

### 1. Smart Wearable Health Monitoring System

- **Description:** Design a wearable device that continuously monitors vital signs like heart rate, temperature, and blood pressure and sends alerts during abnormalities.
- **Technologies:** Microcontroller, Pulse Oximeter, Bluetooth, OLED Display.

### 2. Digital Stethoscope with Bluetooth Connectivity

- **Description:** Build an electronic stethoscope that records heart and lung sounds and transmits them via Bluetooth to a smartphone for analysis.
- **Technologies:** Microcontroller, Microphone Sensor, Bluetooth, Audio Signal Processing.

### 3. Automatic Room Temperature Controller

- **Description:** Develop a system that automatically controls the temperature of a room by adjusting fan speed or activating air conditioning.
- **Technologies:** Temperature Sensors (DHT11), Microcontroller, Relays, Fan Control.

### 4. Solar-Powered Battery Charger

- **Description:** Design a solar-powered charging system for portable devices with overcharge protection and battery status indication.
- **Technologies:** Solar Panels, MPPT Controller, Battery Management System, LED Indicators.

### 5. IR-Based Object Counter

- **Description:** Create an IR-based object counting system to count people entering or exiting a room or objects on a conveyor belt.
- **Technologies:** IR Sensors, Microcontroller, LCD Display, Counters.

### 6. Smart Doorbell with Facial Recognition

- **Description:** Build a smart doorbell that uses facial recognition to identify visitors and notify the homeowner via a smartphone app.
- **Technologies:** Raspberry Pi, Camera, AI for Facial Recognition, IoT.

### 7. Wireless Power Transmission System

- **Description:** Design a system to transmit power wirelessly over short distances, useful for wireless charging applications.
- **Technologies:** Inductive Coupling, Power Electronics, Coils, Resonant Circuits.

## 8. Electronic Voting Machine

- **Description:** Develop an electronic voting machine with security features like biometric authentication to ensure safe and tamper-proof elections.
- **Technologies:** Keypad, LCD Display, Microcontroller, Biometric Scanner.

## 9. Smart Street Light System

- **Description:** Design a smart street lighting system that automatically adjusts brightness based on ambient light and traffic.
- **Technologies:** LDR, IR Sensors, Microcontroller, Relays.

## 10. Home Automation System Using Bluetooth

- **Description:** Build a system to control home appliances via Bluetooth, allowing users to turn devices on or off using a smartphone.
- **Technologies:** Bluetooth Module, Microcontroller, Relays, Mobile App.

## 11. Digital Stopwatch with Lap Timer

- **Description:** Create a digital stopwatch that records time, allows for lap timing, and displays the results on a 7-segment display.
- **Technologies:** Microcontroller, 7-Segment Display, Buttons, Timers.

## 12. Heartbeat Monitoring System Using Arduino

- **Description:** Design a system that monitors a person's heartbeat using a pulse sensor and displays it on an LCD.
- **Technologies:** Pulse Sensor, Arduino, LCD Display, Data Logging.

## 13. Ultrasonic Distance Measurement System

- **Description:** Build an ultrasonic distance measurement system that displays the distance to an object in real-time on an LCD.
- **Technologies:** Ultrasonic Sensor, Microcontroller, LCD Display, Signal Processing.

## 14. Smart Energy Meter

- **Description:** Design an energy meter that measures electricity consumption and transmits the data to a mobile app for real-time monitoring.
- **Technologies:** Current Sensors, Microcontroller, IoT, Energy Monitoring Software.

### 15. Capacitive Touch Switch

- **Description:** Create a capacitive touch switch for controlling home appliances, replacing mechanical switches with touch sensors.
- **Technologies:** Capacitive Touch Sensors, Microcontroller, Relays.

### 16. Fire Detection System

- **Description:** Develop a fire detection system that senses smoke or high temperatures and triggers an alarm, with an option to notify authorities.
- **Technologies:** Smoke Sensor, Temperature Sensor, Microcontroller, Buzzer.

### 17. Electronic Voting Machine

- **Description:** Build a simple and secure electronic voting machine with a keypad for voters to cast votes and an LCD to display the results.
- **Technologies:** Microcontroller, Keypad, LCD Display, Secure Memory.

### 18. Smart Water Quality Monitoring System

- **Description:** Create a water quality monitoring system to measure pH, turbidity, and temperature, providing real-time data on water safety.
- **Technologies:** pH Sensor, Turbidity Sensor, Microcontroller, IoT.

### 19. Digital Capacitance Meter

- **Description:** Design a digital capacitance meter to measure the capacitance of capacitors, displaying the value on an LCD.
- **Technologies:** Microcontroller, ADC, LCD Display, Capacitor Measurement Circuit.

### 20. Automatic Solar Tracker

- **Description:** Develop a solar tracker system that automatically adjusts the position of solar panels to maximize energy capture.
- **Technologies:** Light Sensors, Servo Motors, Microcontroller, Solar Panels.