Grade 4

Manual: 1

AI Project:Healthy Food Indicator

Theory

A healthy food indicator is a system that shows whether food is healthy or not.
It uses simple input to identify food type.
The system gives an indication using light (LED).

Theory –2 (Electronics Concept)

A microcontroller (UNO) is used to control the system.
The input is given to the microcontroller based on food type.
The LED glows to show whether the food is healthy or unhealthy.

Aim / Objective

To create a system that indicates healthy food using LED.

Components Required

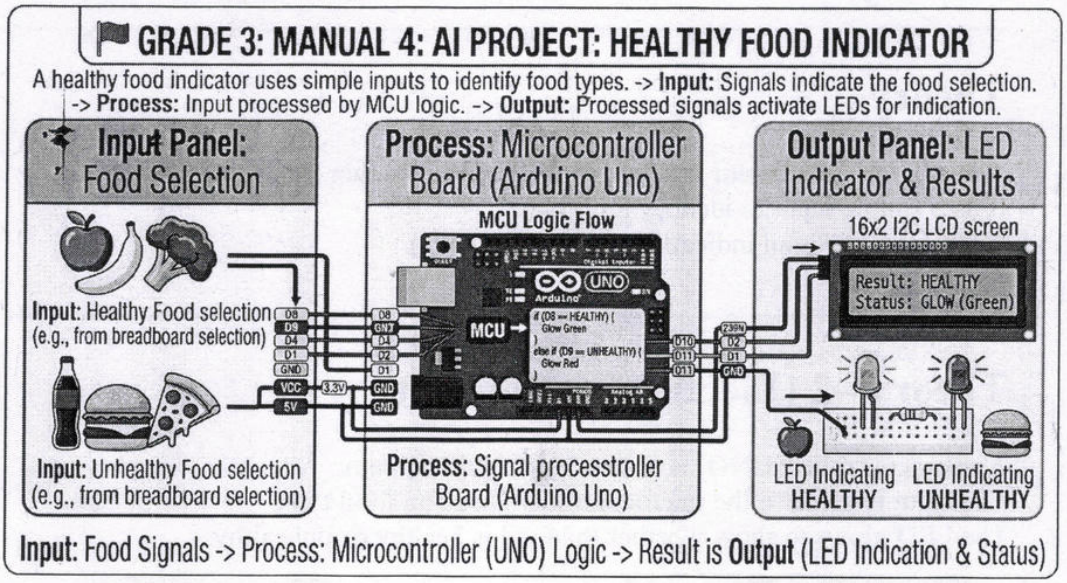
- LED
- Microcontroller UNO
- Resistor
- Breadboard
- Connecting Wires

Procedure

- Connect the LED to the microcontroller UNO.
- Use a resistor with the LED for safety.
- Program the microcontroller to control the LED.
- Give input (healthy or unhealthy food selection).
- Observe the LED indication

Working Principle

- The input about food type is given to the microcontroller.
- The microcontroller processes the input.
- The LED glows to indicate whether the food is healthy or not.



Result

The LED indicates healthy or unhealthy food.

System Concept

- Input: Food type
- Process: Microcontroller processing
- Output: LED indication

Grade 4

Manual: 2

AI Project:Light Detecting System

Theory

A light detecting system is used to detect light and darkness.It uses a sensor to sense the amount of light.The system turns ON a light (LED) when it is dark.

Theory – 2 (Electronics Concept)

An LDR (Light Dependent Resistor) is used to detect light.A microcontroller processes the signal from the LDR.When it is dark, the resistance changes and the LED turns ON.

Aim / Objective

To create a system that turns ON LED in darkness.

