ARDUINO 1 – BLINK

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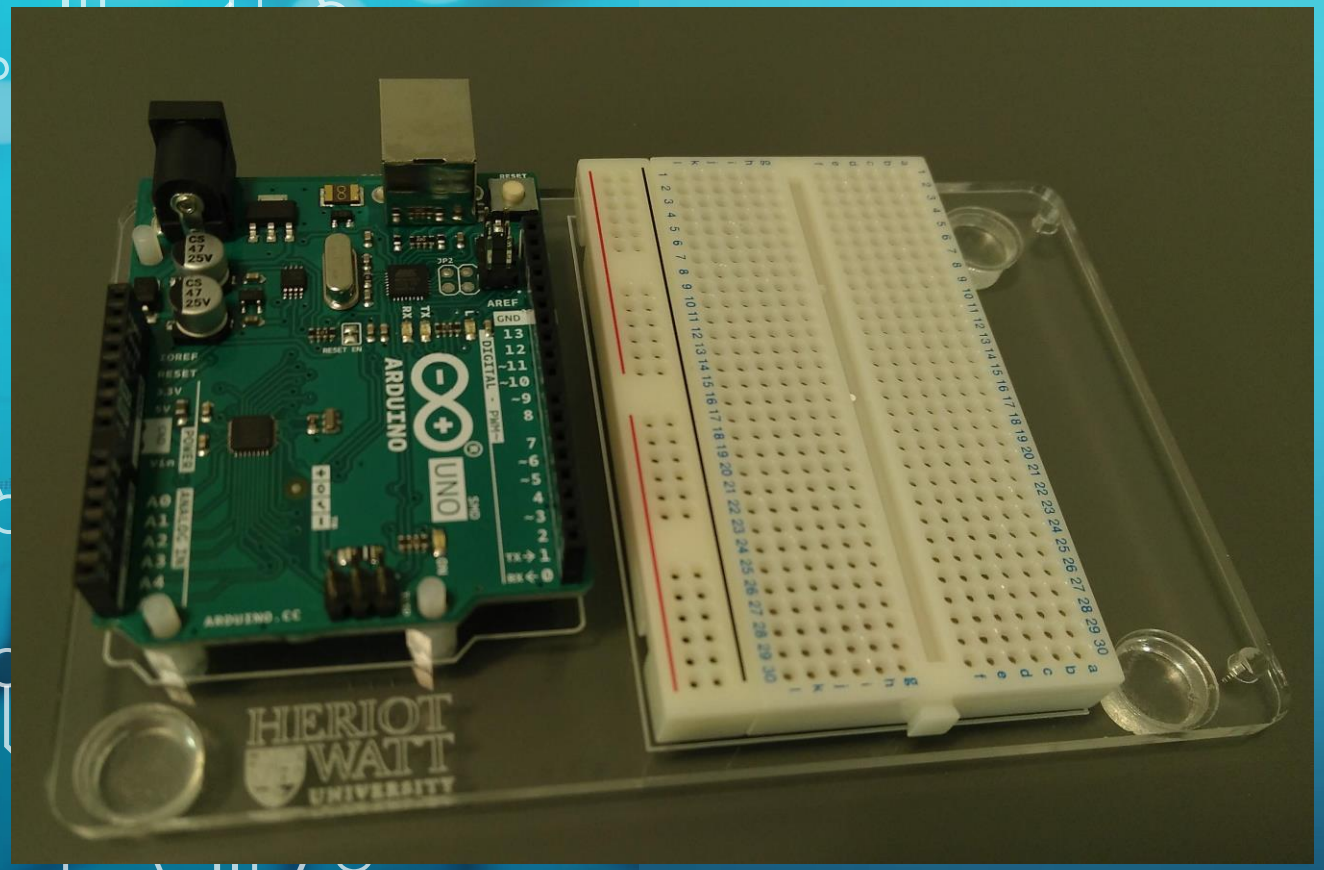
WHAT IS ARDUINO?



