

Intro to Unity

Hands-On Challenges

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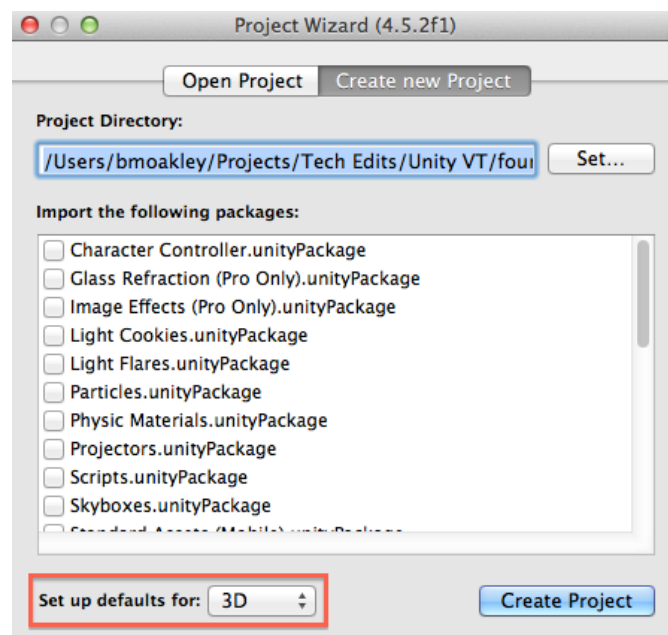


Challenge C: Building the Breakout Game

Now that you have a good idea on how to move around in Unity's interface, it's now time for you to start building your Unity game. The game you will be building is a breakout game. While the game is essentially played in two dimensions, you will build it using Unity's 3D tools

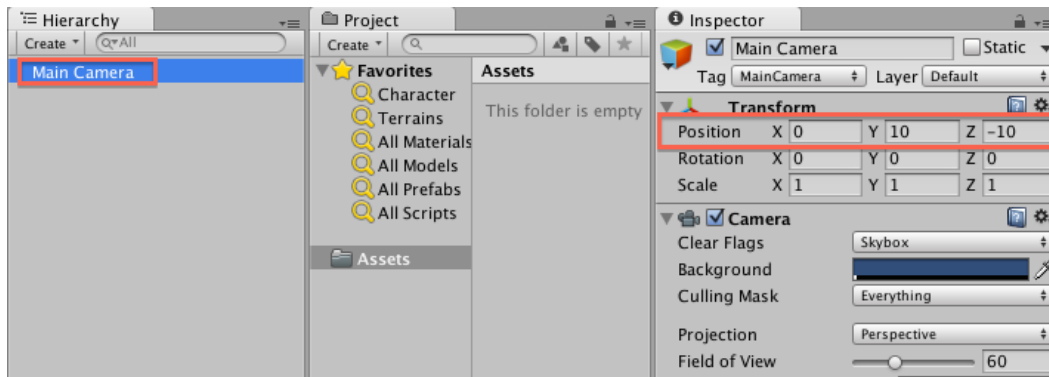
Getting Started

Startup Unity and create a new project. Don't worry about importing packages. You will do that later in the series. Also, that Unity is set to use the 3D defaults.



Before doing anything, make sure your camera is properly positioned. It should be the only item in your Scene view. Select the **Main Camera** in your **Hierarchy view**, and in the Inspector, change the **Position** for the **X coordinate** to **0**, the **Y coordinate** to **10**, and the **Z coordinate** to be **-10**.



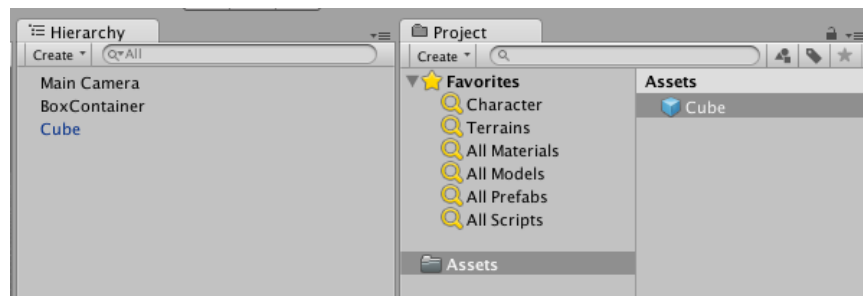


Next, create an empty GameObject by selecting **GameObject \ Create Empty**. Change the name of the empty GameObject, **single clicking** it in Hierarchy view, and typing **BoxContainer**.

