Installation Instructions for Students (November 2014)
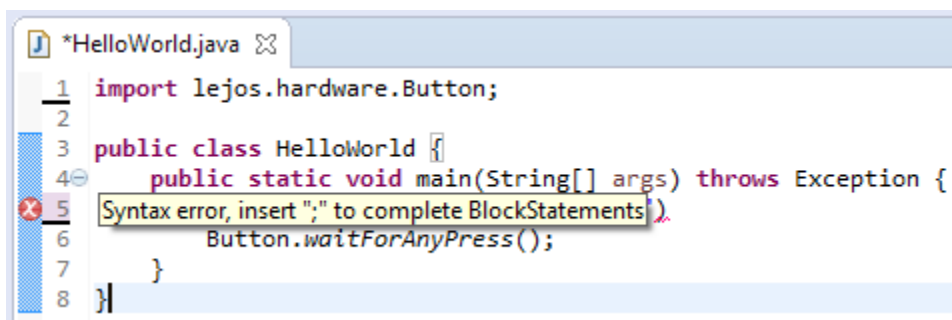
These are the instructions for installing LeJOS and Eclipse onto your computer for use in the course.   The instructions are for Windows users.   If you are using a Mac or a Linux laptop, you will need to look at the wiki page of the www.lejos.org website for further instructions ... which will bring you to the sourceforge website: http://sourceforge.net/p/lejos/wiki/Installing leJOS/   It is assumed for the remainder of this document that you are using a laptop running Microsoft Windows.

1. Download and install the x86 version of the Java SE 7 **JDK** (**DO NOT DOWNLOAD THE x64 VERSION**, although with Mac OS X there is only a 64-bit version. Also, make sure NOT to download the JRE ... you need the JDK). Also, do not download version 8 as it does not yet work on the EV3. When this was written, the latest was **jdk-7u67-windows-i586.exe** for windows) from this website: http://www.oracle.com/technetwork/java/javase/downloads/index.html

2. Download the **Java SE 7 Documentation** which is on this page: http://www.oracle.com/technetwork/java/javase/downloads/index.html near the bottom.   Copy the file (e.g., **jdk-7u67-apidocs.zip**) to the Java installation folder (e.g., C:\Program Files (x86)\Java\jdk1.7.0_67). Unzip the file. You should have a folder called **jdk-7u67-apidocs** now.   Go in there and drag the **docs** subfolder **up one level** into the **jdk1.7.0_67** folder which already has subfolders **bin**, **db**, **include**, **jre**, **lib** etc.... Delete the folder called **jdk-7u67-apidocs** as well as the **jdk-7u67-apidocs.zip** file.

3. Download the **0.8.1-beta** version of the leJOS windows installer from https://sourceforge.net/projects/lejos/files/lejos-EV3/ and run it (for Windows, the file is called **leJOS_EV3_0.8.1-beta_win32_Setup.exe**.   Follow the instructions to select the java jdk version that you installed in step 1 (version 7).   Allow the remaining default options during the setup ... which will create a **leJOS EV3** folder in the **C:\Program Files** folder.   Once installed, it will have a checkbox to **Launch the EV3SDCard utility**.   Uncheck this because I have already prepared the micro SD cards for you and will give them to you on the first day of class (or possibly sooner if I see you).

4. Eclipse will be used as the IDE for the course.   Download **Eclipse** from this website www.eclipse.org/downloads/. You will want the **Eclipse IDE for Java Developers** (usually the fourth option in the list).   Make sure to download the Windows 32 Bit version (**NOT THE 64-BIT VERSION**). Just click on the down-facing green arrow.   At the time this was written the file was called: **eclipse-java-luna-R-win32.zip**.   Unzip the file after it downloads. A folder should have been created with the same name.   It is a good idea to drag this folder to the **C:\Program Files (x86)** folder.   Inside the folder is an **eclipse** folder and inside there you should see a purple circle icon ... this is the eclipse application.   Right-click on it and make a select **Create shortcut**.   Drag the shortcut to your desktop and rename it to **Eclipse**.   Double-click to run it.   It will ask you to create a workspace ... use the name **COMP1807_W2015**.   You can close the "welcome" screen.

5. From the **Help** menu, select **Install New Software...**.   Click the **Add...** button.   In the **Name** field, type in **leJOS EV3** and in the **Location** field, type in **http://lejos.sourceforge.net/tools/eclipse/plugin/ev3.** Click the **OK** button.   Check off the checkbox that shows up labelled **leJOS EV3 Support**.   Click the **Next>** button.   Click **Next>** again.   Click the radio button to accept the license agreement and then click the **Finish** button. You will get a warning ... just click **OK** to continue.   Go ahead and restart Eclipse when it asks you. Once Eclipse has restarted, the plugin should be available and you will see a menu item called **leJOS EV3** as well as a couple of orange leJOS icons.

6. Now we need confirm that EV3_HOME is set properly in the preferences. Click the **Window** menu and select **preferences** and then **leJOS EV3** in the list on the left hand side. You should set the **EV3_HOME** to your installed folder location (likely **C:\Program Files (x86)\leJOS EV3**) if it has not been set yet. Make sure that **Run Tools in separate JVM** is set as well as **Run program after upload**. Check off **Connect to named brick** and enter **10.0.1.1** into the text field labelled **Name**. Press the **Apply** and then **OK** buttons.

7. Turn on your EV3 at this time. It typically takes a good minute or so for the EV3 to boot up. In fact, the very first time that you turn on the EV3 with the micro SD card, it will take a good 8 minutes or so to initialize everything!

8. Now we will get a **Hello World** program running on the robot. All code in Eclipse is organized into *Projects*. Once eclipse has started, go to the **File** menu and select **New** and then **Project...** (**i.e. NOT Java Project**). Select the **LeJOS EV3** folder and then **LeJOS EV3 Project** and press **Next >**. Enter **COMP1807_W15** as the **Project name** at the top. Then click the **Finish** button. You should see the **COMP1807_W15** project appear in the workspace under the Package Explorer on the left side of the window.

9. Select the **COMP1807_W15** project that you just made. Select **File/New/Class** from the menu bar.

10. Type **HelloWorld** into the **Name:** field (with no spaces) of the resulting window. Select the checkbox that says **public static void main(String[] args)**. Click **Finish**. The new class should appear.

11. Adjust code to look as shown here:

```java
import lejos.hardware.Button;
public class HelloWorld {
    public static void main(String[] args) throws Exception {
        System.out.println("Hello World");
        Button.waitForAnyPress();
    }
}
```

12. If there are any syntax errors, then will be shown with an ❌ along the left side of the code:
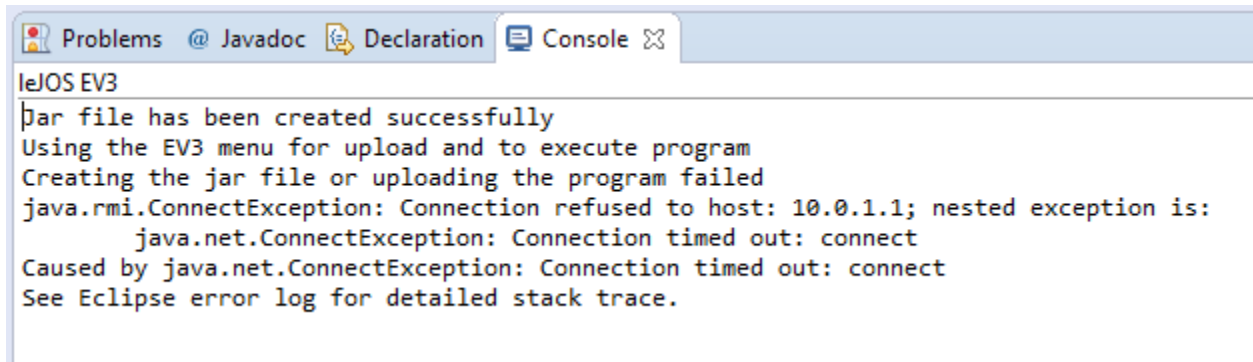

Fix any syntax errors before continuing and then save your code by pressing the save button 💾 (or press CTRL + S).

13. Once your code compiles and saves ok, we can run it.   Make sure that the EV3 is turned on and that it is not currently running a program. Connect the EV3 to your laptop using the USB cable provided in the kit.   In Eclipse, press the run button to upload your program onto the robot and run it.   The first time you do this for each program, it will ask how you want to run the program. Select **LeJOS EV3 Program** and press **OK**.
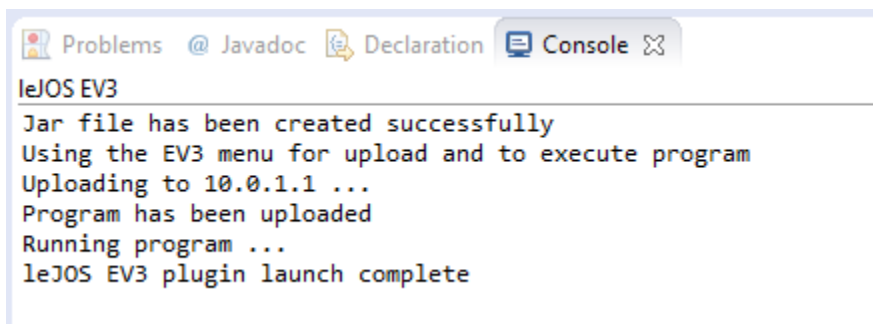
   If the upload did not work, you will get a message like this in the bottom Console pane of Eclipse:

```
 Problems   @ Javadoc    Declaration    Console ⌗
leJOS EV3
Jar file has been created successfully
Using the EV3 menu for upload and to execute program
Creating the jar file or uploading the program failed
java.rmi.ConnectException: Connection refused to host: 10.0.1.1; nested exception is:
        java.net.ConnectException: Connection timed out: connect
Caused by java.net.ConnectException: Connection timed out: connect
See Eclipse error log for detailed stack trace.
```

   If this happens, just unplug the USB cable and plug it back in again.

   Hopefully, the program will load and run on the robot.   Note that it takes a bit of time for the program to start up.   If it worked, you should see the following in the bottom Console pane of Eclipse:
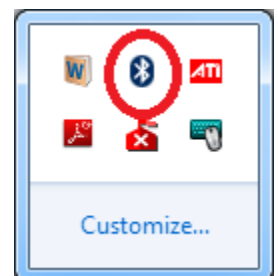
```
 Problems   @ Javadoc    Declaration    Console ⌗
leJOS EV3
Jar file has been created successfully
Using the EV3 menu for upload and to execute program
Uploading to 10.0.1.1 ...
Program has been uploaded
Running program ...
leJOS EV3 plugin launch complete
```
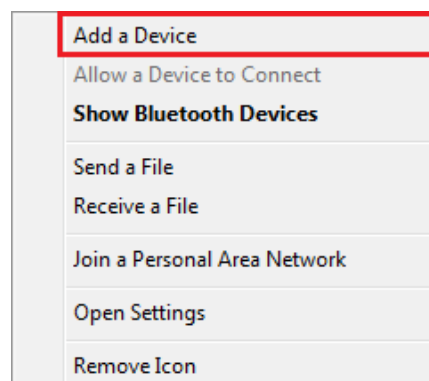
   You should also see the words **Hello World** appear on the EV3.   Press any button on the EV3 to quit the program.

14. Unplug the USB cable … we'll try to get it working with the Bluetooth. On the EV3, use the left and right buttons on the menu to scroll until it says "Bluetooth" ... with the bluetooth icon centered. Select it by pressing the center dark gray button. Make sure that the EV3 is visible by scrolling to "Visibility" (i.e., the eye icon). It should say "Visibility on", otherwise press the dark gray button to turn it on.

15. In the taskbar of windows, off to the right, you should see something like this under the hidden icons.   Select the **Bluetooth** icon as shown here circled:

