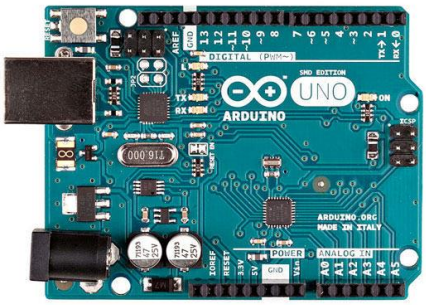
A Maker's World: Arduino Uno

Instructor: Natalia Baklitskaya (natalia.baklitskaya@gmail.com)

For this workshop, the laptop in front of you already has Arduino IDE installed. If you would like to intall this software on your personal device, please download it here: https://www.arduino.cc/en/Main/Software

In this portion of the workshop, we will be working with an **Arduino Uno**.



> The UNO is the best board to get started with electronics and coding. If this is your first experience tinkering with the platform, the UNO is the most robust board you can start playing with. The UNO is the most used and documented board of the whole Arduino & Genuino family.

Arduino Uno is a great way to get started with embedded electronics and microcontrollers. It is simple enough for a begginer to pick up, yet powerful enough to make some pretty cool projects. In addition, being an open-source platform, it comes with a huge and an amazing community. You can find a myriad of helpful resources on **arduino.cc** and **arduino.org**, and some great example projects on websites such as **instructables.com**.

My favorite kit to get started with is the **Official Arduino Starter Kit**. It comes with a very good book that teaches you from the ground up about electronics and code concepts through some fun projects, and comes with all the parts that you need to assemble these circuits. We will be using a project and a book from this kit for Part I.

A Maker's World: Arduino Uno

INSTRUCTIONS

1. Observe the Arduino Uno project Assembled in front of you. It is almost complete, but it needs a few adjustments before it will work. We will first adjust a few wires, and then fix the code needed to program it.

2. Open the Arduino Projects Book at your desk to the page corresponding to your project:

   - 06: Light Theremin ---- p.71
   - 07: Keyboard Instrument ---- p.80
   - 11: Crystal Ball ---- p.115

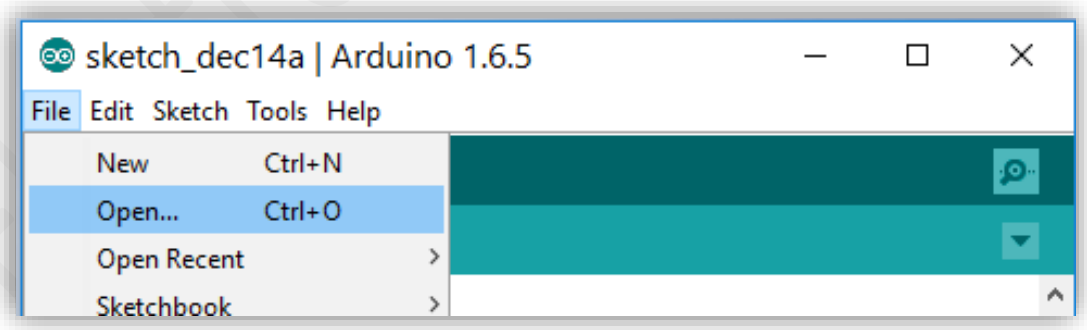
3. Look through the wiring diagram for your circuit and compare it to the assembled circuit in front of you. There are 2 wires that need to be re-connected corectly for your circuit to function. Apply the necessary fixes.

4. Discuss the funcitonality of these wires with your group. Think about how the circuit functions. When you are done, call a TA over and tell them what your group decided about the functionality of the wires and the circuit.

5. Locate the yellow USB cable at the table. Plug one end of it into Arduino Uno, and the other into the laptop at your desk.

