AUTOMATIC DOOR OPENER WITH SENSOR AND ARDUINO BOARD

An Automatic Door Opener using a sensor and an Arduino board is an intelligent system designed to automatically open and close doors without physical contact. It is primarily implemented in places where hygiene, convenience, or accessibility is important—such as hospitals, offices, homes, and commercial buildings.

Working Principle:

The system uses an infrared (IR) sensor or ultrasonic sensor to detect the presence or motion of a person near the door. When the sensor detects an object within a specific range, it sends a signal to the Arduino microcontroller, which processes the input and activates a servo motor or motor driver to open the door. After a brief delay, the door automatically closes again.

Code:

```
#include <Servo.h>
// Define pins for ultrasonic sensor
const int trigPin = 9;
const int echoPin = 10;
// Create servo object
Servo doorServo;
// Distance threshold (in cm)
const int openThreshold = 50;
// Time delay before closing the door (in milliseconds)
const int closeDelay = 5000;
void setup() {
  // Initialize serial communication
  Serial.begin(9600);
 // Setup sensor pins
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);
  // Attach servo to pin 3
  doorServo.attach(3);
  // Set door to closed position initially
  doorServo.write(0);
}
void loop() {
  long duration;
  int distance;
 // Clear the trigPin
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
// Set the trigPin HIGH for 10 microseconds
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);
// Read echoPin
  duration = pulseIn(echoPin, HIGH);
// Calculate distance in cm
  distance = duration * 0.034 / 2;
  Serial.print("Distance: ");
```

```
  Serial.println(distance);
  // If someone is detected close to the door
  if (distance > 0 && distance <= openThreshold) {
    // Open door
    doorServo.write(90);
    delay(closeDelay);
    // Close door
    doorServo.write(0);
  }
  delay(500);
}
```

Circuit Diagram: