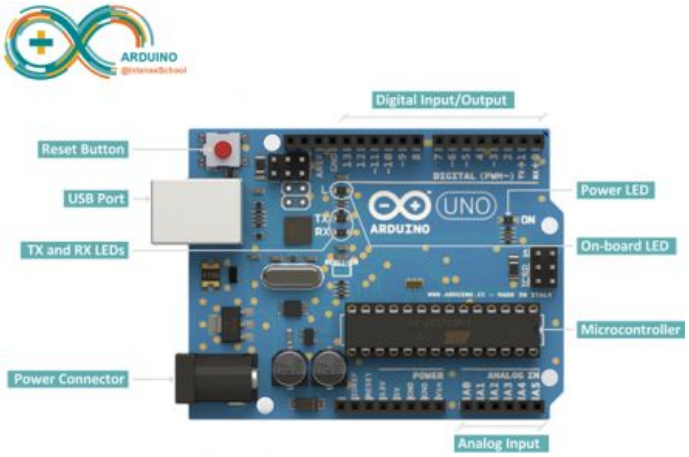
CRASH DETECTION SYSTEM
USER MANUAL

1.COMPONENT DESCRIPTIONS:

1.1 Arduino Uno

This is what the Arduino board looks like.

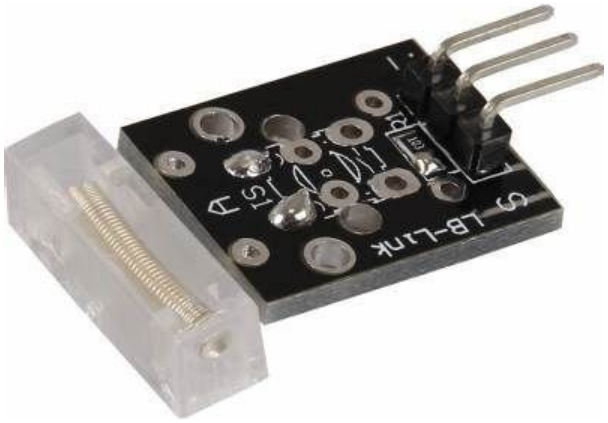


1.2 Power Supply

Typically, the Arduino board can operate satisfactorily on power that is available on the USB port of the computer that it is connected to. Simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The AC adapters commonly available in retail stores for use with consumer products are often suitable, but make sure that it has the proper connector for plugging into the power socket on your Arduino board: 5.5mm diameter cylindrical plug with 2.1mm pin hole, and that provides Positive voltage on the inside pinhole and Negative (or common/ground) voltage on the outside cylindrical sleeve of the connector plug. Recommended : **7~12V |** Absolute : **6~20V**

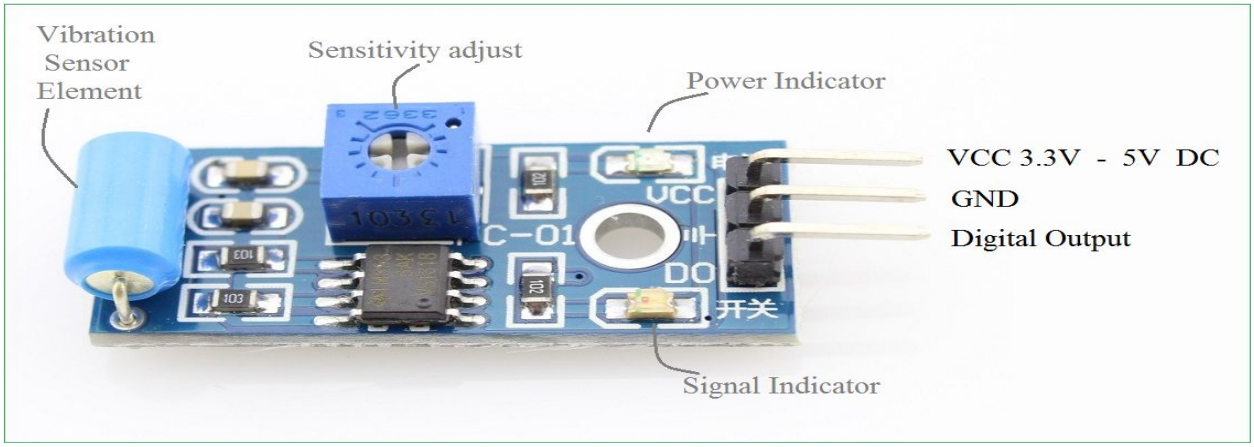
1.3 KY031 Shock Sensor

A shock sensor works by detecting the shockwaves.
When a large shock wave is detected, the shock sensor will activate. This will tell the shock sensor to activate the buzzer.



