HARDWARE REQUIREMENTS

- Google Cardboard (Google-branded Cardboard is compatible with most of the devices up to 6" in size). You can purchase it from here (Google-brand) or here (cheaper version).
- Android portable device up to 6" in size. (Larger Android tablets will display the VR images, but the device is too large to fit in Google Cardboard. However, you will still be able to program and see how it works -- you just won't get the VR feel. It's not perfect, but cheaper than buying it)
- Laptop with Windows (version 7 or higher) or Mac OSX (version 10.8.0 or higher), 2GB RAM or more, 4G disk space.
- You must have administrator privileges to install software and hardware drivers.
- Download the items from school, presuming the download speed is faster. You will be downloading about 5Gb of data.

Bring to the session:

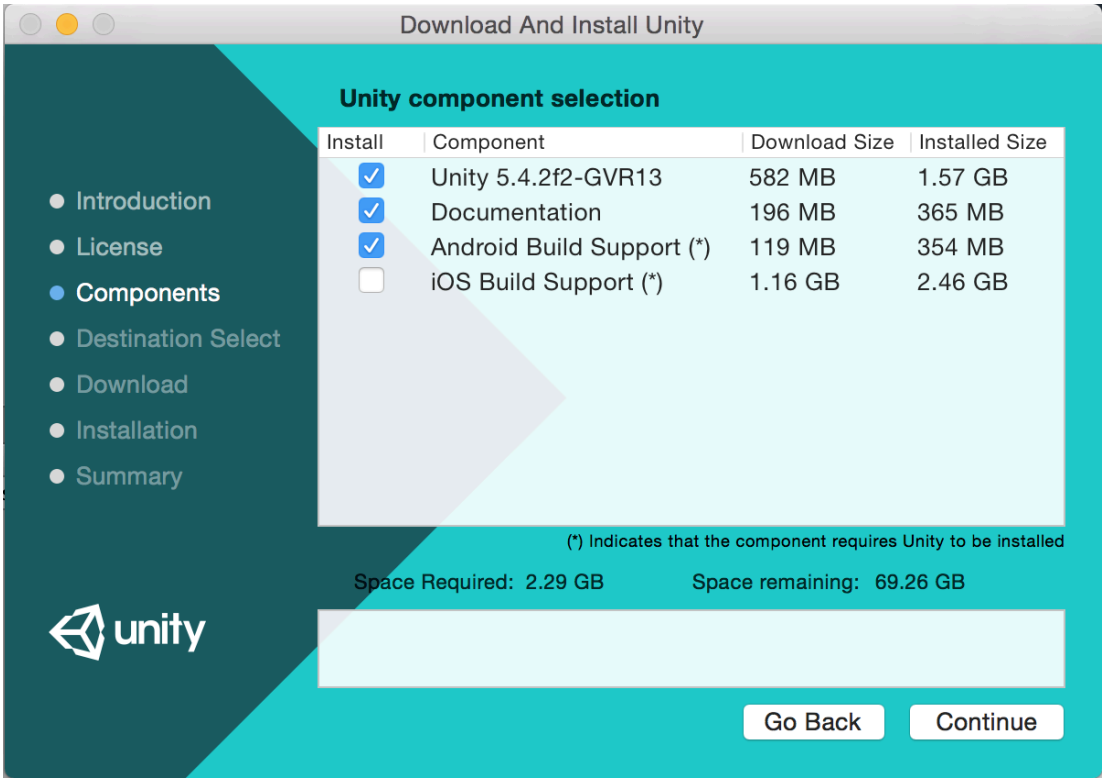
- Your laptop with the software already installed
- Laptop power cord
- Google Cardboard
- Android device (if possible)
- Android device charger

See the next page for the software installation instructions...

SOFTWARE INSTALLATION INSTRUCTIONS

Please perform these steps BEFORE arriving at the PLTWCA Conference.
You will be downloading approximately 5Gb worth of data. The entire process should take 2-3 hours depending on your internet download speed.

1. **Unity**
    a. Go to the Daydream Technical Preview download page. Make sure you download the correct page for the platform you are using (Windows or Mac)
    b. Click through the license consent pages
    c. Win only: You can install either the 32-bit or 64-bit version. Install whichever version matches your machine. Find out which version you have by following these instructions.
    d. Open the installer file and make sure to check the Android Build Support checkbox.



    e. Click Continue (or Next) and follow the prompts.
    f. Note: You will be downloading a total of about 2Gb of data during this step so be patient.
    g. When installation is complete it will ask you to create Unity account with your email and a password.
    h. You should select the Personal License
    i. Click Start Using Unity when finished, then close the program. We will work with Unity later.

