ARDUINO 6 – ACCELEROMETER

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INTRODUCTION

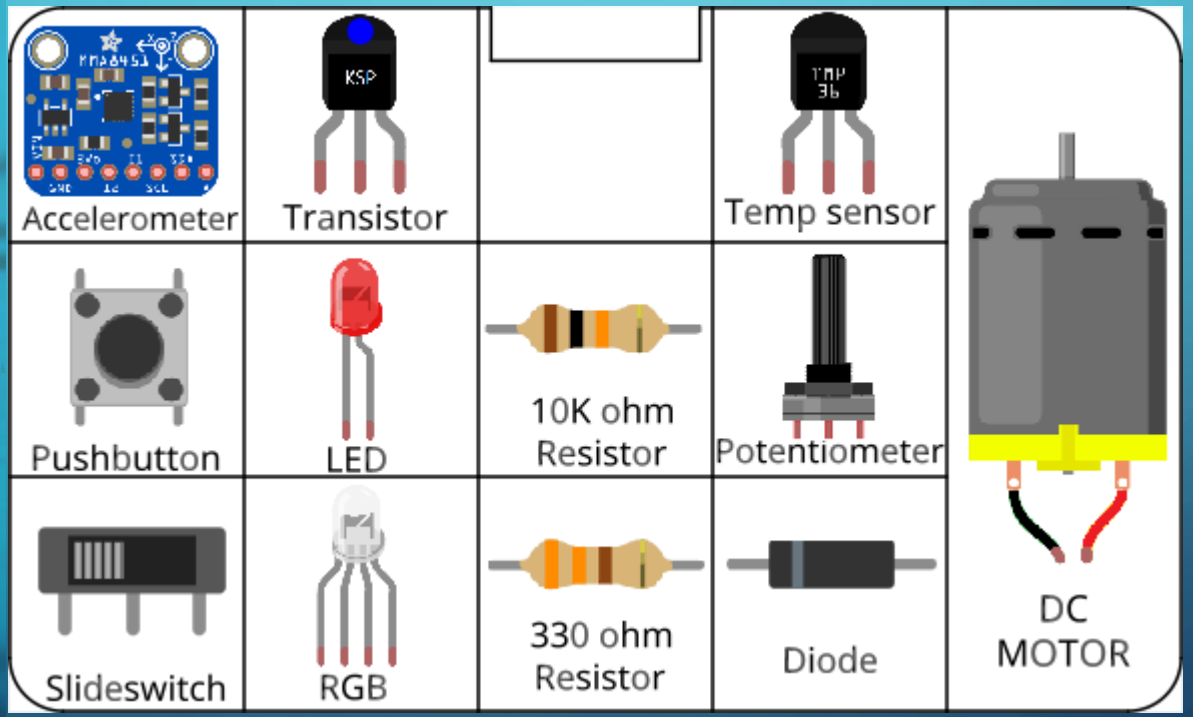
- Use an Arduino with an accelerometer to measure acceleration

WHAT ARE WE DOING TODAY?

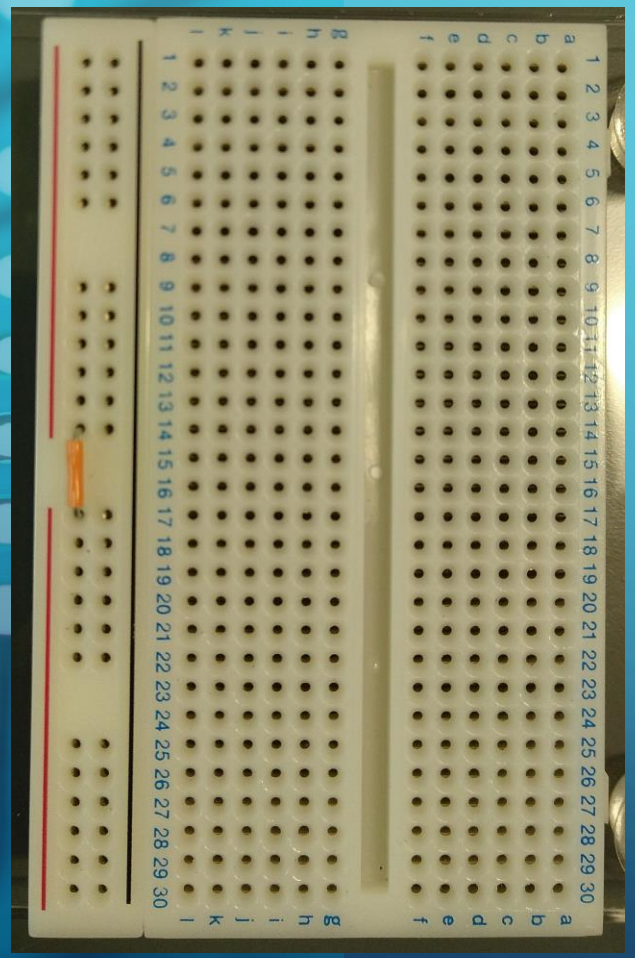
1. Build the accelerometer circuit
2. Install accelerometer libraries to the Arduino IDE
3. Measure acceleration and orientation using the Adafruit MMA8451 accelerometer
4. Estimate velocity and displacement using acceleration

