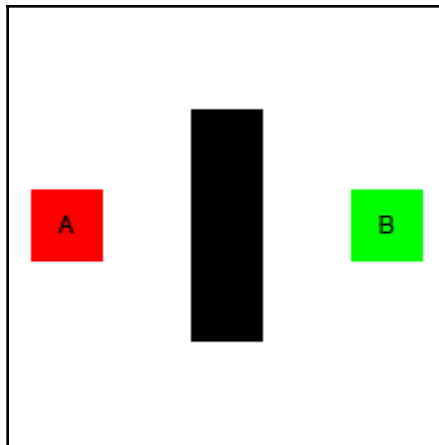
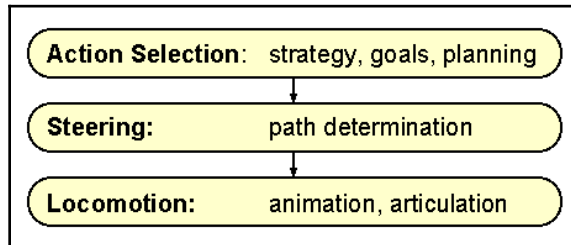
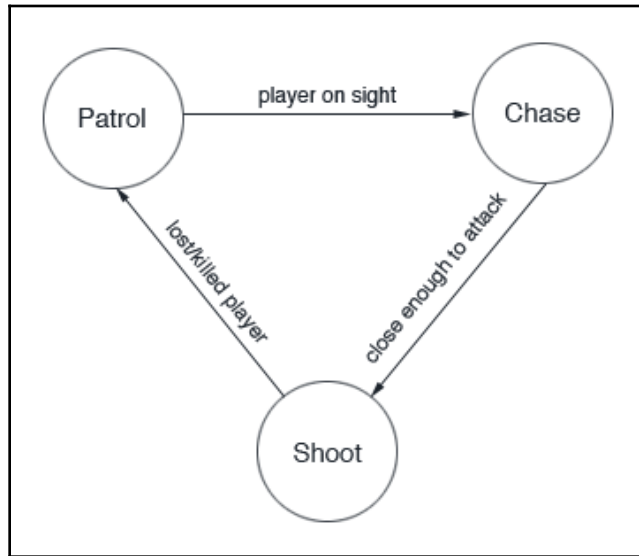
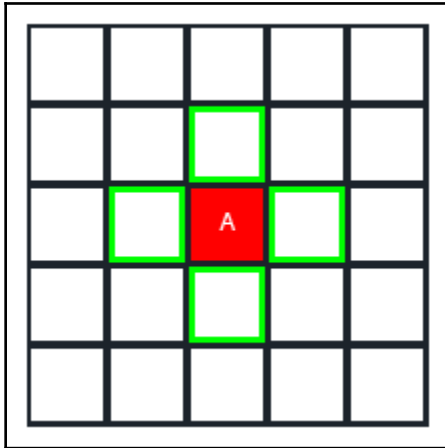
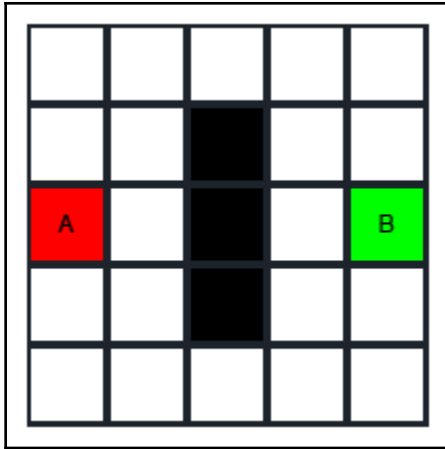
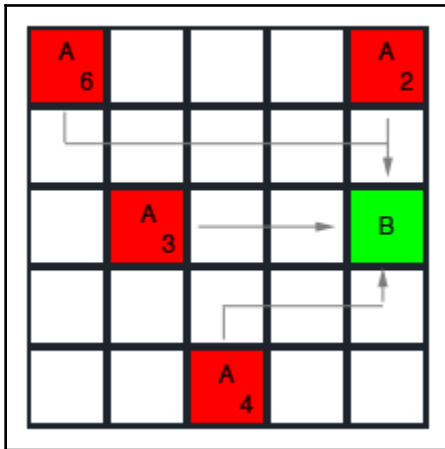
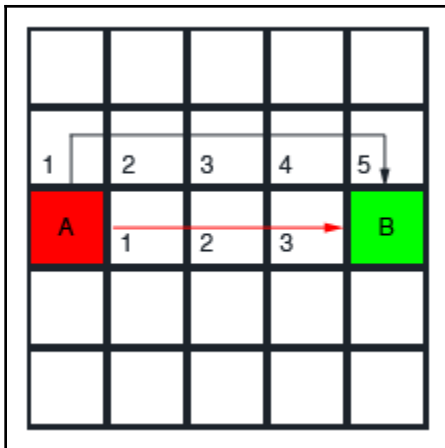


Chapter 1: Introduction to AI







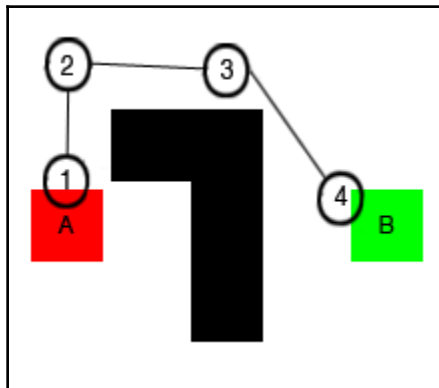
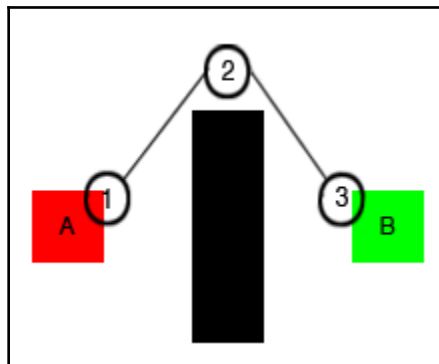
0	0	0	0	0
1 0	1 0	1 0	1 0	1 0
6	0	0	0	0
1 5	1 0	1 0	1 0	1 0
0	4	0	0	0
1 0	1 3	1 0	1 0	1 0
6	0	0	0	0
1 5	1 0	1 0	1 0	1 0
0	0	0	0	0
1 0	1 0	1 0	1 0	1 0

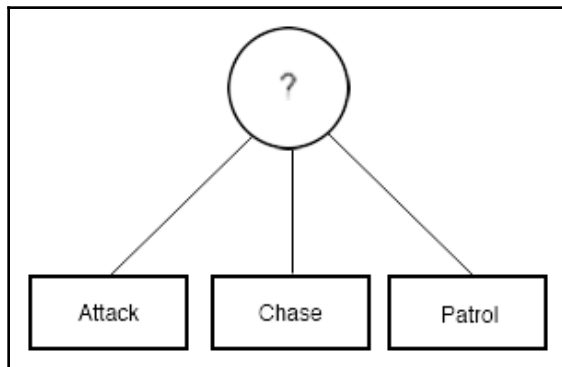
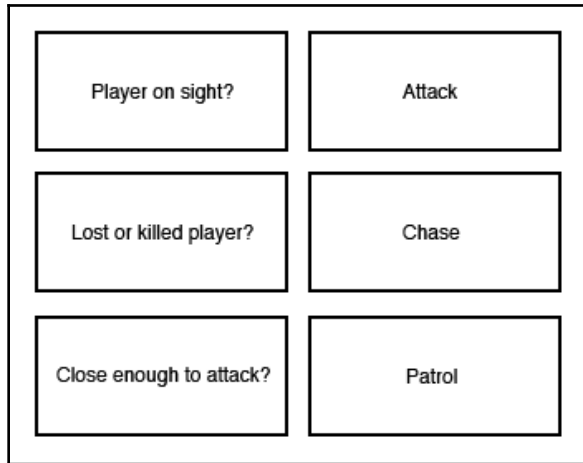
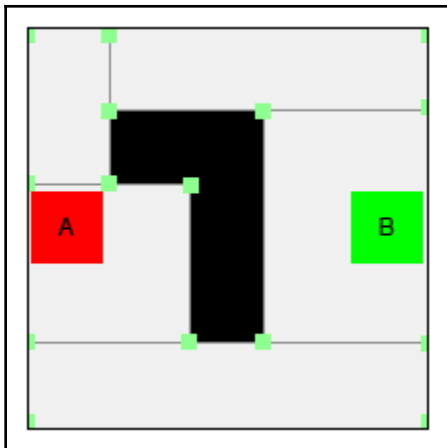
0	0	0	0	0
1 0	1 0	1 0	1 0	1 0
6	6	0	0	0
1 5	2 4	1 0	1 0	1 0
0	4	0	0	0
1 0	1 3	1 0	1 0	1 0
6	6	0	0	0
1 5	2 4	1 0	1 0	1 0
0	0	0	0	0
1 0	1 0	1 0	1 0	1 0

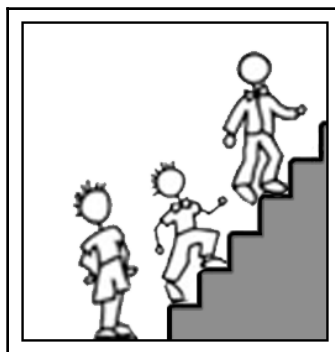
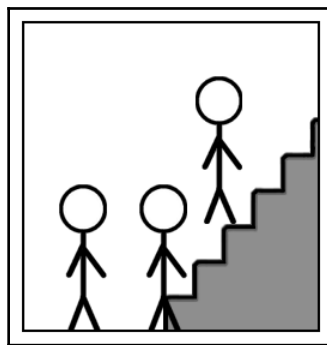
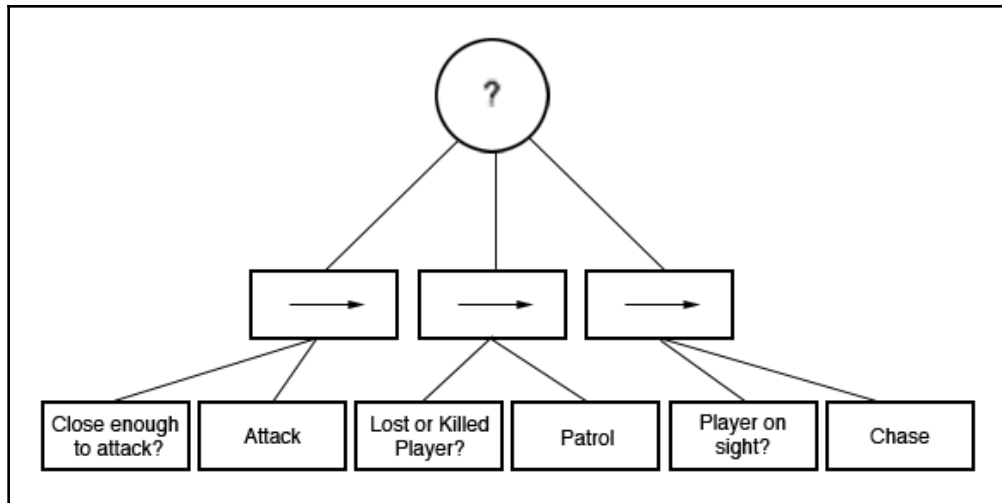
8	0	0	0	0
2 6	1 0	1 0	1 0	1 0
6	6	0	0	0
1 5	2 4	1 0	1 0	1 0
0	4	0	0	0
1 0	1 3	1 0	1 0	1 0
6	6	0	0	0
1 5	2 4	1 0	1 0	1 0
0	0	0	0	0
1 0	1 0	1 0	1 0	1 0

8	8	8	8	8
2 6	3 5	4 4	5 3	6 2
6	6	0	8	8
1 5	2 4	1 0	6 2	7 1
0	4	0	8	8
1 0	1 3	1 0	7 1	8 0
6	6	0	8	8
1 5	2 4	1 0	6 2	7 1
8	8	8	8	8
2 6	3 5	4 4	5 3	6 2

8	8	8	8	8					
2	6	3	5	4	4	5	3	6	2
6	6	0	8	8					
1	5	2	4	1	0	6	2	7	1
0	4	0	8	8					
1	0	1	3	1	0	7	1	8	0
6	6	0	8	8					
1	5	2	4	1	0	6	2	7	1
8	8	8	8	8					
2	6	3	5	4	4	5	3	6	2