2. **Android Studio**
    a. Download Android Studio, making sure you download for the correct platform (Windows or Mac). This is a 1.6Gb download so be patient with this one too.
    b. Double-click the downloaded file icon and follow the prompts. You will install all the components.
    c. When it's done installing, it will ask you to start Android Studio. Say yes and when asked, choose "I do not have a previous version of Studio…"
    d. When Android Studio starts, you will go through the Setup Wizard and choose a standard setup.
    e. After it's all completed you can exit the program

3. **Google VR SDK**
    a. Download the Google VR SDK file. You will use this file in Step 7 below.
    b. Keep this file where you can find it again since you will need it during the conference session.

4. **Java SE JDK**
    a. Go to the Java downloads page
    b. Scroll down to the Java SE Development Kit 8u121 box

Java SE Development Kit 8u121

You must accept the Oracle Binary Code License Agreement for Java SE to download this software.
Thank you for accepting the Oracle Binary Code License Agreement for Java SE; you may now download this software.

Product / File Description	File Size	Download
Linux ARM 32 Hard Float ABI	77.86 MB	jdk-8u121-linux-arm32-vfp-hflt.tar.gz
Linux ARM 64 Hard Float ABI	74.83 MB	jdk-8u121-linux-arm64-vfp-hflt.tar.gz
Linux x86	162.41 MB	jdk-8u121-linux-i586.rpm
Linux x86	177.13 MB	jdk-8u121-linux-i586.tar.gz
Linux x64	159.96 MB	jdk-8u121-linux-x64.rpm
Linux x64	174.76 MB	jdk-8u121-linux-x64.tar.gz
Mac OS X	223.21 MB	jdk-8u121-macosx-x64.dmg
Solaris SPARC 64-bit	139.64 MB	jdk-8u121-solaris-sparcv9.tar.Z
Solaris SPARC 64-bit	99.07 MB	jdk-8u121-solaris-sparcv9.tar.gz
Solaris x64	140.42 MB	jdk-8u121-solaris-x64.tar.Z
Solaris x64	96.9 MB	jdk-8u121-solaris-x64.tar.gz
Windows x86	189.36 MB	jdk-8u121-windows-i586.exe
Windows x64	195.51 MB	jdk-8u121-windows-x64.exe

NOTE: You may see a later version of Java on the page. You can install whichever version shows up as long as it's later than version 8u121.

    c. Check the Accept License Agreement circle
    d. Choose your computer platform (Mac OSX, Win x86 (for 32-bit machines), Win x64 (64-bit machines).
        i. If you don't know if your computer is 32-bit or 64-bit follow these instructions
    e. Download the Java SE Development Kit file
    f. Double-click the file icon and follow the prompts.

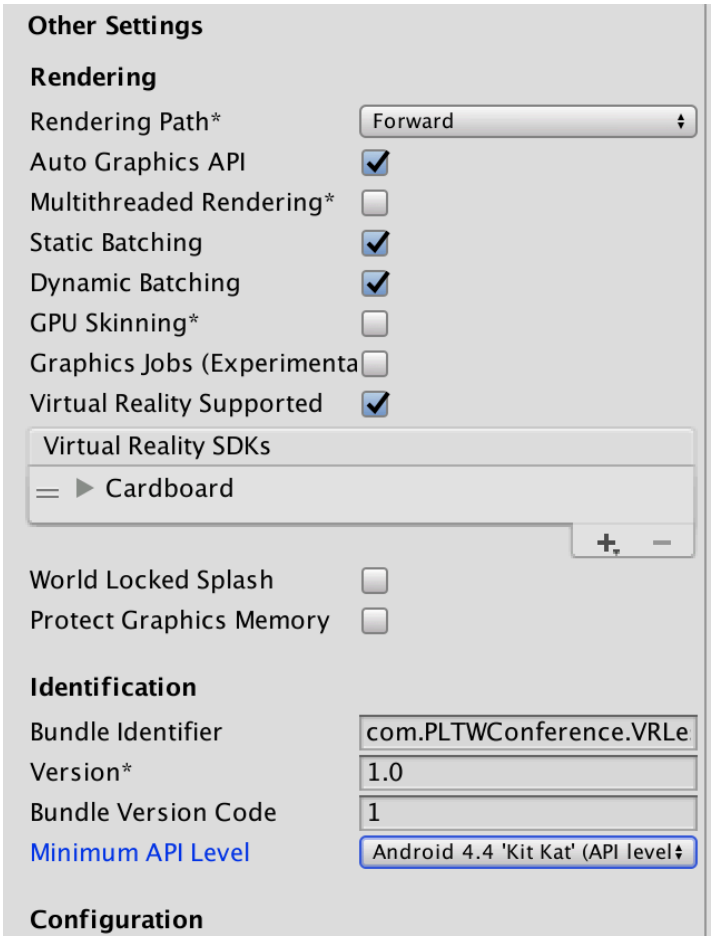
ANDROID DEVICE SETUP AND CONFIGURATION

5. **How to set up your Android device**
    a. **DO NOT** connect your Android device to your computer until directed to do so! (Step 8a below)
    b. To use an Android device (your phone or tablet) you must configure it for debugging
        i. Settings | Developer Options | Check USB debugging
        ii. On Android V4.2 and newer, you must do this first to be able to see the USB debugging option:
            1. Settings | About phone
            2. Click the Build number 7 times
            3. Go back to Step 4a to enable USB debugging
    c. Set up your computer system to detect your phone
        i. Mac: Nothing to do… it just works
        ii. Windows: Go to the OEM drivers page and VERY CAREFULLY follow the instructions to download and install the correct driver for your Android device

6. **Starting Unity**
    a. Start Unity
    b. You may have to create a Unity account before continuing if you didn't already create an account before.