CIRCUITS

All components included in the kit…

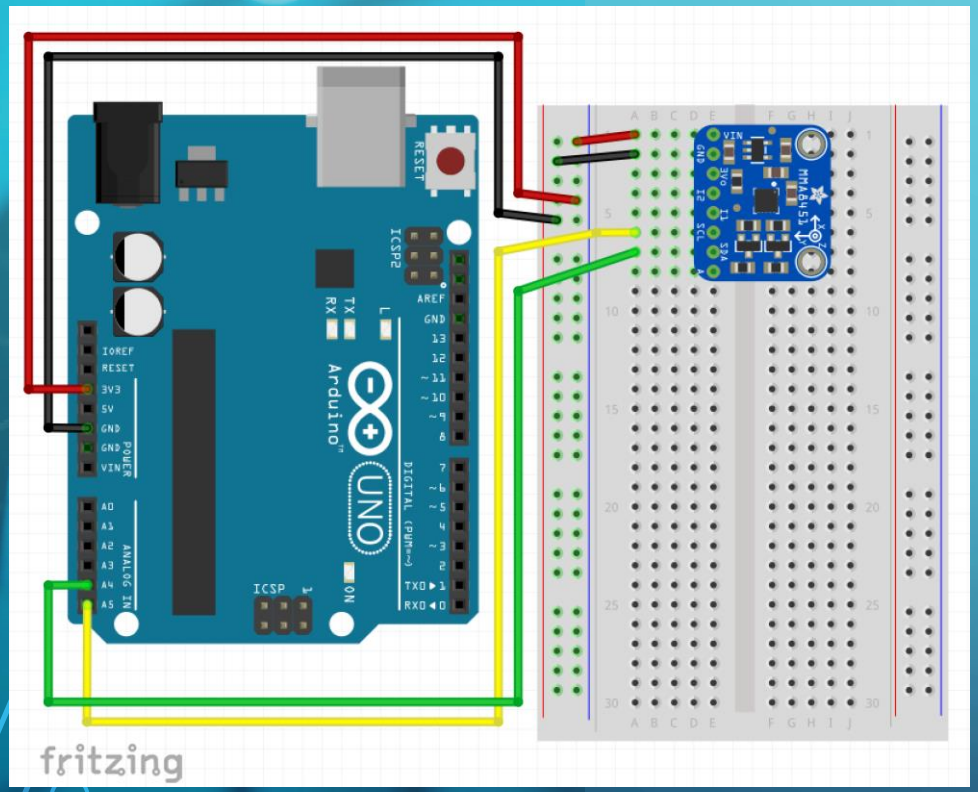


BEFORE YOU START BUILDING CIRCUITS…



- Connect power bus (+ line) together using a small section of jumper cable

BUILDING CIRCUITS



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

NOTE: GND = negative

DEBUGGING CODE

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

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.

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

FINISHED ALREADY?

- Estimated displacement and velocity are going to be wrong…see if you can work out why.
- Create a damage warning trigger – if a sudden acceleration is detected, light a warning LED.