Introduction to Unity

Step 2: use buil-in objects to create game world

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Aim of this tutorial

Based on the skills we have gained recently, now we will try to design game environment — the maze. Our assumptions are as follow:

- a platform from where the player will start;
- water surrounding the platform and path;
- path from platform to bank which should form a simple maze;
- create some form of arcade elements on the water (for example gaps in the path);
- on the land should be located another maze build on big blocks;
- an exit door, where the player will stop, should be located opposite the platform (other side of the game world);
- the player will need to find the key for the exit dors searching throught maze.

Aim of this tutorial

unity_introduction_step_02/game_world_idea_01.png

Textures

Prepare a set of textures for the:

- walls,
- floor,
- ceiling,
- and doors.

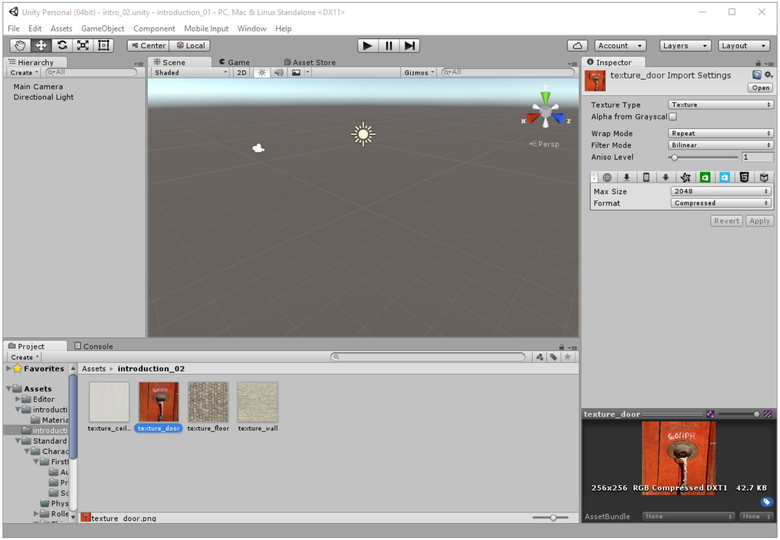
1. Open a previous project.
2. From the main menu create a new scene (**File | New Scene**) and save it as `intro_02` (**File | Save Scene as**).
3. In the **Project** window, click once on the **Assets** folder.
4. Select **Create | Folder** from the **Project** window and rename this folder as `introduction_02`.

Preliminaries

Import textures

1. Select the current project folder `introduction_02`.
2. Select **Assets | Import New Asset**.
3. Browse to the folder where we downloaded the textures.
4. Select one of the texture saved before and click on **Import**.
5. Repeat above steps for the rest of textures.

Textures



texture_door Import Settings

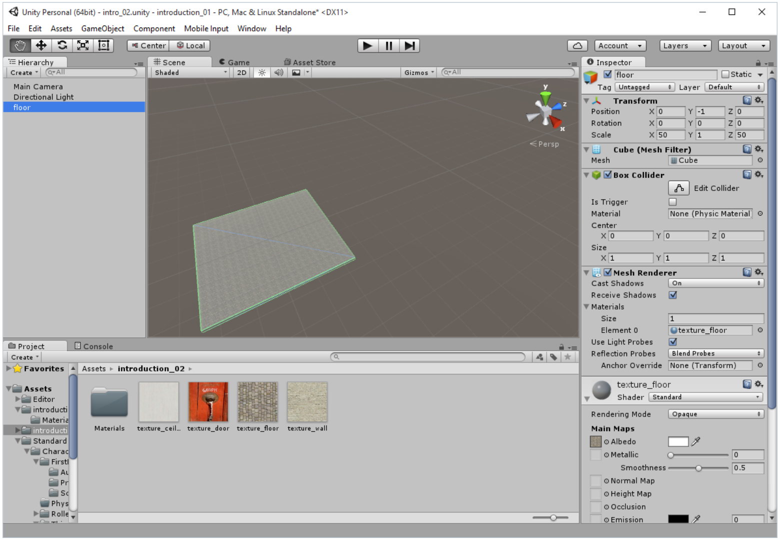
Texture Type: Texture
Alpha from Grayscale: ☐
Wrap Mode: Repeat
Filter Mode: Bilinear
Aniso Level: 1
Max Size: 2048
Format: Compressed

texture_door
256x256 RGB Compressed DXT1 42.7 KB

Floor for the land maze

1. Create a new cube and rename it `floor`.
2. Change its position to `(x=0, y=-1, z=0)` and its scale to `(x=50, y=1, z=50)`.
3. Apply the floor texture to this object (drag-and-drop the texture on the object).
4. If needed, change the tiling property of the texture in the **Inspector** window.

Floor for the land maze



floor Static
Tag Untagged Layer Default

Transform
Position X 0 Y -1 Z 0
Rotation X 0 Y 0 Z 0
Scale X 50 Y 1 Z 50

Cube (Mesh Filter)
Mesh Cube

Box Collider
Edit Collider
Is Trigger ☐
Material None (Physic Material)
Center X 0 Y 0 Z 0
Size X 1 Y 1 Z 1

Mesh Renderer
Cast Shadows On
Receive Shadows ✓
Materials
Size 1
Element 0 texture_floor
Use Light Probes ✓
Reflection Probes Blend Probes
Anchor Override None (Transform)

texture_floor
Shader Standard

Rendering Mode Opaque
Main Maps
Albedo
Metallic 0
Smoothness 0.5
Normal Map
Height Map
Occlusion
Emission 0

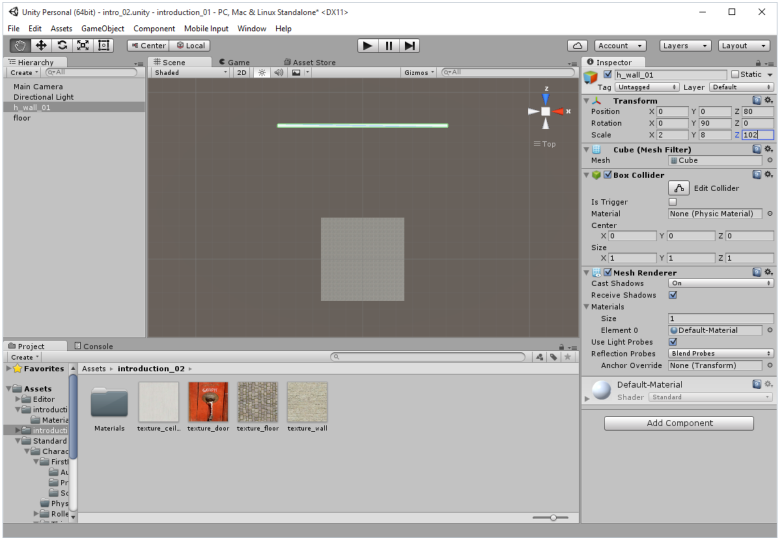
Create horizontal walls

1. Create a new cube and rename it `h_wall_01`[1].
2. Change its position to `(x=0, y=0, z=80)`, its rotation to `(x=0, y=90, z=0)`, and its scale to `(x=2, y=6, z=102)`.
3. Apply the wall texture to this object.
4. Duplicate this object and rename as you want; change properties to[2]:
    1. Change the position of the first copy to `(x=-26, y=1, z=-25)` and its scale to `(x=2, y=4, z=50)`.
    2. Change the position of the second copy to `(x=26, y=1, z=-25)` and its scale to `(x=2, y=4, z=50)`.
    3. Change the position of the third copy to `(x=0, y=1, z=-20)`, its scale to `(x=2, y=4, z=44)`.

[1] We use terms *horizontal* and *vertical* to denote two perpendicular directions on a plane.

[2] Keep the rotation attributes `(x=0, y=90, z=0)`.