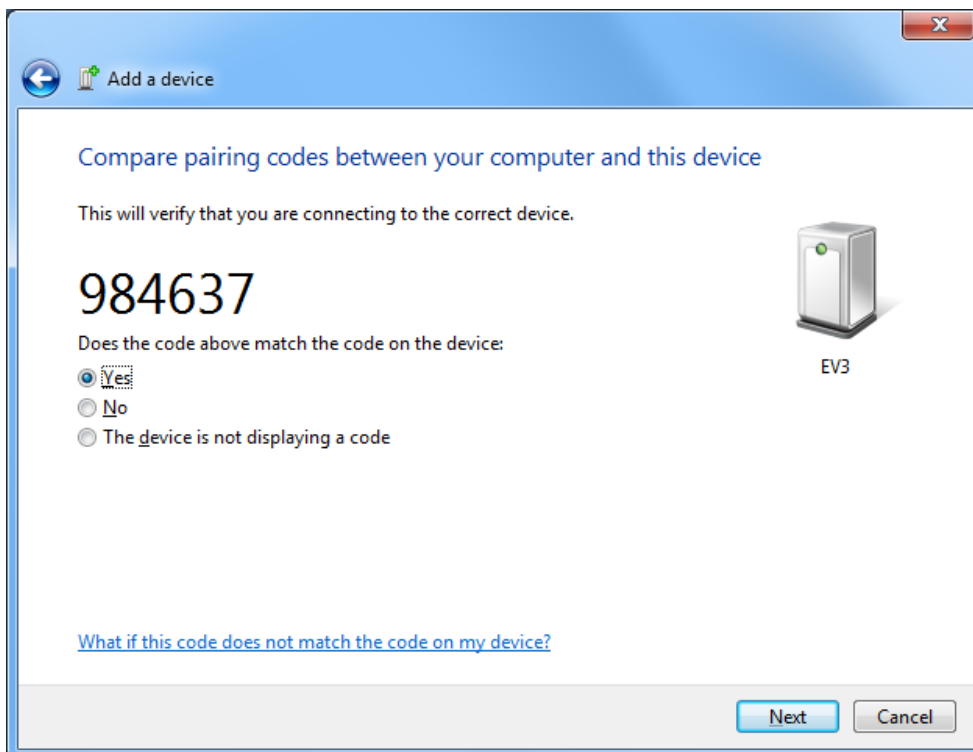   Now select **Add a Device** from the popup menu that appears:

   Add a Device
   Allow a Device to Connect
   Show Bluetooth Devices

   Send a File
   Receive a File

   Join a Personal Area Network

   Open Settings

   Remove Icon

   Customize...

