Both Windows and Mac platforms are supported.

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Preparing your system and installation (Approx. +/- 6 hours)

It is critical that you consult your IT team prior to installing any software or attempting to change any settings on your computer.

User profiles created by your System Administrator specify administrative rights. Because of the wide range of settings, you may not be allowed to do everything you need to do in these instructions.

*Talk to an IT Administrator before proceeding.*

1. Disable the UACs (set to ‘Never notify’)
2. Disable the anti-virus software
3. Disable pop-up blocker in the browser you are utilizing
   (These settings may be re-enabled once the software is installed and operational.)
4. Ensure you have permissions to install USB drivers for any Android, Robotics or other devices which will connect to the computer via USB.
5. Students must have full read and write access to C drive, or the location where Android Studio/SDK is installed.

Student Access and Permissions

- Students must have access to the Internet.
- Students must have access to the Task Manager (Windows) or Force Quit (Mac).
- Students must have permission to download and extract compressed folders. Otherwise the teacher and/or IT department will need to make sure that the required files (specified in the Teacher Notes) have been downloaded on the student machines.
- Students need to receive emails from software, which requires them to create an account.
- Students must have full read and write access to C drive, or the location where Android Studio/SDK is installed.

Web Browsers

Preferred: **Mozilla Firefox** or **Internet Explorer**

Allowed: **Google Chrome** requires a special setting, see below

Visit the links to begin the download. Follow the instructions at each website.


For Google Chrome support please go to  [https://support.google.com/chrome/answer/6213033](https://support.google.com/chrome/answer/6213033) to temporarily enable NPAPI plugins required to run the Java verification plugin.
BlueJ
BlueJ is a Java Development Environment designed for beginners. Download and run the installation file for your system (Mac or Windows).

Procedure
1. Go to http://www.bluej.org/

2. Scroll down and select BlueJ Installer with Java 8 JDK for your Operating System.

3. Once the file has finished downloading run it.
4. Select Next

5. Select Install for all users
6. **Ensure all boxes are checked and select **Next**

7. **Keep the default path and select **Next**

8. **Select **Install**
9. Select **Finish**

![Completed the BlueJ Setup Wizard](image)

**Java Runtime (JRE) and Java Development Kit (JDK) / Java 8 Check**

**Java 8 Check Procedure**

Before installing Android Studio you must have Java 8 installed on your machine.

1. Please use Mozilla Firefox and visit [www.java.com](http://www.java.com) to determine if you have Java installed.
2. Select **“Do I have Java?”**
3. Click **Verify Java Version** and follow the instructions.
4. If you do not have Java 8 or the latest version, the Java website will prompt you to download the file you need. If you are not taken directly to the downloads page, you may access it here: [http://java.com/en/download/](http://java.com/en/download/)

**JRE and JDK Procedure**

2. Click the **Java icon** toward the top left of the page

   ![Java Icon](image)

3. Select **Accept License Agreement** and download the file based on your machine's architecture. Download the Development Kit. **Do not** download the Demos and Samples.

   a. **Windows Users**: If you are unsure of whether your system is 32 or 64 bit please visit this link for information on how to locate this information: [https://support.microsoft.com/en-us/kb/827218](https://support.microsoft.com/en-us/kb/827218)
4. Once the file has finished downloading, run it.

5. Select **Next**

6. Select **Next**
7. Let the installer run.

8. Keep the default path and select **Next**

9. Let the installer run.

10. Select **Close**
Android Studio

1. Begin by visiting the appropriate link below to download Android Studio 2.1.2; this is the only supported version of Android Studio:
   - Android Studio Windows
   - Android Studio Mac

2. Run the installer.
3. Select Next

4. Verify Android Studio, Android SDK, and Android Virtual Device are checked. Select Next

5. Select Browse… under Android SDK Installation Location. Path to the C: drive (or a location where all users have full access). Select Make New Folder and name the folder android-sdk. Select the folder and select OK.
   - For Mac: If you do not have this option, you will create your SDK folder when you get to step 15
6. Select **Next**

7. Select **Install**

8. Wait for installation to complete
9. Select **Finish**

10. Select **OK**

11. Select **Next**.
12. Select **Custom** then **Next**.

13. Select **Next**
14. Check all boxes. Select … to specify the Android SDK Location. Then path to C:android-sdk. Select OK.
   a. For Mac: You will want to create a folder titled android-sdk in a location all users have read & write permissions to. For example: /Library/android-sdk. You may need to open up the Finder to create the folder.