Components Required

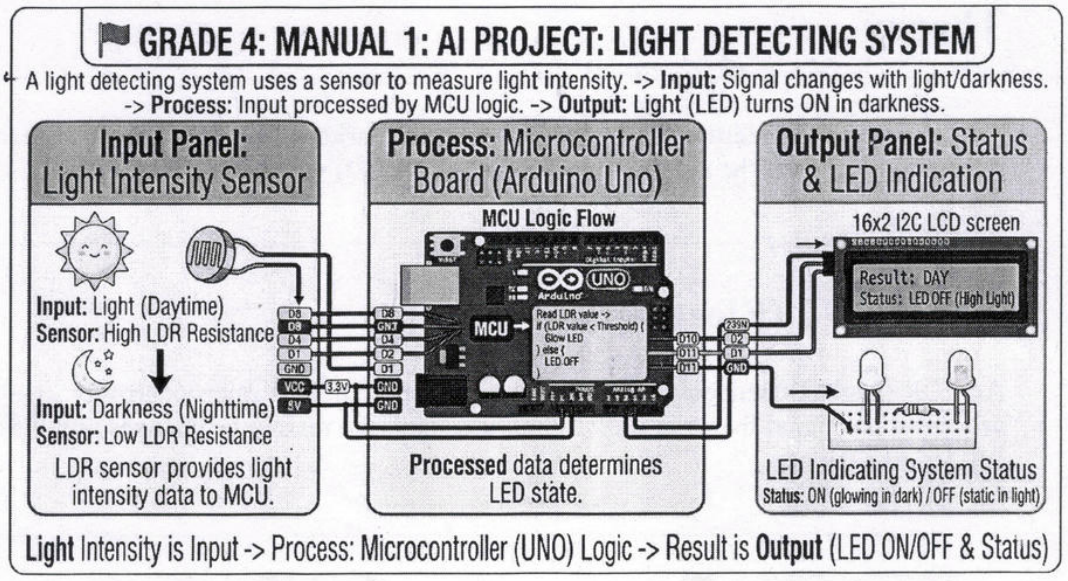
- Microcontroller
- LDR Sensor
- LED
- Resistor
- Breadboard
- Connecting Wires

Procedure

1. Connect the LDR sensor to the microcontroller.
2. Connect the LED with a resistor.
3. Upload the program to the microcontroller.
4. Cover the LDR to create darkness.
5. Observe the LED turning ON.

Working Principle

- The LDR detects light intensity.
- The microcontroller processes the signal.
- When darkness is detected, the LED turns ON.



Result

The LED turns ON in darkness.

System Concept

☐ Input: Light intensity
☐ Process: Microcontroller processing
☐ Output: LED ON/OFF

Grade 4

Manual: 3

AI Project:Distance Alert System

Theory

A distance alert system is used to detect nearby objects.It measures the distance between the sensor and an object.The system gives an alert when an object comes close.

Theory – 2 (Electronics Concept)

An ultrasonic sensor is used to measure distance.A microcontroller processes the signal from the sensor.
When an object is near, the buzzer is activated.

Aim / Objective

To create a system that alerts when an object comes near.

Components Required

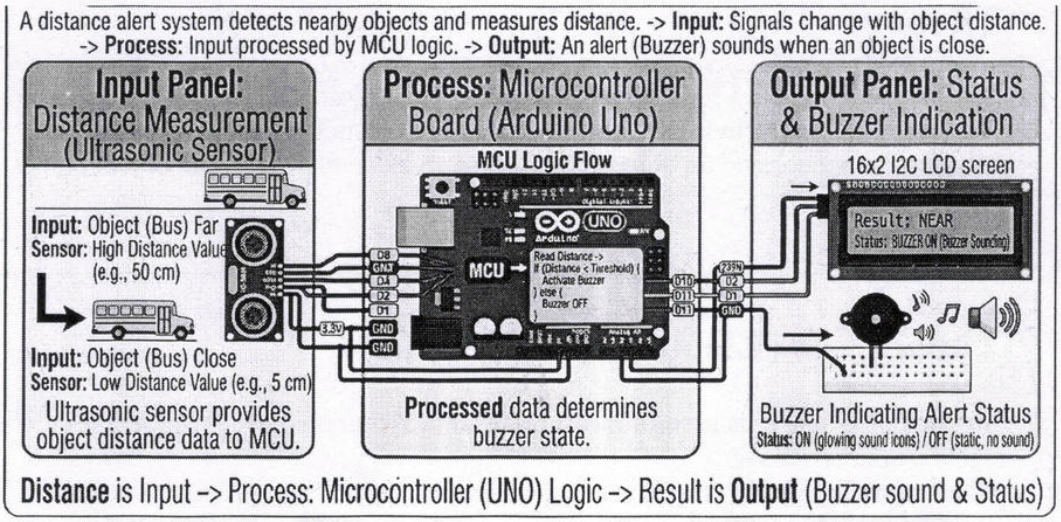
- Microcontroller
- Ultrasonic Sensor
- Buzzer
- Breadboard
- Connecting Wires

Procedure

1. Connect the ultrasonic sensor to the microcontroller.
2. Connect the buzzer to the microcontroller.
3. Upload the program.
4. Place an object near the sensor.
5. Observe the buzzer sound.

Working Principle

- The ultrasonic sensor measures the distance.
- The microcontroller processes the data.
- When the object is close, the buzzer gives an alert.



Result

The buzzer alerts when an object comes near.

System Concept

- ☐ Input: Distance of object
- ☐ Process: Microcontroller processing
- ☐ Output: Buzzer sound

Grade 4

Manual: 1

IoT Project:Classroom Noise Alarm

Theory

A classroom noise alarm detects loud sound in the classroom.
It helps maintain silence by giving an alert when noise increases.

Theory – 2 (Electronics Concept)

ESP8266 is used to control the system.It connects with a mobile using Wi-Fi.
When noise is detected, the LED can be controlled using the mobile.

Aim / Objective

To control an LED using a mobile when noise is detected.

Components Required

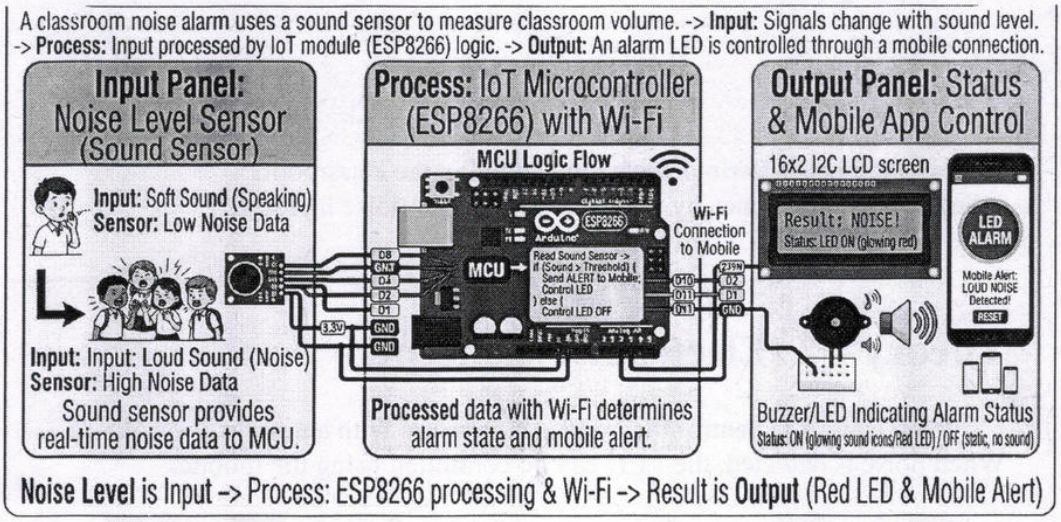
- ESP8266
- LED
- Sound Sensor
- Mobile Phone

Procedure

- Connect LED to ESP8266.
- Connect sound sensor.
- Connect ESP8266 with mobile.
- Make noise and observe LED.

Working Principle

- Sound is detected by the sensor.
- ESP8266 processes the signal.
- LED is controlled through mobile.



Result

LED turns ON when noise is detected.

System Concept

- ☐ Input: Sound
- ☐ Process: ESP8266 processing
- ☐ Output: LED ON/OFF

Grade 4

Manual: 2

IoT Project:Temperature Monitor

Theory

A temperature monitor is a system that measures temperature.
It helps us know how hot or cold the surroundings are.

Theory – 2 (Electronics Concept)

A DHT11 sensor is used to detect temperature.ESP8266 is a microcontroller that processes the data.
The system reads the temperature and displays the value.

Aim / Objective

To create a system that measures and shows temperature.