Step height: Random: Auto-Demo: FPS 37.31
Step slope: Random: On Off

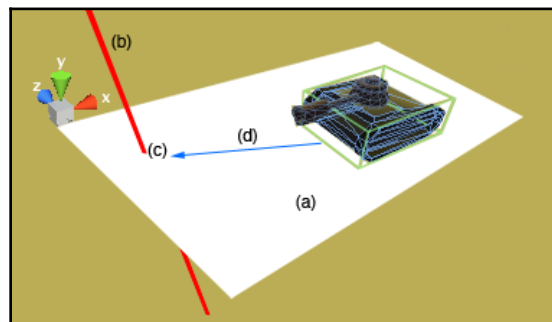
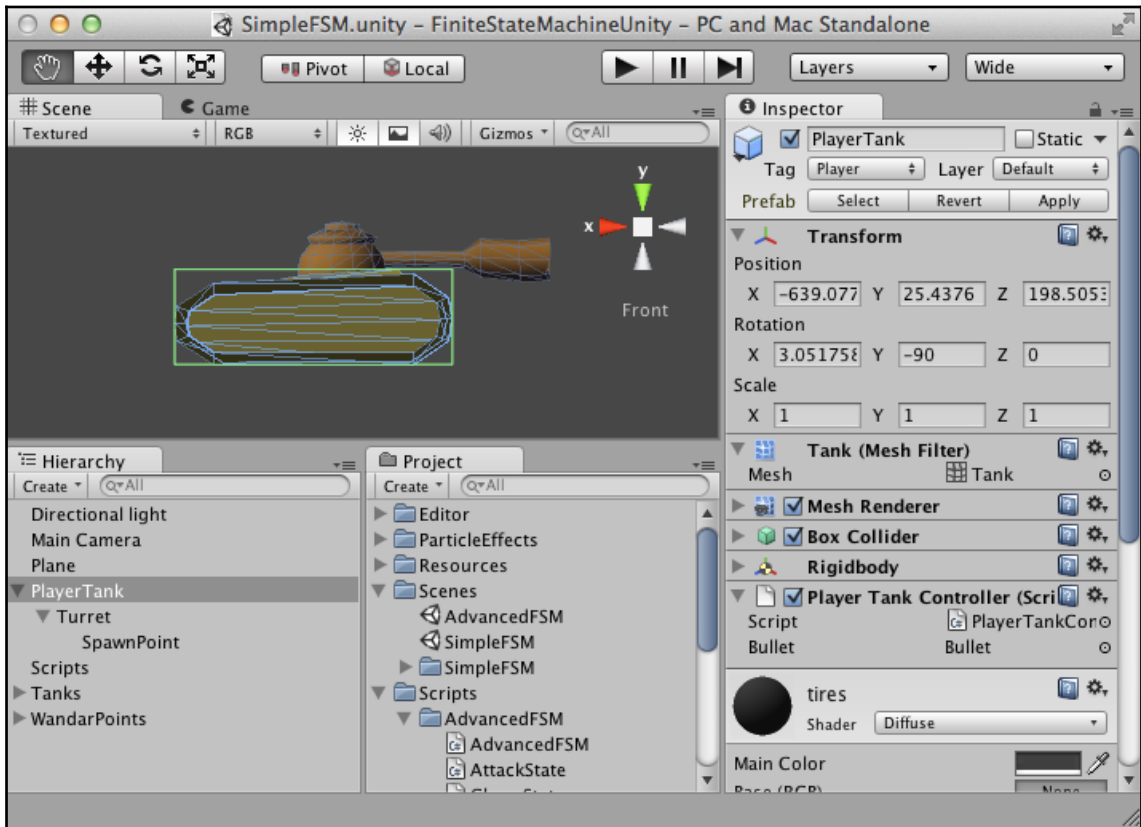
Options

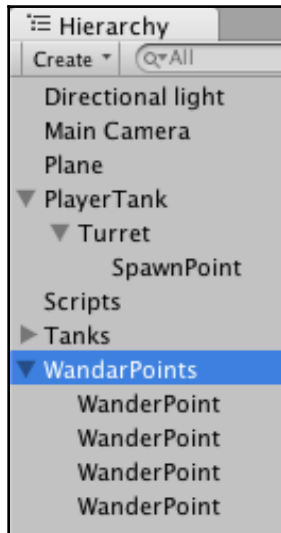
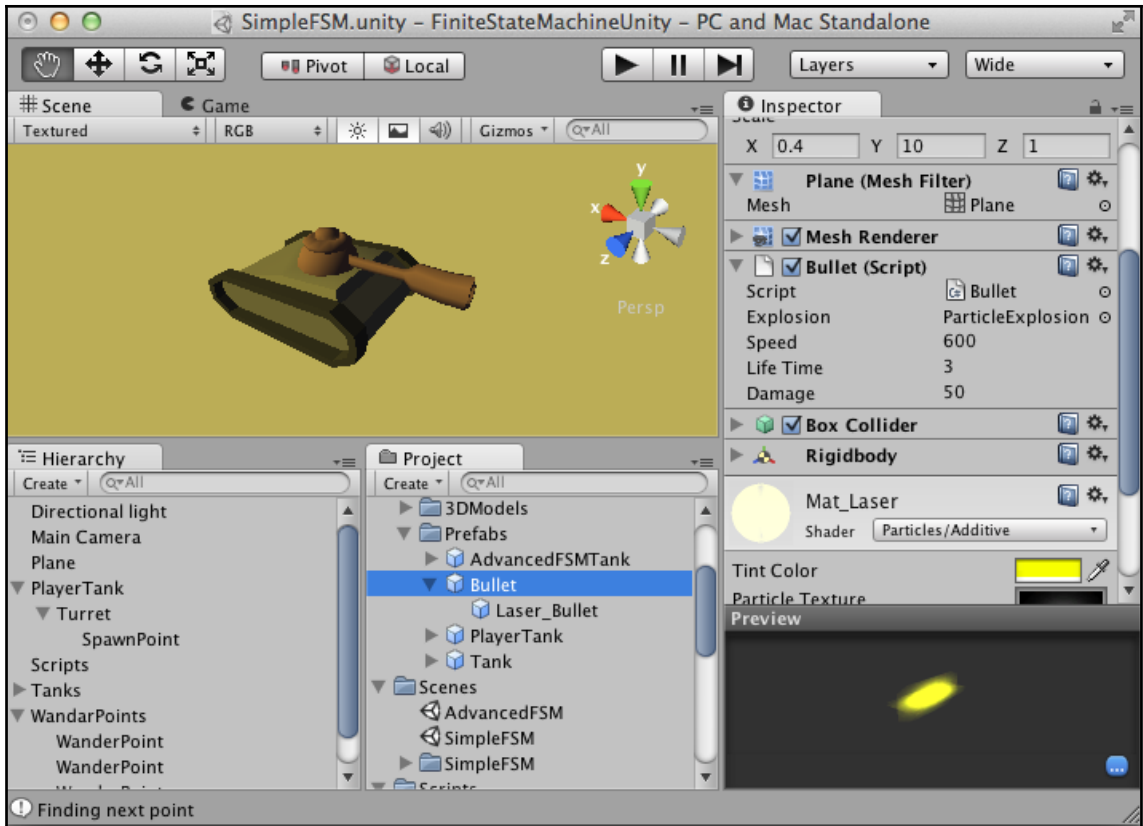
Automatic Demo: Characters: 1
 Random Walking
 Variate Character + Cam
 Variate Terrain
Time Scale: 1

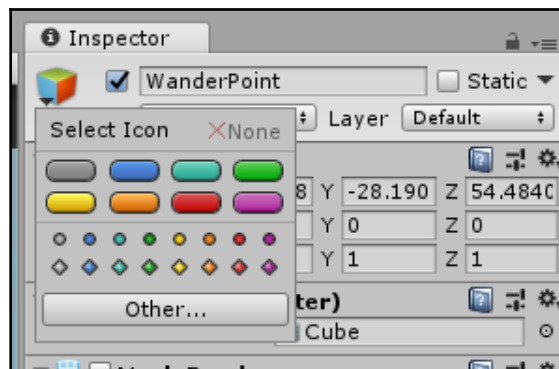
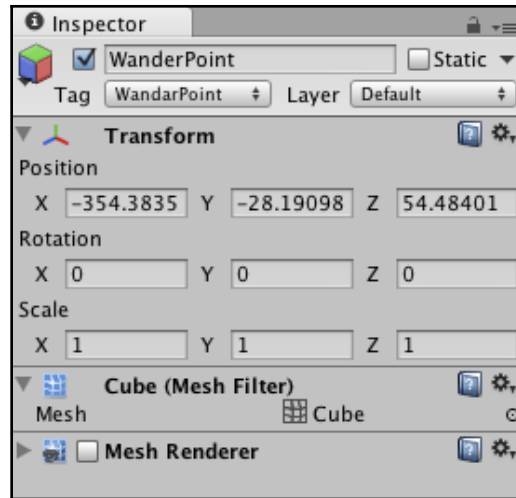
Visualization: Other Options:
 Render Animation Ghost Disable Locomotion
 Render Foot Markers Disable Shadows
 Render Cycle Graph
 Render Blending Graph
 Render Animation States

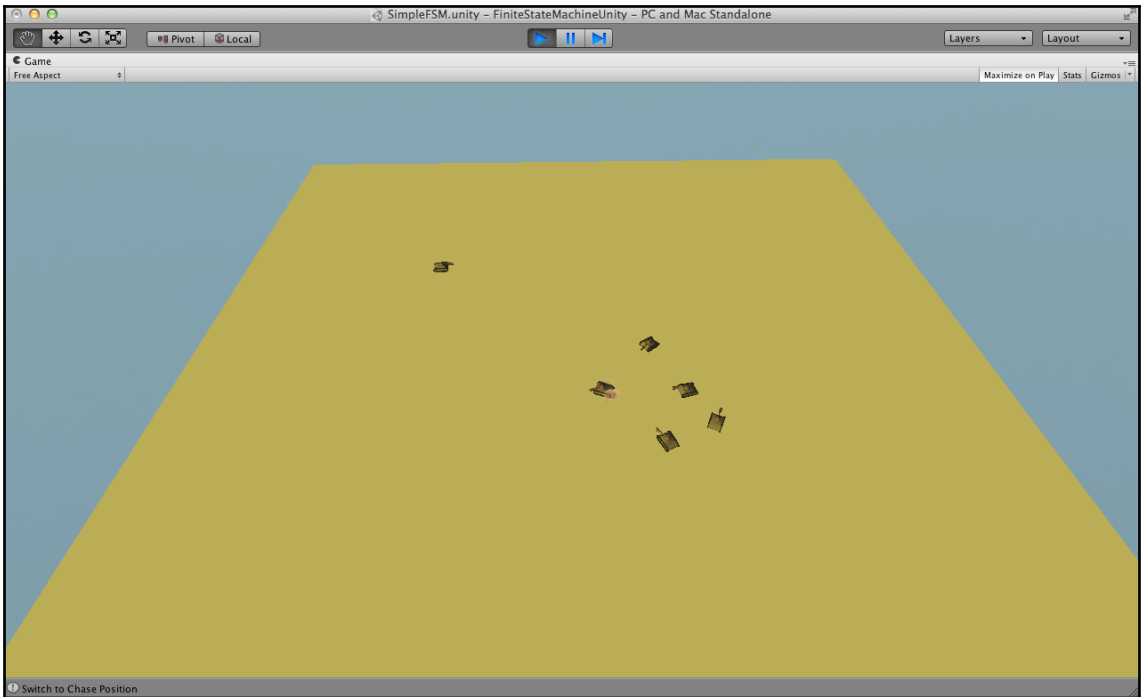
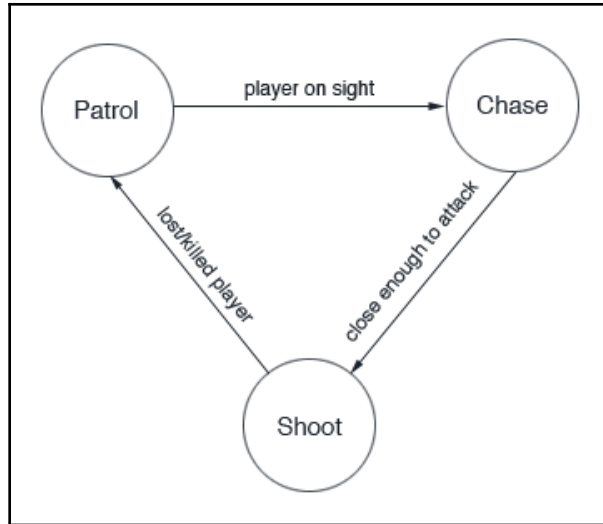
OPTIONS Human Heron Coyote

Chapter 2: Finite State Machines

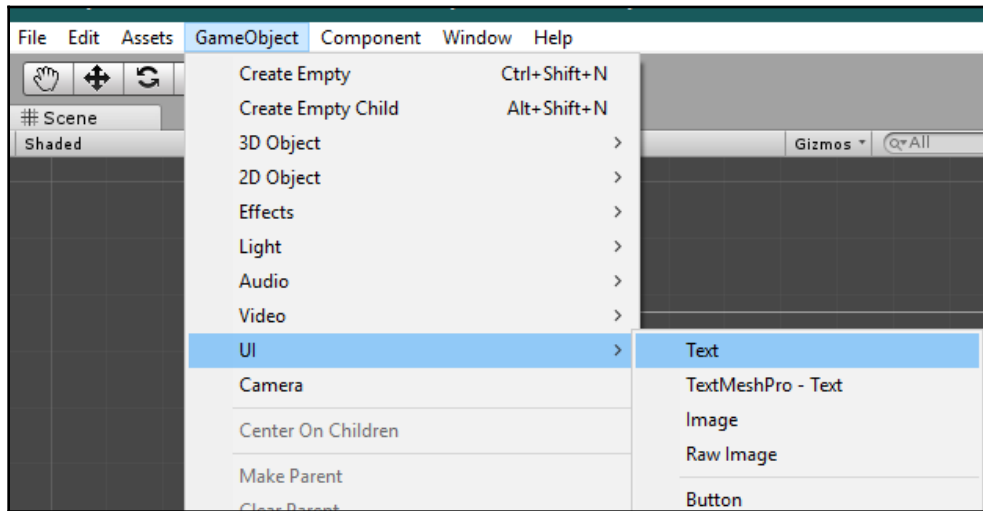








Chapter 3: Randomness and Probability



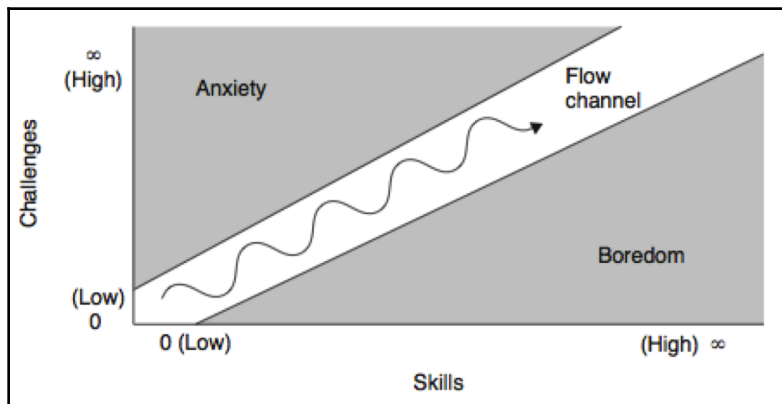
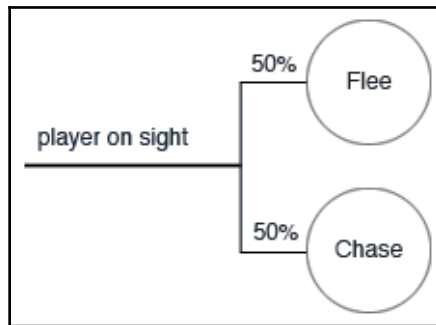
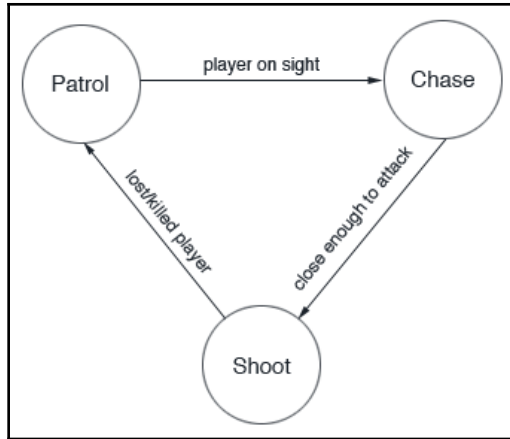
$$P(A) = \frac{n}{N}$$

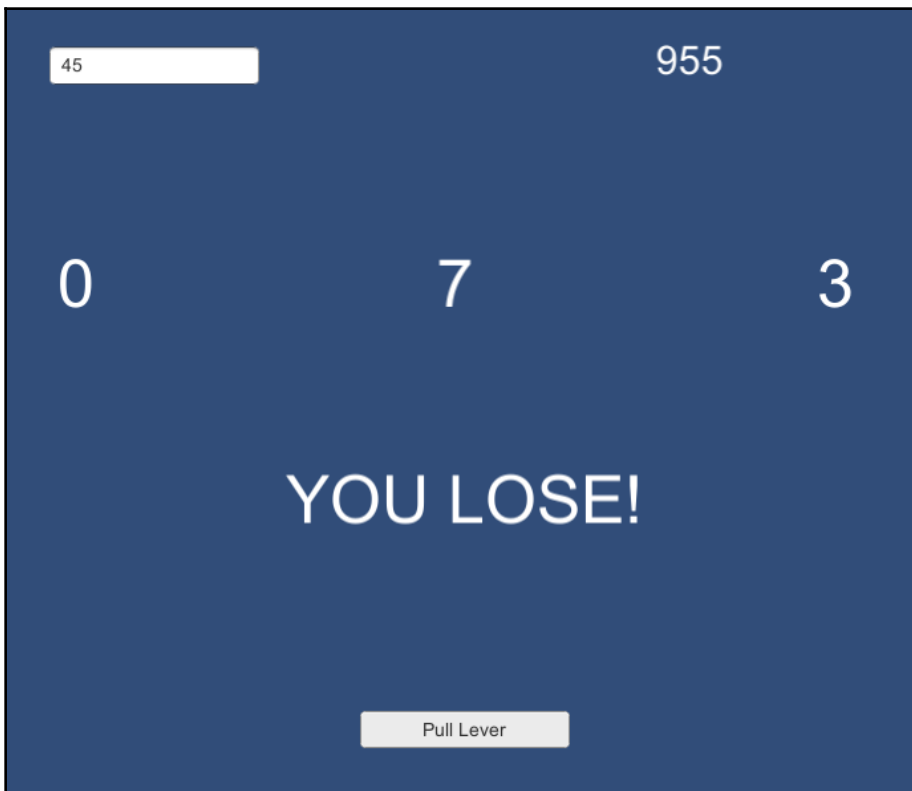
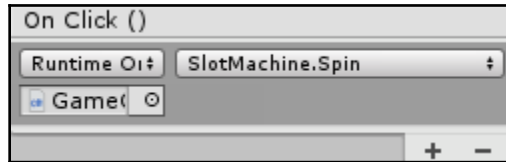
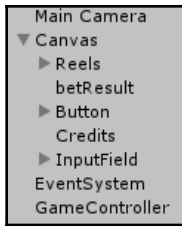
$$\bar{P}(A) = 1 - P(A)$$

$$P(A) + \bar{P}(A)$$

$$P(A \text{ or } B) = P(A) + P(B)$$

$$P(A \text{ and } B) = P(A) \cdot P(B)$$





34

813

0

6

0

YOU WIN 17

Pull Lever

55

890

9

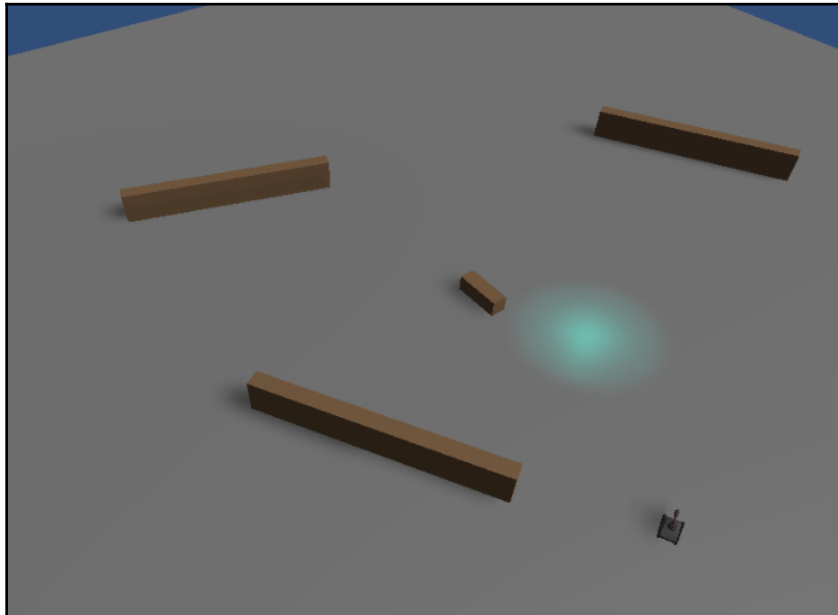
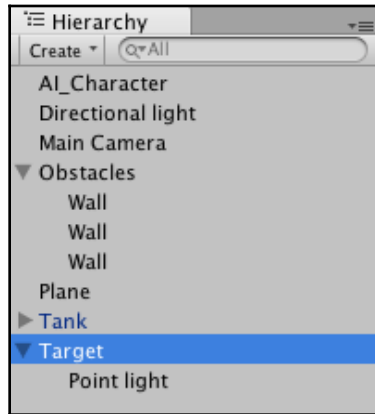
9

8

AWW... ALMOST JACKPOT!

Pull Lever

Chapter 4: Implementing Sensors



Inspector

Tank Static

Tag: Layer:

Prefab:

Transform

Position
X: Y: Z:

Rotation
X: Y: Z:

Scale
X: Y: Z:

Tank (Mesh Filter)

Mesh Renderer

Box Collider

Player Tank (Script)
Script:
Target Transform:

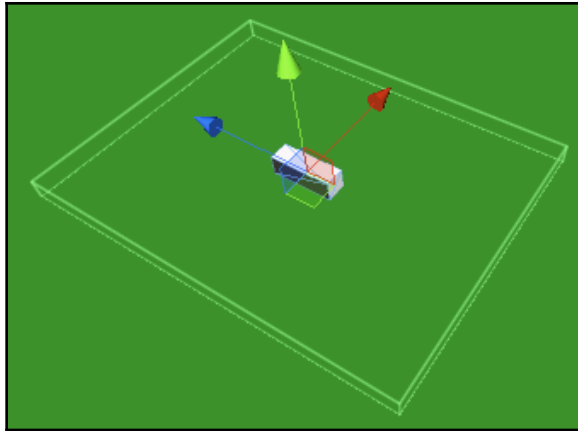
Rigidbody

Mass:
Drag:
Angular Drag:
Use Gravity:
Is Kinematic:
Interpolate:
Collision Detection:

Constraints

Aspect (Script)
Script:
Aspect Name:
Sense Name:

Aspect (Script)
Script:
Aspect Name:



Box Collider

Is Trigger

Material

Center

X Y Z

Size

X Y Z

Mesh Renderer

Perspective (Script)

Script

Debug Mode

Aspect Name Enemy

Detection Rate 1

Field Of View 20

View Distance 30

Wander (Script)

Script

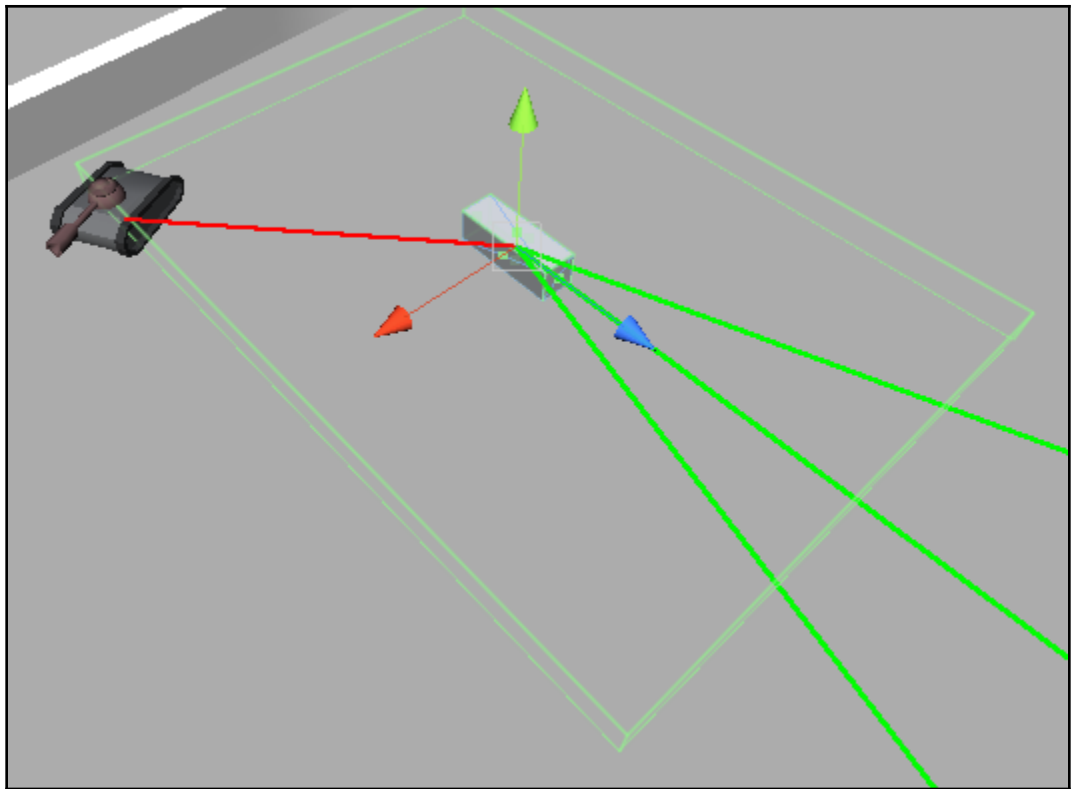
Touch (Script)

Script

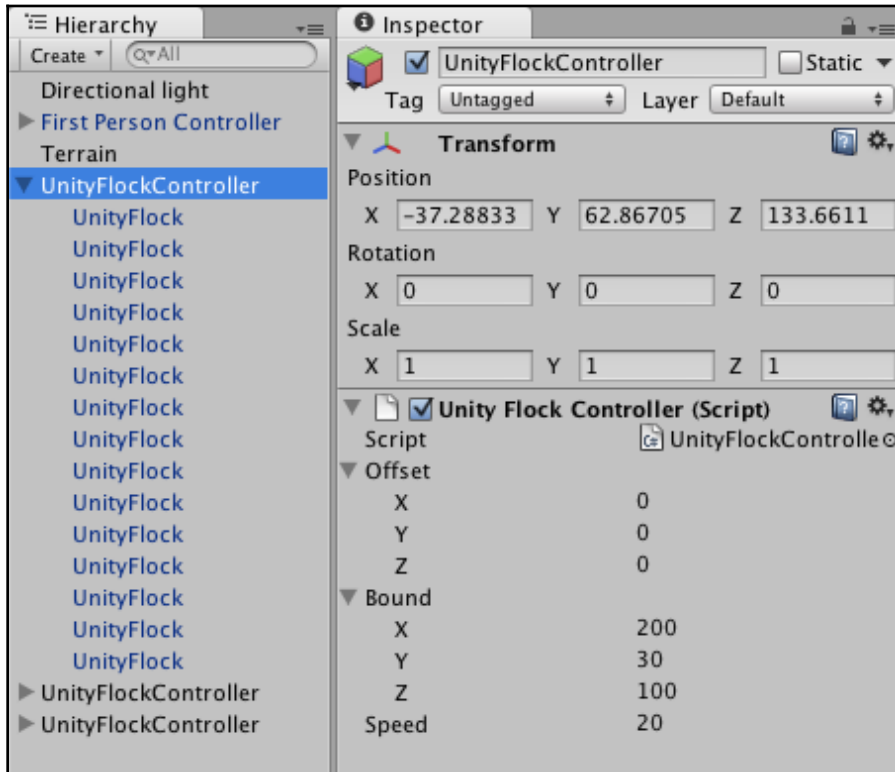
Debug Mode

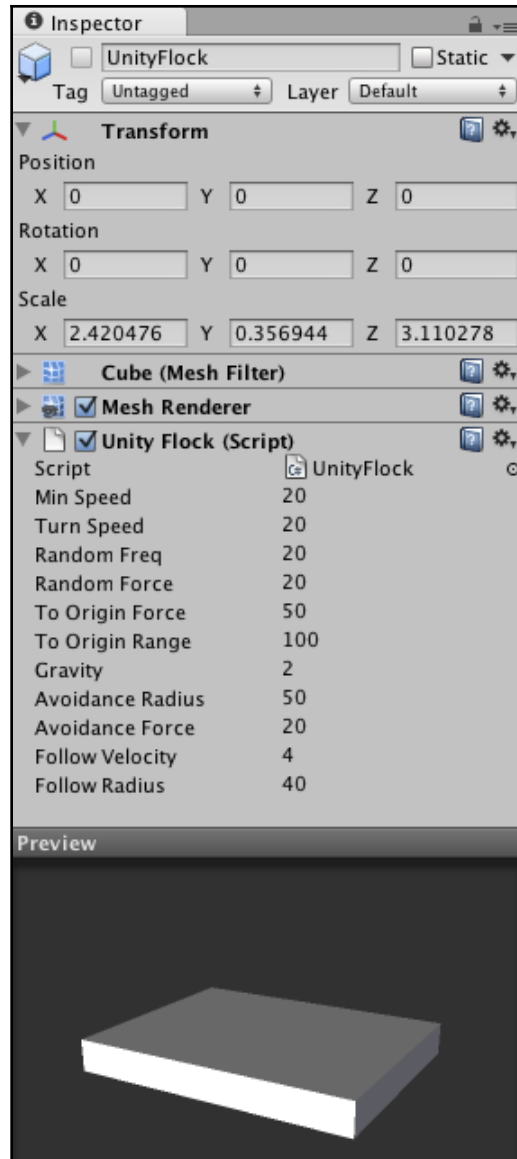
Aspect Name Enemy

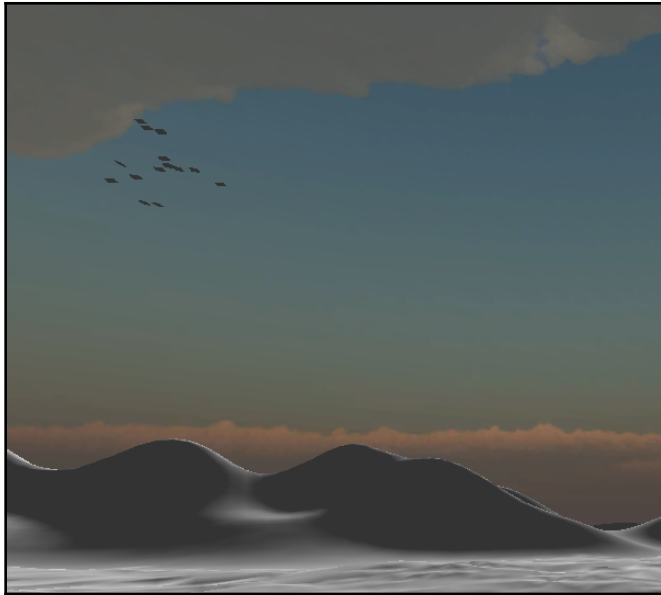
Detection Rate 1



Chapter 5: Flocking







Inspector

Flock Static

Tag Untagged Layer Default

Transform

Position
X 9.98262 Y 1.533306 Z -2.36271

Rotation
X 0 Y 0 Z 0

Scale
X 0.5 Y 0.5 Z 0.5

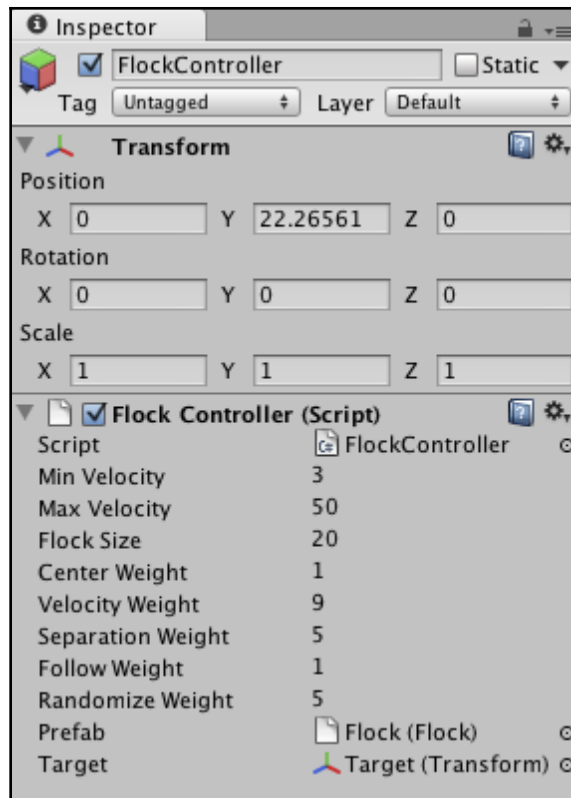
Cube (Mesh Filter)

Mesh Renderer

Rigidbody

Flock (Script)
Script Flock

Sphere Collider



Inspector

Target Static

Tag Untagged Layer Default

Transform

Position
X 0 Y 15.27327 Z 0

Rotation
X 0 Y 0 Z 0

Scale
X 1 Y 1 Z 1

Sphere (Mesh Filter)

Sphere Collider

Mesh Renderer

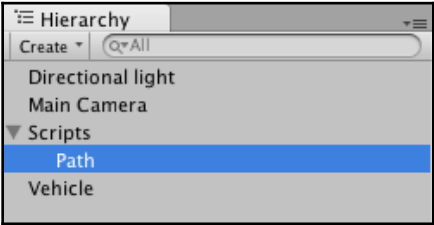
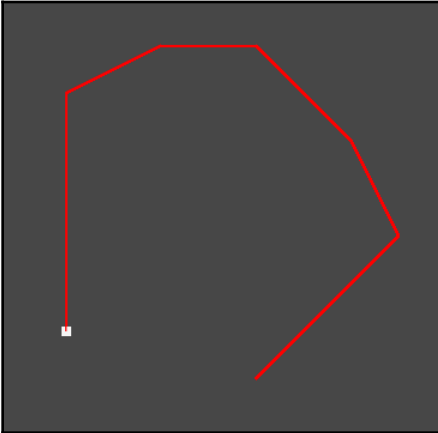
Target Movement (Script)
Script TargetMovement

Bound

X	30
Y	40
Z	70
Speed	8



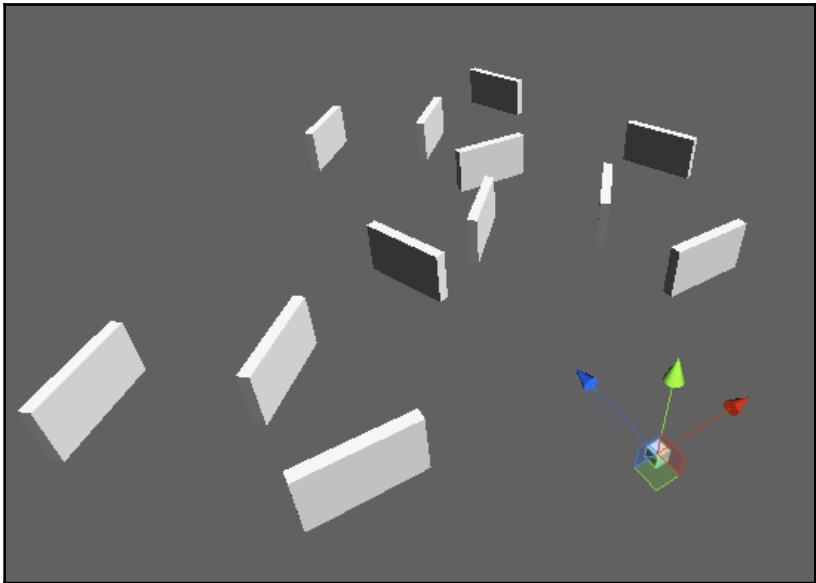
Chapter 6: Path-Following and Steering Behaviors