Create horizontal walls


Unity Personal (64bit) - intro_02.unity - introduction_01 - PC, Mac & Linux Standalone* <DX11>

Hierarchy: Main Camera, Directional Light, h_wall_01, floor

Inspector: h_wall_01 — Tag Untagged, Layer Default

Transform
Position X 0 Y 0 Z 80
Rotation X 0 Y 90 Z 0
Scale X 2 Y 8 Z 102

Cube (Mesh Filter)
Mesh Cube

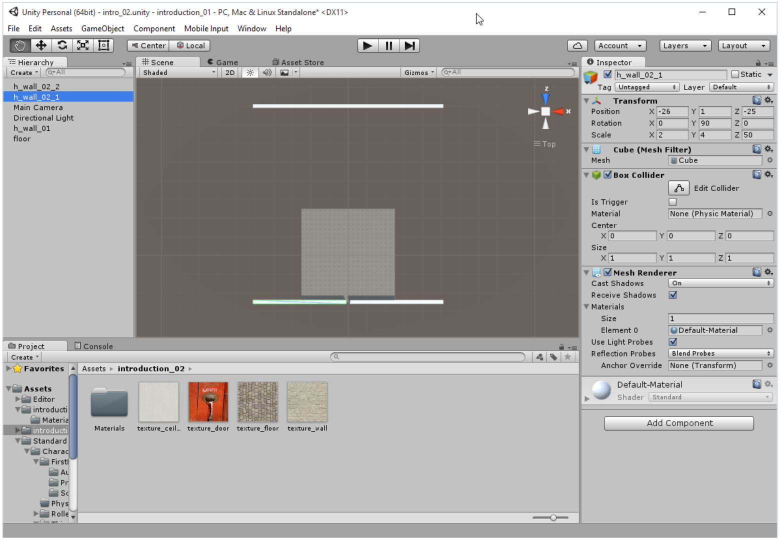
Box Collider
Is Trigger ☐
Material None (Physic Material)
Center X 0 Y 0 Z 0
Size X 1 Y 1 Z 1

Mesh Renderer
Cast Shadows On
Receive Shadows ✓
Materials
Size 1
Element 0 Default-Material
Use Light Probes ✓
Reflection Probes Blend Probes
Anchor Override None (Transform)

Default-Material
Shader Standard

Assets ▸ introduction_02: Materials, texture_ceil..., texture_door, texture_floor, texture_wall

Create horizontal walls



Unity Personal (64bit) - intro_02.unity - introduction_01 - PC, Mac & Linux Standalone* <DX11>

Hierarchy:
- h_wall_02_2
- h_wall_02_1
- Main Camera
- Directional Light
- h_wall_01
- floor

Inspector: h_wall_02_1, Tag Untagged, Layer Default

Transform
- Position X -26 Y 1 Z -25
- Rotation X 0 Y 90 Z 0
- Scale X 2 Y 4 Z 50

Cube (Mesh Filter)
- Mesh: Cube

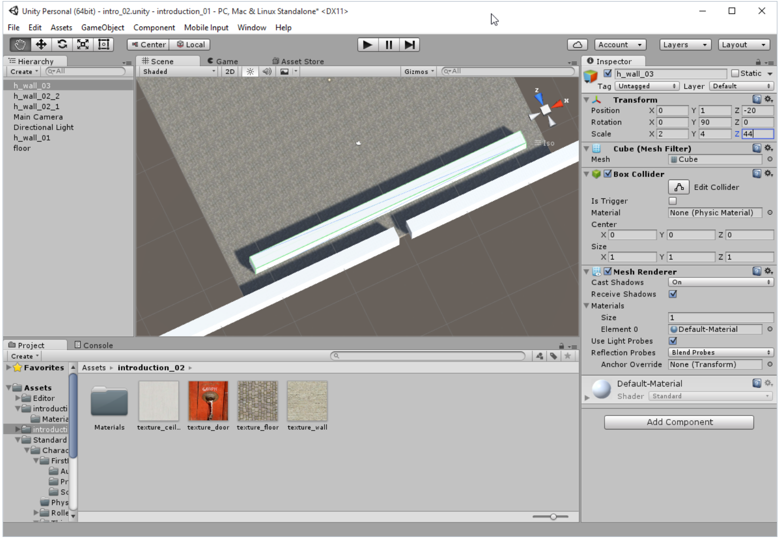
Box Collider
- Is Trigger: ☐
- Material: None (Physic Material)
- Center X 0 Y 0 Z 0
- Size X 1 Y 1 Z 1

Mesh Renderer
- Cast Shadows: On
- Receive Shadows: ✓
- Materials Size: 1
- Element 0: Default-Material
- Use Light Probes: ✓
- Reflection Probes: Blend Probes
- Anchor Override: None (Transform)

Default-Material, Shader: Standard

Assets ▸ introduction_02: Materials, texture_ceil.., texture_door, texture_floor, texture_wall

Create horizontal walls



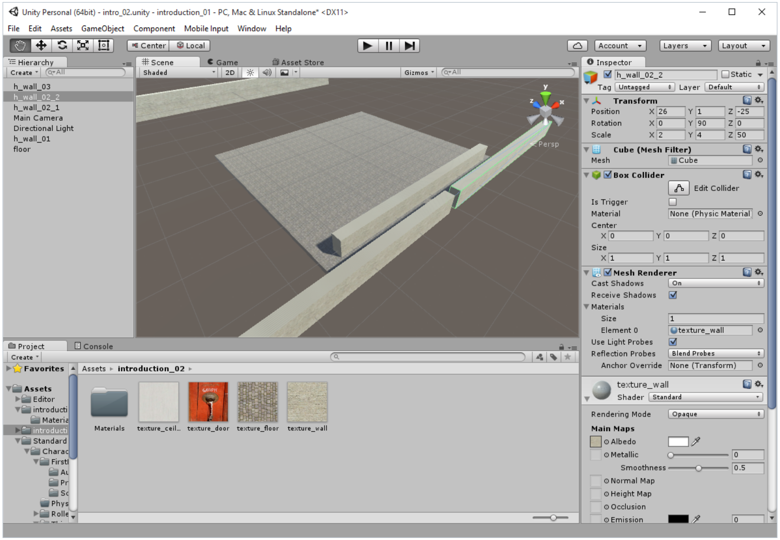
Hierarchy:

```
h_wall_03
h_wall_02_2
h_wall_02_1
Main Camera
Directional Light
h_wall_01
floor
```

Inspector:

```
h_wall_03                         Static
Tag Untagged          Layer Default

Transform
Position   X 0     Y 1     Z -20
Rotation   X 0     Y 90    Z 0
Scale      X 2     Y 4     Z 44

Cube (Mesh Filter)
Mesh              Cube

Box Collider
Is Trigger        ☐
Material          None (Physic Material)
Center
   X 0     Y 0     Z 0
Size
   X 1     Y 1     Z 1

Mesh Renderer
Cast Shadows      On
Receive Shadows   ✓
Materials
   Size           1
   Element 0      Default-Material
Use Light Probes  ✓
Reflection Probes Blend Probes
   Anchor Override None (Transform)

Default-Material
Shader  Standard
```

Create horizontal walls



h_wall_03
h_wall_02_2
h_wall_02_1
Main Camera
Directional Light
h_wall_01
floor

h_wall_02_2 ☐ Static
Tag Untagged Layer Default

Transform

	X	Y	Z
Position	26	1	-25
Rotation	0	90	0
Scale	2	4	50

Cube (Mesh Filter)
Mesh: Cube

Box Collider
Edit Collider
Is Trigger: ☐
Material: None (Physic Material)
Center: X 0 Y 0 Z 0
Size: X 1 Y 1 Z 1

Mesh Renderer
Cast Shadows: On
Receive Shadows: ✓
Materials
Size: 1
Element 0: texture_wall
Use Light Probes: ✓
Reflection Probes: Blend Probes
Anchor Override: None (Transform)

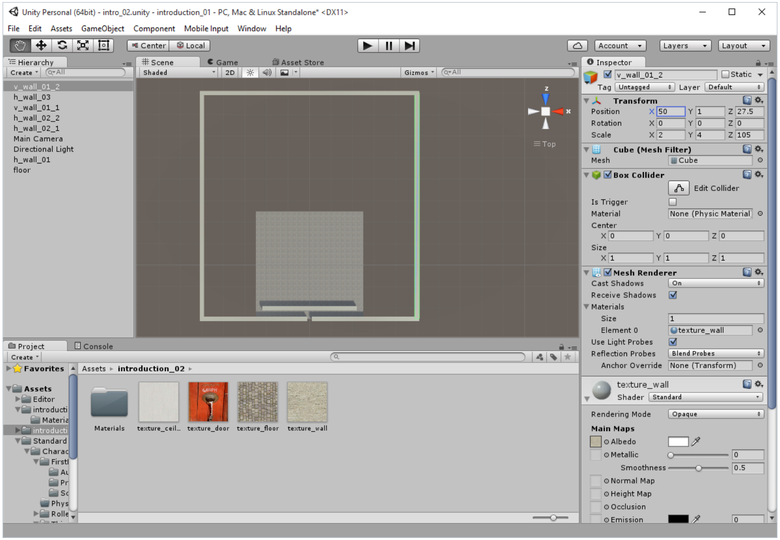
texture_wall
Shader: Standard

Rendering Mode: Opaque
Main Maps
Albedo
Metallic: 0
Smoothness: 0.5
Normal Map
Height Map
Occlusion
Emission: 0

Create vertical walls

1. Create a new cube and rename it `v_wall_01_1`.
2. Change its position to `(x=-50, y=1, z=27.5)` and its scale to `(x=2, y=4, z=105)`.
3. Apply the wall texture to this object.
4. Duplicate this object and rename as you want; change properties to:
    1. Change the position of the first copy to `(x=50, y=1, z=27.5)` and its scale to `(x=2, y=4, z=105)`.
    2. Change the position of the second copy to `(x=3, y=1, z=-22.5)` and its scale to `(x=2, y=4, z=-5)`.