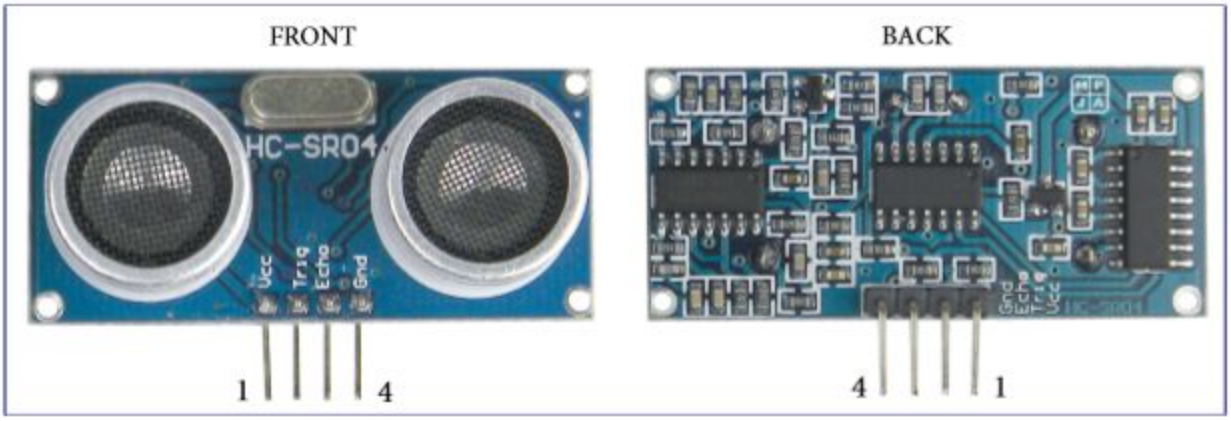
1.4 SW-420 Vibration Sensor

A vibration(shake) makes the vibration sensor to return HIGH output which activates the buzzer.