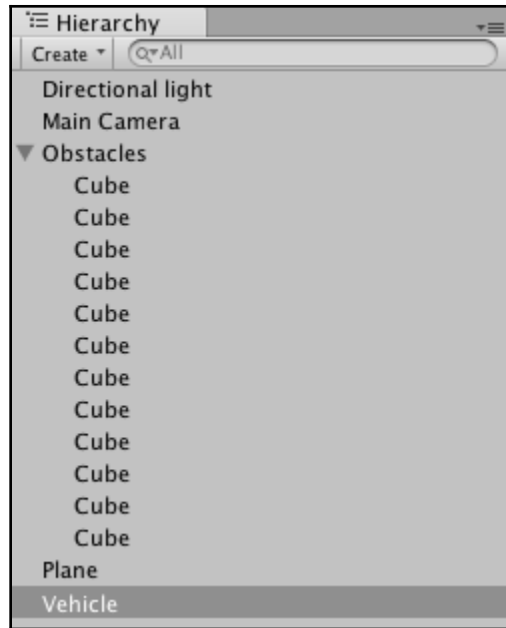


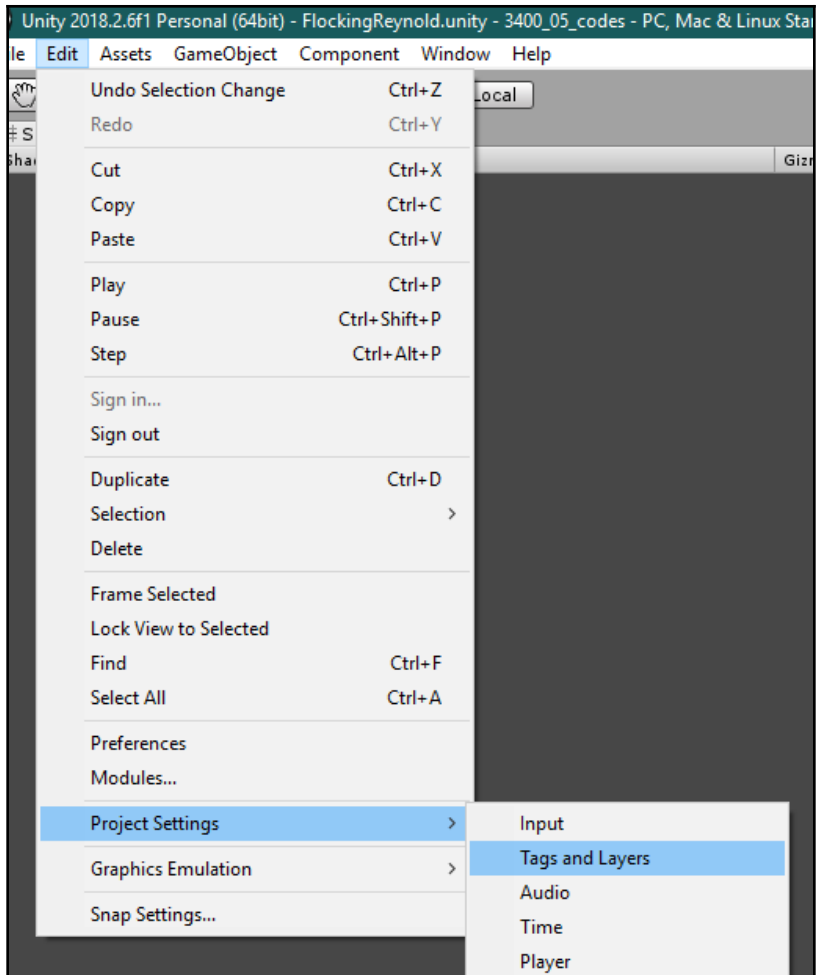
Path (Script)		Path
Script		<input type="checkbox"/>
BDebug		<input checked="" type="checkbox"/>
Radius		2
▼ Point A		
Size		8
▼ Element 0		
X		0
Y		0
Z		0
▼ Element 1		
X		0
Y		0
Z		25
▼ Element 2		
X		10
Y		0
Z		30
▼ Element 3		
X		20
Y		0
Z		30
▼ Element 4		
X		25
Y		0
Z		25
▼ Element 5		
X		30
Y		0
Z		20
▼ Element 6		
X		35
Y		0
Z		10
▼ Element 7		
X		20
Y		0
Z		-5

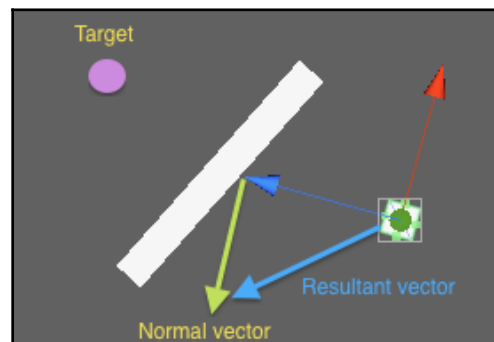
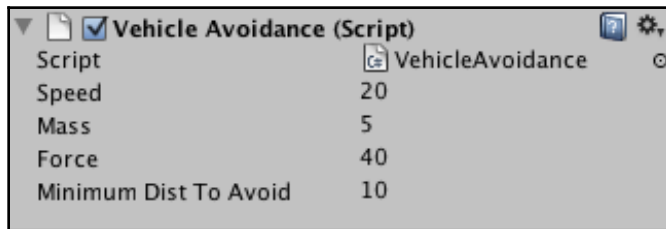
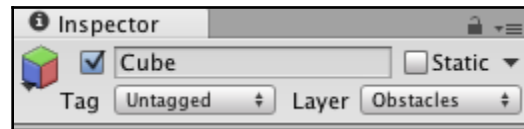
Vehicle Following (Script)

Script	VehicleFollowing	
Path	Path (Path)	
Speed	10	
Mass	5	
Is Looping	<input type="checkbox"/>	

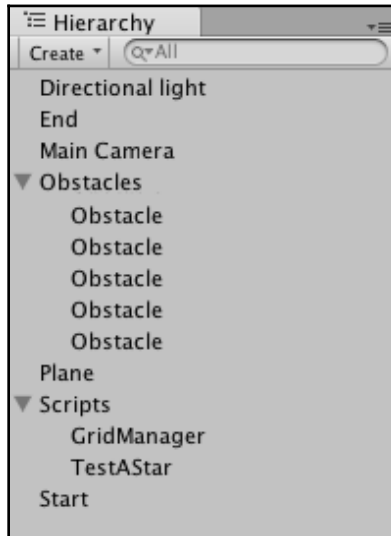
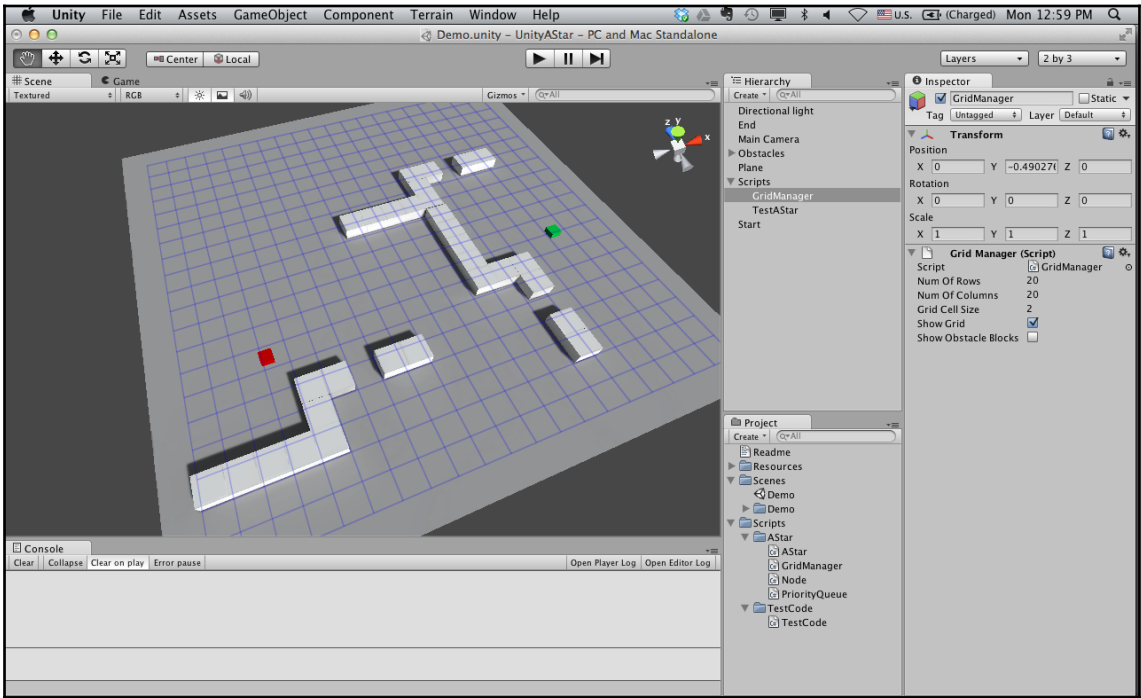


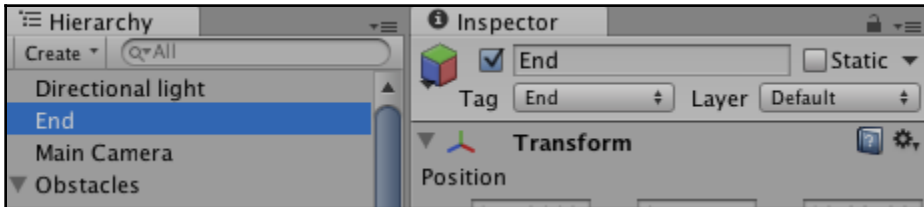
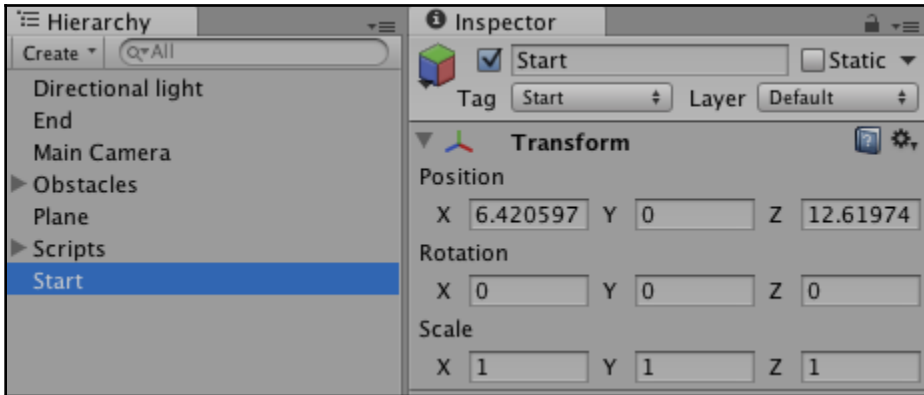
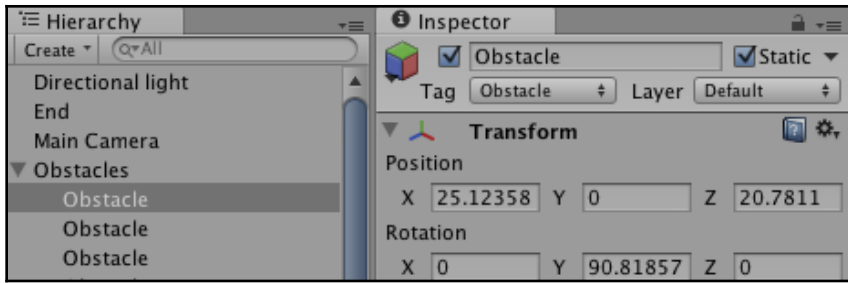


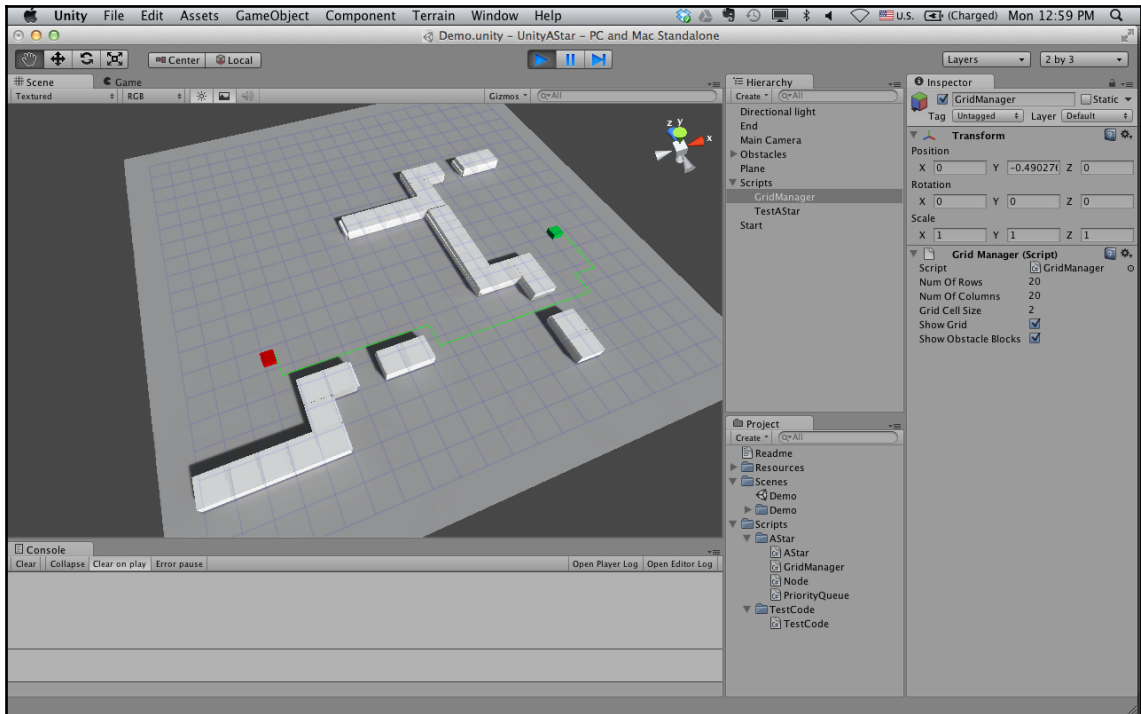
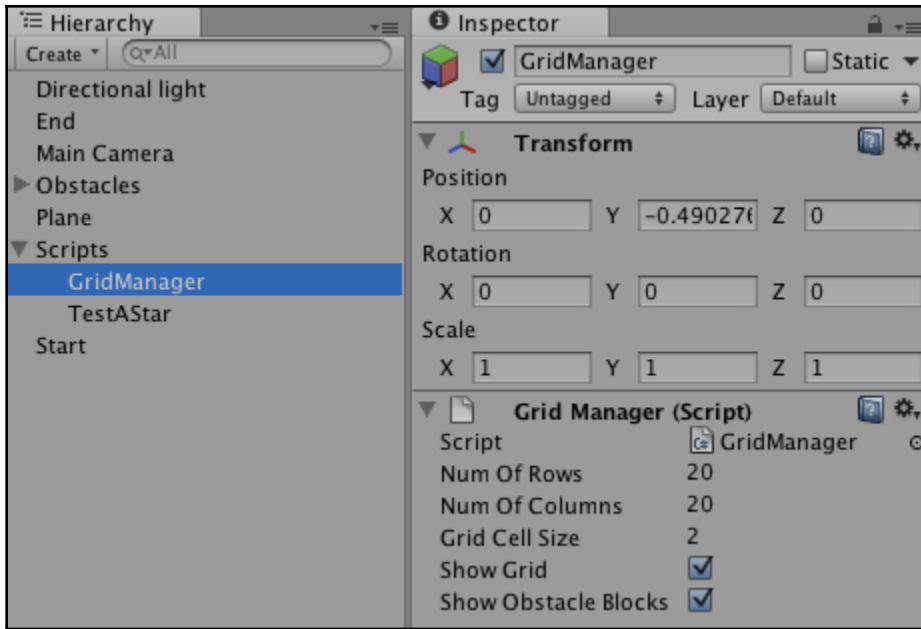