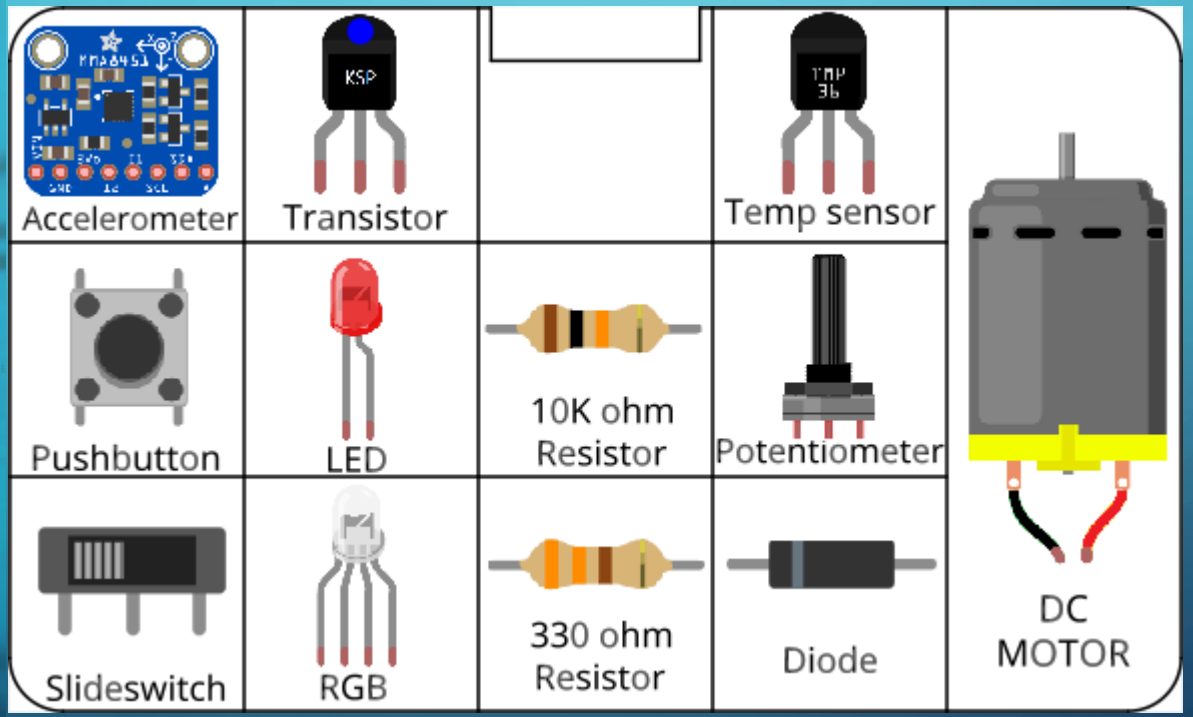
- Programmable microcontroller
- Open source hardware
- Versatile, adaptable, lots of community support
- Loads of add-ons available

WHY LEARN ARDUINO?