16. Hopefully, the EV3 will appear in the list of discoverable bluetooth devices. If not, double check that the Visibility is enabled on the EV3. Select the EV3 and press **Next**:
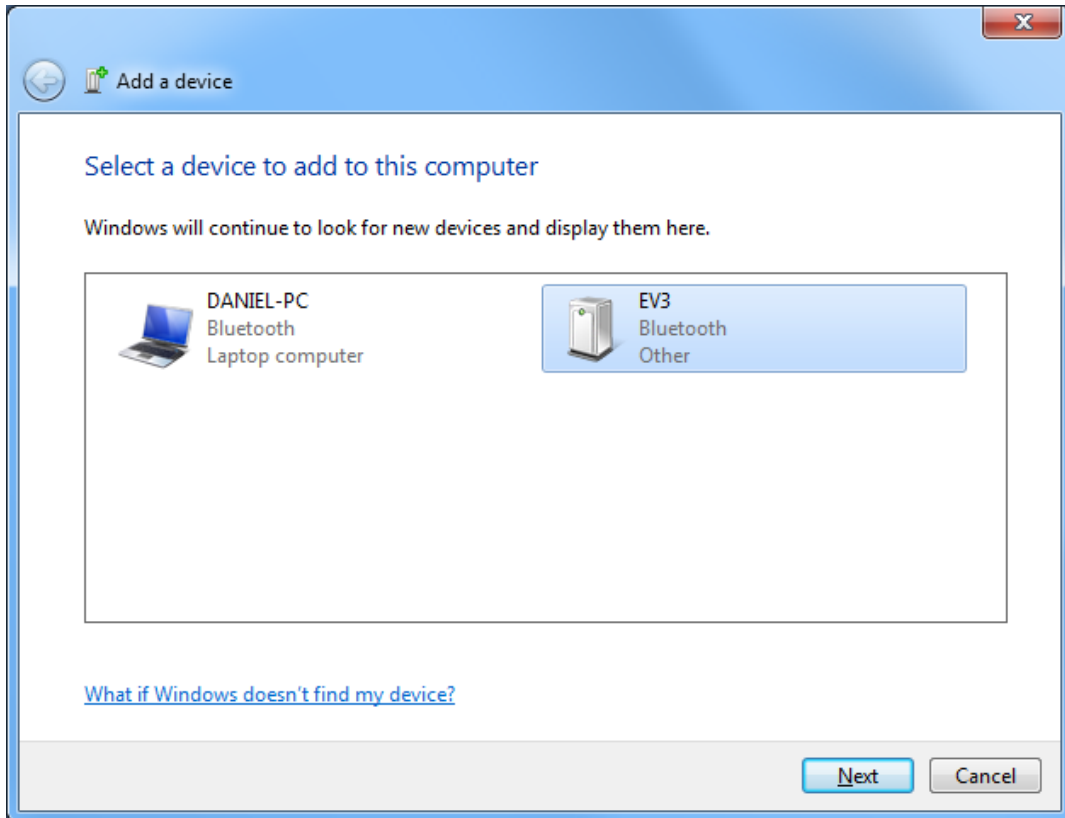
17. It will try to confirm the device that you are connected to. It should have the correct number … provided that there is only one EV3 around. Don't try doing this in the lab when everyone has their EV3 on!!! Press **Next**. It should say that it is installing device driver software.
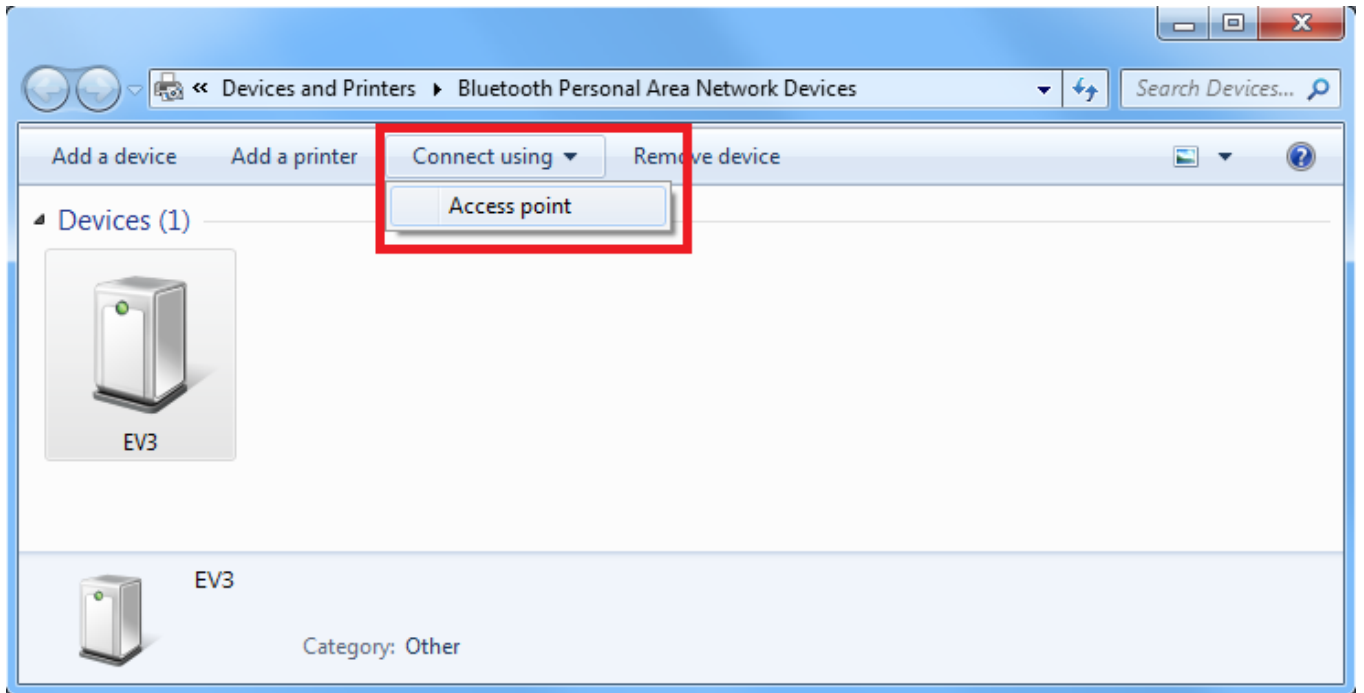
18. Hopefully you see this:

This device has been successfully added to this computer

Windows is now checking for drivers and will install them if necessary. You may need to wait for this to finish before your device is ready to use.