1.5 HR-SR04 Ultrasonic Sensor

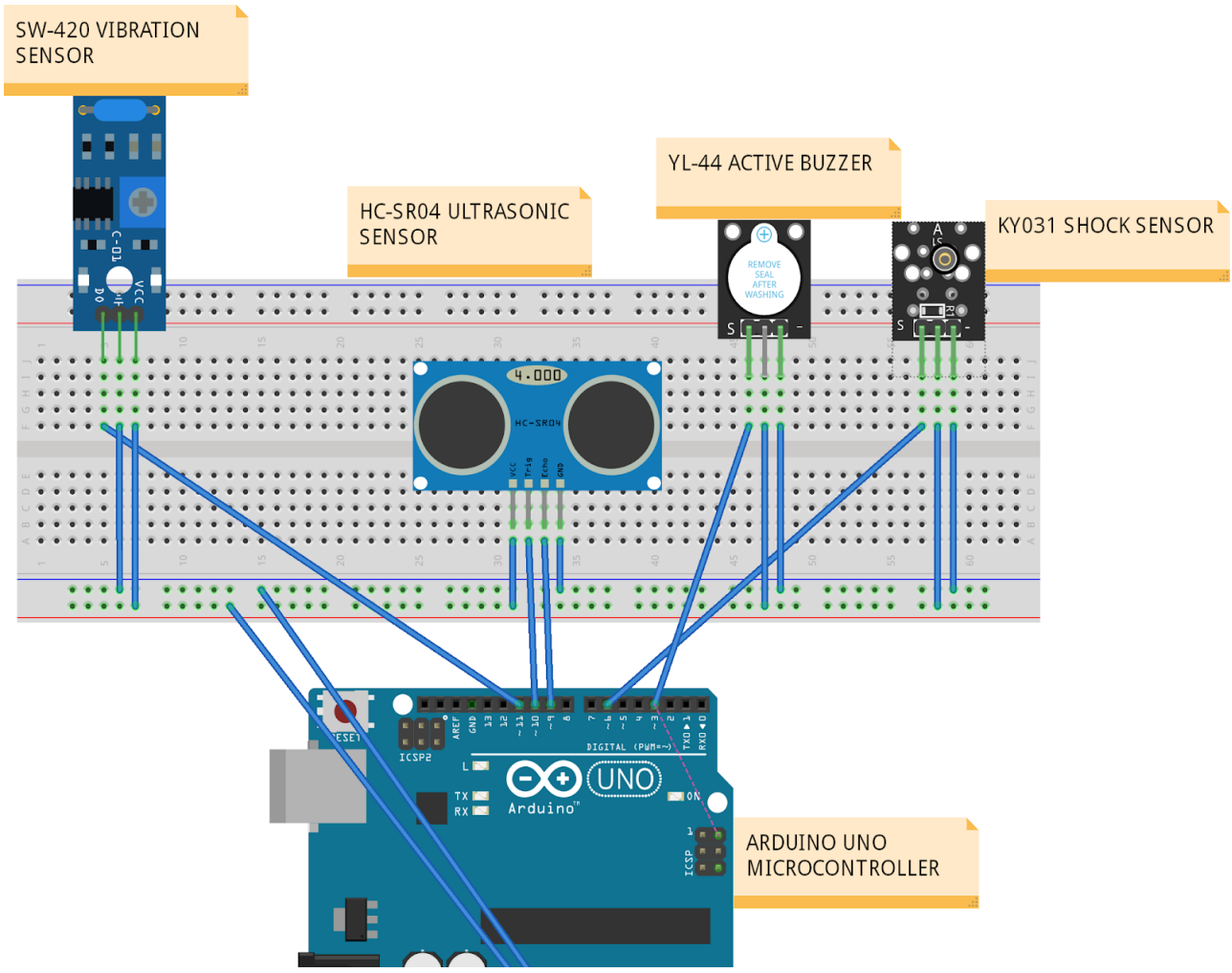
Ultrasonic sensor is a device that can measure the distance to an object by using sound waves. The sensor sends an ultrasound pulse via its trig terminals and receives them via its echo terminals which activates the buzzer.



2. PROCEDURE TO OPERATE:

- Connect the arduino board to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The green LED (near the reset switch) is marked with ON, and it indicates that the Arduino has power.
- An orange LED near the center of the board (labeled “Pin 13 LED”) should flash on and off when the board is powered up.
- Give a jerk in order to generate shockwaves to activate the shock sensor.
- The vibration sensor will detect vibrations with very high sensitivity compared to shock sensor.

- On moving an object towards the ultrasonic sensor, it measures distance by sending out a sound wave at a specific frequency and listening for that sound wave to bounce back.
- As soon as the distance is less than 7.5 cm, ultrasonic sensor is activated.
- When all the three sensors confirm output, the buzzer is activated.



3. TROUBLESHOOTING:

3.1 Check your power.

Make sure that you have enough power then make sure it's getting to the right place. Confirm your power indicator lights are on. If you are using a battery, confirm that it can output the recommended voltages.

3.2 Check for hot components and funny smells.

Locate any components that may be too hot to touch. They are probably receiving too much power, check your power source. Sniff your components for anything that might seem to smell like burning. This is a definite indication of an incorrect connection, and you should disconnect the power right away. Replace any damaged components and recheck your circuit for incorrect connections before powering up.

Not found the issue you are facing here?

3.3 Check the various forums and troubleshooting websites.

If you are having trouble with something, there is a very good chance that someone else already had the same problem, solved it and posted it in a forum. Take advantage of that. The official Arduino website, Adafruit, Sparkfun, and Element14 have Arduino forums where people post discussions. Those communities are filled with people who just want to get their Arduinos to do cool stuff. They are almost always helpful and supportive. For more information, go to the troubleshooting page on the official arduino website.