15. Select Next
16. Select **Finish**

![Verify Settings](image1)

If you want to review or change any of your installation settings, click **Next**.

**Current Settings:**

- **Setup Type:** Custom
- **SDK Folder:** C:\Android-sdk
- **Total Download Size:** 1.22 GB
- **SDK Components to Download:**
  - Android SDK Build-Tools 26.0.2: 472 MB
  - Android SDK Platform-Tools 26.0: 2.98 MB
  - Android SDK Tools 26.2.2: 288 MB
  - Android Support Repository: 278 MB
  - Oracle JRE: 717 MB

![Finish](image2)

17. Wait for the components to download. This may take a few minutes.

![Android Studio Setup Wizard](image3)

18. Select **Finish**

![Downloading Components](image4)
19. This will start Android Studio.

**Configure SDK Platform and Tools**

**Procedure**

1. Once Android Studio is open select **Configure** and then select **SDK Manager**.
2. Click **Show Package Details** in the bottom right.
3. Scroll down to **Android 6.0**. Select the APIs as indicated below. See image as well.
   a. Google APIs
   b. Android SDK Platform 23, rev 3
   c. Sources for Android SDK
4. Scroll down to **Android 5.1**. You will need the APIs as indicated below.
   a. Google APIs
   b. SDK Platform Android 22
   c. Sources for Android 22
   d. ARM EABI v7a System Image
   e. Intel x86 Atom System Image
   f. Intel x86 Atom 64 System Image
   g. Google APIs ARM EABI v7a System Image
   h. Google APIs Intel x86 Atom System Image
   i. Google APIs Intel x86 Atom 64 System Image
5. Scroll down to **Android 5.0**
   a. Google APIs
   b. Android SDK Platform 21
   c. Sources for Android 21
6. Select the **SDK Tools** tab and select **Show Package Details** from the bottom right. Select **Android SDK Build-Tools 23.0.2** and **23.0.3** if not installed.

7. Click **OK** in the bottom right.

8. Click **Accept** and **Next**.

9. Click **Finish** once done.
When Android Studio is launched under a new user, the Android Studio Setup Wizard will launch. Make the same selections that we previously made (pages 11-13), and ensure to specify the created android-sdk folder for the SDK location.**

**Turn Off Automatic Updates**

Do not upgrade Android Studio beyond this version without being asked by PLTW. Although the automatic update feature made it easy to get this update, in the future when Android Studio tells you that a new update is available, you should not update. Students are likely to click the update link. To prevent this from happening, you can disable update notifications by following these steps.

**Procedure**

1. Once Android Studio is open select Configure and then select Settings.

2. Select Notifications from the left hand side.

3. Next to Platform and Plugin Updates, change Sticky balloon to No popup.

4. Click OK.
Set Environment Variables
Procedure – Windows Only

1. Open the Control Panel.


3. Select System.

4. Select Advanced System Settings.
5. Select **Environmental Variables**

6. Under **System Variables** select **New**.
7. Enter **ANDROID_STUDIO_JDK** for the Variable name.
8. For Variable value you will need to find the **Java JDK bin** folder path. This is typically in the Programs or Applications folder. See the example below.

   a. Once you have located the path enter it in the Variable value field.

   ![New System Variable](image)

   Please note your folder path may be different than the one in the example above.

9. Click **OK** to save the System Variable.

10. Add another **New** System variable.
11. Enter **JAVA_HOME** for the Variable name.

12. For Variable value you will need to find the **Java JDK** folder path. This is typically in the Programs or Applications folder. See the example below.

```
Computer ➔ Local Disk (C) ➔ Program Files ➔ Java ➔ jdk1.8.0_77
```

a. Once you have located the path enter it in the Variable value field.

![New System Variable](image)

Please note your folder path may be different than the one in the example above.

13. Click **OK** to save the system variable.

**Procedure – Mac Only**

1. Open a **Finder** window and go the top level, such as “My Mac”, to find the location of your Java folder.
   a. It should be in a similar location as shown in the image below.

![Finder Window](image)

2. Open AppleScript Editor.

![AppleScript Editor](image)
3. Type in the following script, substituting your own jdk version for `<jdk version>`:

```
do shell script "launchctl setenv STUDIO_JDK /Library/Java/JavaVirtualMachines/<jdk version>"
```

4. Run the script by clicking the Arrow in the toolbar at the top of the screen, even though it looks grayed out.

5. You will receive a “ ” in response, showing that the script ran successfully.
   a. If you get an error make sure you’ve typed the script exactly as shown and that you have the closing quotation mark. Do not include the angle brackets.