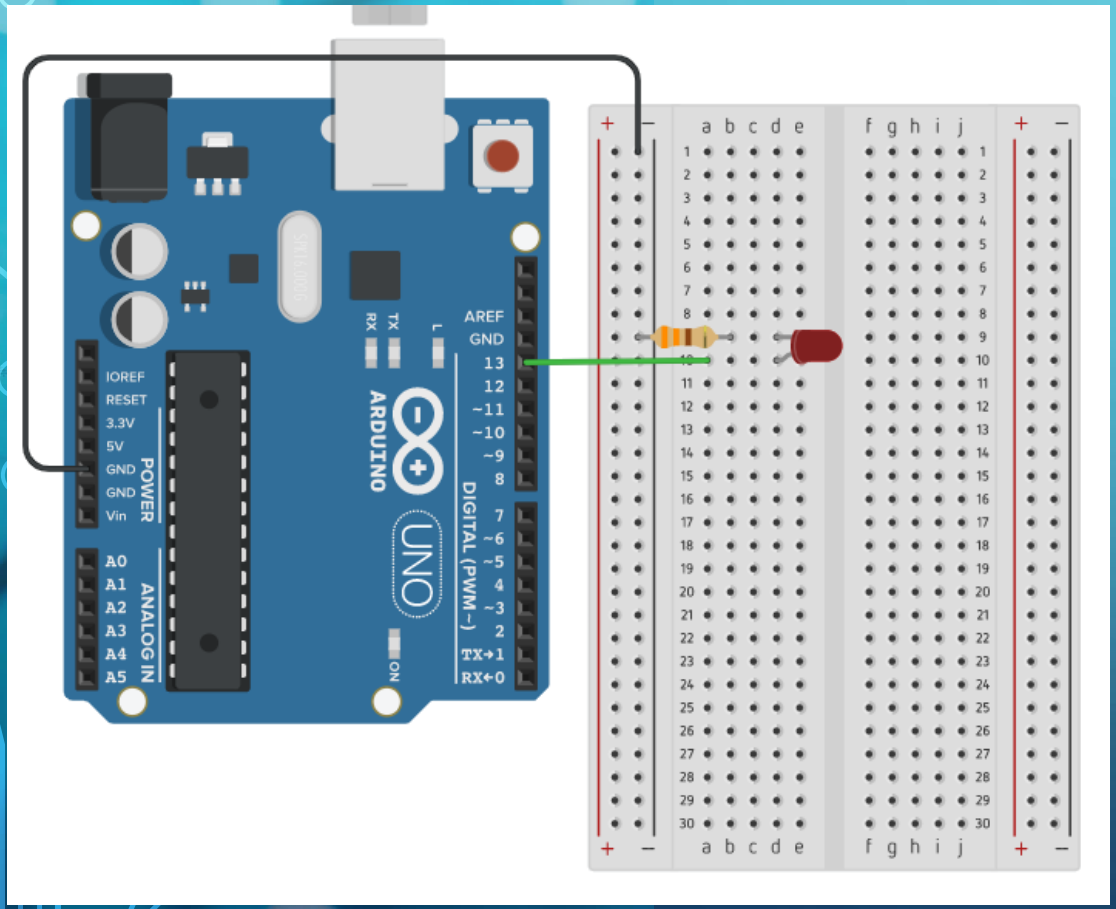
- Measurement – data capture
- Control – make motors and actuators work
- Projects – future work based on this

CIRCUITS

All components included in the kit…



BUILDING CIRCUITS



- Insert components into breadboard holes
- Connect up using instrument wire
- Arduino controls inputs and outputs
- Follow schematics