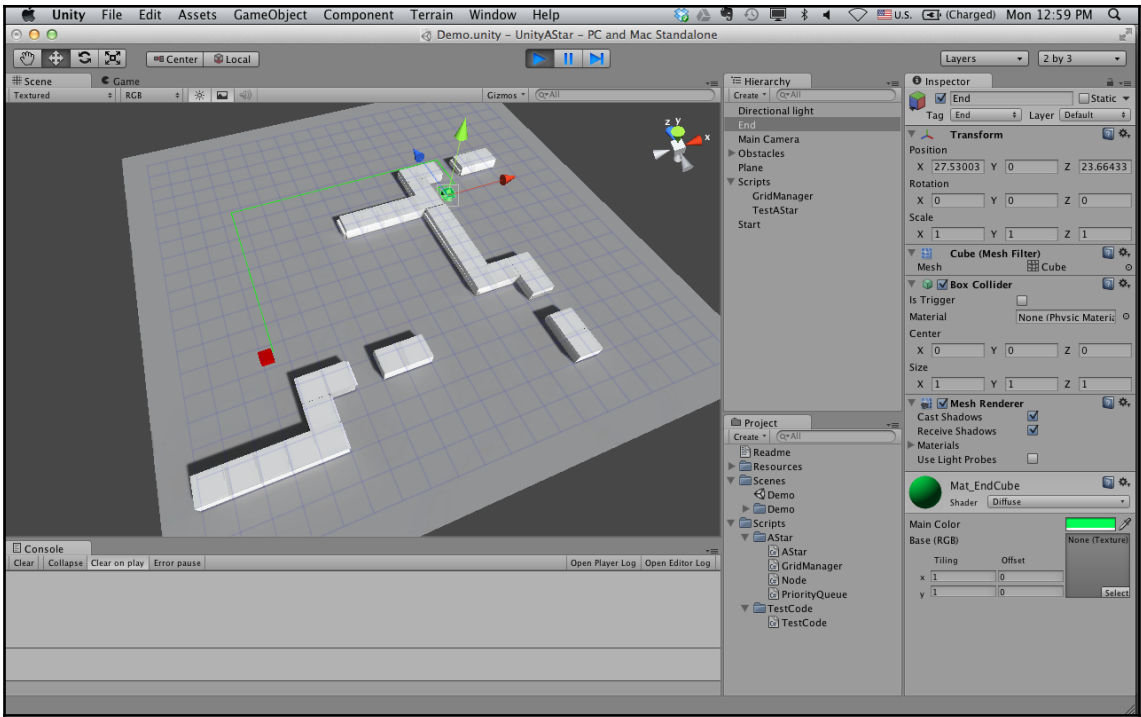


Chapter 7: A* Pathfinding

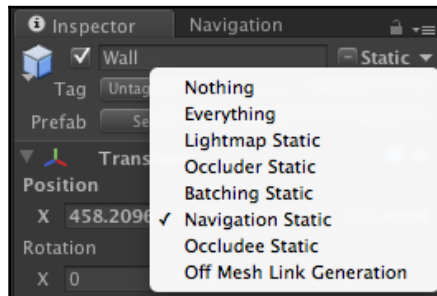
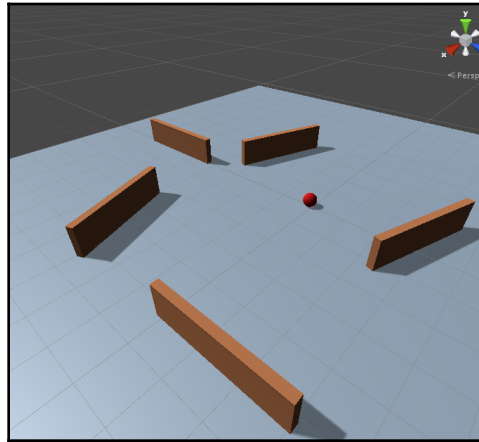








Chapter 10: Navigation Mesh



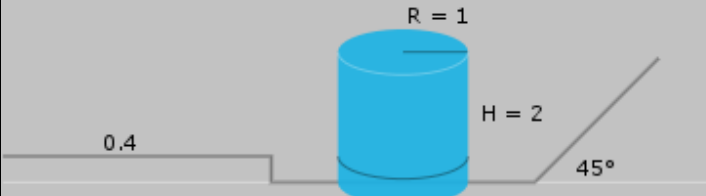
Collab Account Layers Layout

Inspector Navigation

Agents Areas **Bake** Object

[Learn instead about the component workflow.](#)

Baked Agent Size




0.4 R = 1 H = 2 45°

Agent Radius

Agent Height

Max Slope

Step Height

 Step Height conflicts with Max Slope. This makes some slopes unwalkable.
Consider decreasing Max Slope to < 36.9 degrees.
Or, increase Step Height to > 0.50.

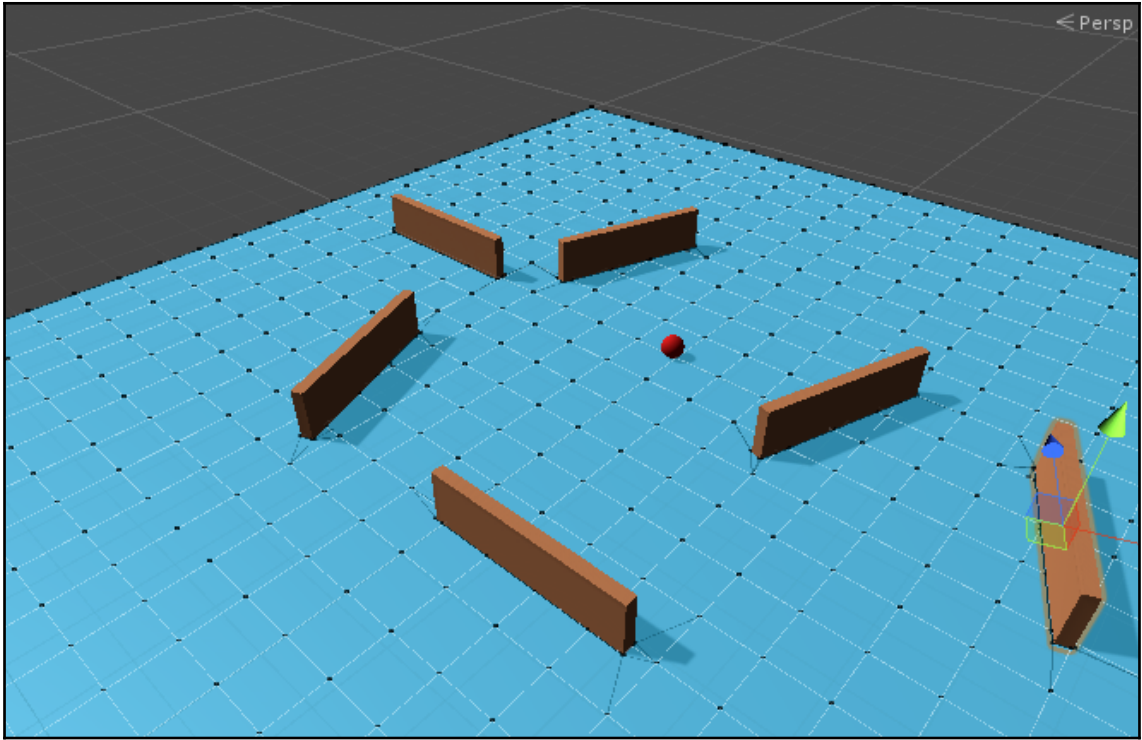
Generated Off Mesh Links





Drop Height

Jump Distance

▶ Advanced

Clear Bake



 **Nav Mesh Agent**   

Agent Type

Base Offset

Steering

Speed

Angular Speed

Acceleration

Stopping Distance

Auto Braking

Obstacle Avoidance

Radius

Height

Quality

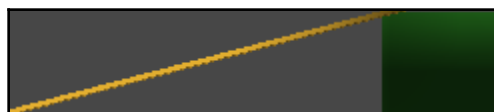
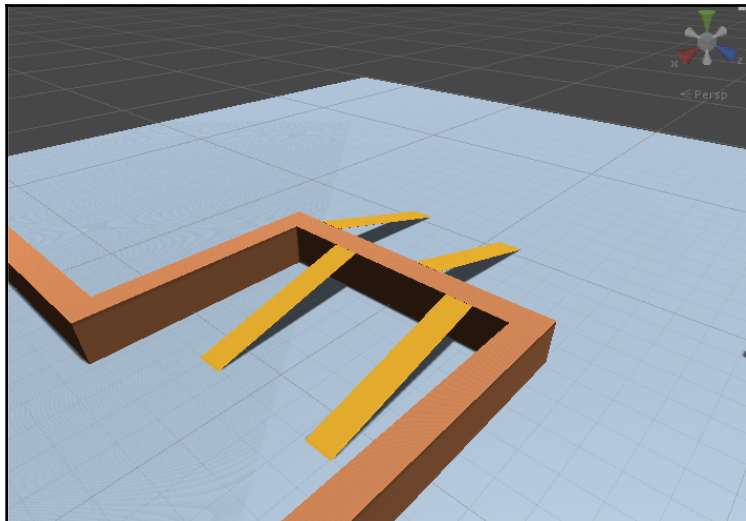
Priority

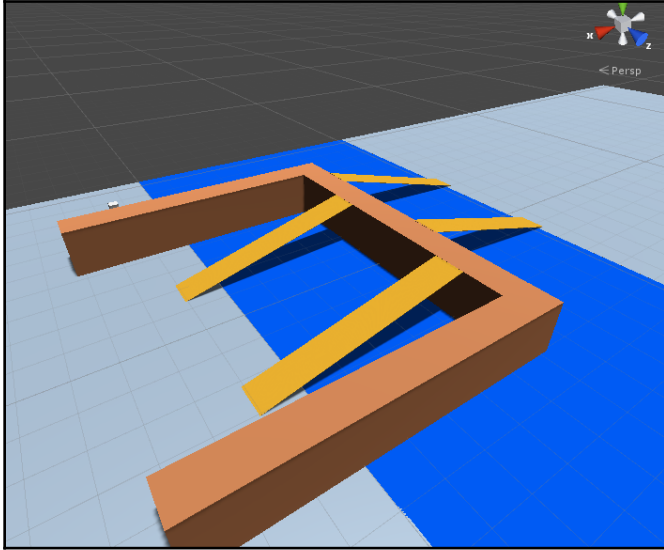
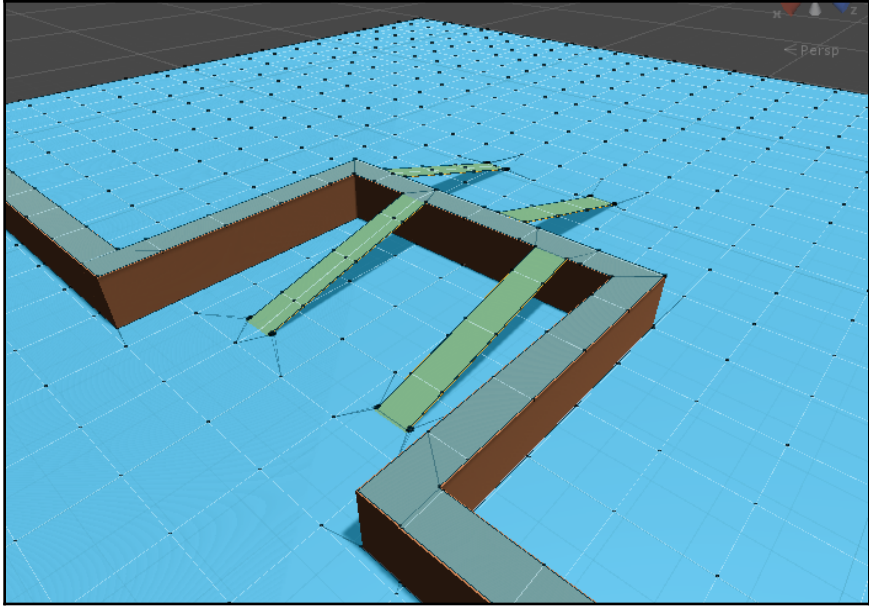
Path Finding