To verify if this device finished installing properly, look for it in Devices and Printers.

EV3

Close

19. In the taskbar of windows, off to the right, select the **Bluetooth** icon again as shown here circled. This time though, select **Show Bluetooth Devices**.

Add a Device
Allow a Device to Connect
Show Bluetooth Devices
Send a File
Receive a File
Join a Personal Area Network
Open Settings
Remove Icon

Customize...

20. Highlight the **EV3** and select **Access point** from the **Connect using** menu item.

It should connect and then the toolbar should change to say **Disconnect from device network**. Don't select this though! Your EV3 is connected now.
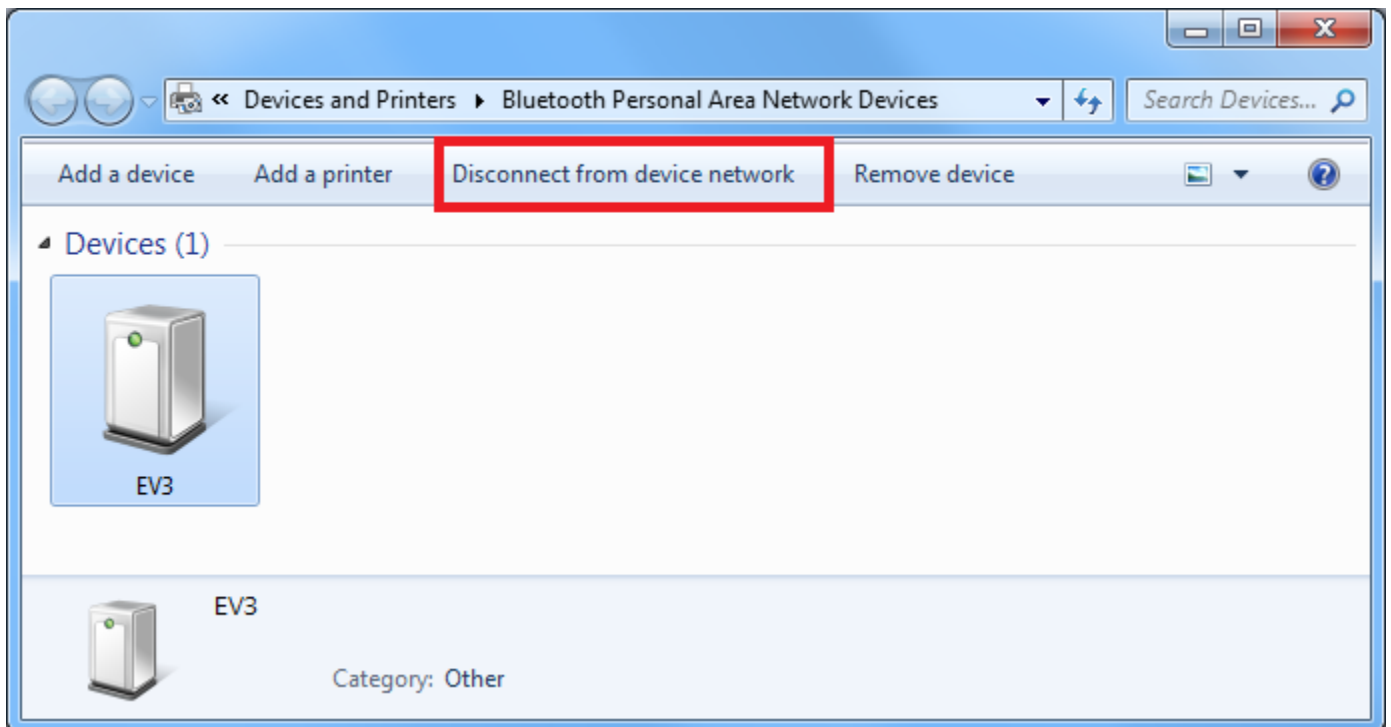
You should be able to upload code using bluetooth now. Try to run your program again (make sure that the USB cable is unplugged). Each time that you turn on your EV3, you will need to repeat steps 19 and 20.