Create vertical walls



v_wall_01_2 Static
Tag Untagged Layer Default

Transform
Position X 50 Y 1 Z 27.5
Rotation X 0 Y 0 Z 0
Scale X 2 Y 4 Z 105

Cube (Mesh Filter)
Mesh Cube

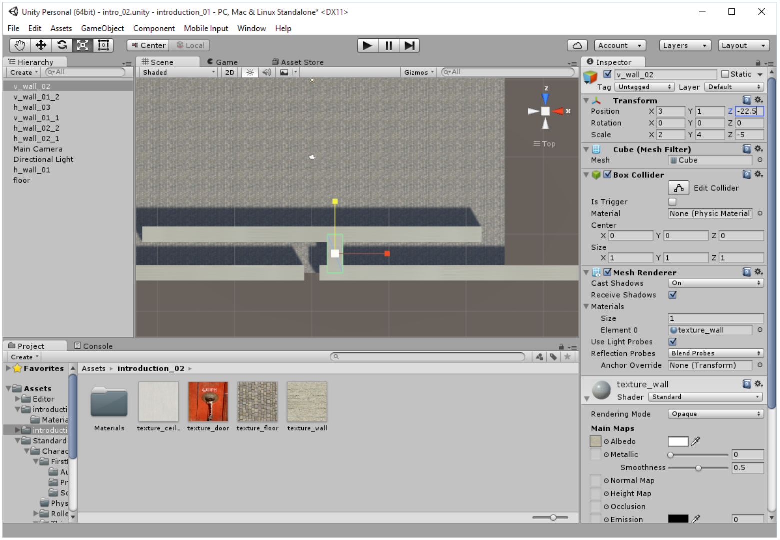
Box Collider
Is Trigger ☐
Material None (Physic Material)
Center
X 0 Y 0 Z 0
Size
X 1 Y 1 Z 1

Mesh Renderer
Cast Shadows On
Receive Shadows ✓
Materials
Size 1
Element 0 texture_wall
Use Light Probes ✓
Reflection Probes Blend Probes
Anchor Override None (Transform)

texture_wall
Shader Standard

Rendering Mode Opaque
Main Maps
Albedo
Metallic 0
Smoothness 0.5
Normal Map
Height Map
Occlusion
Emission 0

Create vertical walls



Unity Personal (64bit) - intro_02.unity - introduction_01 - PC, Mac & Linux Standalone* <DX11>

v_wall_02
v_wall_01_2
h_wall_03
v_wall_01_1
h_wall_02_2
h_wall_02_1
Main Camera
Directional Light
h_wall_01
floor

Assets ▸ introduction_02

Materials
texture_ceil...
texture_door
texture_floor
texture_wall

Assets
Editor
introducti
Materia
introducti
Standard
Charac
FirstI
Au
Pr
Sc
Phys
Rolle

v_wall_02 Static
Tag Untagged Layer Default

Transform
Position X 3 Y 1 Z -22.5
Rotation X 0 Y 0 Z 0
Scale X 2 Y 4 Z -5

Cube (Mesh Filter)
Mesh Cube

Box Collider
Edit Collider
Is Trigger
Material None (Physic Material)
Center
X 0 Y 0 Z 0
Size
X 1 Y 1 Z 1

Mesh Renderer
Cast Shadows On
Receive Shadows ✓
Materials
Size 1
Element 0 texture_wall
Use Light Probes ✓
Reflection Probes Blend Probes
Anchor Override None (Transform)

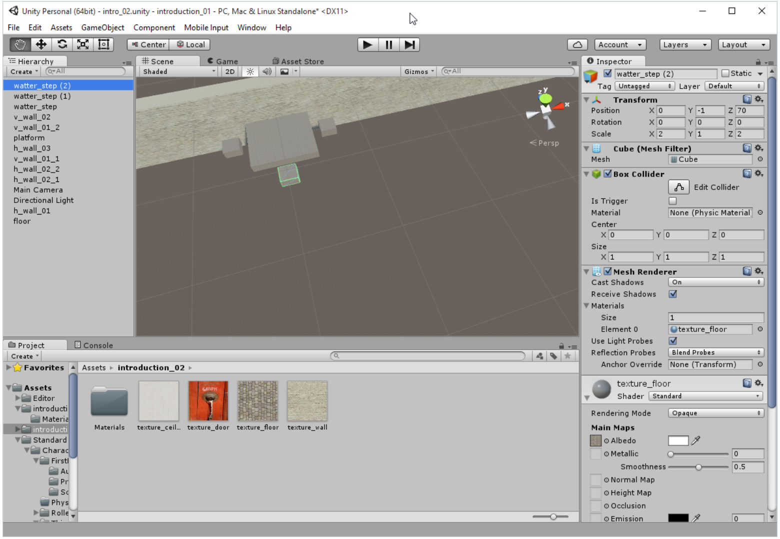
texture_wall
Shader Standard

Rendering Mode Opaque
Main Maps
Albedo
Metallic 0
Smoothness 0.5
Normal Map
Height Map
Occlusion
Emission 0

Create the platform and the path from platform to the bank

1. Create a new cube and rename it `platform`.
2. Apply the floor texture to this object.
3. Change the tiling properties if needed.
4. Modify the position of this object to `(x=0, y=-1, z=76)` and its scale to `(x=8, y=1, z=8)`.
5. Duplicate platform and rename it `watter_step`.
6. Change the scale to `(x=2, y=1, z=2)`.
7. Change the position of this cube to `(x=XX, y=-1, z=ZZ)`.
8. Duplicate bridge cube as many times as you need, change its properties etc. to create path.

Create the platform and the path from platform to the bank


Unity Personal (64bit) - intro_02.unity - introduction_01 - PC, Mac & Linux Standalone* <DX11>
File Edit Assets GameObject Component Mobile Input Window Help
Center Local
Account Layers Layout
Hierarchy Scene Game Asset Store Inspector
Create Shaded 2D Gizmos
Persp
Project Console
Favorites
Assets
Editor
Standard
Assets ▸ introduction_02
Materials texture_ceil... texture_door texture_floor texture_wall

Hierarchy:
- watter_step (2)
- watter_step (1)
- watter_step
- v_wall_02
- v_wall_01_2
- platform
- h_wall_03
- v_wall_01_1
- h_wall_02_2
- h_wall_02_1
- Main Camera
- Directional Light
- h_wall_01
- floor

Inspector: watter_step (2) — Static
Tag Untagged — Layer Default

Transform

	X	Y	Z
Position	0	-1	70
Rotation	0	0	0
Scale	2	1	2

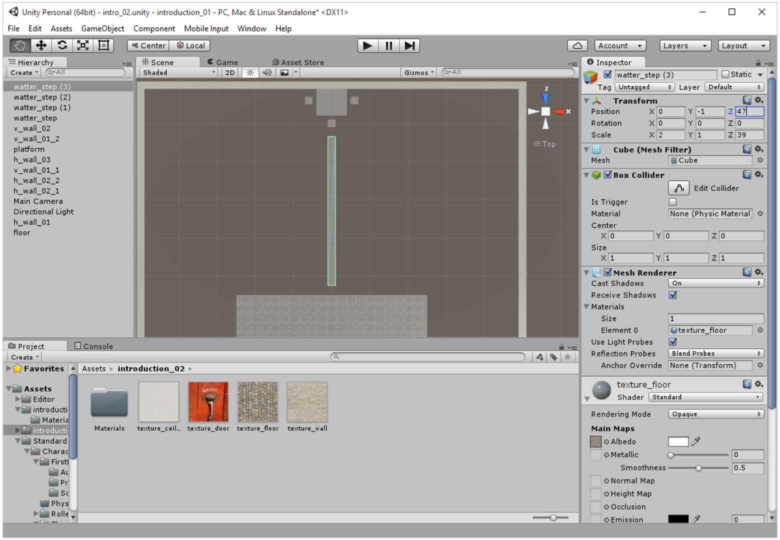
Cube (Mesh Filter)
Mesh: Cube

Box Collider
Edit Collider
Is Trigger: ☐
Material: None (Physic Material)
Center: X 0, Y 0, Z 0
Size: X 1, Y 1, Z 1