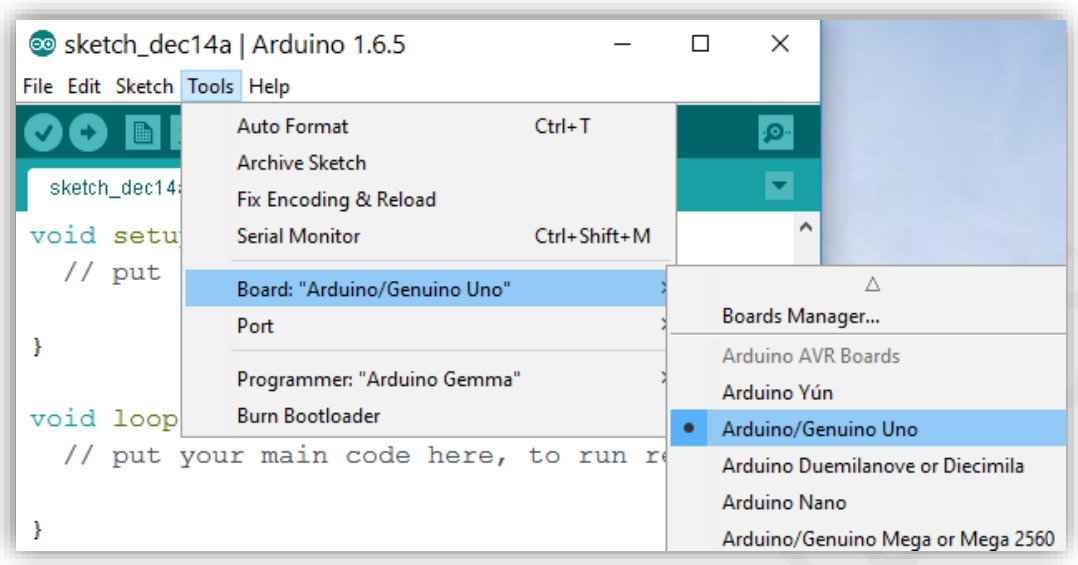
6. Open Arduino IDE by double clicking on the teal Arduino icon on your desktop.

7. Open ***File > Open*** and browse for a file located in the Desktop directory that corresponds to your project.

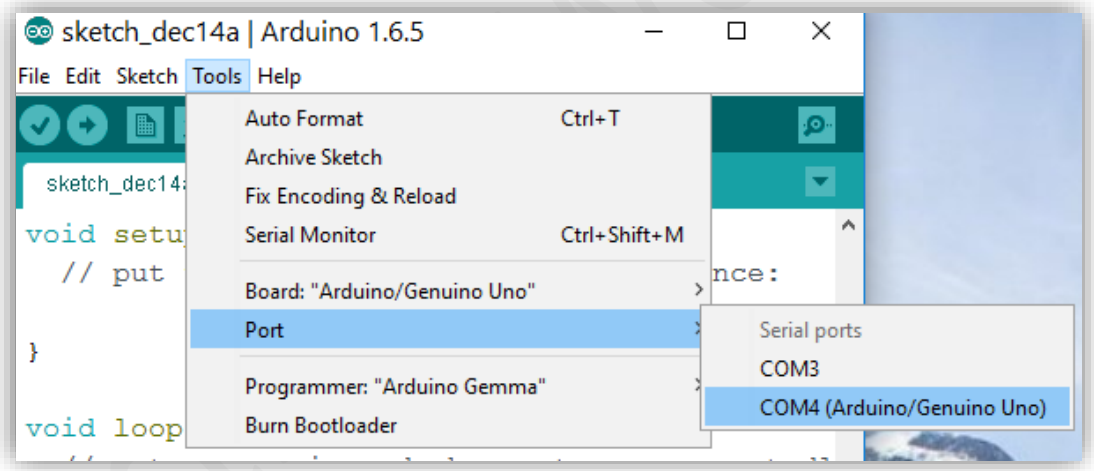


8. Edit the code by completing the **// TODO:** instructions embedded in code.

9. Change the Board settings under Tools to 'Arduino/Genuino Uno'.

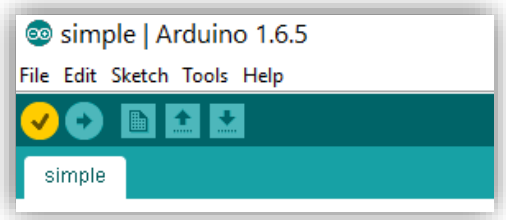


10. Change the Port under Tools to the COM port that has 'Arduino/Genuino Uno' next to it.

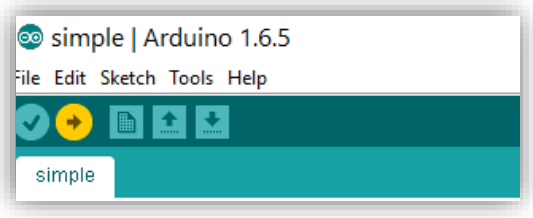


11. Save your program by going to **File > Save** (or hit **Ctrl+S**).

12. Compile your code by clicking the check mark in the upper left corner in your window. Check for errors at the bottom of the window.



13. Upload the code to your Arduino Uno.



14. Test your circuit and show it off to a TA!