NOTE: GND = negative

BREADBOARDS

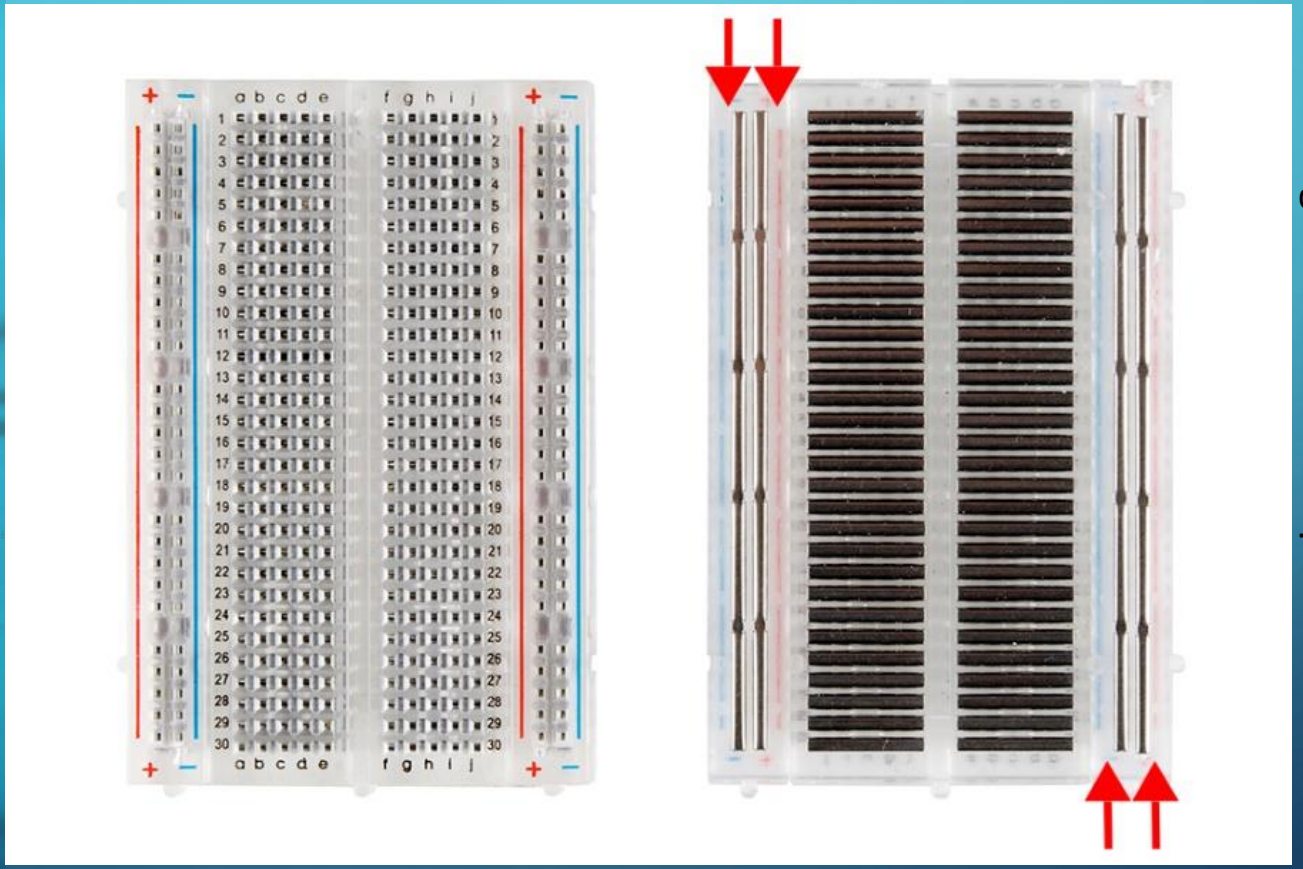
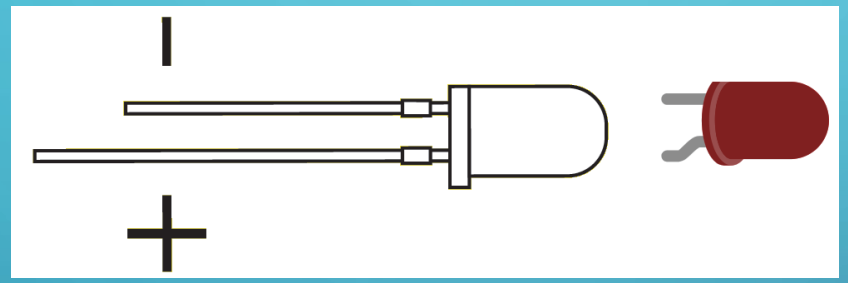
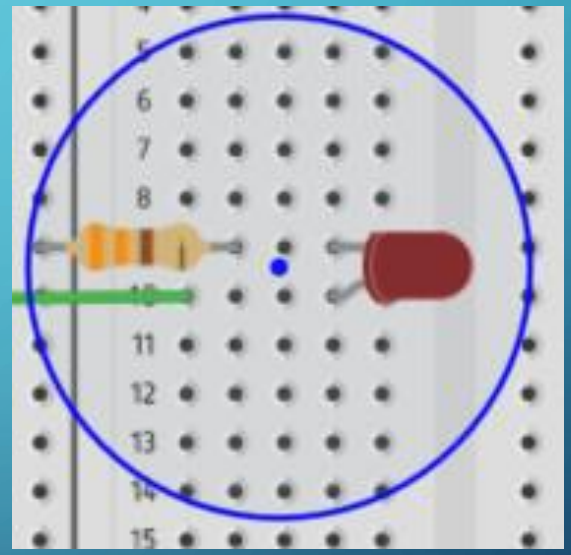


