MiddleVR/Visbox Setup Manual for Unity
Cleveland State University

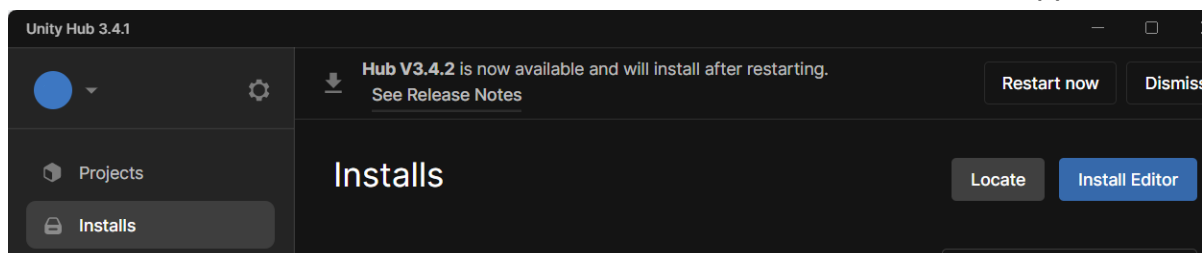**NOTE:** This manual assumes that you already have a **Unity account**, **Unity Hub** and the latest LTS (Long Term Support) version of **Unity** installed on your computer. If you don't have Unity installed, refer to this link: https://unity.com/download.

When installing Unity, make sure to check the "**Android Build Support**" box.
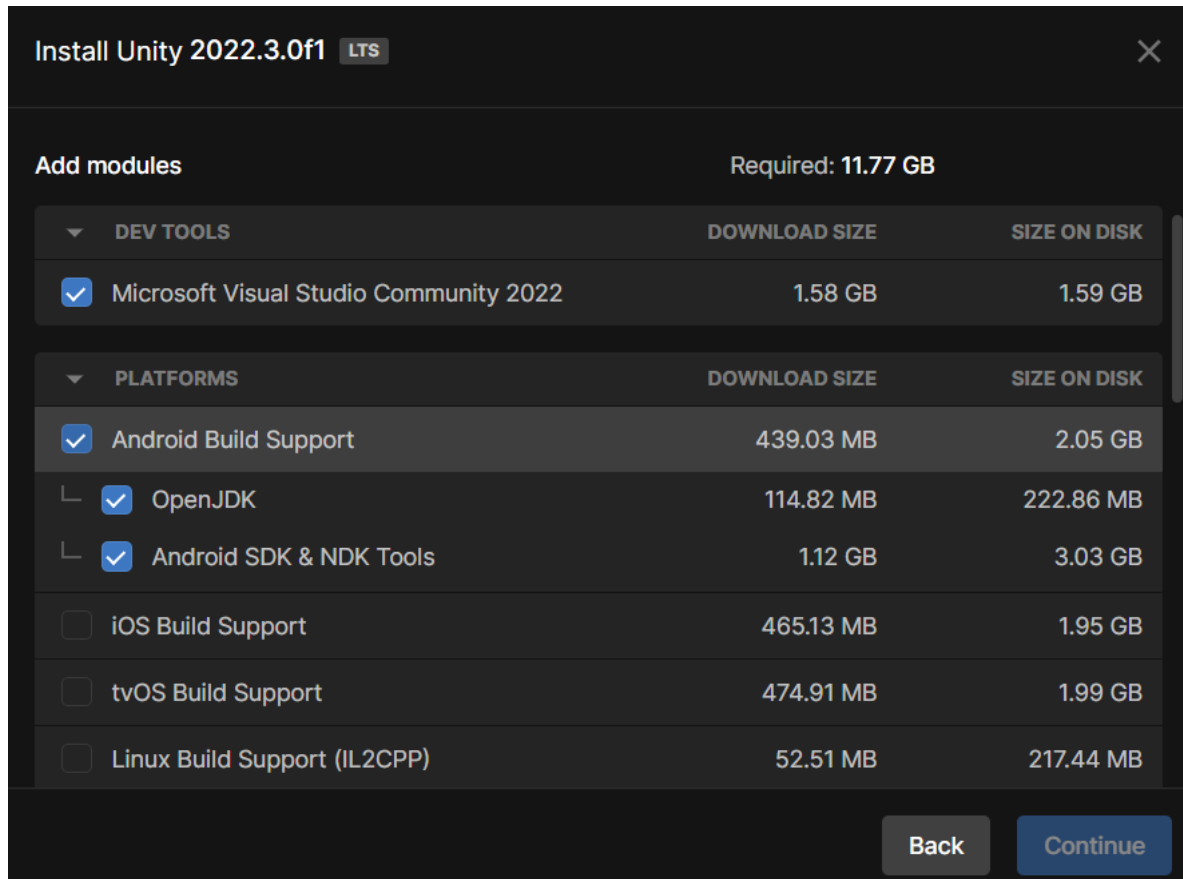
If this option doesn't come up for you, click "**Install Editor**" under "Installs" in Unity Hub and download the version. You will be able to download Android Build Support here.

Contents:

==NOTE:==
   ➢ **Tutorials 1-3 are for your own personal computer.**
   ➢ **Tutorial 4 is for the MakerSpace computer only.**
==NOTE:==
   ➢ ***MiddleVR:**

   MiddleVR is a Unity plugin for multi-display, stereoscopy, cluster rendering and also VR systems such as Walls, CAVEs etc.

   At its core, MiddleVR is a library handling all aspects of multi-display and cluster rendering, but also optionally adds VR capabilities such as: input devices, stereoscopy, interactions.

   It offers a C# API (application programming interface), and a graphical user interface to configure a cluster or VR system.

   ➢ ****MVRManager:**

   A Unity GameObject with several scripts attached to it. Those scripts handle all the management of 3D nodes, cameras, viewports, devices, clustering.

   The MVRManager will initialize MiddleVR with the specified options, especially the configuration file. It will create the 3D hierarchy of nodes that you've specified in MiddleVR Config and the cameras with their respective viewports.

Tutorial 1 - Installing MiddleVR on your Computer

1. Follow this link: https://www.middlevr.com/2/download-links/ to download MiddleVR. You will be prompted to make an account and will have to wait for your account to be approved by an administrator before downloading anything. You will get an email notifying you of your approval.

2. Once your account has been approved, download MiddleVR. This is free, but it is only the demo version:
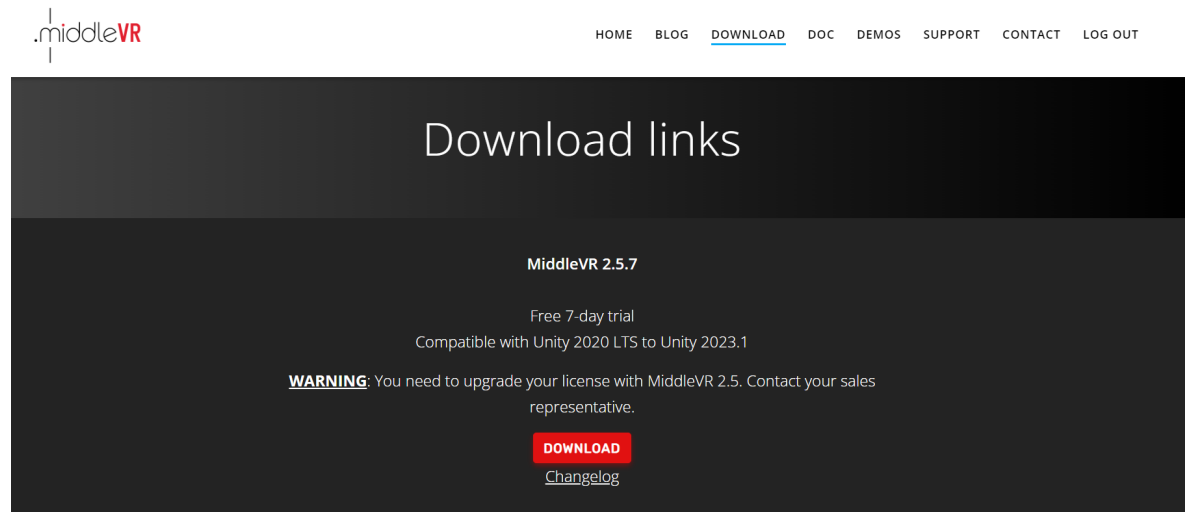
3. Once the download is finished, launch the **MiddleVR Installer** and follow the instructions. If you leave everything to the default settings, MiddleVR should be stored here on your local machine:
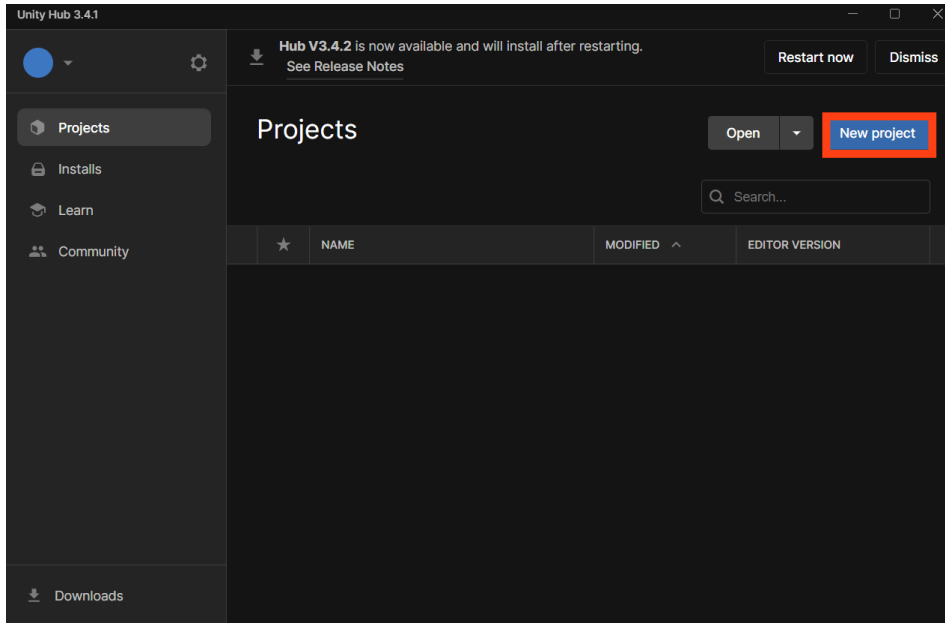
C:\Program Files\MiddleVR2
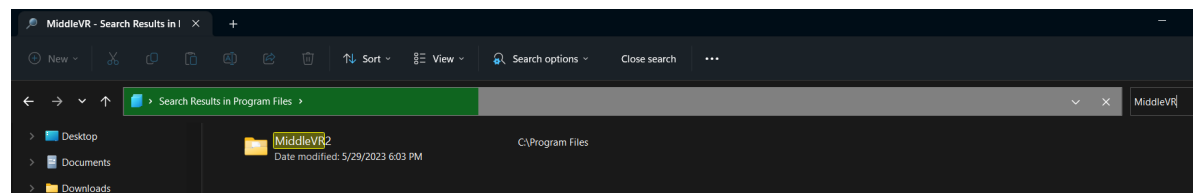
Tutorial 2 - Configuring your Unity Project and MVRManager for Visbox

    a. **Create your New Unity Project**

1a. Open your Unity Hub and Click "**New Project**":