Mesh Renderer
Cast Shadows: On
Receive Shadows: ✓
Materials
Size: 1
Element 0: texture_floor
Use Light Probes: ✓
Reflection Probes: Blend Probes
Anchor Override: None (Transform)

texture_floor
Shader: Standard
Rendering Mode: Opaque
Main Maps
Albedo
Metallic: 0
Smoothness: 0.5
Normal Map
Height Map
Occlusion
Emission: 0

Create the platform and the path from platform to the bank



Unity Personal (64bit) - intro_02.unity - introduction_01 - PC, Mac & Linux Standalone* <DX11>

File Edit Assets GameObject Component Mobile Input Window Help

Hierarchy

- watter_step (3)
- watter_step (2)
- watter_step (1)
- watter_step
- v_wall_02
- v_wall_01_2
- platform
- h_wall_03
- v_wall_01_1
- h_wall_02_2
- h_wall_02_1
- Main Camera
- Directional Light
- h_wall_01
- floor

Inspector

watter_step (3)   Static
Tag Untagged   Layer Default

Transform
Position X 0 Y -1 Z 47
Rotation X 0 Y 0 Z 0
Scale X 2 Y 1 Z 39

Cube (Mesh Filter)
Mesh Cube

Box Collider
Edit Collider
Is Trigger ☐
Material None (Physic Material)
Center X 0 Y 0 Z 0
Size X 1 Y 1 Z 1

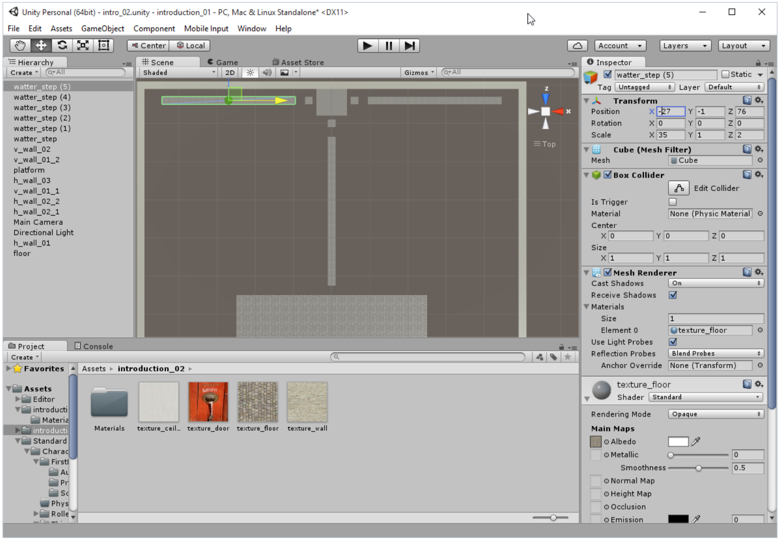
Mesh Renderer
Cast Shadows On
Receive Shadows ✓
Materials
Size 1
Element 0 texture_floor
Use Light Probes ✓
Reflection Probes Blend Probes
Anchor Override None (Transform)

texture_floor
Shader Standard
Rendering Mode Opaque
Main Maps
Albedo
Metallic 0
Smoothness 0.5
Normal Map
Height Map
Occlusion
Emission 0

Project: Assets ▸ introduction_02

Materials, texture_ceil..., texture_door, texture_floor, texture_wall

Create the platform and the path from platform to the bank



Unity Personal (64bit) - intro_02.unity - introduction_01 - PC, Mac & Linux Standalone* <DX11>

Hierarchy

- watter_step (5)
- watter_step (4)
- watter_step (3)
- watter_step (2)
- watter_step (1)
- watter_step
- v_wall_02
- v_wall_01_2
- platform
- h_wall_03
- v_wall_01_1
- h_wall_02_2
- h_wall_02_1
- Main Camera
- Directional Light
- h_wall_01
- floor

Assets ▸ introduction_02

Materials, texture_ceil.., texture_door, texture_floor, texture_wall

Assets: Editor, introducti, Materia, introducti, Standard, Charac, FirstI, Au, Pr, Sc, Phys, Rolle

Inspector

watter_step (5) — Static — Tag Untagged — Layer Default

Transform

	X	Y	Z
Position	-27	-1	76
Rotation	0	0	0
Scale	35	1	2

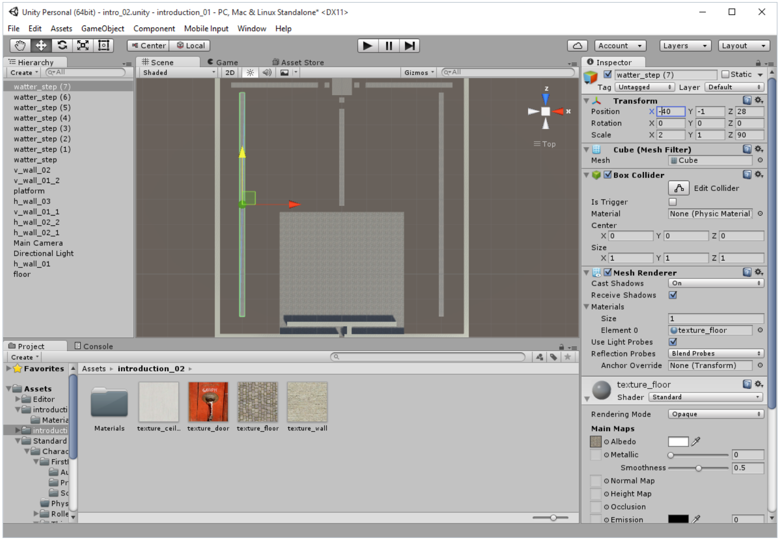
Cube (Mesh Filter)
Mesh: Cube

Box Collider
Edit Collider
Is Trigger: ☐
Material: None (Physic Material)
Center: X 0, Y 0, Z 0
Size: X 1, Y 1, Z 1

Mesh Renderer
Cast Shadows: On
Receive Shadows: ✓
Materials
Size: 1
Element 0: texture_floor
Use Light Probes: ✓
Reflection Probes: Blend Probes
Anchor Override: None (Transform)

texture_floor
Shader: Standard
Rendering Mode: Opaque
Main Maps
Albedo
Metallic: 0
Smoothness: 0.5
Normal Map
Height Map
Occlusion
Emission: 0

Create the platform and the path from platform to the bank



Unity Personal (64bit) - intro_02.unity - introduction_01 - PC, Mac & Linux Standalone* <DX11>

Hierarchy:
watter_step (7)
watter_step (6)
watter_step (5)
watter_step (4)
watter_step (3)
watter_step (2)
watter_step (1)
watter_step
v_wall_02
v_wall_01_2
platform
h_wall_03
v_wall_01_1
h_wall_02_2
h_wall_02_1
Main Camera
Directional Light
h_wall_01
floor

Assets ▸ introduction_02

Inspector
watter_step (7) Static
Tag Untagged Layer Default

Transform
Position X -40 Y -1 Z 28
Rotation X 0 Y 0 Z 0
Scale X 2 Y 1 Z 90

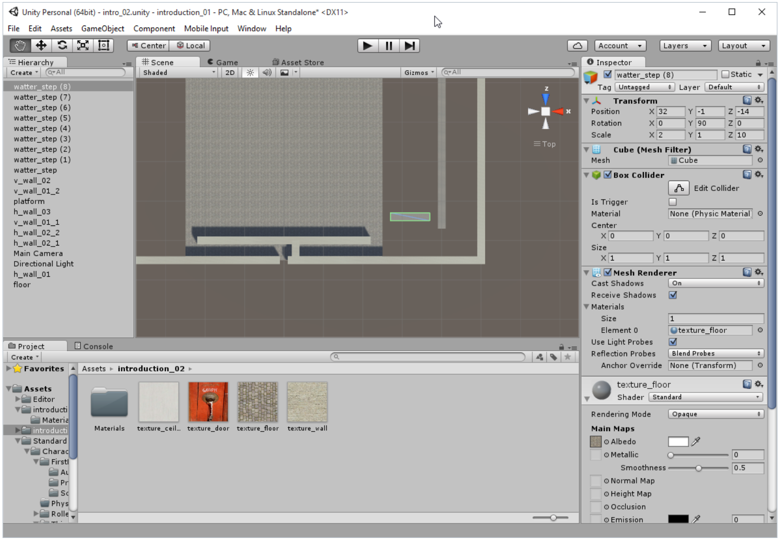
Cube (Mesh Filter)
Mesh Cube

Box Collider
Edit Collider
Is Trigger ☐
Material None (Physic Material)
Center X 0 Y 0 Z 0
Size X 1 Y 1 Z 1