Image source: learn.sparkfun

- Horizontal connections have a gap in the middle

LEDS

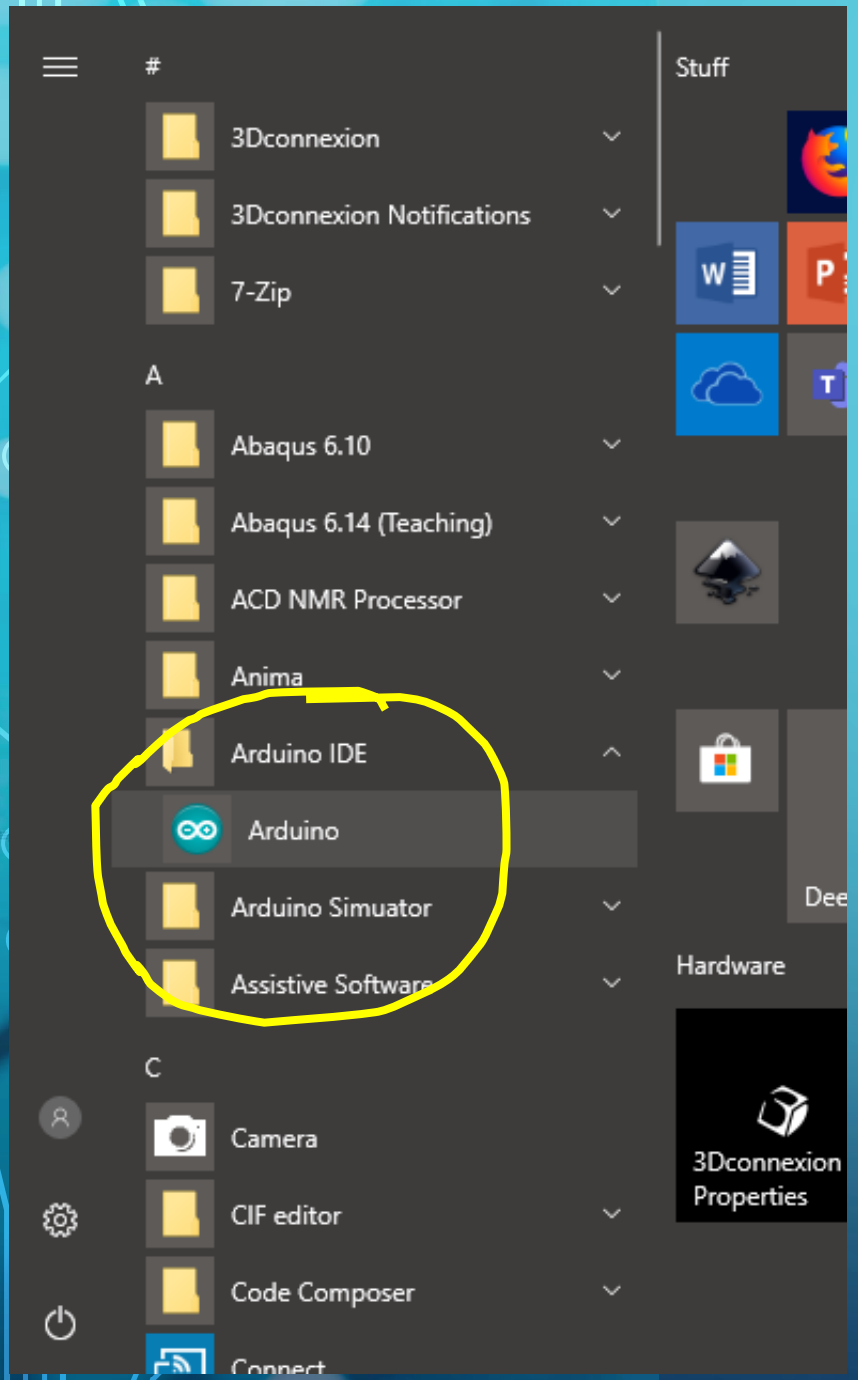




- Connect long leg (anode) to positive

DEBUGGING CIRCUITS

