CPE 4010: Sensors, Actuators and Integration

Laboratory Exercise 2 – Arduino IDE Setup

Objective:

To have the student set up their Arduino system (Mega 2560) and run the usual "Hello World" program and build and run a simple IO circuit. This lab will prepare the student for subsequent labs involving sensors and actuators.

Procedures will be highlighted in red boxes; some procedures require you to collect data for your report. Enter all required data in the appropriate field within the accompanying Datasheet. Also, be sure to enter your name at the top of the Datasheet.

- **NOTE: Those who elected to use a different IDE will perform the same step in the manual with their IDE. The main purpose of this lab is to ensure that the student has a working IDE which can successfully communicate with the Arduino board such that future laboratory exercises can be performed.**

Once you have completed all of the following procedures and filled in your Datasheet, upload your complete Datasheet to the "Lab 2" folder under "Assignments"

Required Equipment:

Personal computer

Arduino Micro-controller and usb cable

1 LED

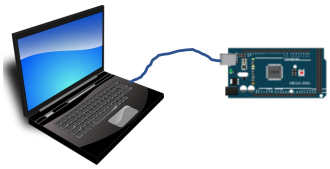
1 Potentiometer

1 220 Ohm resistor

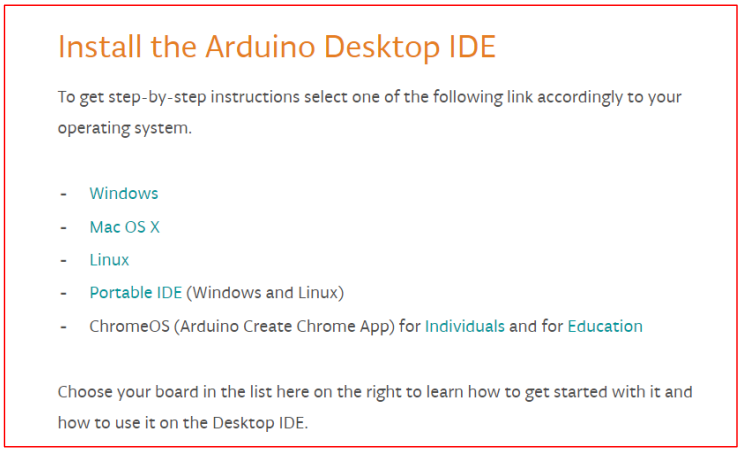
Breadboard and jumper wires

Procedure:

1. Remove the MEGA 2560 and USB cable from your "Arduino Kit"
2. Using the usb cable from your kit, connect your MEGA 2560 to your laptop

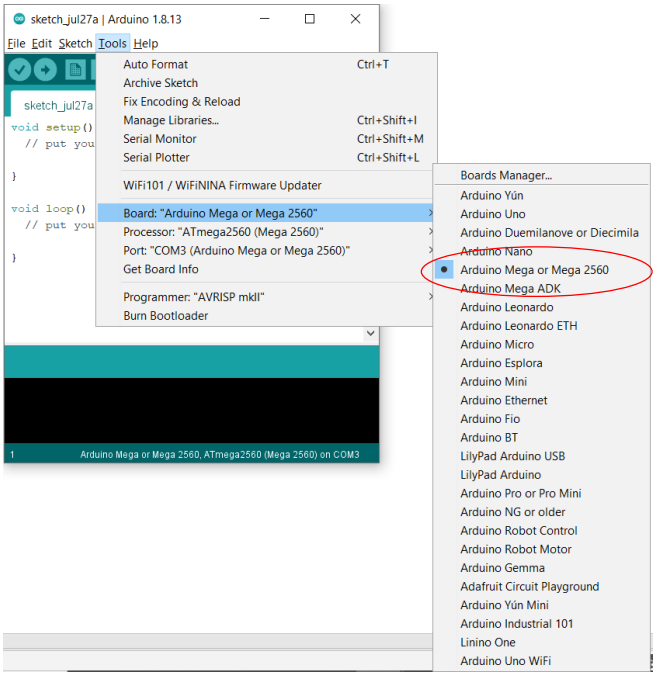


3. Download the Arduino IDE from the following website:
   https://www.arduino.cc/en/Guide/HomePage
   Click on the link corresponding to your OS



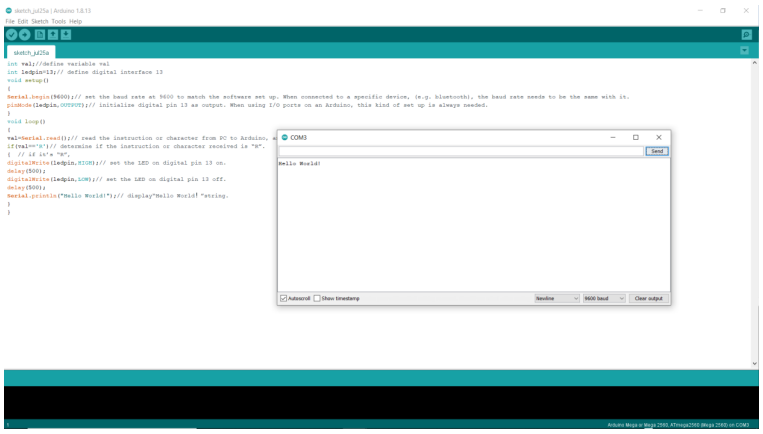
4. Follow the instructions to install the Arduino IDE on your laptop and run the Arduino IDE

5. Under "Tools" click the "Board:" menu item and select the Arduino board that you are using for the laboratory exercise. (Ex: "Arduino Mega or Mega 2560")



6. Browse to the following website and click on "Project 1: Hello World" link
   https://wiki.keyestudio.com/052043_Super_Learning_Kit_for_Arduino

7. Follow the instructions of “Project 1: Hello World.” The output of your IDE window should appear as the screenshot below. **Take a screenshot of your running program along with the IDE code window (as shown below) and insert it into the corresponding section of the “Lab 2 Datasheet”**



8. In your browser, navigate back to the “052043 Super Learning Kit for Arduino” homepage and click on “Project 3: PWM” link. Complete all of the instructions. https://wiki.keyestudio.com/052043_Super_Learning_Kit_for_Arduino#Project_3:_PWM

9. Take a screenshot of your Serial Monitor window with the complete PWM code and take a picture (using your mobile phone or some other device) of your circuit board with the LED illuminated.
   Insert both images in the corresponding section of your Datasheet.

10. **Write a conclusion in the “Conclusions” section of the Datasheet explaining your observations and lessons learned.**