2a. Use the **3D** template for this project. Make sure to include your name when naming the project (ie: John Smith - Demo). In this particular example, the project is just named "Demo" as shown in the screenshots. Click "**Create Project**":
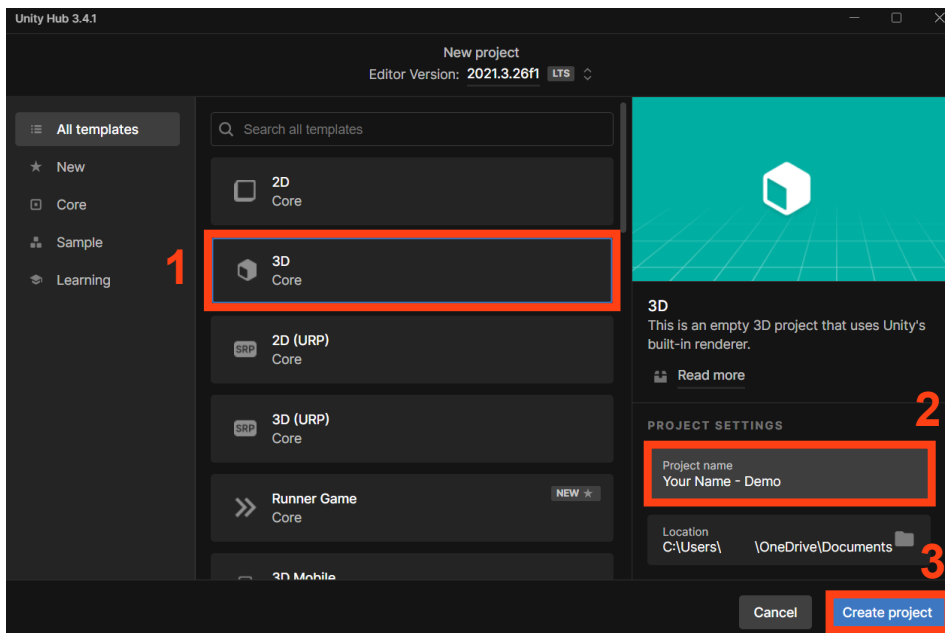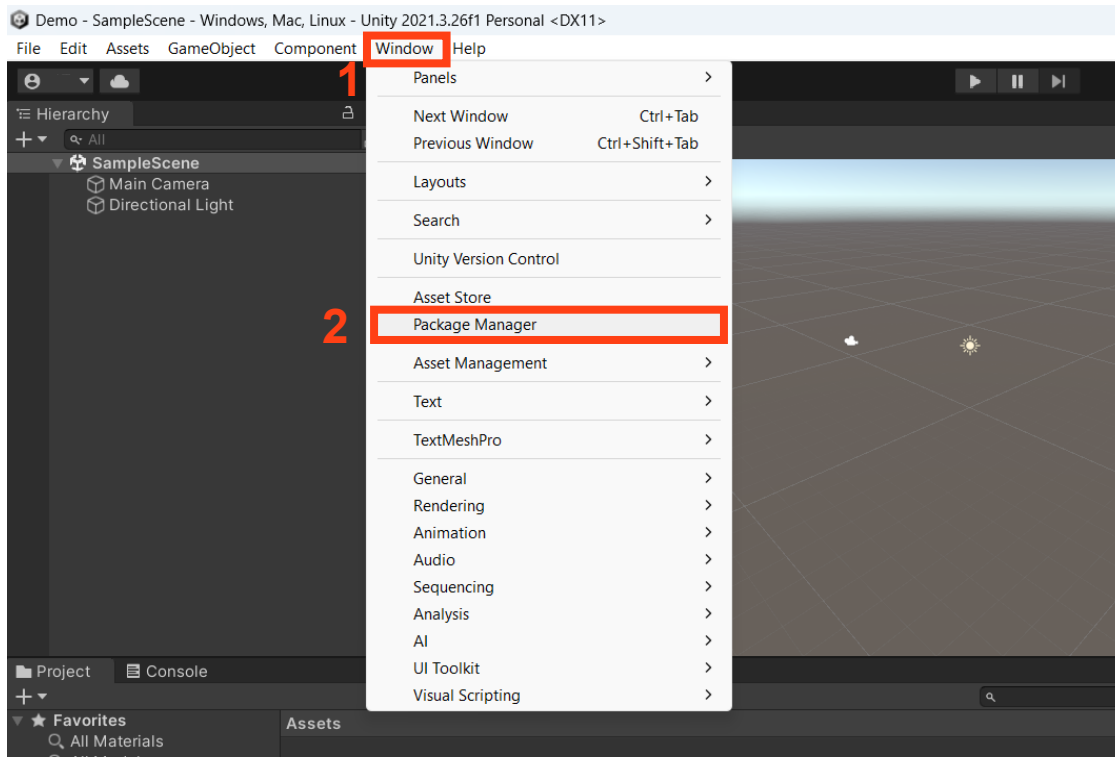
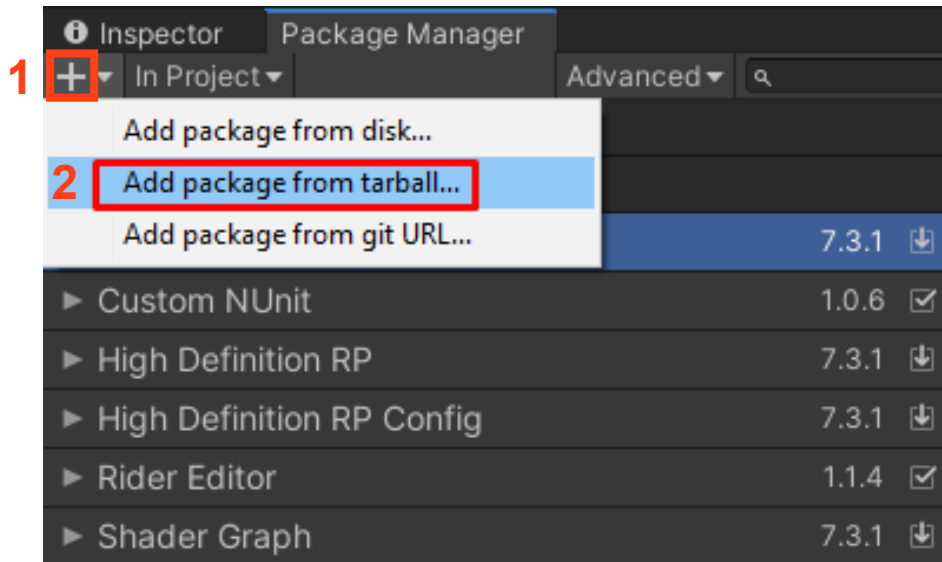**3a.** Once the project has been created, the UI should look something like this:
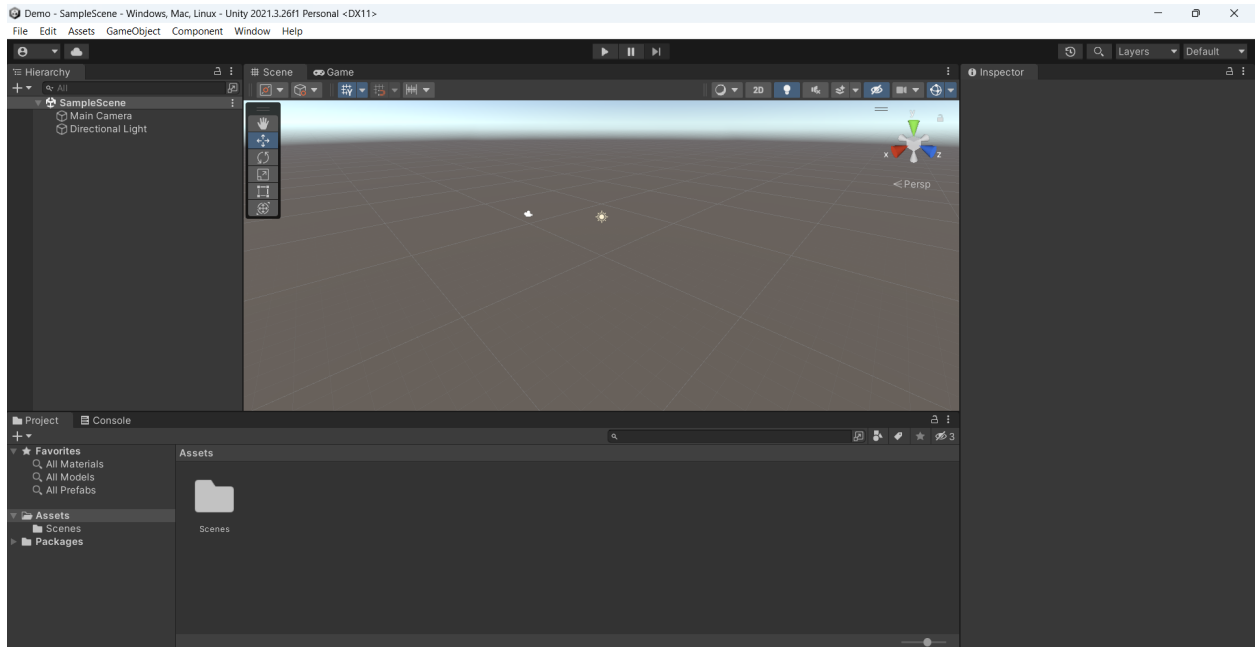
b. Import MiddleVR Packages into your Project

1b. Open the Packet Manager: Click on **Window** > **Package Manager**:
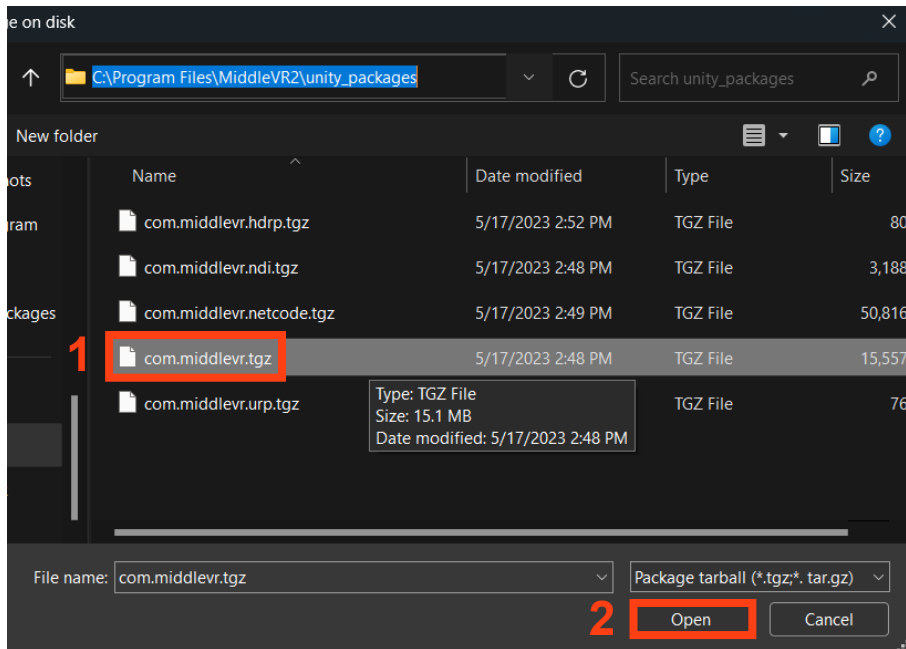
**2b.** Click on **+** and choose **Add package from tarball…**

3b. Go to where the MiddleVR files are stored. If you didn't store the files anywhere specific, they will be located here:
C:\Program Files\MiddleVR2\unity_packages

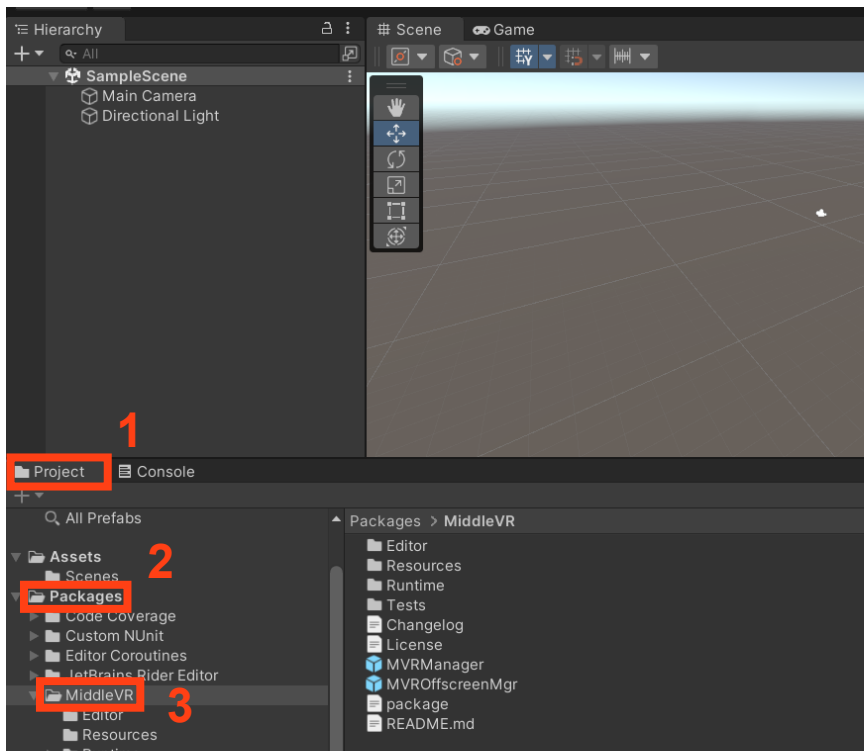Click on and open the file with this name: **com.middlevr.tgz**

4b. You should see something like this in the package manager after you've added the package. Close the package manager afterwards:
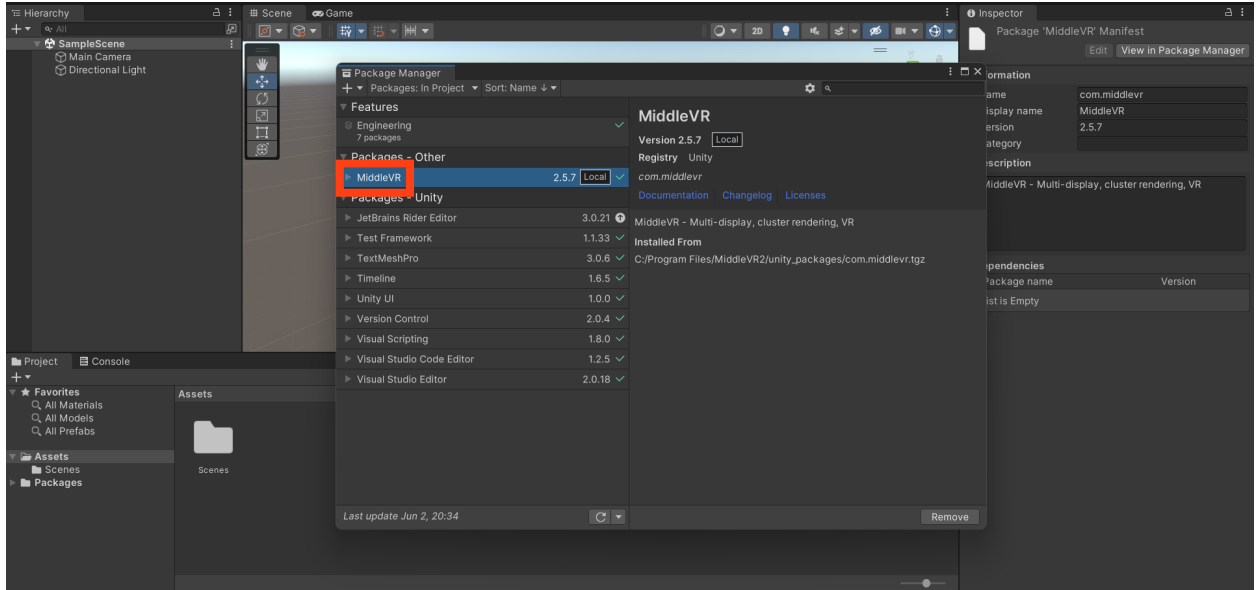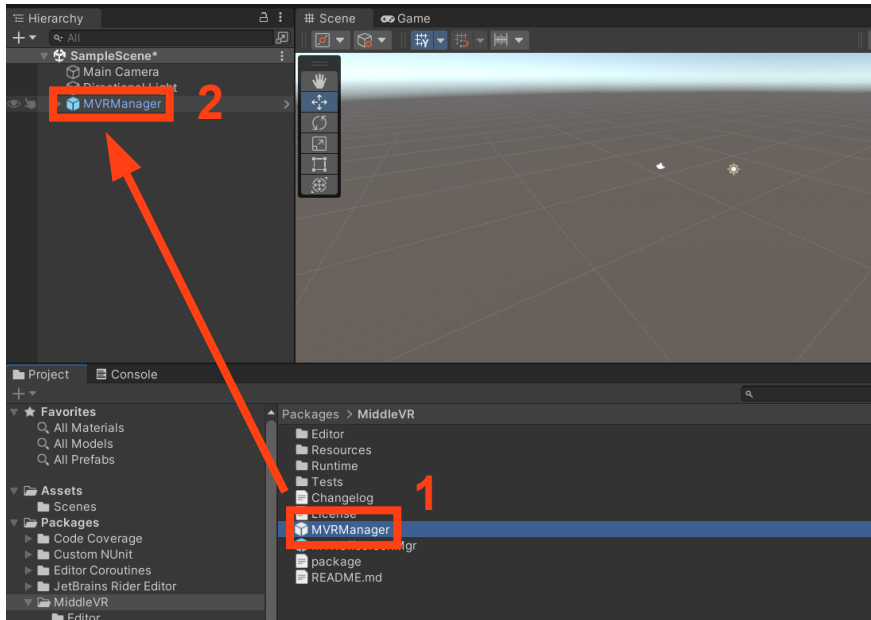

c. **Add MVRManager into your Project Hierarchy**

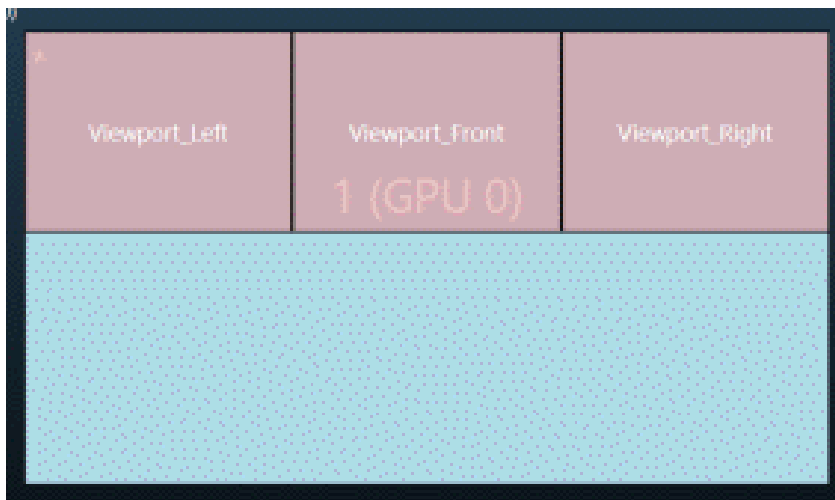**1c.** Go to the "**Project**" tab > **Packages** > **MiddleVR**:

2c. Drag and drop the **MVRManager** object (Packages > MiddleVR > MVRManager) into the "**Hierarchy**" tab:
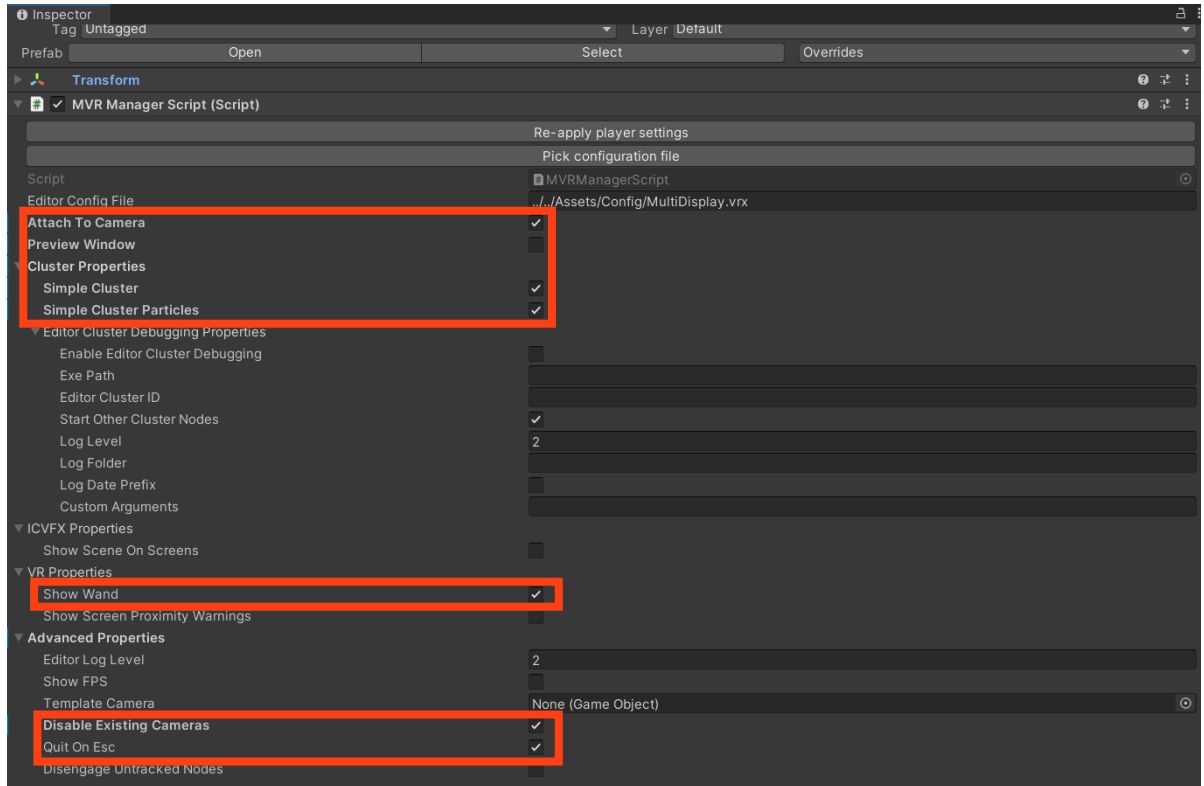