6. Save the file with the name “AndroidStudioEnvVarSetup”. Choose File Format: Application

7. Click OK and then quit the Script Editor.

8. Open System Preferences

9. Select Users & Groups.
10. Select **Login Items**

![Login Items screenshot]

11. Click the + to add the new application you just created, AndroidStudioEnvVarSetup, to Login Items.
   a. This will run the script that sets up the environment variables each time you log in. Not that each user will have to add this login item.

---

**Emulators**

**Procedure – Android Studio Emulator (Preferred)**

Android Studio 2.0 has a built-in emulator. If this solution works on your school’s computers, you do not need to install Genymotion. First, try to run the Android Studio Emulator. If that does not work, then install Genymotion.

1. Open Android Studio. Start a new project and select the default selections. Launch AVD Manager by selecting the icon in the menu bar.
2. Select **Create Virtual Device**.

3. Select the device of your choice, Nexus 6 for example, and click **Next**.
4. Select the recommended API and click **Next**.

5. Click **Finish** on the bottom right.

6. Once the device has been created you can click the **green arrow** to start it.
Procedure – Genymotion (Use only if Android Studio Emulator fails)

Genymotion is an alternative way to get an emulator ONLY if you cannot get the built-in Android Studio emulators to work.

Each student and teacher will need to sign up for a free Genymotion account. To do so, follow the instructions below.

1. Go to https://www.genymotion.com/#/download
2. Use the Sign In option at the top right of the page
3. Select the download based on your Operating System.
a. For Windows ensure to select the version **with VirtualBox**

b. For Mac VirtualBox is a separate download.
   i. Visit this link and download ‘Virtual Box 5.0 or OSX Hosts’.
      [https://www.virtualbox.org/wiki/downloads](https://www.virtualbox.org/wiki/downloads)
   ii. Once the VirtualBox dmg file has downloaded, open the installer and follow the instructions.

4. Once the file has finished downloading, run it.

5. Follow the steps of the installer. **Keep the default paths and selections.**

6. Once prompted to install VirtualBox, follow the steps of the installer. **Keep the default paths and selections.**

7. During the Oracle Box installation you maybe prompted to install device software. Select **Always trust** and **Install.**

![Windows Security]

8. Let the installer finish.
Procedure – Genymotion Plugin
You will need to install the Genymotion plugin in Android Studio. Use the instructions below.
1. Go to the Android Studio start screen and select Configure and then Plugins.

2. Click Browse repositories.

3. Search or Scroll down until you find Genymotion.
4. Select **Install**.

    ![Image of the Genymotion plugin](image)

    - For Mac users: If you do not see Genymotion then it was not installed properly. Run the dmg installer file again.

5. If prompted, click **Restart Android Studio** to finish the installation.
Procedure – Genymotion Custom Tablet 5.0.0 API 21

*If using Genymotion*, Android Studio needs to know what virtual device you will use as an emulator. Follow the steps below to get the Genymotion Virtual emulator.

1. Use this link to download the file. [https://s3.amazonaws.com/support-downloads.pltw.org/genymotion_vbox86p_5.0_150610_003747.ova](https://s3.amazonaws.com/support-downloads.pltw.org/genymotion_vbox86p_5.0_150610_003747.ova)

2. Once the file has finished downloading, run it.

3. Click **Import** on the Import Virtual Appliance box.

![Import Virtual Appliance](image)

4. Let the import run.

5. **VirtualBox** will open. **Close** VirtualBox.

6. **Open** Genymotion.
7. You will now see the emulator listed in Genymotion.

a. The emulator will be listed and can be opened as long Genymotion v2.5.2 is installed. If emulator is not listed, close Genymotion and relaunch it from the Applications folder.

Additional Software

proto.io


Each student and teacher will need to sign up for a free forever account.

This software is accessed only through a web browser.

Procedure – Installation

1. Visit the link listed above.
2. Click sign up at the top of the page.
3. Create your account

Free 15 day trial.

No credit card required.
4. You will receive notice a verification email was sent.