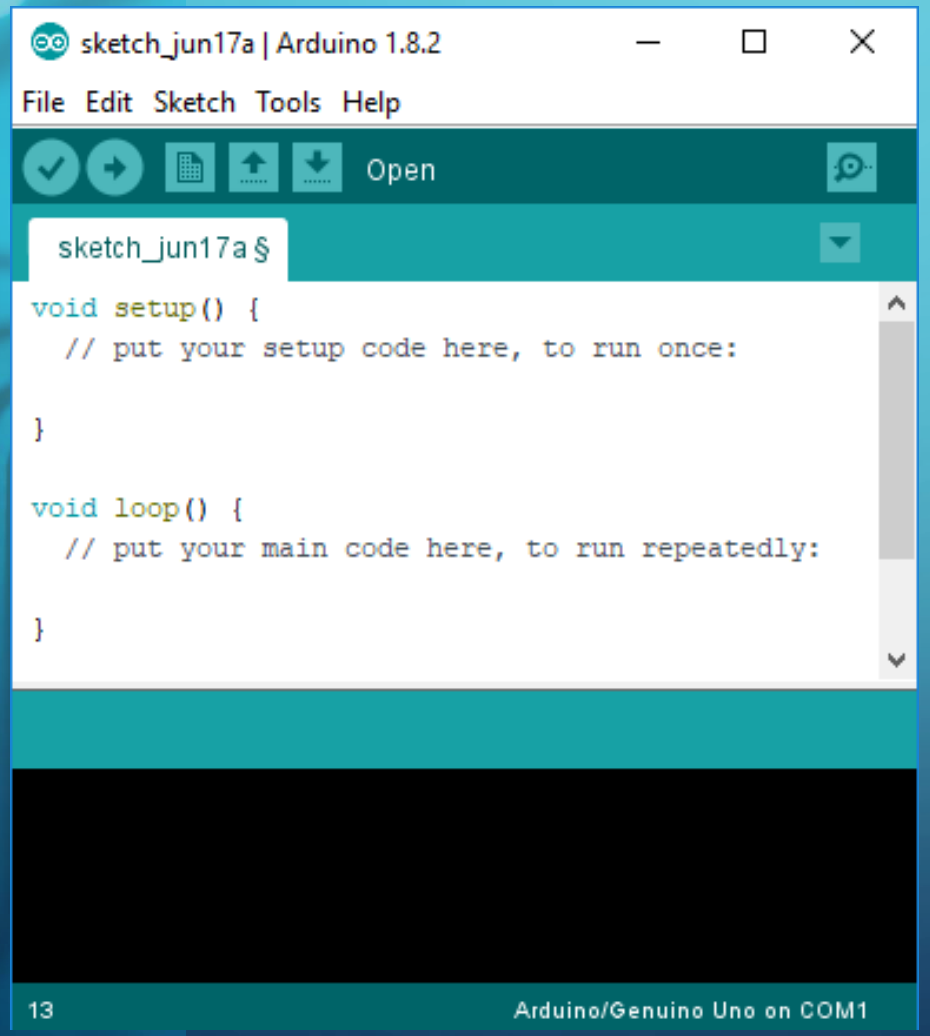
- Did I insert the component fully?
- Is it the right way round (especially LEDs)?
- Is the power connected?
- Is it connected to the correct input/output?



HOW DO I PROGRAM IT?