7. **Import and preview the demo scene**
    a. Create a new 3D project. Make sure the 3D button is checked.
    b. Import the Unity SDK package by going to **Assets > Import Package > Custom Package**. Select the *GoogleVRForUnity*.unitypackage file on your desktop where you downloaded it in Step 3above and click **Open**. Make sure all the boxes are checked in the Importing Package dialog and click **Import**. Note: You may be warned that the APIs will be automatically upgraded. Accept whatever it says and continue if it happens.
    c. Go to **File > BuildSettings**, select **Android** as the platform by highlighting it in the **Platform** list and click **Switch Platform**.

d. Click the **Player Settings…** button, revealing the *PlayerSettings* section in the **Inspector** (right side). If the Inspector doesn't appear, click the Inspector tab at the top right of the screen. Find the Other Settings section and do the following:
   i. Enable **Virtual Reality Supported**.
   ii. In the new **Virtual Reality SDKs** section that appears below, select the + icon, then select **Cardboard** to add it to the list
   iii. Enter the package name *com.PLTWConference.VRLesson* into the **Bundle Identifier** field
   iv. Set the **Minimum API Level** drop-down menu to *"Android 4.4 'Kit Kat' (API level 19)"*



e. In the editor's project pane (Click Project, left side, near the bottom), navigate to **Assets** > **Google VR** > **Demos** > **Scenes** folder and open (double-click) the *GVRDemo* scene. You should see a scene with a textured grid plane with a cube floating above it.

f. Press the **Play** button  (top middle of the page) , and you should see the game view showing a stereo rendering of a red cube.

g. Press the Control key on your keyboard and move your mouse back and forth to tilt your view. You can also press the Alt button on your keyboard and move your mouse to pan around your view of the VR environment. Put the cube in the middle of the view and the cube will change color. Click the mouse and it will disappear
h. Click the Start button again to stop the simulation.

8. Build and deploy to an Android device

a. Connect your Android device to your computer with the USB cable
b. Your Android device may ask you to Allow USB debugging
    i. Check Always allow from this computer
    ii. Click OK
c. Click **Build and Run**.
d. If Unity prompts you for the location of the Android SDK, choose:
    i. Mac: <Username>/Library/Android/SDK
    Note: If there is no Library folder listed, it means that the folder is hidden. Follow the steps below to unhide it:
        1. Launch Terminal from the Applications | Utilities folder
        2. From within Terminal, type the following command and press return:
        `chflags nohidden ~/Library`
        3. Enter the system administrator password, if prompted.
        4. Close the terminal. Now you will be able to select the SDK folder
        5. You can use the command `chflags hidden ~/Library` to hide the Library folder later if you wish.
    ii. Win: C:\Users\<Username>\AppData\Local\Android\sdk
e. Your Android device may ask you to Allow USB debugging at this time too. Check Always allow from this computer and click OK.
f. Make sure your Android device is turned sideways to a landscape orientation.
g. In a minute you should see the same scene with the cube on your Android device.
h. If you get error when building the program click the Console tab in the Project view.
    i. Windows:
        1. Click Edit | Preferences…
        2. Click External Tools
        3. In the JDK line, click Browse, navigate to C:\Program Files\Java\jdk1.8.0_111 and click Select Folder
        4. Click File | Build and Run
    ii. Mac:
        1. Click Unity | Preferences
        2. Click External Tools

3. In the JDK line, click Browse, navigate up two folders to JDKVirtualMachines, then click on the jdk1.8.0_111.jdk folder, then click into Contents, then Home. Click Choose
4. Click File | Build and Run

9. **Play the game!!** Put your device in your new Google Cardboard viewer (although you don't have to have a VR viewer to see what's going on). Look around the scene to find the cube. When you look right at it and it turns green, click on it by tapping the Google Cardboard trigger button with your right index finger (or touching the screen if you're not using a VR device) to collect the cube and spawn a new one in a new location. Turn around some more to find the new cube.

10. **StarterNinja project files**: Download the StarterNinja project files we'll use during the conference. You don't need to do anything with this file except download it for now.

Credits: These instructions were modified from the "Get Started with the Google VR SDK for Unity on Android" webpage.