3c. The project should now be configured to run in a cavspace environment (Visbox). When Unity is in "Play" Mode, the camera will be appear in this format:
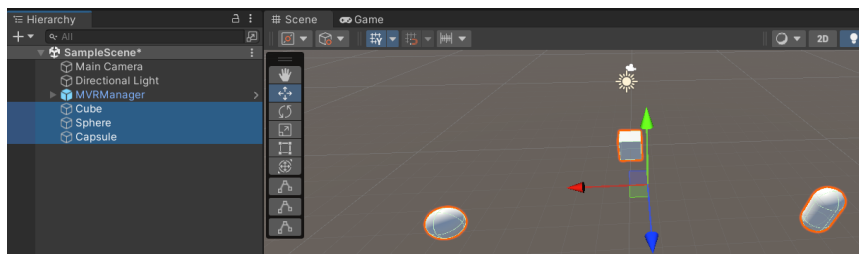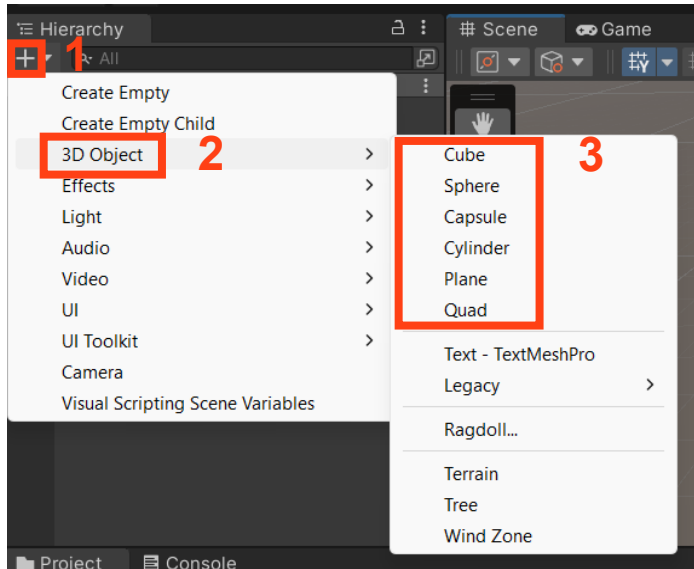
d. Configure MVRManager

1d. Select MVRManager in the "Hierarchy" and make sure the settings in the "**Inspector**" match the picture below:
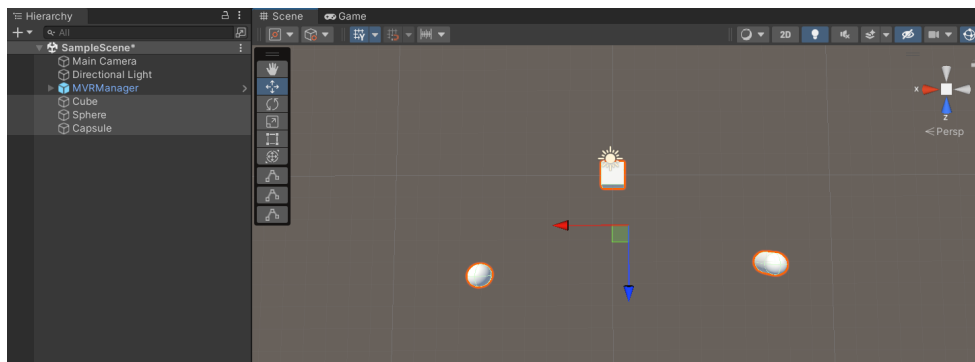
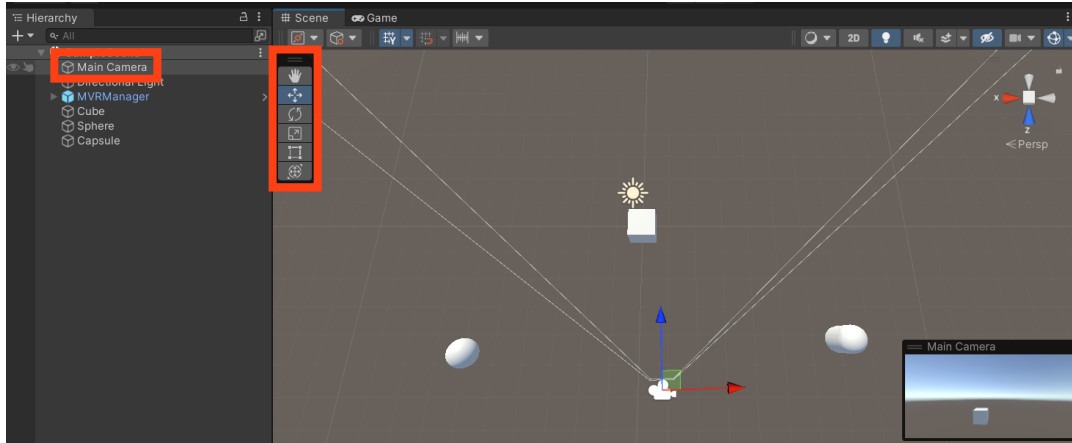**e. Add 3D Objects into your Project Hierarchy**

 1e. To test MiddleVR's setup, add three 3D objects to the hierarchy. **+** > **3D object** > Any shape:

**2e.** From a top view, adjust your 3D objects like this:

3e. Click on **Main Camera** in the "Hierarchy" and adjust it in the project scene so that the forward most object (the cube in the particular example) is the only object visible to the main camera:

This toolbar can be used to switch from "rotate" to "move" mode. You may need to rotate the "Main Camera" to get a similar view in this example.
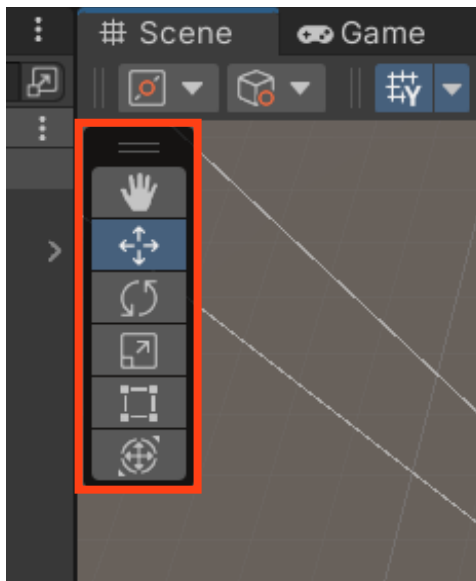
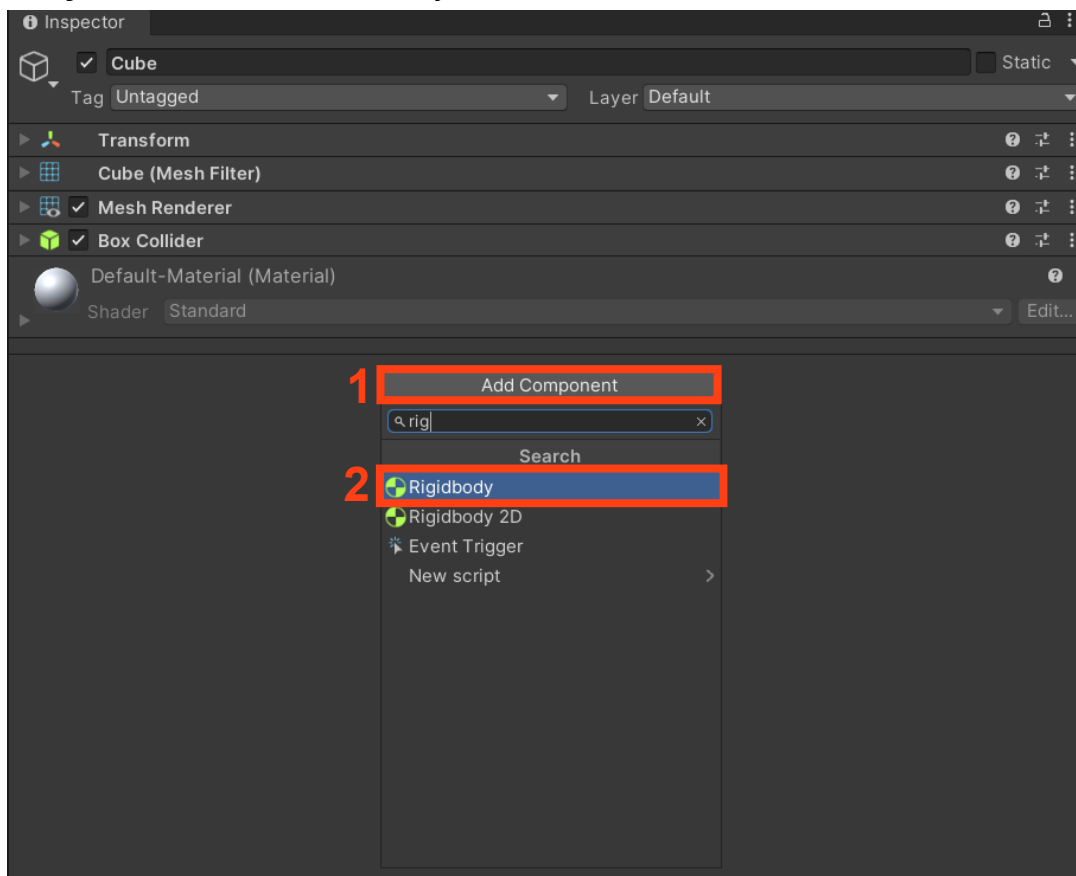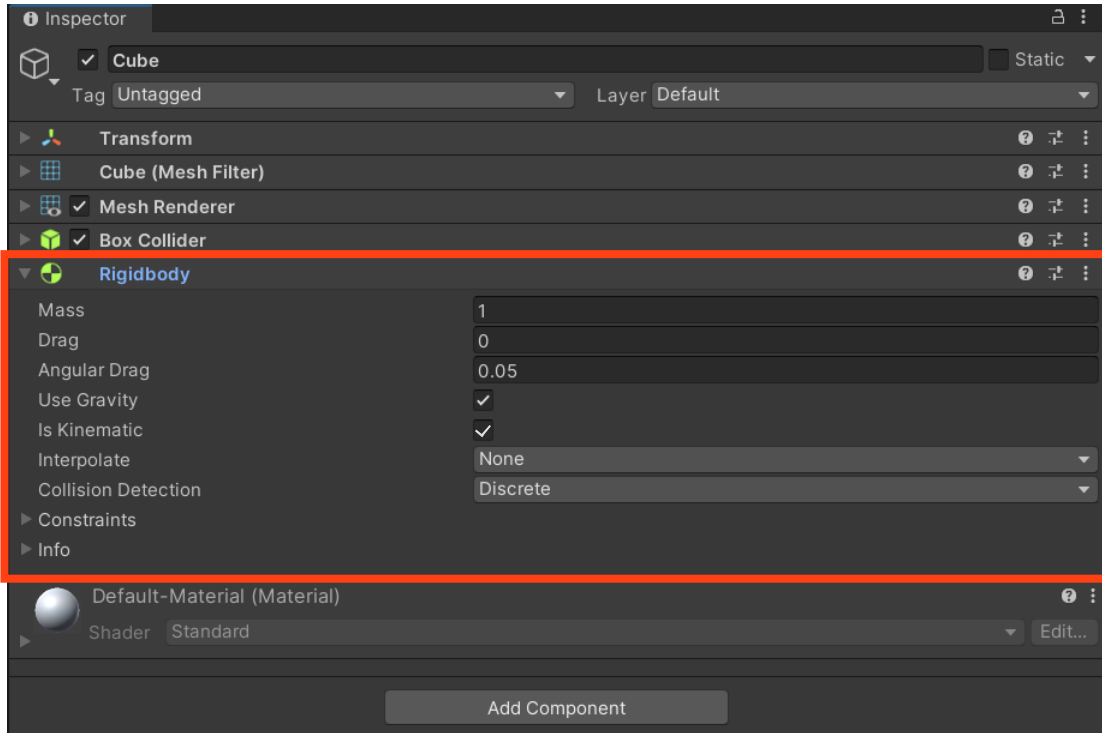**f. Configure Your 3D Objects to be Grabable**

