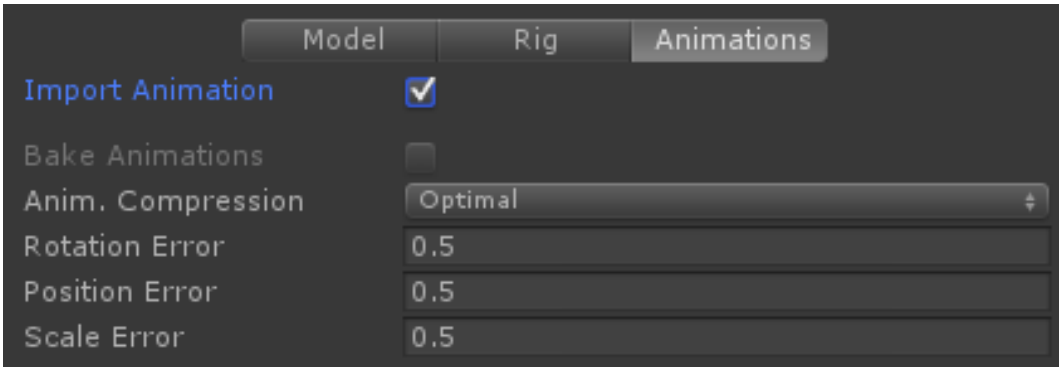
Asset compression

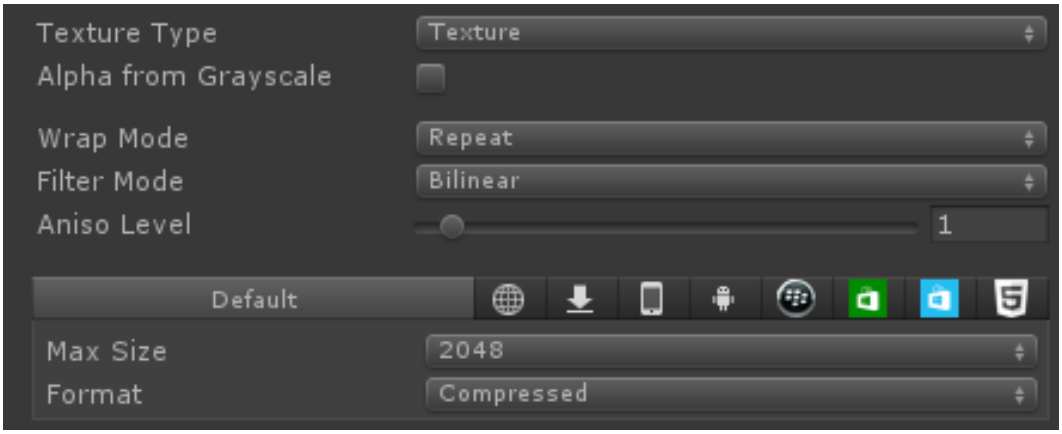
Model tab

The Rig tab

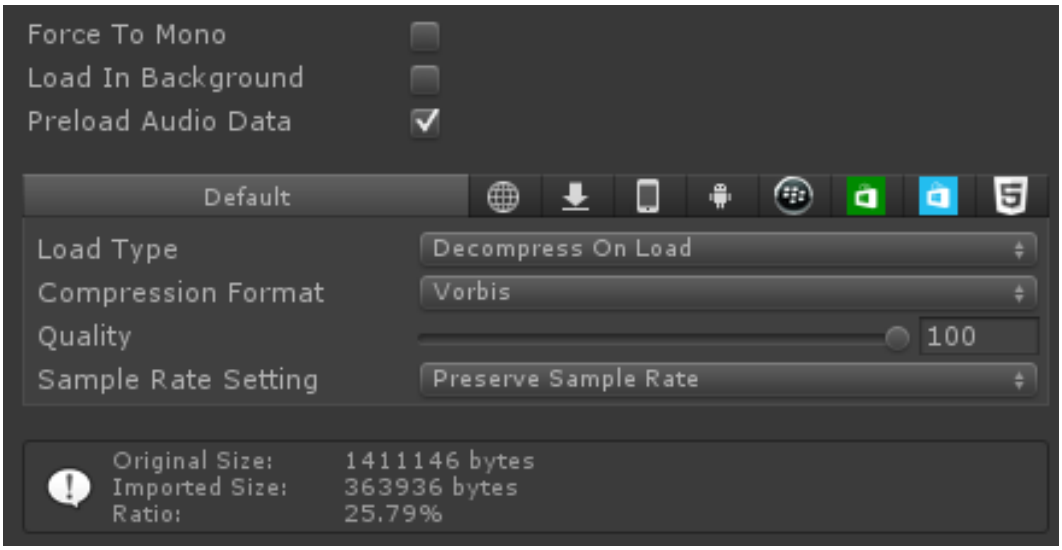
The Animations tab



Textures

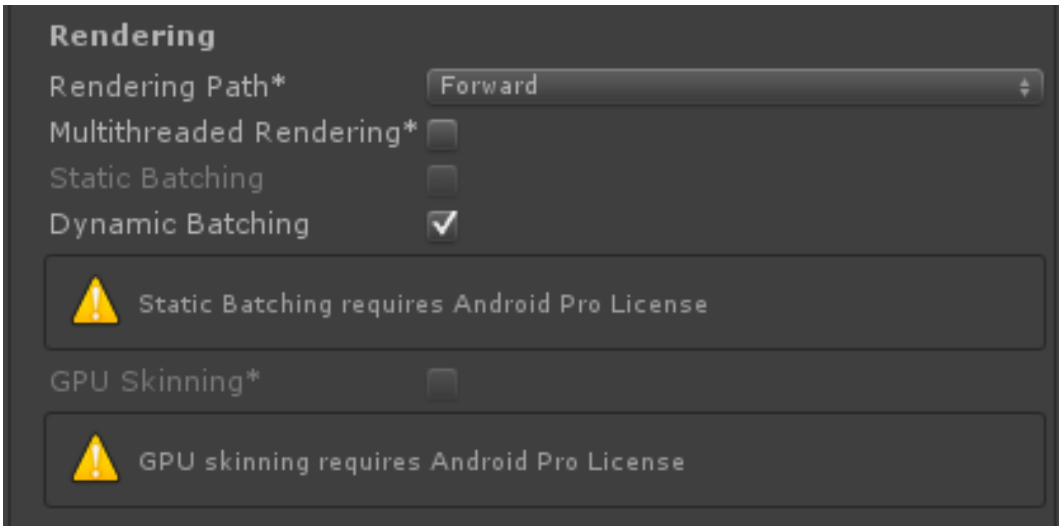