Components Required

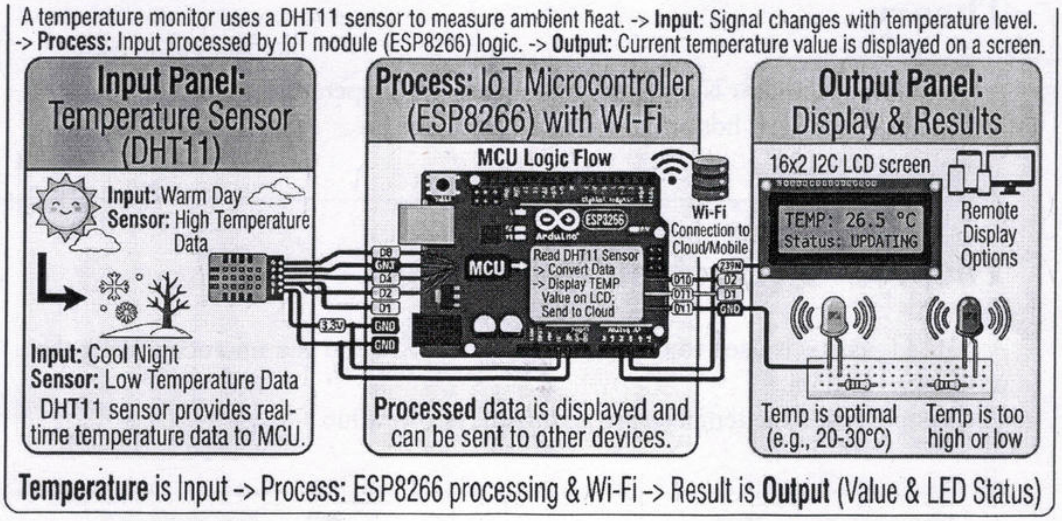
- ESP8266
- DHT11 Sensor
- Connecting Wires
- Power Supply

Procedure

- Connect the DHT11 sensor to ESP8266.
- Upload the program to ESP8266.
- Power ON the system.
- Observe the temperature reading.

Working Principle

- The DHT11 sensor detects the temperature.
- ESP8266 processes the data.
- The temperature value is displayed.



Result

The system shows the temperature.

System Concept

☐ Input: Temperature
☐ Process: ESP8266 processing
☐ Output: Temperature value

Grade 4

Manual: 3

IoT Project:Smart Doorbell

Theory

A smart doorbell is a system that gives an alert when someone presses a button.
It helps us know when someone is at the door.

Theory – 2

ESP8266 is used to control the system and connect with devices using Wi-Fi.
When the button is pressed, a signal is sent to ESP8266.
The buzzer is activated to produce sound as an alert.

Aim / Objective

To create a simple smart alert system for a doorbell.

Components Required

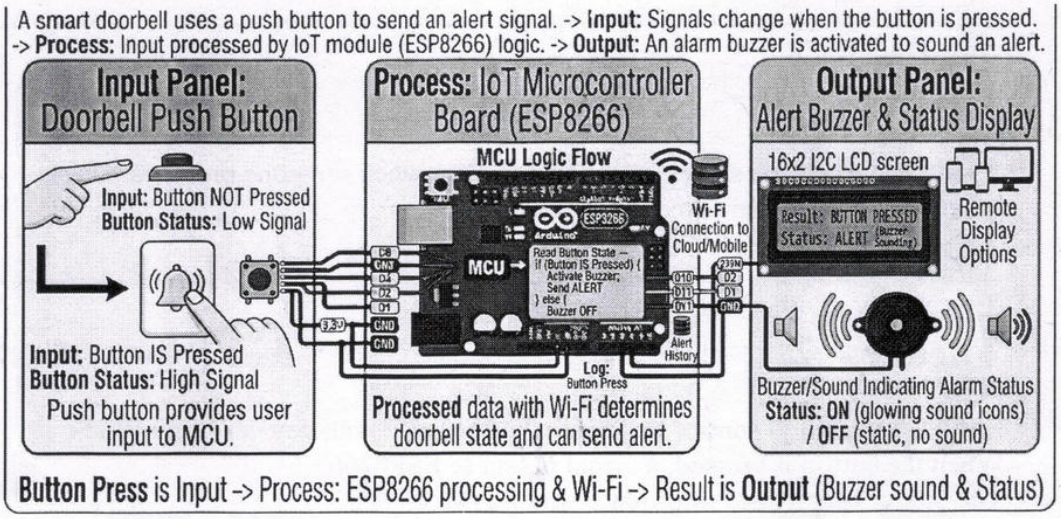
- Button
- Buzzer
- ESP8266
- Connecting Wires
- Power Supply

Procedure

- Connect the button to ESP8266.
- Connect the buzzer to ESP8266.
- Upload the program.
- Press the button.
- Observe the buzzer sound.

Working Principle

The button is pressed by the user.
ESP8266 receives the signal.
The buzzer is activated and produces sound.



Result

The buzzer sounds when the button is pressed.

System Concept

- ☐ Input: Button press
- ☐ Process: ESP8266 processing
- ☐ Output: Buzzer sound