1f. Click on any of the shapes in your "**Hierarchy**". In this example the "Cube" object is selected to be configured:
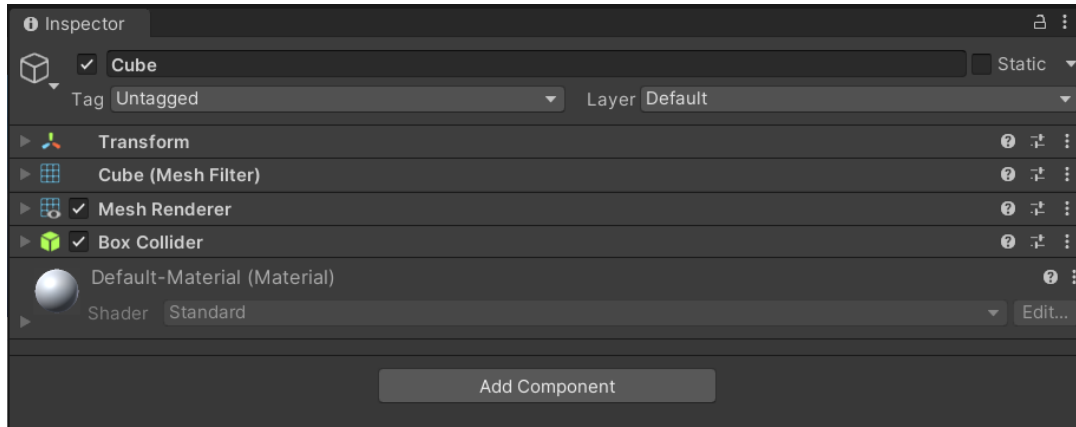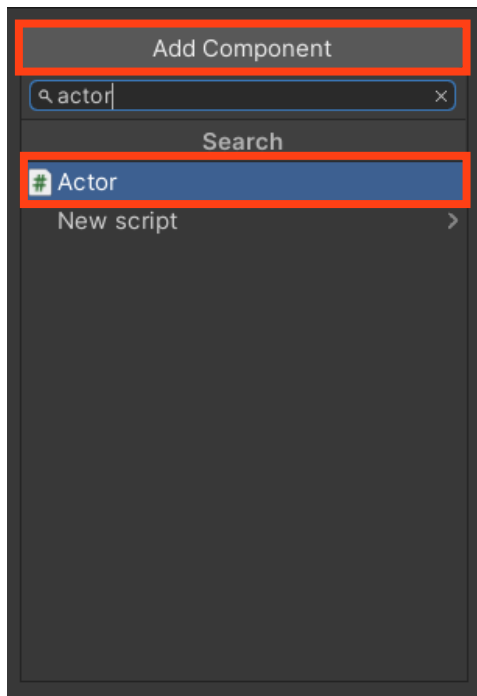

2f. In the "**Inspector**" box, Click the "**Add Component**" button and search "**Rigid Body**". Add it to the "**Cube**" object:
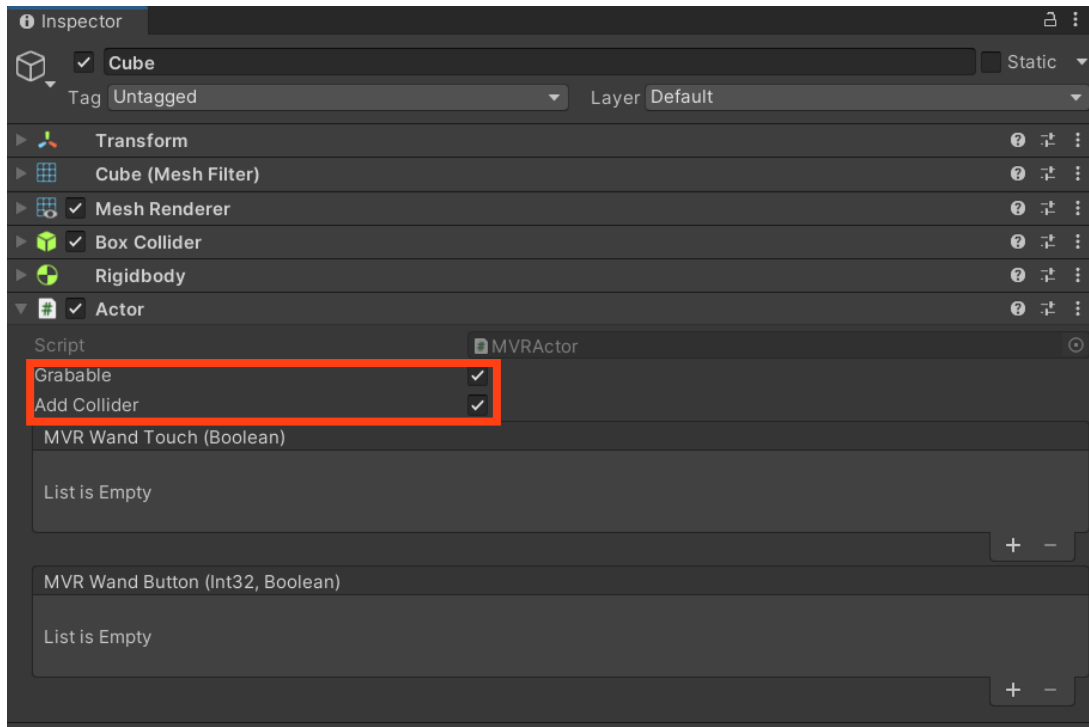
3f. In the "**Inspector**" box, Click the "**Add Component**" button and search "**Actor**":

4f. Click the "**Actor**" script and ensure that the settings are the same as in the below picture:

g. **Test your Unity Program**

1g. Click on the "Play" button at the top of the UI. You will likely get a message saying that the license for MiddleVR will expire shortly after the date you installed it. Just press "OK":
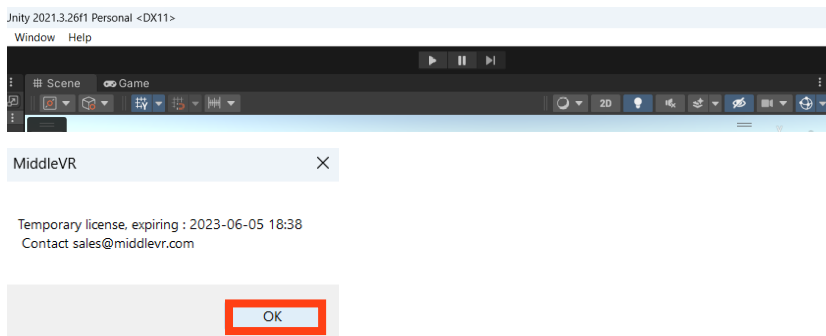
Assuming that the main camera can only view one object in "Scene" mode and looks like the picture below in "Game" mode, you have successfully set up a VR project compatible with the Visbox cave space environment! Make sure to save all changes (Ctrl + s)

"**Scene**" mode vs "**Game**" mode:
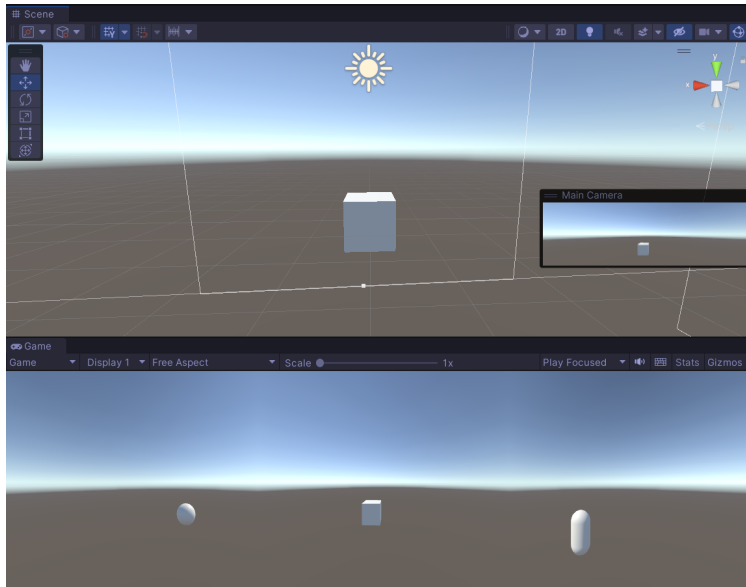
2g. Now that you have a starter project in which you can pick up objects with a controller, you can now start developing your VR project. If you are still new to Unity, refer to Unity Learn (https://learn.unity.com/pathways) for tutorials.
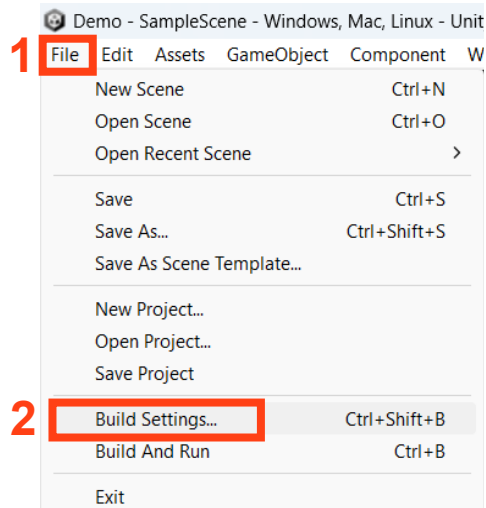
Tutorial 3 - Exporting and launching your Unity project in MiddleVR