Audio

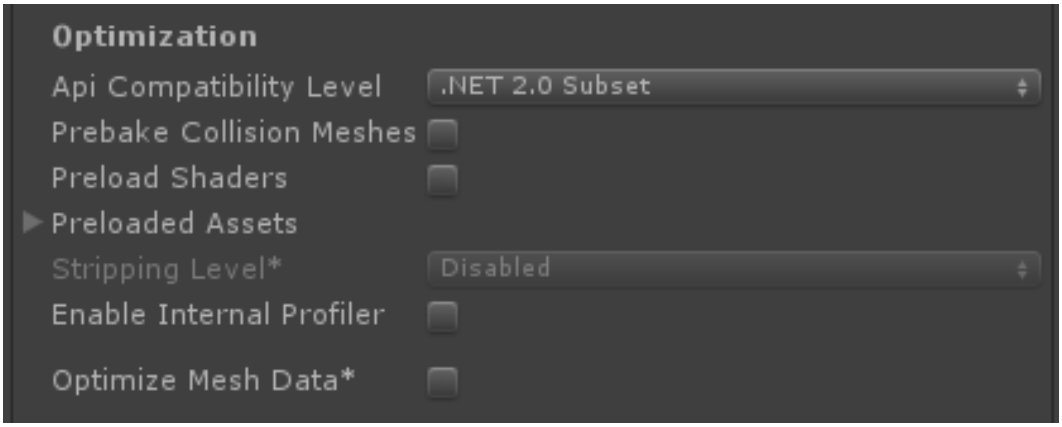


Player settings

Rendering



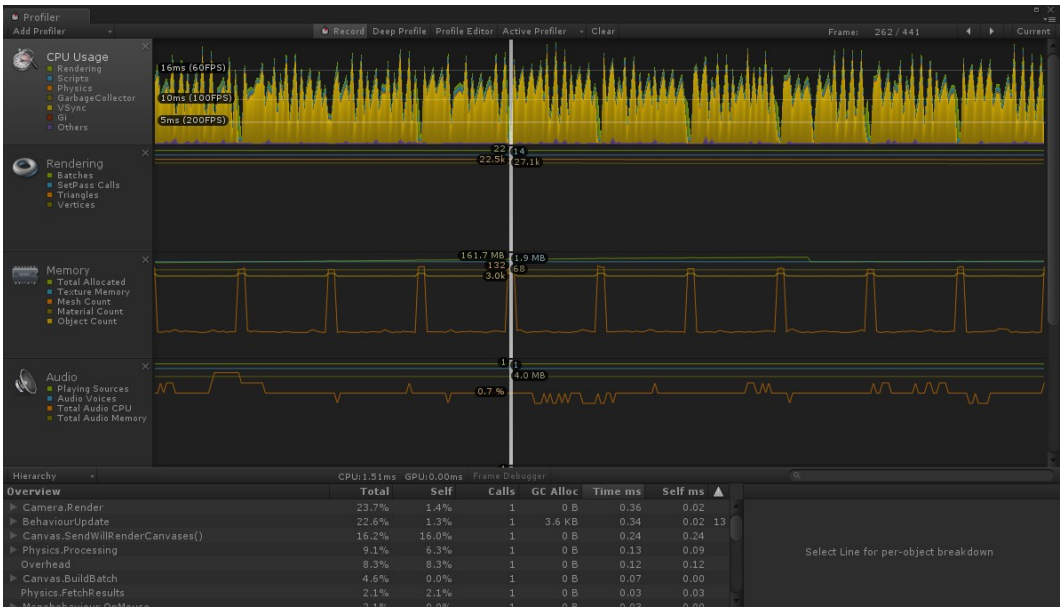
Optimization



Tracking performance

Editor statistics

The Profiler



Tracking script performance

Minimizing lag

Occlusion