Mesh Renderer
Cast Shadows On
Receive Shadows ✓
Materials
Size 1
Element 0 texture_floor
Use Light Probes ✓
Reflection Probes Blend Probes
Anchor Override None (Transform)

texture_floor
Shader Standard
Rendering Mode Opaque
Main Maps
Albedo
Metallic 0
Smoothness 0.5
Normal Map
Height Map
Occlusion
Emission 0

Create the platform and the path from platform to the bank


Unity Personal (64bit) - intro_02.unity - introduction_01 - PC, Mac & Linux Standalone* <DX11>
File Edit Assets GameObject Component Mobile Input Window Help
Center Local
Account Layers Layout
Hierarchy Create
Scene Game Asset Store
Shaded 2D Gizmos
Top
Project Console Create
Favorites
Assets Editor introducti Materia introducti Standard Charac FirstI Au Pr Sc Phys Rolle
Assets ▸ introduction_02
Materials texture_ceil... texture_door texture_floor texture_wall

Hierarchy:

```
watter_step (8)
watter_step (7)
watter_step (6)
watter_step (5)
watter_step (4)
watter_step (3)
watter_step (2)
watter_step (1)
watter_step
v_wall_02
v_wall_01_2
platform
h_wall_03
v_wall_01_1
h_wall_02_2
h_wall_02_1
Main Camera
Directional Light
h_wall_01
floor
```

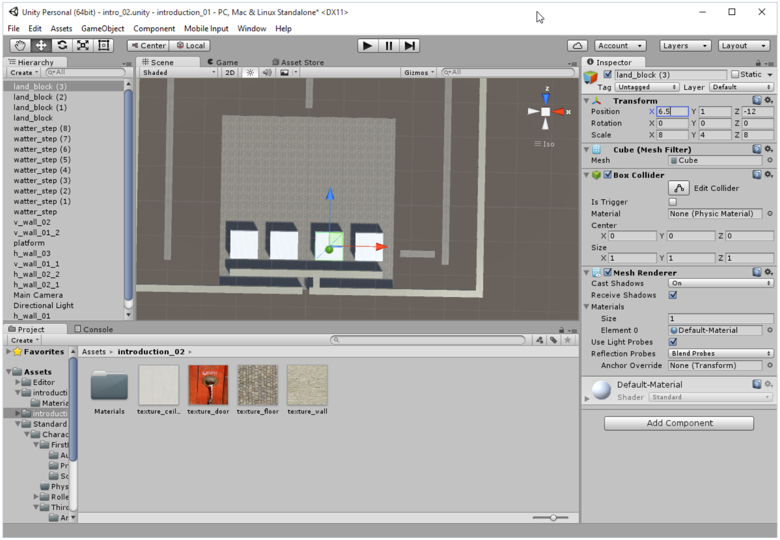
Inspector:

```
watter_step (8)                    Static
Tag Untagged        Layer Default
Transform
  Position   X 32   Y -1   Z -14
  Rotation   X 0    Y 90   Z 0
  Scale      X 2    Y 1    Z 10
Cube (Mesh Filter)
  Mesh       Cube
Box Collider
  Edit Collider
  Is Trigger
  Material   None (Physic Material)
  Center
    X 0   Y 0   Z 0
  Size
    X 1   Y 1   Z 1
Mesh Renderer
  Cast Shadows        On
  Receive Shadows     ✓
  Materials
    Size              1
    Element 0         texture_floor
  Use Light Probes    ✓
  Reflection Probes   Blend Probes
    Anchor Override   None (Transform)
texture_floor
  Shader   Standard
  Rendering Mode   Opaque
  Main Maps
    Albedo
    Metallic            0
      Smoothness        0.5
    Normal Map
    Height Map
    Occlusion
    Emission            0
```

Create big blocks and place them on land to form maze

1. Create a new cube and rename it `land_block`.
2. Change the position of this cube to (x=XX, y=1, z=ZZ) and its scale to (x=8, y=4, z=8).
3. Apply the wall texture to this object.
4. If needed, change the tiling property of the texture.
5. Duplicate this object as many times as you need to create maze.

Create big blocks and place them on land to form maze


Unity Personal (64bit) - intro_02.unity - introduction_01 - PC, Mac & Linux Standalone* <DX11>
File Edit Assets GameObject Component Mobile Input Window Help
Center Local
Account Layers Layout
Hierarchy Create All
Scene Game Asset Store
Shaded 2D Gizmos All
Iso
Inspector
Project Console Create
Edit Collider
Add Component

Hierarchy:

```
land_block (3)
land_block (2)
land_block (1)
land_block
watter_step (8)
watter_step (7)
watter_step (6)
watter_step (5)
watter_step (4)
watter_step (3)
watter_step (2)
watter_step (1)
watter_step
v_wall_02
v_wall_01_2
platform
h_wall_03
v_wall_01_1
h_wall_02_2
h_wall_02_1
Main Camera
Directional Light
h_wall_01
```

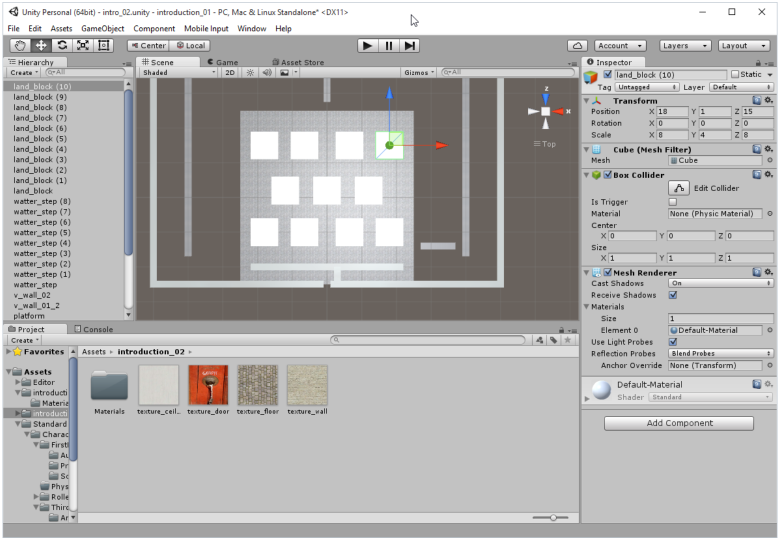
Inspector:

```
land_block (3)                    Static
Tag Untagged       Layer Default
Transform
  Position   X 6.5   Y 1   Z -12
  Rotation   X 0     Y 0   Z 0
  Scale      X 8     Y 4   Z 8
Cube (Mesh Filter)
  Mesh       Cube
Box Collider
  Is Trigger
  Material   None (Physic Material)
  Center     X 0   Y 0   Z 0
  Size       X 1   Y 1   Z 1
Mesh Renderer
  Cast Shadows      On
  Receive Shadows   ✓
  Materials
    Size        1
    Element 0   Default-Material
  Use Light Probes   ✓
  Reflection Probes  Blend Probes
  Anchor Override    None (Transform)
Default-Material
  Shader  Standard
```

Project:

```
Favorites
Assets
  Editor
  introducti
    Materia
  introducti
  Standard
    Charac
      FirstI
        Au
        Pr
        Sc
      Phys
      Rolle
      Thir
        Ar

Assets ▸ introduction_02 ▸
Materials  texture_ceil...  texture_door  texture_floor  texture_wall
```

Create big blocks and place them on land to form maze



Hierarchy:

land_block (10)
land_block (9)
land_block (8)
land_block (7)
land_block (6)
land_block (5)
land_block (4)
land_block (3)
land_block (2)
land_block (1)
land_block
watter_step (8)
watter_step (7)
watter_step (6)
watter_step (5)
watter_step (4)
watter_step (3)
watter_step (2)
watter_step (1)
watter_step
v_wall_02
v_wall_01_2
platform

Inspector:

land_block (10) Static
Tag Untagged Layer Default

Transform

	X	Y	Z
Position	18	1	15
Rotation	0	0	0
Scale	8	4	8

Cube (Mesh Filter)
Mesh Cube

Box Collider
Is Trigger ☐
Material None (Physic Material)
Center X 0 Y 0 Z 0
Size X 1 Y 1 Z 1

Mesh Renderer
Cast Shadows On
Receive Shadows ✓
Materials
Size 1
Element 0 Default-Material
Use Light Probes ✓
Reflection Probes Blend Probes
Anchor Override None (Transform)

Default-Material
Shader Standard

Project:

Favorites
Assets
Editor
introducti
Materia
introducti
Standard
Charac
FirstI
Au
Pr
Sc
Phys
Rolle
Thir
Ar

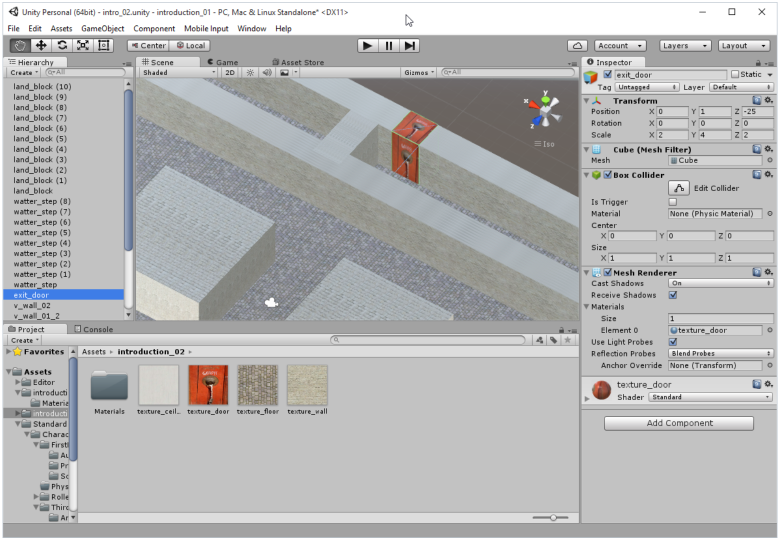
Assets ▸ introduction_02 ▸

Materials
texture_ceil...
texture_door
texture_floor
texture_wall

Create exit door

1. Create a new cube and rename it `exit_door`.
2. Apply the door texture to this object and verify the tiling property of the texture.
3. Change the position of this object to `(x=0, y=1, z=-24)` and its scale to `(x=2, y=4, z=2)`.

Create exit door



Unity Personal (64bit) - intro_02.unity - introduction_01 - PC, Mac & Linux Standalone* <DX11>

land_block (10)
land_block (9)
land_block (8)
land_block (7)
land_block (6)
land_block (5)
land_block (4)
land_block (3)
land_block (2)
land_block (1)
land_block
watter_step (8)
watter_step (7)
watter_step (6)
watter_step (5)
watter_step (4)
watter_step (3)
watter_step (2)
watter_step (1)
watter_step
exit_door
v_wall_02
v_wall_01_2

Assets ▸ introduction_02 ▸

exit_door ☐ Static
Tag Untagged Layer Default

Transform

Position	X 0	Y 1	Z -25
Rotation	X 0	Y 0	Z 0
Scale	X 2	Y 4	Z 2

Cube (Mesh Filter)
Mesh: Cube

Box Collider
Is Trigger: ☐
Material: None (Physic Material)
Center: X 0, Y 0, Z 0
Size: X 1, Y 1, Z 1

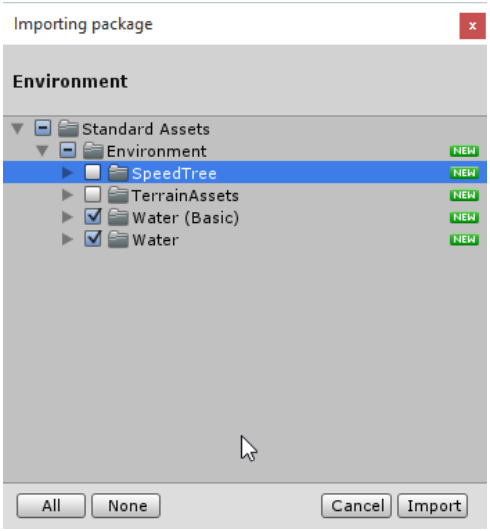
Mesh Renderer
Cast Shadows: On
Receive Shadows: ✓
Materials
Size: 1
Element 0: texture_door
Use Light Probes: ✓
Reflection Probes: Blend Probes
Anchor Override: None (Transform)

texture_door
Shader: Standard

Add water

1. Select **Assets** | **Import package** | **Environment**.
2. A new window labeled **Importing package** will appear.
3. Click on the **Import** button. This will import all necessary assets to simulate water.
4. In the **Project** window, select **Assets** | **Standard Assets** | **Environment** | **Water** | **Water** | **Prefabs**.
5. It should include two prefabs, **WaterProDaytime** and **WaterProNighttime**.
6. Drag-and-drop the prefab **WaterProDaytime** to the **Scene** view and rename it `water`.
7. Change its position to `(x=0, y=-1, z=27)` and its scale property to `(x=80, y=1, z=80)`.

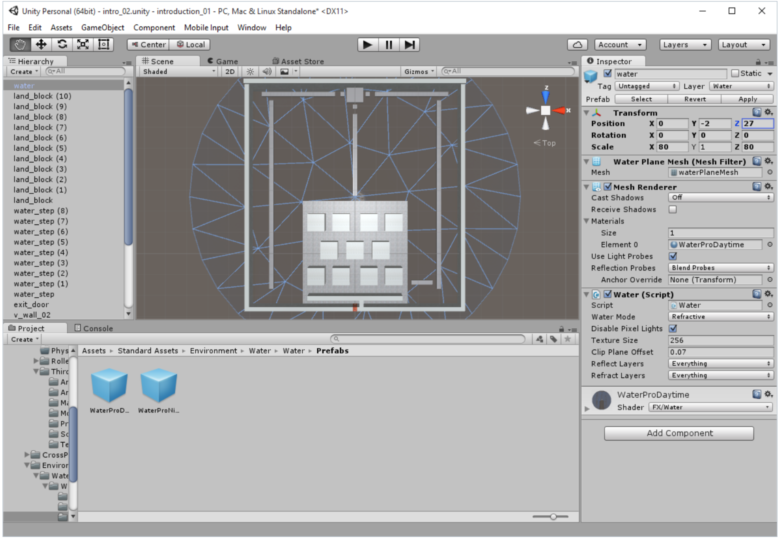
Add water


Importing package

Environment

- [−] Standard Assets
  - [−] Environment NEW
    - [ ] SpeedTree NEW
    - [ ] TerrainAssets NEW
    - [✓] Water (Basic) NEW
    - [✓] Water NEW

Add water



Unity Personal (64bit) - intro_02.unity - introduction_01 - PC, Mac & Linux Standalone* <DX11>

Hierarchy:

```
water
land_block (10)
land_block (9)
land_block (8)
land_block (7)
land_block (6)
land_block (5)
land_block (4)
land_block (3)
land_block (2)
land_block (1)
land_block
water_step (8)
water_step (7)
water_step (6)
water_step (5)
water_step (4)
water_step (3)
water_step (2)
water_step (1)
water_step
exit_door
v_wall_02
```

Assets ▸ Standard Assets ▸ Environment ▸ Water ▸ Water ▸ **Prefabs**

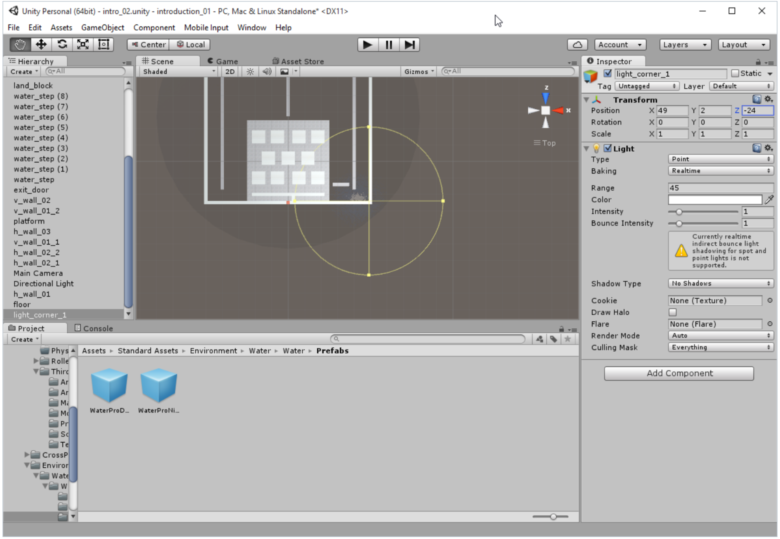
Inspector:

```
water                         Static
Tag  Untagged        Layer  Water
Prefab  Select   Revert   Apply

Transform
Position   X 0    Y -2   Z 27
Rotation   X 0    Y 0    Z 0
Scale      X 80   Y 1    Z 80

Water Plane Mesh (Mesh Filter)
Mesh                 waterPlaneMesh

Mesh Renderer
Cast Shadows         Off
Receive Shadows      ☐
Materials
  Size               1
  Element 0          WaterProDaytime
Use Light Probes     ✓
Reflection Probes    Blend Probes
  Anchor Override    None (Transform)

Water (Script)
Script               Water
Water Mode           Refractive
Disable Pixel Lights ✓
Texture Size         256
Clip Plane Offset    0.07
Reflect Layers       Everything
Refract Layers       Everything

WaterProDaytime
Shader  FX/Water
```

Add lights

1. Remove **Directional light** object if it exists.
2. Add a point light by selecting **GameObject | Light | Point Light**.
3. Rename this light `light_corner_1`.
4. Change its position to `(x=49, y=2, z=-24)` and its range to 45.
5. Duplicate this object three times to obtain three additional lights at the other corners of the game world and in the middle.
6. Duplicate one of the objects labeled `light_corner` and rename it `light_middle`.
7. Change the position of the `light_middle` to `(x=0, y=2, z=25)` and its range to 100.
8. Check the scene in the **Scene** view and add other lights as you like.

Add lights



Unity Personal (64bit) - intro_02.unity - introduction_01 - PC, Mac & Linux Standalone* <DX11>

Hierarchy:
land_block
water_step (8)
water_step (7)
water_step (6)
water_step (5)
water_step (4)
water_step (3)
water_step (2)
water_step (1)
water_step
exit_door
v_wall_02
v_wall_01_2
platform
h_wall_03
v_wall_01_1
h_wall_02_2
h_wall_02_1
Main Camera
Directional Light
h_wall_01
floor
light_corner_1

Assets ▸ Standard Assets ▸ Environment ▸ Water ▸ Water ▸ **Prefabs**

Inspector: light_corner_1 — Static
Tag: Untagged — Layer: Default

Transform

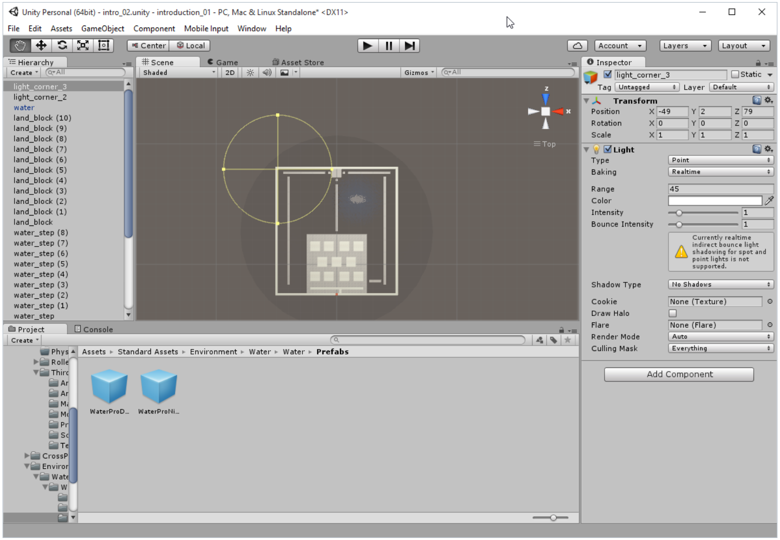
	X	Y	Z
Position	49	2	-24
Rotation	0	0	0
Scale	1	1	1

Light

Type	Point
Baking	Realtime
Range	45
Color	
Intensity	1
Bounce Intensity	1
Shadow Type	No Shadows
Cookie	None (Texture)
Draw Halo	☐
Flare	None (Flare)
Render Mode	Auto
Culling Mask	Everything

Currently realtime indirect bounce light shadowing for spot and point lights is not supported.

Add lights



Unity Personal (64bit) - intro_02.unity - introduction_01 - PC, Mac & Linux Standalone* <DX11>

Hierarchy:

light_corner_3
light_corner_2
water
land_block (10)
land_block (9)
land_block (8)
land_block (7)
land_block (6)
land_block (5)
land_block (4)
land_block (3)
land_block (2)
land_block (1)
land_block
water_step (8)
water_step (7)
water_step (6)
water_step (5)
water_step (4)
water_step (3)
water_step (2)
water_step (1)
water_step

Assets ▸ Standard Assets ▸ Environment ▸ Water ▸ Water ▸ **Prefabs**

Inspector: light_corner_3 — Static — Tag Untagged — Layer Default

Transform

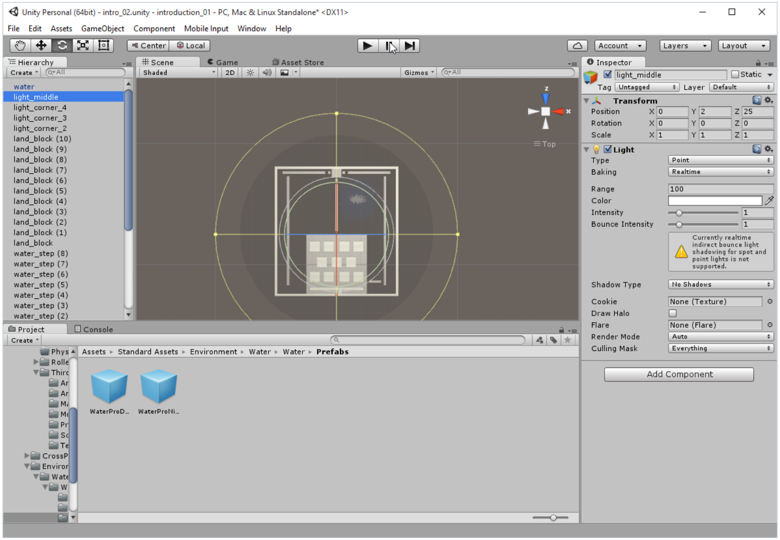
	X	Y	Z
Position	-49	2	79
Rotation	0	0	0
Scale	1	1	1

Light

Type	Point
Baking	Realtime
Range	45
Color	
Intensity	1
Bounce Intensity	1
Shadow Type	No Shadows
Cookie	None (Texture)
Draw Halo	☐
Flare	None (Flare)
Render Mode	Auto
Culling Mask	Everything

Currently realtime indirect bounce light shadowing for spot and point lights is not supported.

Add lights


Unity Personal (64bit) - intro_02.unity - introduction_01 - PC, Mac & Linux Standalone* <DX11>

File Edit Assets GameObject Component Mobile Input Window Help

Hierarchy:

water
light_middle
light_corner_4
light_corner_3
light_corner_2
land_block (10)
land_block (9)
land_block (8)
land_block (7)
land_block (6)
land_block (5)
land_block (4)
land_block (3)
land_block (2)
land_block (1)
land_block
water_step (8)
water_step (7)
water_step (6)
water_step (5)
water_step (4)
water_step (3)
water_step (2)

Inspector

light_middle   Static

Tag Untagged   Layer Default

Transform

	X	Y	Z
Position	0	2	25
Rotation	0	0	0
Scale	1	1	1

Light

Type	Point
Baking	Realtime
Range	100
Color	
Intensity	1
Bounce Intensity	1
Shadow Type	No Shadows
Cookie	None (Texture)
Draw Halo	
Flare	None (Flare)
Render Mode	Auto
Culling Mask	Everything

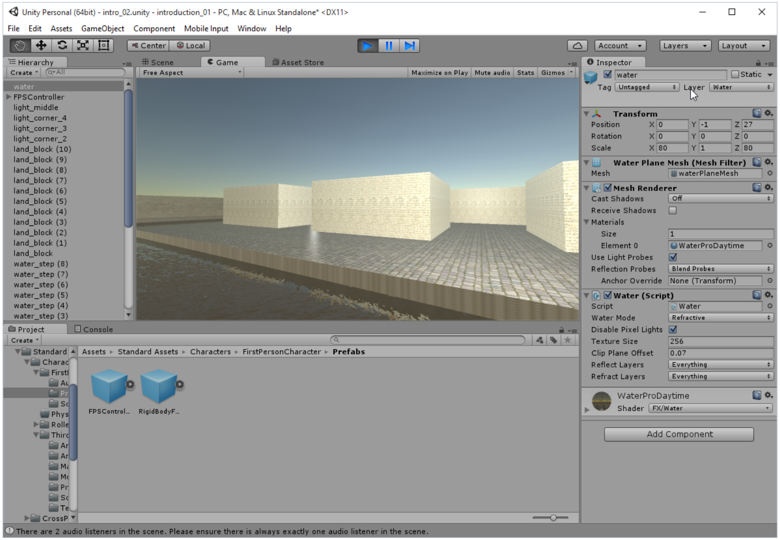
Currently realtime indirect bounce light shadowing for spot and point lights is not supported.