The BoxContainer will define the shape of the actual Breakout game. It will contain all the rails.

Select the **BoxContainer** in the Hierarchy view, and in the Inspector, change **Position** for the **X coordinate** to be **3.17**, the **Y coordinate** to **29.95**, and the **Z coordinate** to be **19.87**.

Next, **select GameObject \ Create Other \ Cube**. Select the cube, and in the inspector, change the **Scale** for the **X coordinate** to be **30.5**. Drag this scaled cube into your Project view. Voila! You now have a prefab.



Single click the prefab name in the Project view and change the name to **Rail**.

Once you start adding items to Project view, it's always a good idea to organize it. In your project view, select **Create** and from the dropdown, select **Folder**. Rename the folder to **Prefabs**, then drag the Rail prefab into the folder.

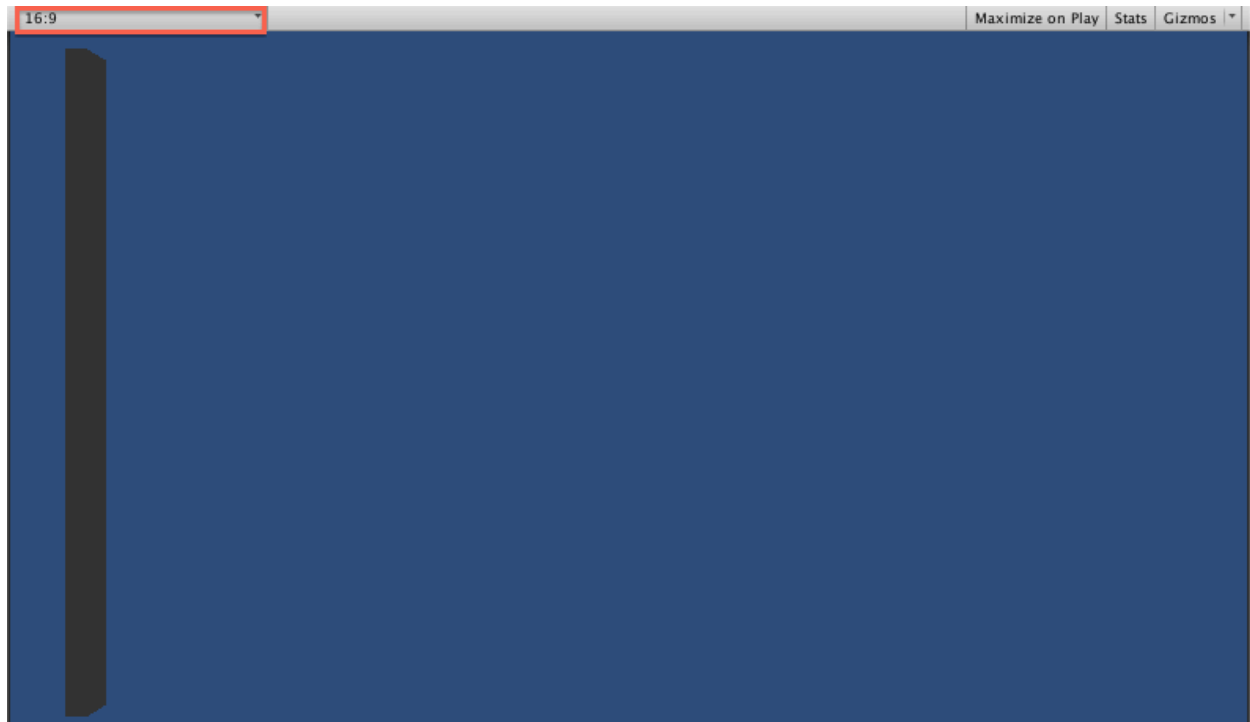
Now, back to the breakout container. Select your new rail instance in the Scene, and **drag it** into the **BoxContainer**. The rail's position coordinates will now be relative to the BoxContainer.

