

Overview

This activity is a fun project on digital making. You will learn how to assemble an Arduino powered digital pulse rate sensor that measures your heartbeat. You will then extend the circuit and build a system that displays your heartbeat using lights and sounds!

Objectives

After this activity you will be able to:

- Assemble an Arduino powered digital pulse rate sensor
- Connect the pulse sensor to an electrical board
- Display your pulse rate using lights and sounds

Suitable for

Age 10 +, single learner. Sessions can be facilitated by Skills Development Scotland.

Difficulty

Beginners and expert

Play Time

Short Play (30-60 minutes)

How to

Start Raspberry Pi and open up ppt for a series of instructions.

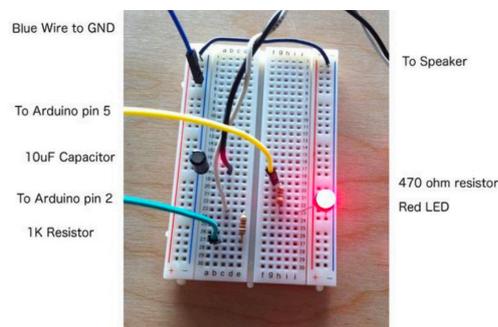
Wrap the PulseRate Sensor on your index finger. Make sure it is not too tight. Connect PulseRate Sensor to the Arduino. Plug Arduino into the Raspberry Pi USB port.

What happens?

Your pulse is displayed as a light on the Arduino board. Now disconnect the USB and let's have some fun with lights and LEDs.

We are going to build a medical equipment prototype. We will build a system that displays our pulse as lights and sounds.

Lights: Take the breadboard and connect a wire from Arduino pin 5 to anywhere on the breadboard. The voltage that comes out from the Arduino is now too high. We need a resistor to keep our LED safe. Plug the 470 ohm resistor in, so that the resistor becomes part of your circuit. Now that our voltage is reduced by the resistor we can plug in the LED. Plug the LED so that the long leg is close to the resistor and the short leg is connected to



ground (GND) on the Arduino. Double check that the circle is connected and plug the USB back in.

What happens?

Your pulse should now be nicely displayed by the LED

Sound: For sound we will build another circuit. First, connect a wire from the Arduino Pin 2 to a free zone of the breadboard. Similarly, as the current from the Arduino is too high; we need something in between that protects our circuit. That is why we are going to plug a 1 K resistor into the breadboard and complete the circuit with the speaker (positive side to resistor negative side to grounded black capacitor).

Research and explore forms of pollution that might be found in residential areas, cities, docklands, farms and other areas of interest.

Post-activity

Get your own Arduino and learn about all the wonderful projects in digital making at www.arduino.cc

The book Arduino Projects at the Careers Lab has many projects that you could do. Join the Lab Rats program or come back to the Lab for more creative action!

Go to [My World of Work](#) to explore the related job profiles, industries and Modern Apprenticeships and more in My career options

My World of Work links

Job profiles – [Computer games developer](#), [Software developer](#), [Electronics engineer](#)

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