a. Exporting your Unity Project

1a. In Unity, go to **File > Build Settings…:**

2a. If there is nothing in the **Scenes in Build** box, make sure to click the **Add Open Scenes** button. Make sure **Windows, Mac, Linux** is selected under the **Platform** box and that 64-bit (Or anything relating to 64-bit) is selected next to **Architecture**. MiddleVR is only compatible with 64-bit builds:
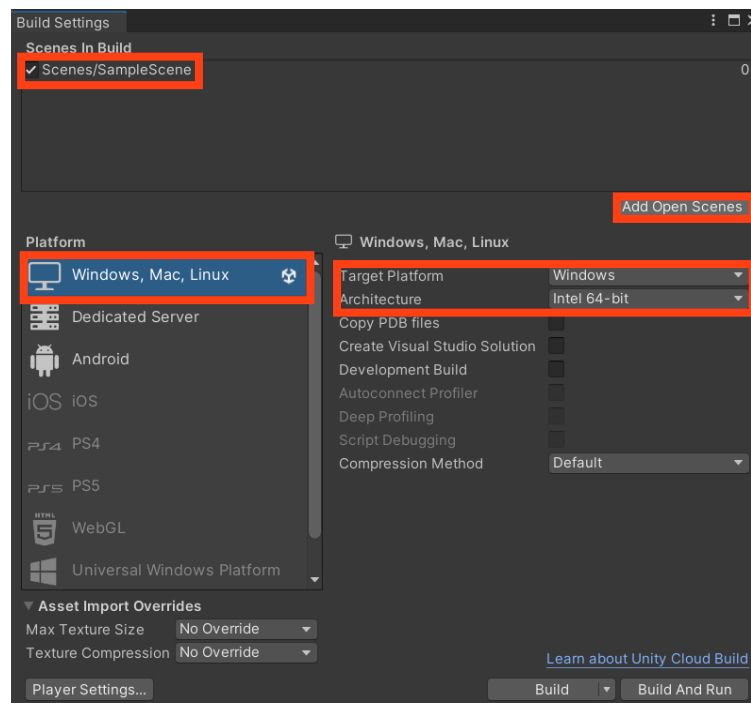
3a. Click on "**Player Settings**":
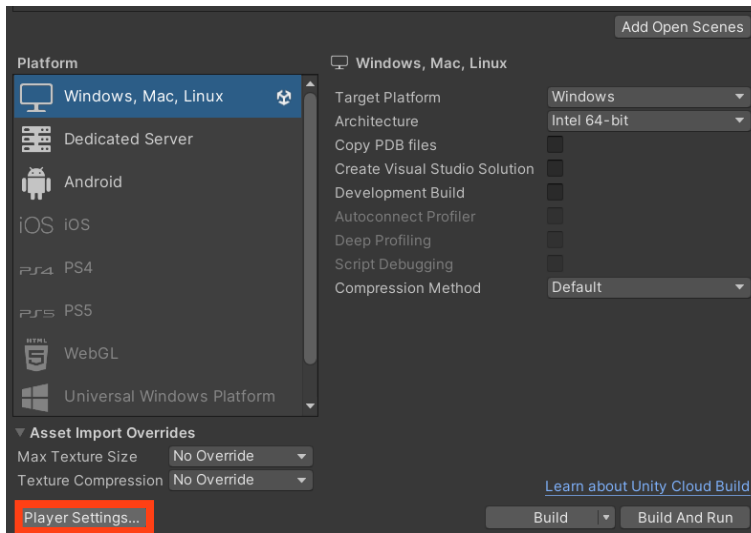
4a. Under "**Player**" > "**Resolution and Presentation**", ensure that you settings match the photo below:
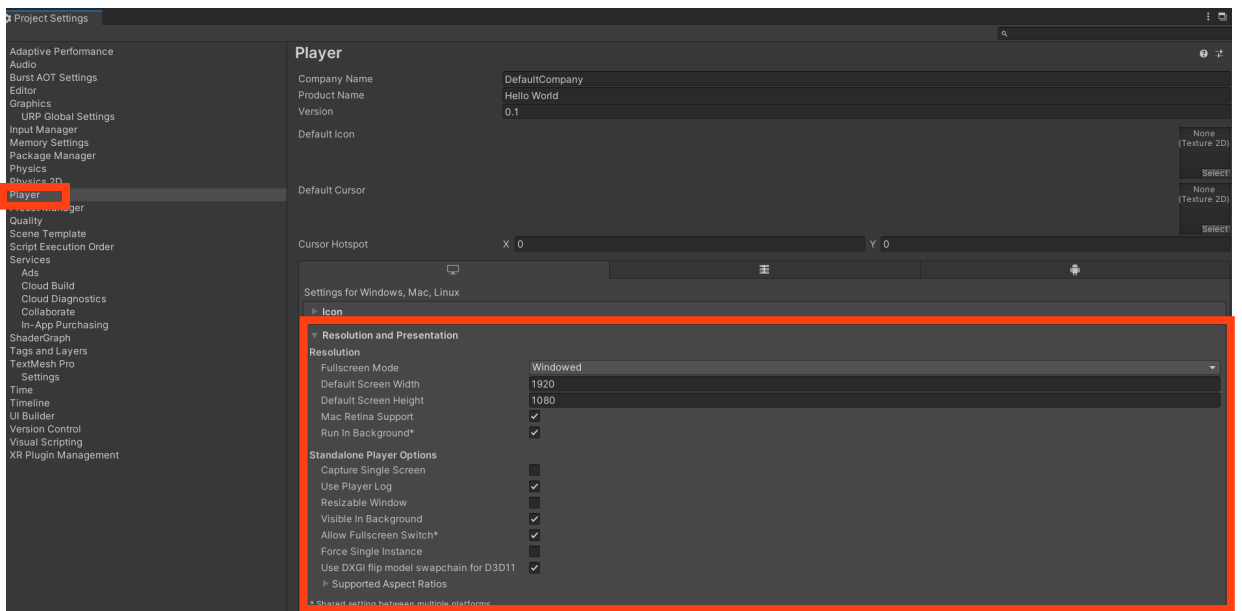
5a. Under "**Player**" > "**Other Settings**", ensure that you settings match the photo below:
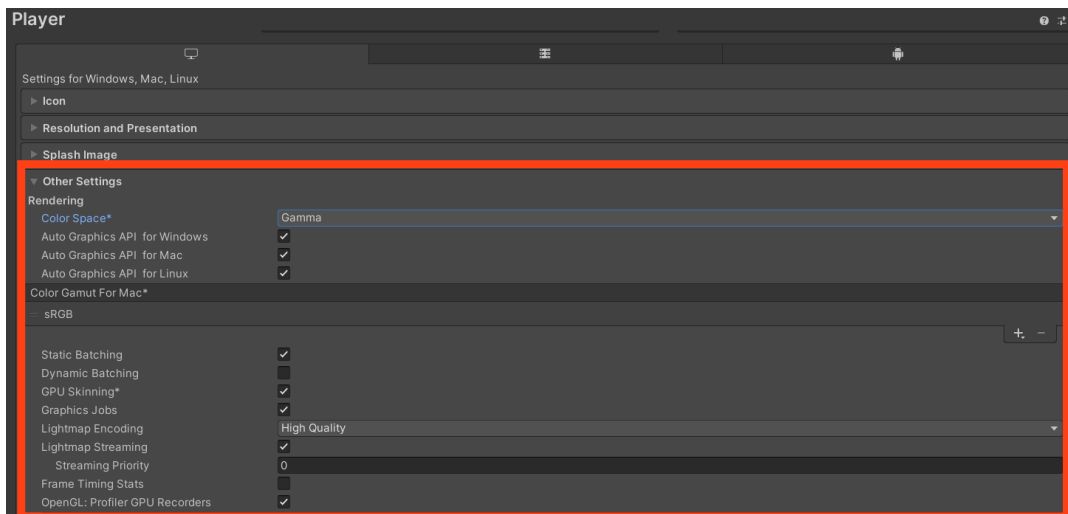
6a. Press **Build** and pick a folder on your machine to store the executable file:
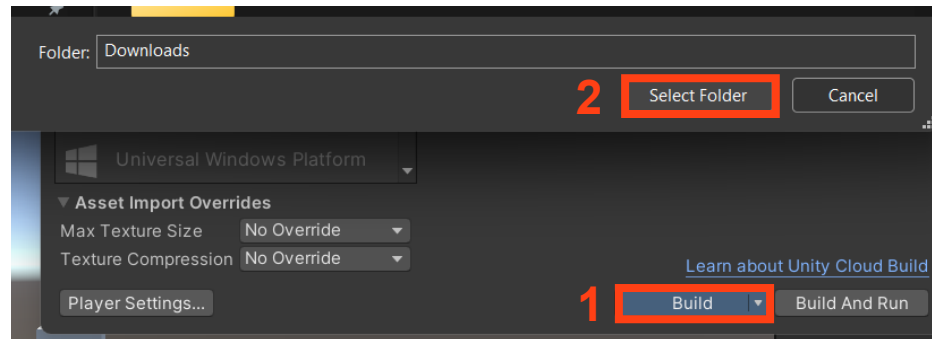
b. **Launching your Project on MiddleVRConfig**
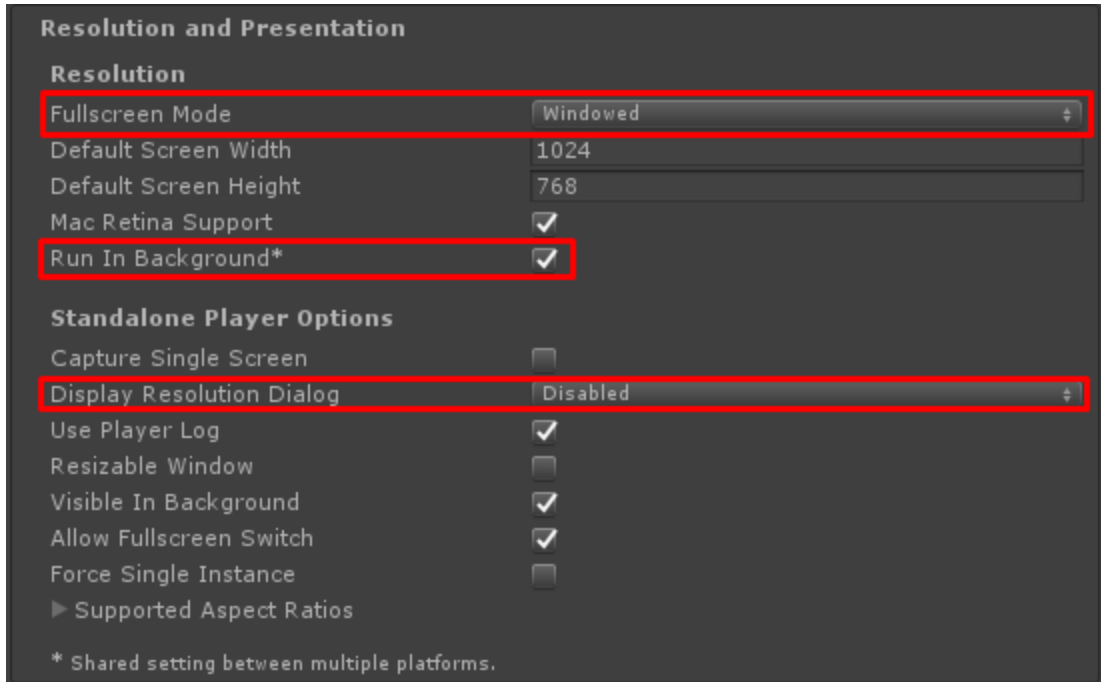   <mark>NOTE:</mark> You can only do this next part on your computer if your free trial has not expired yet. You will follow this same process on the MakerSpace PC.