To create a vertical rail, select your current rail and in the inspector, change the **Rotation** for the **Z coordinate** to be **270**.



Next, change the rail's **Position** for the **X coordinate** to be **-28.44**, the **Y coordinate** to be **-20.11**, and the **Z coordinate** to be **-1.85**.

In your Game view, you will now see your left hand rail. If you don't see the left hand rail, make sure to check your Game view's aspect ratio.



Select the Rail in the Hierarchy view, single click, and rename it to **Left Rail**. Now to make the right hand side.

Press **Command-D** (or if you are a Windows user, **Control-D**) to duplicate the rail. Now you will see two Left Rails. Select one, single click, and **rename** to **Right Rail**. In the inspector, change the **Position** for the **X coordinate** to be **22.02**, the **Y coordinate** to be **-20.11**, and the **Z coordinate** to be **-1.85**.

Select the **rail prefab** in your **Project** view and **drag** it to your **Scene** view.

Drag it into the BoxContainer and then single click to rename it to **Bottom Rail**.

In the inspector, change the **Position** for the **X coordinate** to be **-3.20**, the **Y coordinate** to be **-35.9**, and the **Z coordinate** to be **-1.8**.

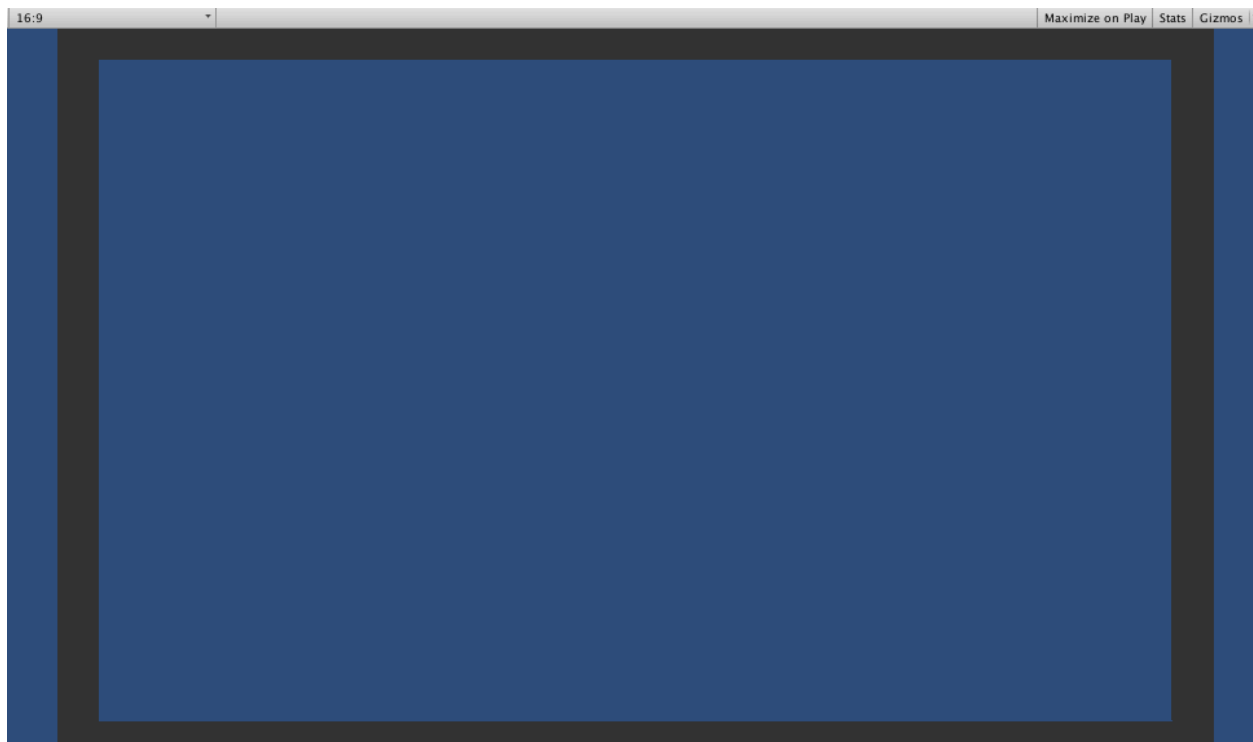
You will notice that the rail doesn't exactly fit in the frame. Use the **scale tool** to so that the rail properly connects with both sides.