5. Follow the instructions in the email you will receive.

6. Create your password to verify your account.

7. Once your account has been verified click Click here to continue and proto.io will load.
Flash
http://get2.adobe.com/flashplayer/
When installing Flash, ensure you are not installing any third party software like the “McAfee Antivirus” plug in or “Google toolbar” plug in. Please uncheck these boxes should you see them prior to installing Flash

Procedure – Installation
1. Visit the link listed above.
2. Verify the optional offers are unchecked and click Install Now
3. Once the file is finished downloading, run it.
4. Click Run.
5. Click Next
6. Let the installer run. Once it is finished click **Finish**

![Adobe Flash Player Installer](image)

**Adobe Reader**


When installing Adobe Products, ensure you are not installing any third party software like the “McAfee Antivirus” plug in or “Google toolbar” plug in. Please uncheck these boxes should you see them prior to installing Flash

**Procedure – Installation**

1. Visit the link listed above.
2. Verify the optional offers are unchecked and click **Install Now**

![Adobe Acrobat Reader DC](image)

3. Once the file is finished downloading, run it.
4. Click **Run**.

![Open File - Security Warning](image)

5. Let the installer run and it will finish installation.
Adobe AIR
http://get.adobe.com/air/
When installing Adobe Products, ensure you are not installing any third party software like the “McAfee Antivirus” plug-in or “Google toolbar” plug-in. Please uncheck these boxes should you see them prior to installing Flash

Procedure – Installation
1. Visit the link listed above.

2. Click Download Now

3. Once the file has finished downloading, run it.

4. Click Run.

5. When the installer opens, click I Agree
6. Let the installer run.
7. Once it has finished click **Finish**.

**GitHub**

http://windows.github.com or http://mac.github.com/

**Procedure – Installation**
1. Visit the link listed above.
2. Click **Download**
3. Once the file has finished downloading, run it.
4. Click **Run**.

5. **Click Install**

6. Wait for the installer while it runs.

7. Once it finishes GitHub has been installed.
Zip Utility

**MAC:** MacOS has a built-in zip utility.

**WINDOWS:** When installing 7-zip, select the latest version for your operating system. [http://www.7-zip.org](http://www.7-zip.org)

Procedure – Installation

1. Go to the 7-Zip site. [http://www.7-zip.org/](http://www.7-zip.org/)
2. Use the appropriate download link based on your Operating System. (64 or 32 bit)

3. Run the file once the download is complete.
4. Select **Install**
5. Select Close

6. 7-Zip has been installed.

Android Device Setup
If you are using Android devices in your classroom, follow the instructions below. **If you are only using emulators, you may skip this section.**

Enable Developer Options on Device
To ensure that not only does your computer connect to your mobile device, but that Android Studio can run applications on it too, please complete the following steps.

1. On your device, **enable Developer Options** from your device’s **Settings** application. Settings configuration varies by manufacturer but Developer Options are usually disabled. You can find how to enable Developer Options on your manufacturer’s web site.

2. Within Developer Options, **enable USB Debugging**.

3. Another useful option to enable is **Stay Awake** so that the device does not sleep while students are developing their apps.

Connect Device to Computer
1. Connect your device to your computer via a USB cable. (Ensure you have the USB drivers for your device installed or it will not communicate).

2. In Android Studio, create a new project from the Welcome screen by clicking **Start a new Android Studio project** or from the Android Studio IDE by clicking **File > New Project**.
3. In the New Project wizard, accept all the defaults and click **Next**. Once the wizard is complete, a blank project will open with a “Hello World” message displayed on the Design screen.

4. Select **Run > Run ‘app’** (or **click on the green arrow** icon). A Choose Device dialog appears, similar to the dialog below:

![Choose Device Dialog]

5. If the Choose Device list is empty, and your tablet is connected, most likely you will need to download and install the latest drivers from the manufacturer’s website onto your computer. After you successfully install the drivers, restart Android Studio, open your project again, and run the app.

6. Select your device from the Choose Device list and click **OK**. After a few moments, a dialog should appear on your tablet confirming that you want to run the app. Select **OK**. A white screen with the text “Hello world!” appears.

**Connect Device to Network**
- Note that the projects created in some activities in this course (Units 2 and 4) require access to the Internet. Therefore mobile devices will require at least one of the following:
  - WiFi connection
  - Cellular connection
- If the mobile devices do not have Wi-Fi or cellular data, then students will need to test their apps on an emulator. It is recommended that students use both real devices as well as emulators.

**Documentation and Support**
- Android Studio User Guide
- Run Apps on a Hardware Device
- Genymotion Emulator not showing up in Android Studio

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