1b. Go to "C:\Program Files\MiddleVR2\data\Config\Standard\Default.vrx" and launch the executable file:

2b. From here you will be able to add your executable file (Demo.exe in this example) into MiddleVRConfig by pressing **+**, adding the file and then pressing the **Run** button:

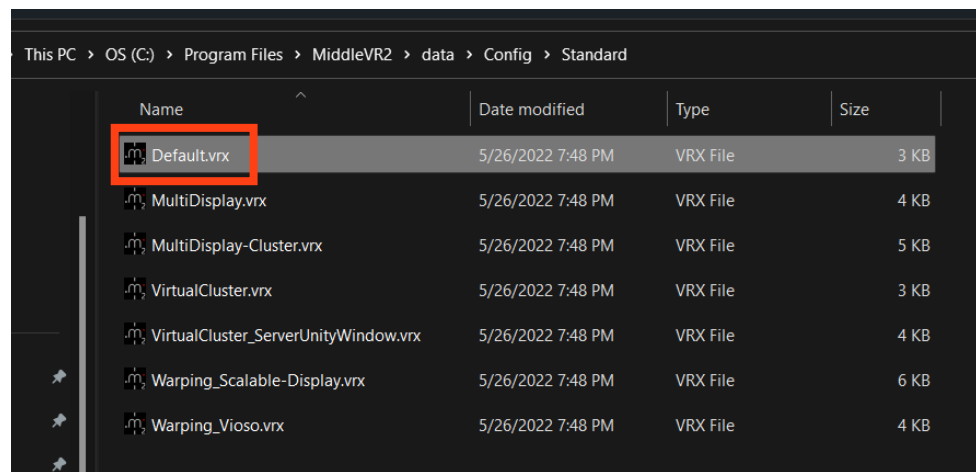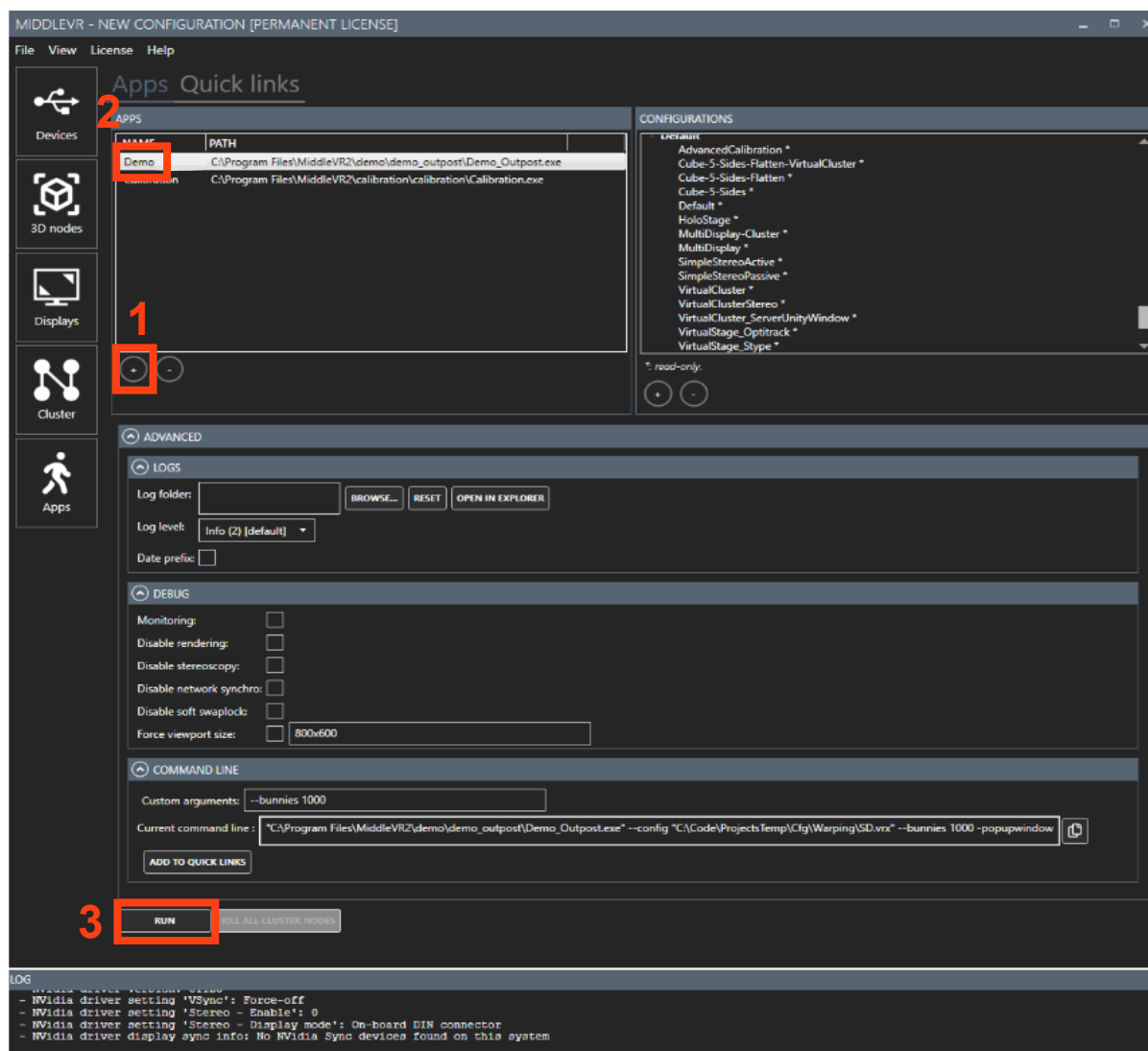**NOTE:** You will also not be able to test your program on MiddleVRConfig without a wand and glasses. You will have to put your executable file on a USB flash drive and load your executable file onto the MiddleVRConfig on the MakerSpace PC. You can test your program in the MakerSpace cave space with the necessary equipment.

If you had any trouble following this guide, refer to MiddleVR's guide here: https://www.middlevr.com/2/doc/current/TutoUnitySetup.html

Tutorial 4 - Run "Hello World" Program on MakerSpace Computer and Visbox

NOTE: This tutorial is a guide on how to set up the Visbox projector and MiddleVRConfig to run the "Hello World" program on the MakerSpace Computer only. This will not work on your personal computer as the projector, "Hello World Program" and Visbox are only available in the MakerSpace.

1. Once the MakerSpace computer is powered on, Click on the desktop icon labeled "**PROJS-ON.sh**". This will turn the projector for Visbox on. *If Windows is not already signed on, ask a lab tech for assistance:*
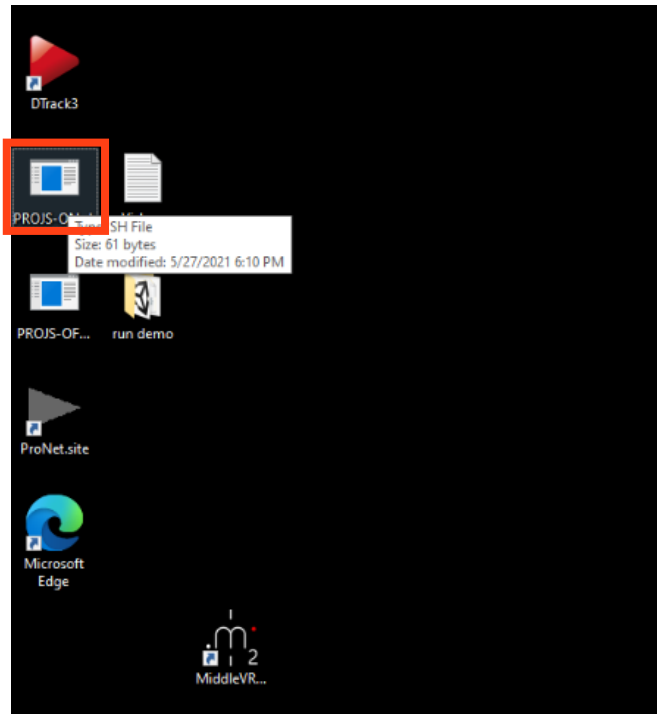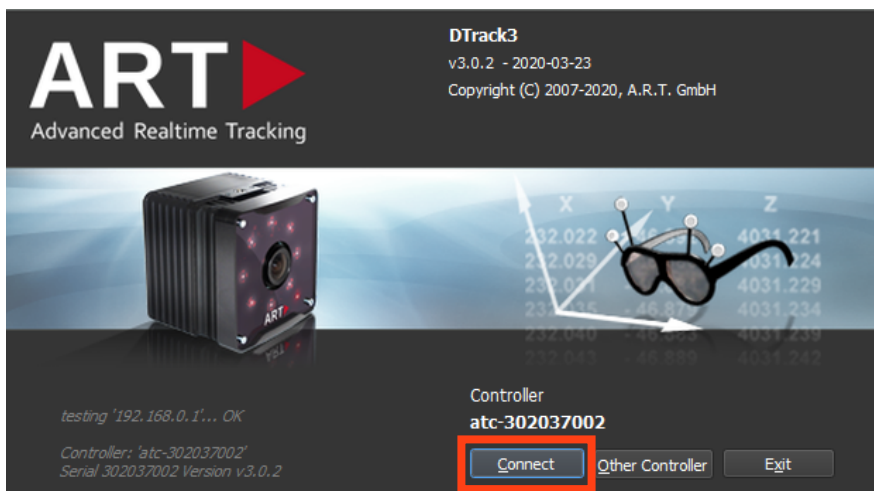
You should be able to hear the projector power up. Wait a few minutes for the projector to warm up. Once the Visbox looks like the picture below (the Visbox logo will be projected on the three vertical walls of the box), you can proceed to step 2.

2.

    a. Click the desktop icon labeled "**DTrack3**":
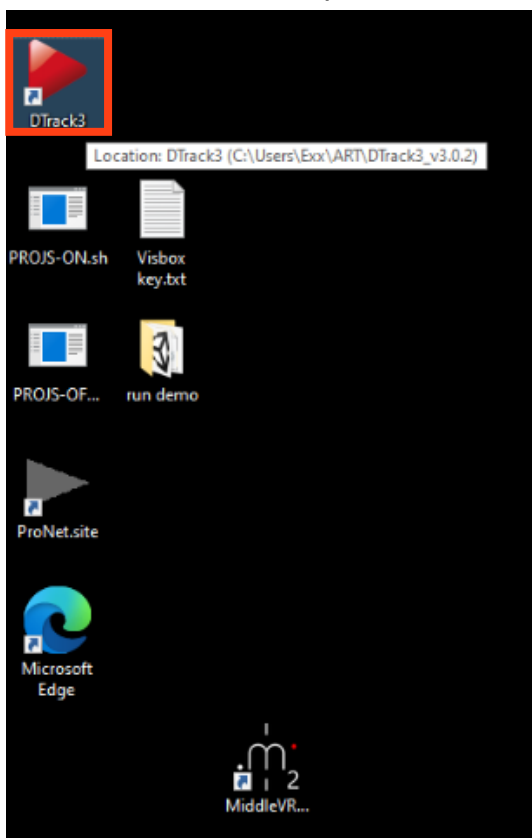
    b. Click "**Connect**":

If the DTrack3 UI looks as it does above, you can proceed to part c.