Auto Traverse Off Mesh

Auto Repath

Area Mask





Collab Account Layers Layout

Inspector Navigation

Agents Areas Bake Object

	Name	Cost
Built-in 0	Walkable	1
Built-in 1	Not Walkable	1
Built-in 2	Jump	2
User 3	Water	5
User 4		1
User 5		1
User 6		1

Collab Account Layers Layout

Inspector Navigation

Agents Areas Bake Object

Scene Filter:

All Mesh Renderers Terrains

[Learn instead about the component workflow.](#)

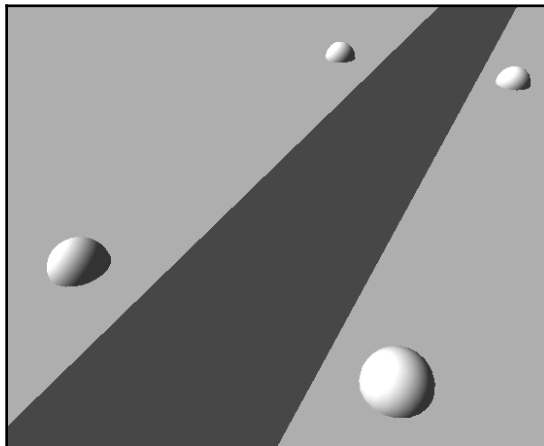
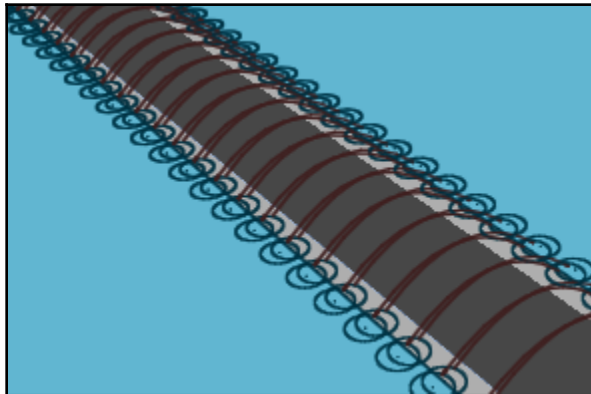
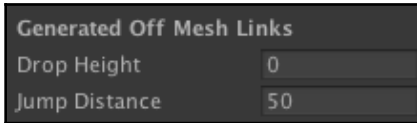
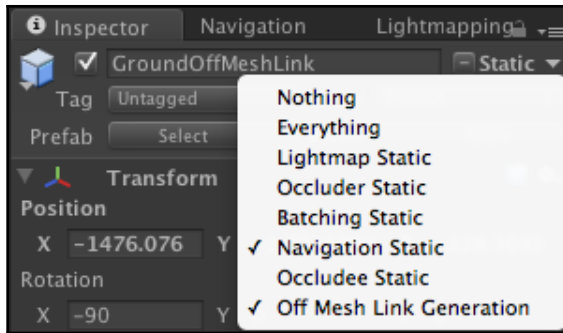
Water (Mesh Renderer)

Navigation Static

Generate OffMeshLinks

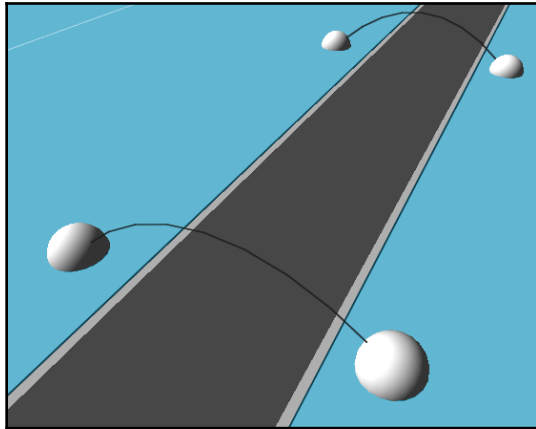
Navigation Area Water



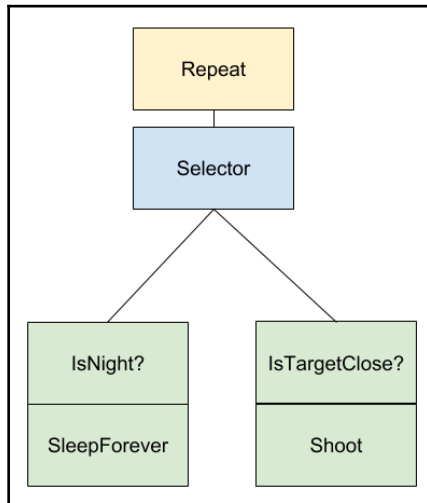
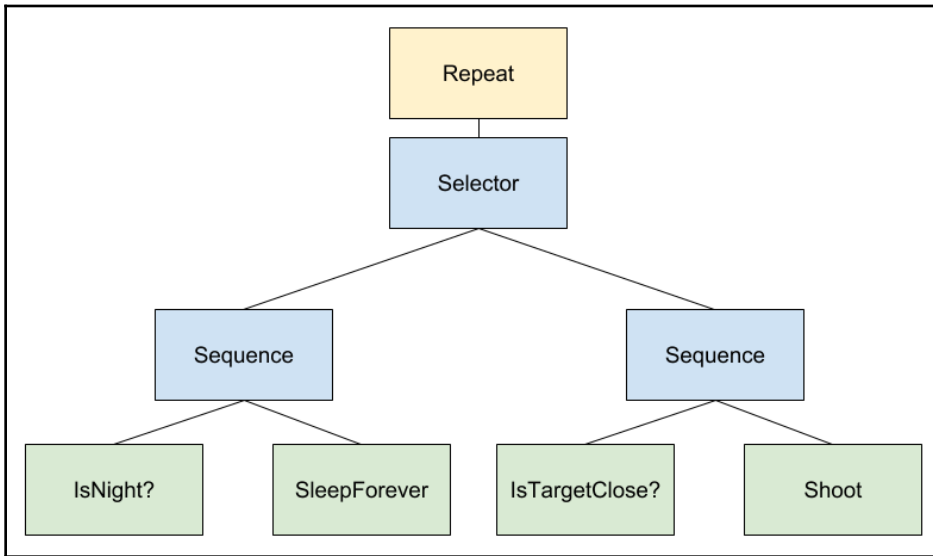


▼ Off Mesh Link ⓘ ⚙

Start	OffMeshLink01 (Transform)	⊙
End	OffMeshLink01_End (Transform)	⊙
Cost Override	-1	
Bi Directional	<input checked="" type="checkbox"/>	
Activated	<input checked="" type="checkbox"/>	



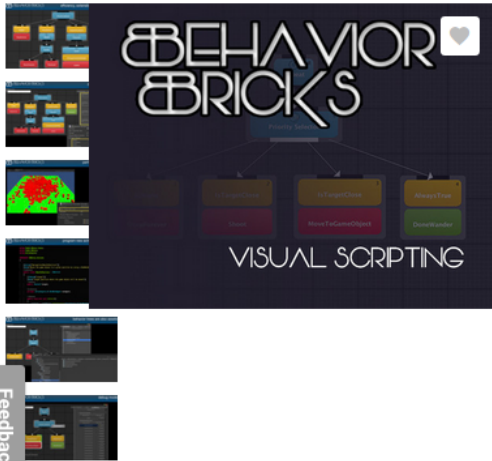
Chapter 9: Behavior Trees



Scene Asset Store

All Assets

Home > Tools > Visual Scripting



BEHAVIOR BRICKS
VISUAL SCRIPTING

Feedback

PADAONE GAMES

Behavior Bricks

FREE

★★★★☆ 31 user reviews [Download](#)

Popular Tags

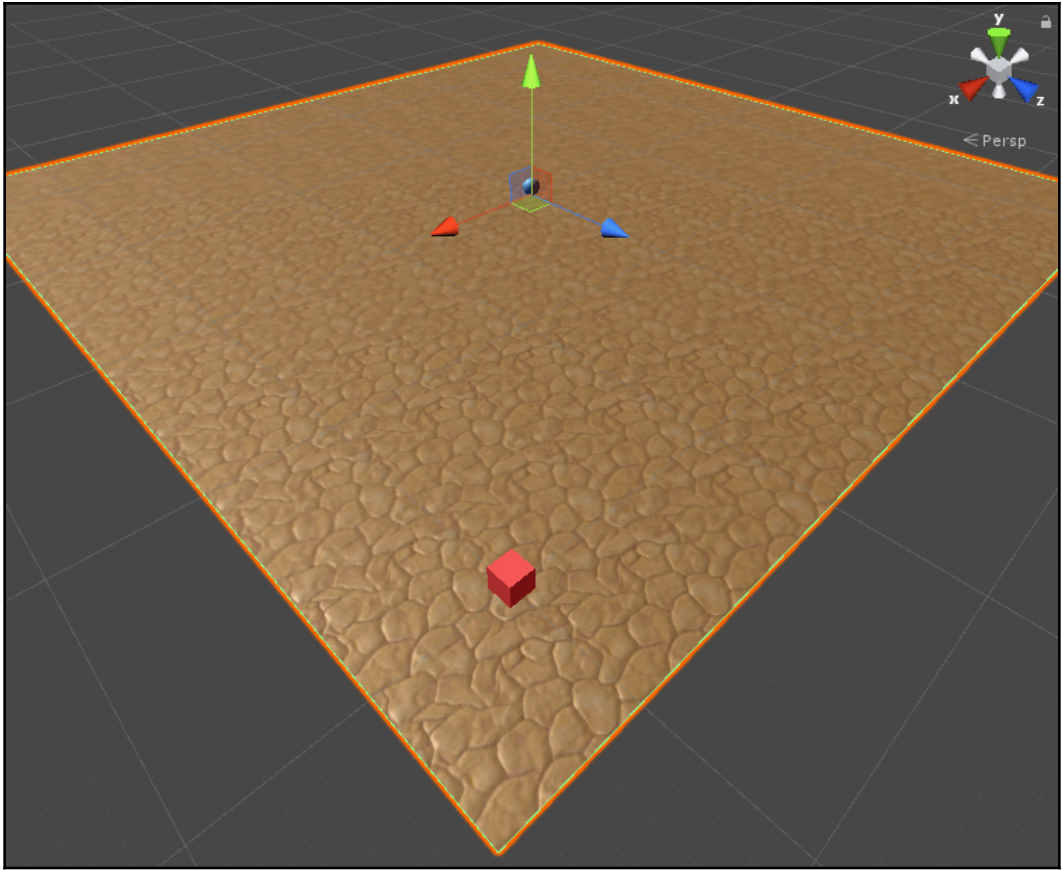
[Edit tags](#) [Report tags](#)