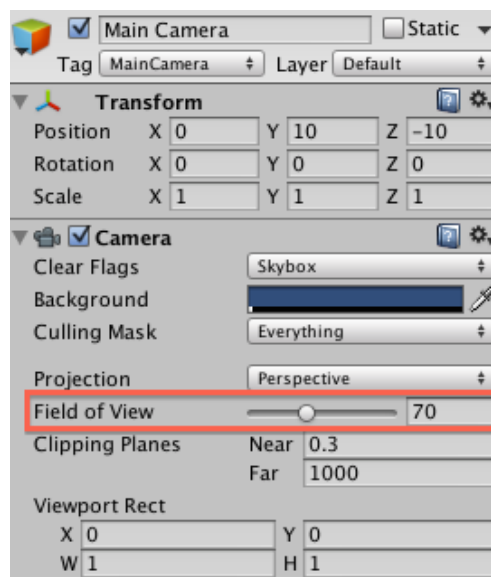
Once you have the rail in place, create the top rail for the container and place it in the proper area to complete your breakout box.



When you are done, your Scene view should look like this:

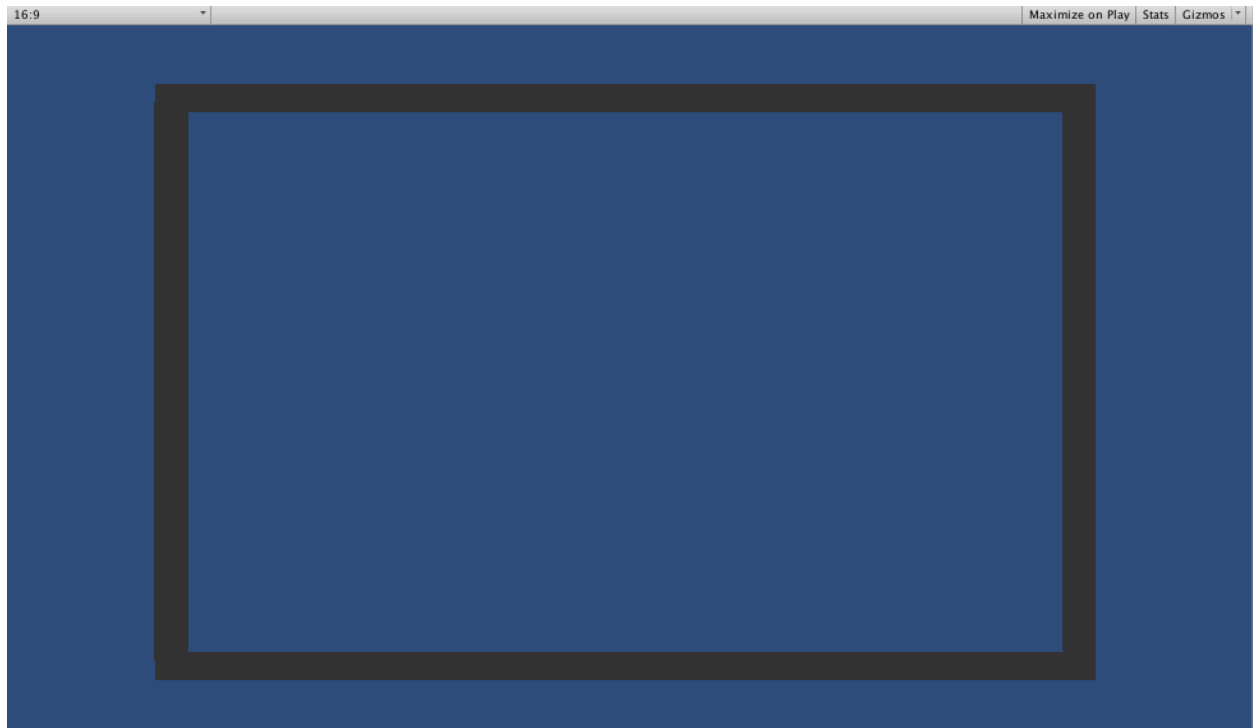


The frame itself is a little too close to the camera. In the Hierarchy, select the **Main Camera**, and in the Inspector, set the **field of view** to be **70**.