Assets ▸ Standard Assets ▸ Environment ▸ Water ▸ Water ▸ **Prefabs**

WaterProD... WaterProNi...

Phys Rolle Thirc Ar Ar Ma Mc Pr Sc Te CrossP Enviror Wate W

Add lights


Unity Personal (64bit) - intro_02.unity - introduction_01 - PC, Mac & Linux Standalone* <DX11>
File Edit Assets GameObject Component Mobile Input Window Help
Center Local
Account Layers Layout
Hierarchy
Create
Scene
Game
Asset Store
Free Aspect
Maximize on Play Mute audio Stats Gizmos
Inspector
Project
Console
Create
Assets ▸ Standard Assets ▸ Characters ▸ FirstPersonCharacter ▸ Prefabs
FPSControl...
RigidBodyF...
Add Component

Hierarchy:

- water
- FPSController
- light_middle
- light_corner_4
- light_corner_3
- light_corner_2
- land_block (10)
- land_block (9)
- land_block (8)
- land_block (7)
- land_block (6)
- land_block (5)
- land_block (4)
- land_block (3)
- land_block (2)
- land_block (1)
- land_block
- water_step (8)
- water_step (7)
- water_step (6)
- water_step (5)
- water_step (4)
- water_step (3)

Inspector:

water ☐ Static
Tag Untagged Layer Water

Transform

	X	Y	Z
Position	0	-1	27
Rotation	0	0	0
Scale	80	1	80

Water Plane Mesh (Mesh Filter)

Mesh: waterPlaneMesh

Mesh Renderer

Cast Shadows	Off
Receive Shadows	☐
Materials	
Size	1
Element 0	WaterProDaytime
Use Light Probes	✓
Reflection Probes	Blend Probes
Anchor Override	None (Transform)

Water (Script)

Script	Water
Water Mode	Refractive
Disable Pixel Lights	✓
Texture Size	256
Clip Plane Offset	0.07
Reflect Layers	Everything
Refract Layers	Everything

WaterProDaytime
Shader FX/Water

There are 2 audio listeners in the scene. Please ensure there is always exactly one audio listener in the scene.

Adding a first-person controller
Optional

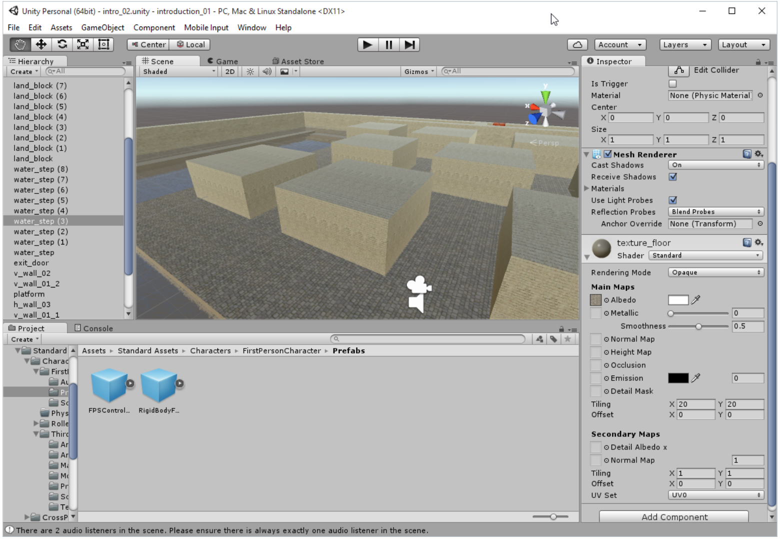
Make sure that you have the first-person controller. If not, add it with the following steps

- Drag-and-drop the **First Person Controller** prefab (that is, blue box labeled `FPSCharacter`) by selecting in **Assets** view **Assets** | **Standard Assets** | **Characters** | **FirstPersonCharacter** | **Prefabs** | **FPSController** onto the **Scene** view (or the **Project** view).
- Move this controller to the position `(x=0, y=2, z=25)`. This should place the controller slightly above the ground.

Play the scene

1. Play the scene (Ctrl + P) and navigate through the maze.

Play the scene


Unity Personal (64bit) - intro_02.unity - introduction_01 - PC, Mac & Linux Standalone <DX11>
File Edit Assets GameObject Component Mobile Input Window Help
Center Local
Account Layers Layout
Hierarchy Scene Game Asset Store Inspector
Shaded 2D Gizmos
Persp
Project Console
Assets ▸ Standard Assets ▸ Characters ▸ FirstPersonCharacter ▸ Prefabs
FPSControl... RigidBodyF...
Add Component

Hierarchy: land_block (7), land_block (6), land_block (5), land_block (4), land_block (3), land_block (2), land_block (1), land_block, water_step (8), water_step (7), water_step (6), water_step (5), water_step (4), water_step (3), water_step (2), water_step (1), water_step, exit_door, v_wall_02, v_wall_01_2, platform, h_wall_03, v_wall_01_1

Is Trigger	☐	
Material	None (Physic Material)	
Center	X 0	Y 0 Z 0
Size	X 1	Y 1 Z 1
Mesh Renderer		
Cast Shadows	On	
Receive Shadows	✓	
Materials		
Use Light Probes	✓	
Reflection Probes	Blend Probes	
Anchor Override	None (Transform)	
texture_floor	Shader Standard	
Rendering Mode	Opaque	
Main Maps		
Albedo		
Metallic		0
Smoothness		0.5
Normal Map		
Height Map		
Occlusion		
Emission		0
Detail Mask		
Tiling	X 20	Y 20
Offset	X 0	Y 0
Secondary Maps		
Detail Albedo x		
Normal Map		1
Tiling	X 1	Y 1
Offset	X 0	Y 0
UV Set	UV0	

There are 2 audio listeners in the scene. Please ensure there is always exactly one audio listener in the scene.

Colliders

So far, we have managed to create a level on which the first-person controller can navigate and collide with both walls and the floor. However, this would not be possible without **colliders**. When we added the different component (for example, wall or ground), a collider was added by default to these objects. This makes it possible to detect collision between objects. In our case, the first-person controller includes a default collider. As a result, this character controller collided with the walls. There are several types of colliders in Unity3D, including box, sphere, capsule, wheel, or terrain colliders. Some of these colliders are based on basic shapes such as boxes (for example, box colliders), spheres (for example, sphere colliders), or capsule (for example, capsule colliders). We need colliders to make our scene realistic. When colliders are activated (that is, during a collision), built-in functions are called so that we can in turn perform specific actions when this collision occurs (for example, destroy an object or play a sound).

Floor object and its collider

1. In the **Scene** view, click on one object labeled `floor`.
2. In the **Inspector** window, we can see a list of components for this object. Components can be added to objects either by default (when they are created) or after creation (using the **Component** menu).
3. We can see that one of these components is a **Box Collider**.

Test the effect of colliders on walls

1. Select one of the walls in the hierarchy.
2. Identify its box collider in the **Inspector** window.
3. Deactivate the box collider (by checking the box to the right of the label **Box Collider** in the **Inspector** window).
4. Test the scene. We should be able to walk through this wall.
5. Stop the scene and reactivate the box collider on this object.

Remove the collider and add another collider to the object

1. Select one of the walls in the hierarchy, identify its box collider in the **Inspector** window and remove the collider (right-click on the label **Box Collider** and select **Remove Component** from the contextual menu).
2. Test the scene; we should be able to walk through the wall.
3. Stop the scene.
4. Add a new collider to this object:
    1. Select the wall in the hierarchy.
    2. Select: **Component | Physics | Box Collider**.
    3. This should add a new box collider to the object.
    4. Test the scene.
    5. We should now be able to collide with the wall again.

Remove the collider for the floor

1. Select the object labeled `floor` in the **Hierarchy** view.
2. Deactivate its box collider in the **Inspector** window.
3. Test the scene.
4. Our character should literally fall indefinitely (because there is no collision detected with the floor).

To do

1. Remove light reflections on the floor.
2. Improve texturing.

Summary

You should know

- how to transform basic shapes to create basic environment,
- how to add and configure point lights in a scene,
- how to use colliders in game,
- how to use buil-in water objects.