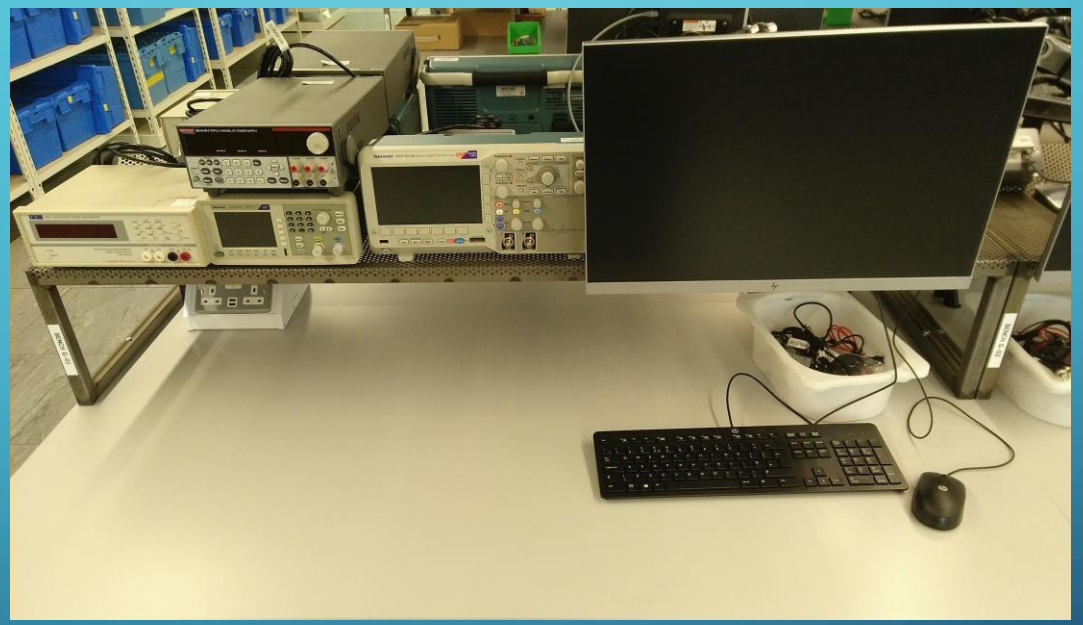
- Arduino IDE
- USB cable
- C++

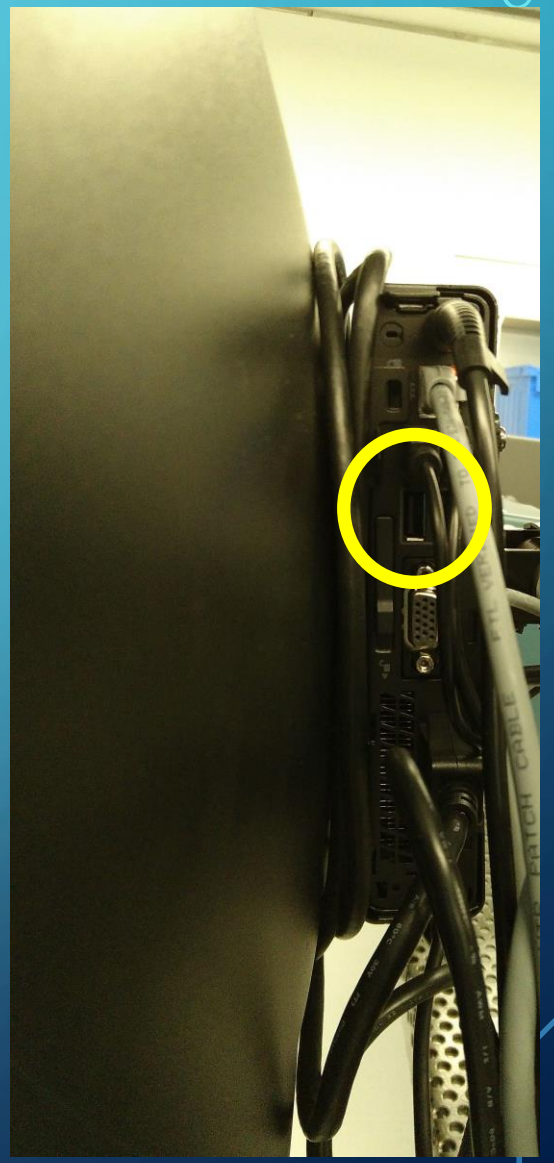
ARDUINO IDE



- Write code
- Compile
- Download to Arduino
- Arduino runs code

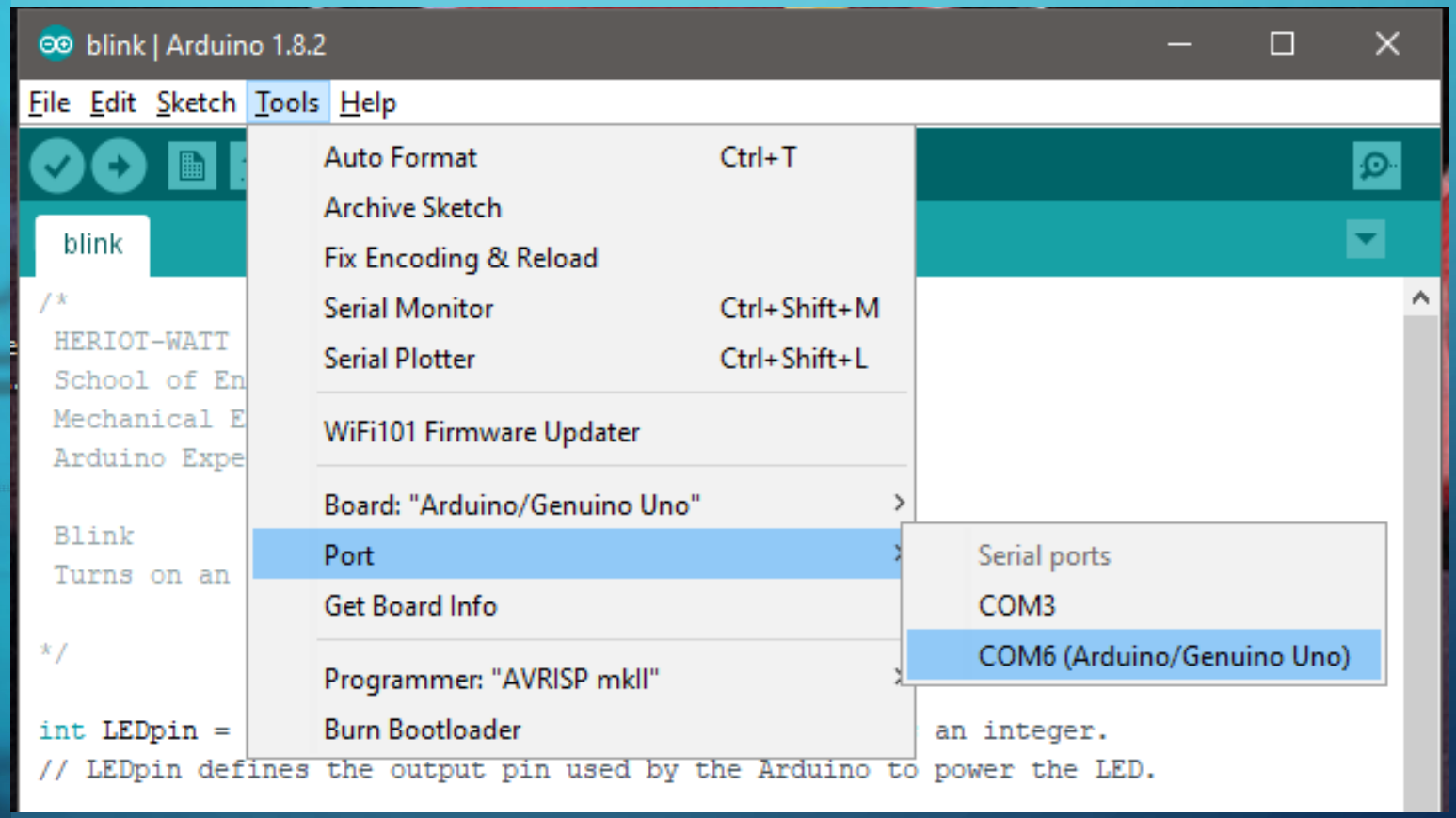
USB CONNECTION





- USB sockets on front and rear of PCs

CONNECTING TO ARDUINO



- Select COM port (Tools menu)

DEBUGGING CODE

- Is there a space missing somewhere?
- Do all lines end with a semicolon;
- Is something commented out //

WHAT ARE WE DOING TODAY?

- Download the blink code to the Arduino
- Build the circuit on the breadboard
- Make an LED flash

HOUSEKEEPING

- Take two boxes:
  - One Arduino box
  - One Sensors and Motion kit
- Put components back into labelled places in boxes after use
- Any components missing – let us know.

FINISHED ALREADY?

- Make the LED blink faster and slower
- Add a second LED which flashes out of sync with the other
- Make the LED light in time to the bass rhythm in Queen's Flash

TIDYING UP

- Return components to your Sensors and Motion box IN THE CORRECT PLACES!!!
  - Put instrument wire in motor compartment
- Return Arduino to its case
- Return both boxes to tutor