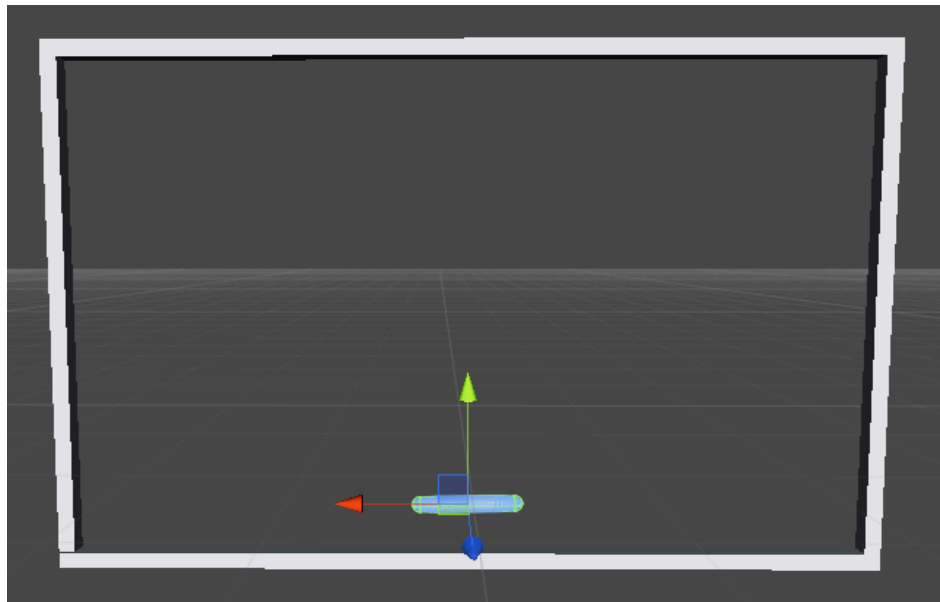
Your frame will be now nicely centered in the Game View.





Now, it's time to create the paddle. **Select GameObject \ Create Other \ Capsule**. Give it the name **Paddle**. The Paddle **will not** be parented into the BoxContainer.

Select the Paddle and in the inspector, change the **Position** for the **X coordinate** to be **0**, the **Y coordinate** to be **-2.50**, and the **Z coordinate** to be **17.9**. For the **Rotation**, change the **Z value** to **269.2**. For **Scale**, change the **Y value** to be **3.47**.



For the ball, select **GameObject \ Create Other \ Sphere**. Select the Sphere, single click it, and give it the name **Ball**. Next, select the **Ball** and **drag it into the Paddle**. Finally, in the inspector, change the **postion** for the **X coordinate** to be **-1.13**, the **Y coordinate** to be **0**, and the **Z coordinate** to be **0**. For the **Rotation**, set the Z value to be **90.79**. For the **Scale**, set the **X value** to be **0.27**. and the **Y value** to be **0.99**.



Select the **Paddle** and **drag** it into your **Project** view to create a prefab. While you won't be creating other GameObjects from it, you may want to extend the game to include multiplayer support.

Also, **select** the **Ball** and also drag it into the **Project** view.

Your final task is to create thirteen columns of bricks. First, create an empty GameObject column to contain all of the bricks. Name is **Bricks**. Next, create thirteen empty GameObjects for each column.

Finally, create a brick prefab. The brick should be a simple cube. Scale it so it looks like a brick, then add six bricks per column. Make sure the bricks are contained within the frame as opposed to being positioned further from the camera.

Once you are done, congratulations ... you have the beginning of a true Breakout game!

Before stopping, make sure to first Save your project. When you do save your Project, you'll be prompted to name the Scene. Since you are only dealing with one level in this game, call it **Main**. Otherwise, you may call it "CharacterCreator" or "FirstLevel" and so on.



The next time you open your project, you may see an empty scene and you may think you have lost all your work. This is not case. Rather, Unity has loaded with a empty scene. Find your scene file in the Project browser and double click it to reload all of your work.