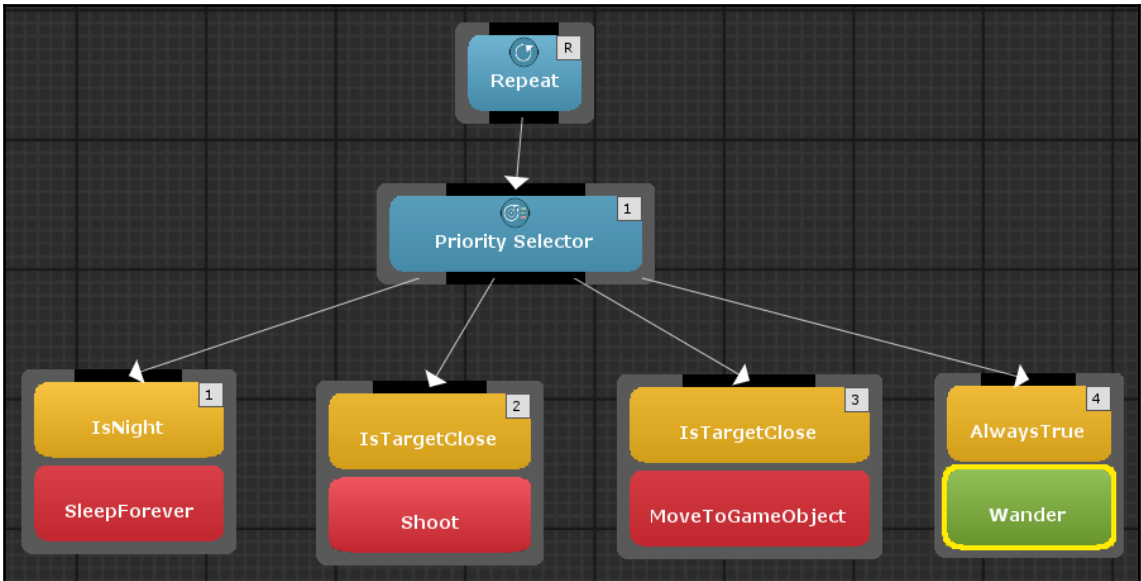
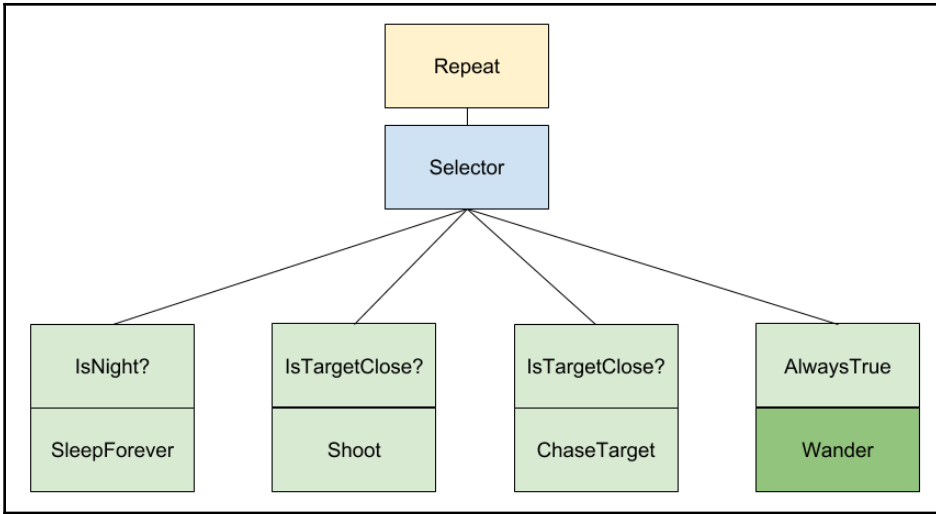
Behavior Bricks (BB) is a state-of-the-art engine for Behavior Trees (BTs) along with an intuitive visual editor. Behavior Bricks has been designed with three main goals in mind: efficiency, extensibility, and reusability. As a result, Behavior Bricks includes some *unique features* not to be found in other tools for Behavior Trees available in the Asset Store.

State-of-the-art, unique features, and free, how is that even possible? Behavior Bricks is the [showcase of the work from a research group](#)

Requirements Editor Extension (one license per seat)




Package contents 1.1 MB






Auto Repath

Area Mask

▼ **Behavior Executor (Script)**   





Behavior EnemyTree (BrickA) 





Max Tasks Per Tick

Paused

Restart When Finished

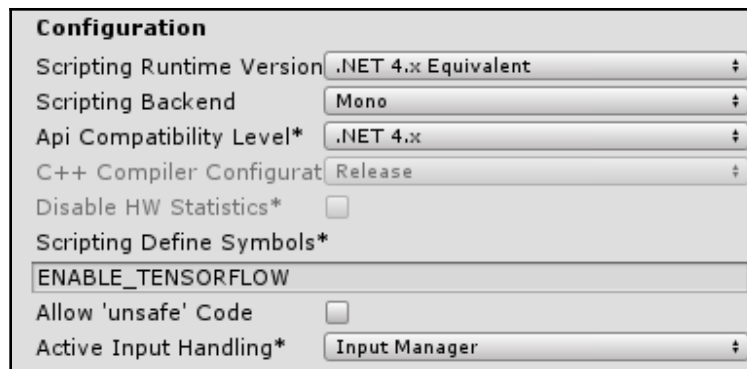
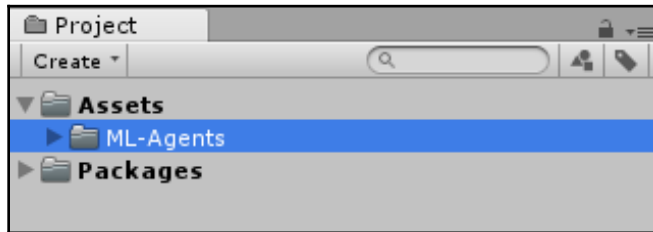
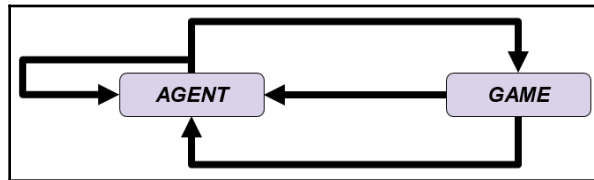
▼ Behavior Params

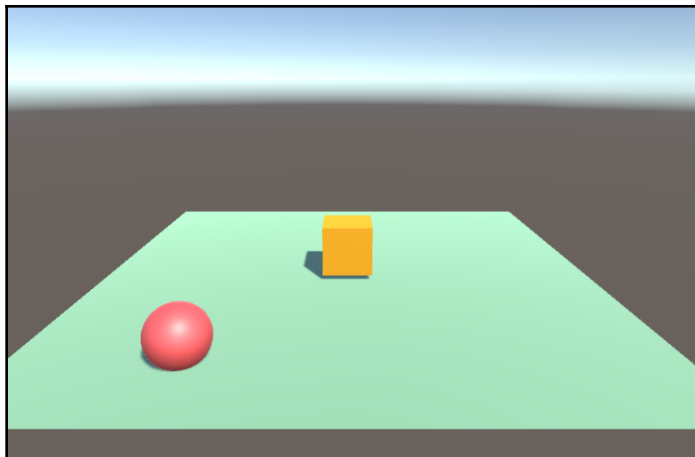
player	<input type="text" value="Player"/>	
floor	<input type="text" value="Floor"/>	
shootPoint	<input type="text" value="shootPoint (Tran"/>	
bullet	<input type="text" value="Bullet"/>	

 Enemy   


Shader


Chapter 10: Machine Learning in Unity





► Materials
Dynamic Occluded

▼  **Sphere Collider** ? ⇄ ⚙


 Edit Collider

Is Trigger

Material ○

Center X Y Z

Radius

▼  **Sphere Agent (Script)** ? ⇄ ⚙

Brain ○

Agent Cameras

Max Step


Reset On Done

On Demand Decisions

Decision Frequency

Script ○

Target ○

►  Sphere ? ⇄ ⚙

Shader ▼

Brain (Script)

▼ Brain Parameters

Vector Observation

Space Size: 8

Stacked Vectors: 1

▼ Visual Observation

Size: 0

Vector Action

Space Type: Continuous

Space Size: 2

▼ Action Descriptions

Size: 2

Element 0:

Element 1:

Brain Type: Player

Broadcast:

Edit the continuous inputs for your actions

▼ Key Continuous Player Actions

Size: 4

▼ Element 0

Key: D

Index: 0

Value: 1

▼ Element 1

Key: A

Index: 0

Value: -1

▼ Element 2

Key: W

Index: 1

Value: 1

▼ Element 3

Key: S

Index: 1

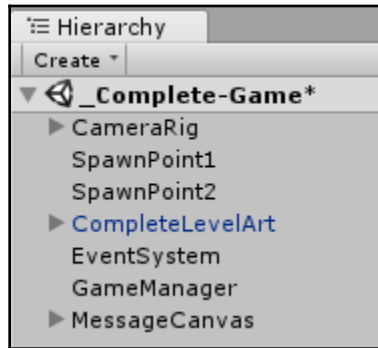
Value: -1

▶ Axis Continuous Player Actions



```
INFO:magents.learn:{'--curriculum': 'None',  
  '--docker-target-name': 'Empty',  
  '--env': 'None',  
  '--help': False,  
  '--keep-checkpoints': '5',  
  '--lesson': '0',  
  '--load': False,  
  '--no-graphics': False,  
  '--num-runs': '1',  
  '--run-id': 'first-run',  
  '--save-freq': '50000',  
  '--seed': '-1',  
  '--slow': False,  
  '--train': True,  
  '--worker-id': '0',  
  '<trainer-config-path>': 'config/trainer_config.yaml'}  
INFO:magents.envs:Start training by pressing the Play button in the Unity Editor.
```

Chapter 11: Putting It All Together

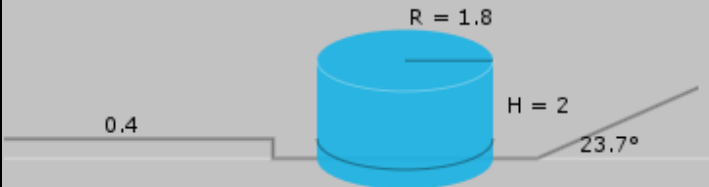


Inspector Navigation

Agents Areas **Bake** Object

[Learn instead about the component workflow.](#)

Baked Agent Size



0.4 R = 1.8 H = 2 23.7°

Agent Radius

Agent Height

Max Slope

Step Height

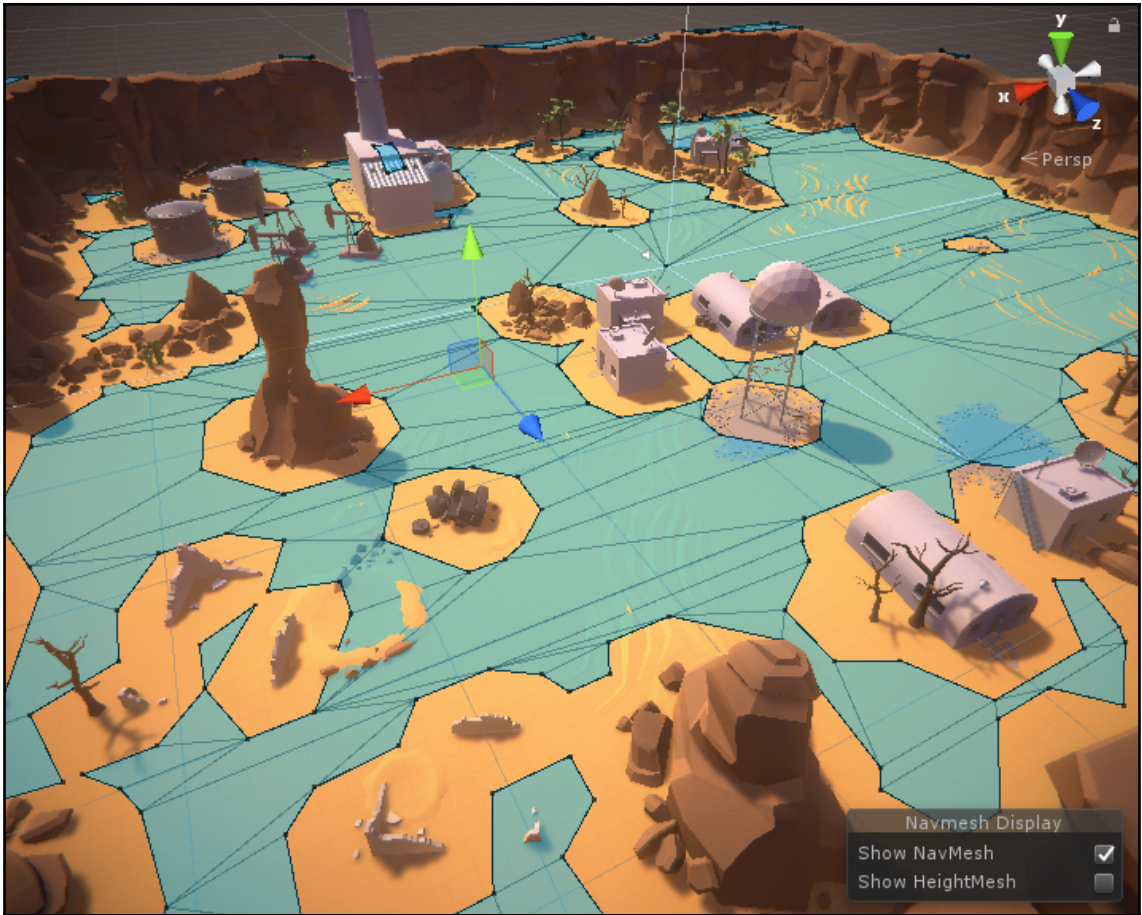
Generated Off Mesh Links

Drop Height

Jump Distance

▶ Advanced

Clear Bake





▼ Nav Mesh Agent [Icon] [Icon] [Icon]

Agent Type:

Base Offset:

Steering

Speed:

Angular Speed:

Acceleration:

Stopping Distance:

Auto Braking:

Obstacle Avoidance

Radius:

Height:

Quality:

Priority:

Path Finding

Auto Traverse Off Mesh:

Auto Repath:

Area Mask:

Add Component

