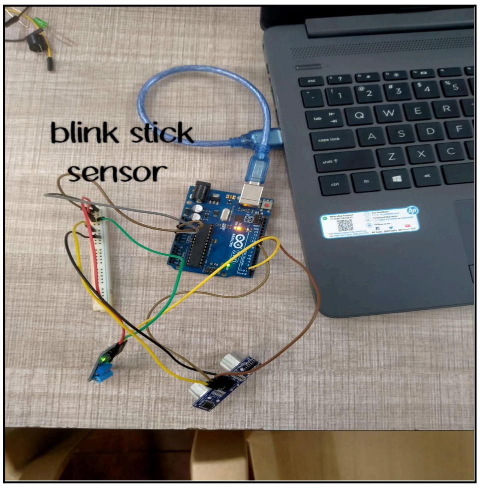
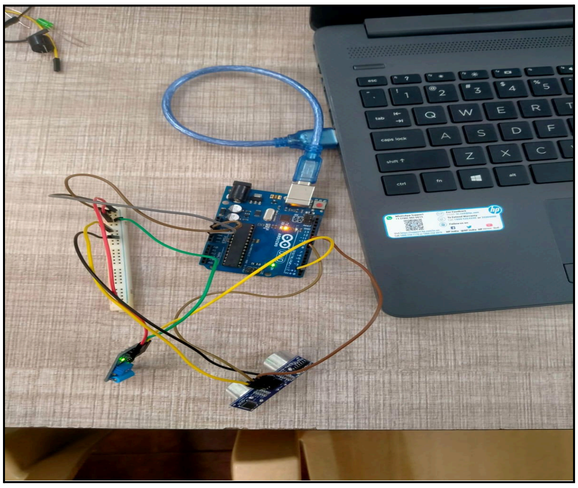
PROJECT 2: BLIND STICK

A smart blind stick is an assistive device designed for visually impaired individuals to enhance mobility and navigation. It integrates sensors such as ultrasonic or infrared to detect obstacles and provide feedback through vibrations, sound alerts, or tactile cues. Connected to a microcontroller like Arduino, it processes sensor data to inform users about their surroundings in real-time. The stick may also include features like GPS for location tracking and Bluetooth connectivity for integration with mobile devices, aiming to improve independence and safety while navigating environments.

Steps to be followed:

1. Choose suitable sensors like ultrasonic or infrared to detect obstacles
2. Select a microcontroller board such as Arduino or Raspberry Pi.
3. Decide on a power source, such as rechargeable batteries.
4. Mount sensors on the stick for optimal obstacle detection.
5. Program the microcontroller to calculate obstacle distances.
6. Integrate feedback mechanisms like vibrating motors or sound alerts
7. Include a user interface for adjusting settings and controls.
8. Assemble components securely onto the stick.
9. Test the device thoroughly for accurate obstacle detection.
10. Provide clear user instructions for operation and maintenance.





COMPONENTS REQUIRED:-

1. HC-SR04 Ultrasonic Sensor
2. Vibration Sensor
3. Power Source
4. Arduino Board
5. Jumper Wires
6. LED

In conclusion, the provided Arduino sketch demonstrates a practical application of the HC-SR04 ultrasonic sensor and a vibration sensor. The sketch efficiently measures distances using the ultrasonic sensor and detects vibrations using the vibration sensor, providing feedback through an LED. This setup can be further expanded for use in projects requiring obstacle detection and environmental monitoring, showcasing the versatility of Arduino in sensor integration and real-time data processing. Overall, the program exemplifies how Arduino facilitates the implementation of sensor-driven solutions in various applications, from robotics to IoT devices.

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```
const int trigPin = 9;
const int echoPin = 10;

float duration, distance;
const int sensorPin = 2;
const int ledPin = 13;
int sensorValue = 0;

void setup() {
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);
  pinMode(sensorPin, INPUT);
  pinMode(ledPin, OUTPUT);
  Serial.begin(9600);
}
```

```
void loop() {
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);
  duration = pulseIn(echoPin, HIGH);
  distance = (duration*.0343)/2;
  Serial.print("Distance: ");
  Serial.println(distance);
  delay(100);
sensorValue = digitalRead(sensorPin);
    Serial.println(sensorValue);
  if (sensorValue == HIGH) {
    digitalWrite(ledPin, HIGH);
    Serial.println("Vibration detected!");
  } else {
    digitalWrite(ledPin, LOW);
  }
```