ONLY IF THE CONNECT BUTTON IS NOT AVAILABLE and instead there is a button titled "Wake on Lan", go to the ART controller (the big black machine next to the Visbox) and switch the power off and back on again:

Exit out of DTrack3 and open it back up again. The connect button should now be there.
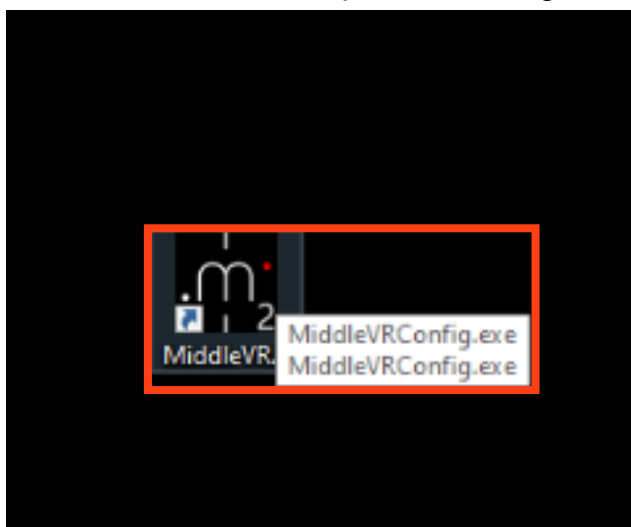
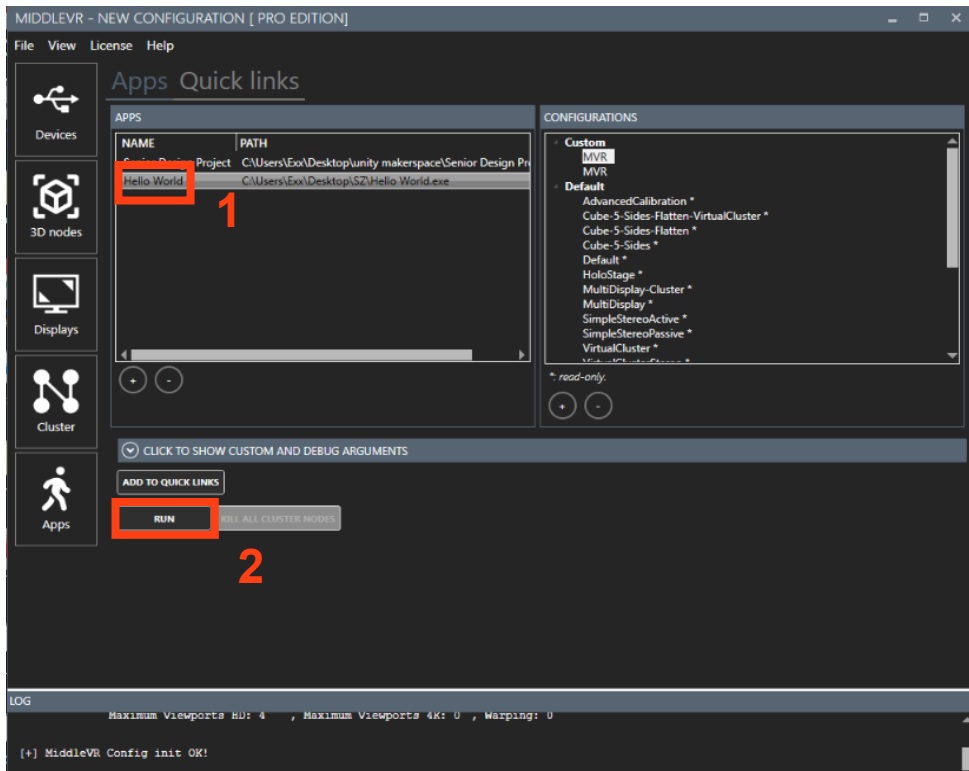**c.** Click "**Start**". This will connect the glasses and wand to the Visbox environment:
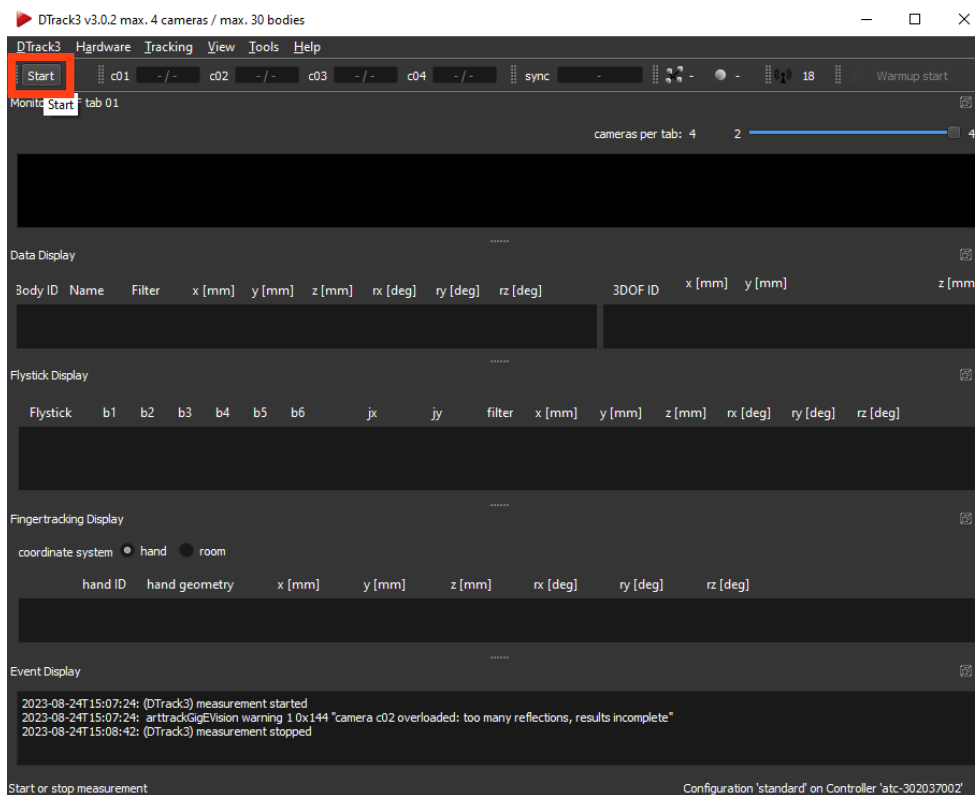
3.

a. Click the desktop icon labeled "**MiddleVRConfig.exe**". This will look similar to the MiddleVRConfig app that you launched on your computer. If it asks to run the previous configuration, select "**Yes**".

b. When MiddleVRConfig is open, make sure that the "**Hello World**" program is selected. Hit "**Run**":

The Visbox environment should now look like this:

4. You should now be able to test the program with the glasses and wand. You should be able to walk around in the cube environment.
   a. The wand (**1**) should be in a box labeled "ART" (**2**)
   b. The glasses (**3**) should be by the computer or plugged into the ART controller (**4**) for charging

If you cannot find these two pieces of equipment, ask a lab tech for help.

1. Wand
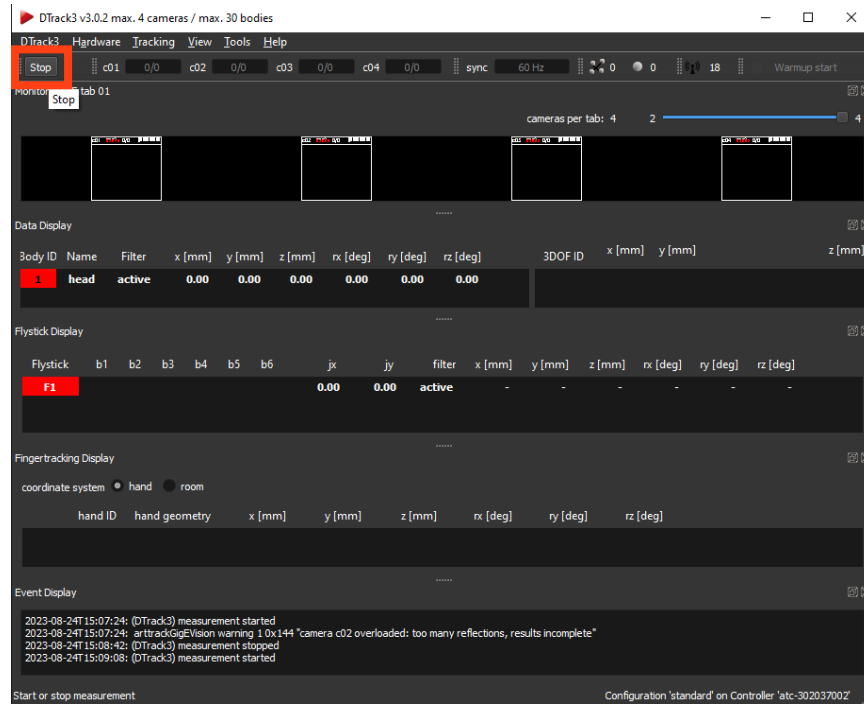
2. ART Wand Box

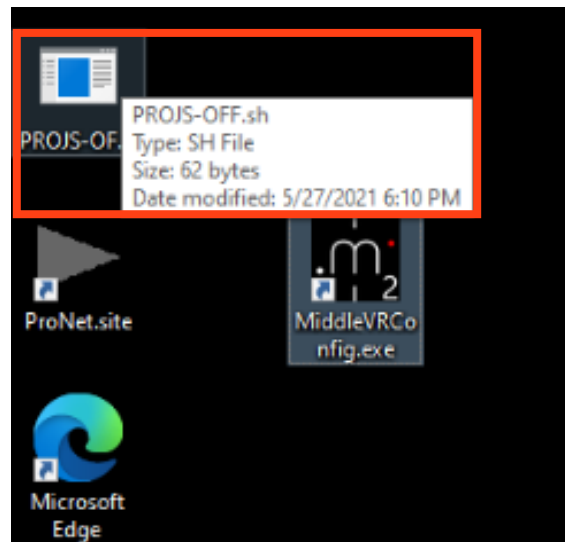**3. Glasses**

4. ART Controller

5. IMPORTANT: Follow these steps when you're finished testing.

    a. Exit out of MiddleVRConfig

    b. Click "**Stop**" in the DTrack3 program and exit.

    c. Click the desktop icon labeled "**PROJ-OFF.sh**". This will power down the projector:

d. You will know that you powered off the projector correctly when the Visbox looks like this, or how it originally did before the projector was turned on:

6. If you run into any trouble, ask a lab tech for assistance.