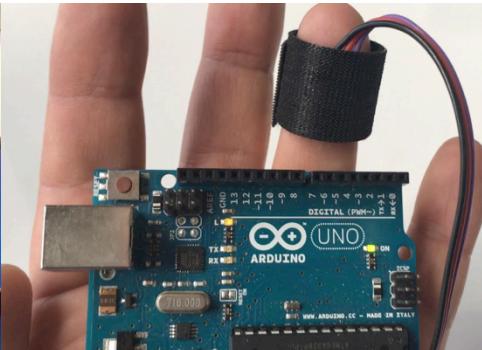




# iLAB: next-generation coding for physiological monitoring

## Aim

To give school students – the next generation of researchers – access to stimulating and hands-on education about applications of programming to medical technology



```
// Variables
int PulseSensorPurplePin = 0; // Pulse Sensor PURPLE WIRE connected to pin 0
int LED13 = 13; // The on-board Arduino LED

int Signal; // Holds the incoming raw data. Signal variable will determine which signal to count
int threshold = 500; // Set this value to whatever you want your signal to be above to trigger the LED

// The Setup Function:
void setup() {
  pinMode(LED13, OUTPUT);
  Serial.begin(9600);
}

// The Main Loop Function:
void loop() {
  Signal = analogRead(PulseSensorPurplePin); // Read the PulseSensor
  Serial.println(Signal); // Assign this value to the variable Signal
  if (Signal > threshold) { // If the signal is above the threshold
    digitalWrite(LED13, HIGH); // Turn the LED on
  } else { // Else, the signal must be below the threshold
    digitalWrite(LED13, LOW); // Turn the LED off
  }
}
```



## Competition: build an Arduino-based device for physiological monitoring

- 8 teams of students work over a series of 8 sessions delivered in school.
- Each team builds an Arduino based device to monitor a body function, such as heart rate.
- Each team will also design a website with full details of their device, thereby enabling other students to reproduce their ideas at the end of the project.

|           |                                    |        |
|-----------|------------------------------------|--------|
| Session 1 | Introduction to medical technology | 21 Sep |
| Session 2 | • Physiological monitoring         | 28 Sep |
| Session 3 | Building our own medical device    | 05 Oct |
| Session 4 | • Surgical robots                  | 12 Oct |
| Session 5 | • Robots for cancer treatment      | 19 Oct |
| Session 6 | • Trip to Cambridge                | 02 Nov |
| Session 7 | Finalising our medical devices     | 09 Nov |
| Session 8 | Presentation day                   | 16 Nov |

