ENVIRONMENTAL MONITORING

USING INTERNET OF THINGS

IOT

BASIC DETAILS OF THE TEAM

Team name : proj_224086_Team_1

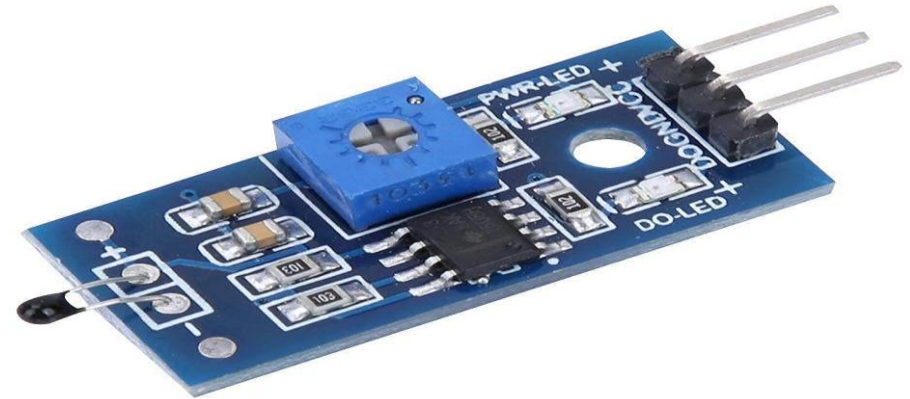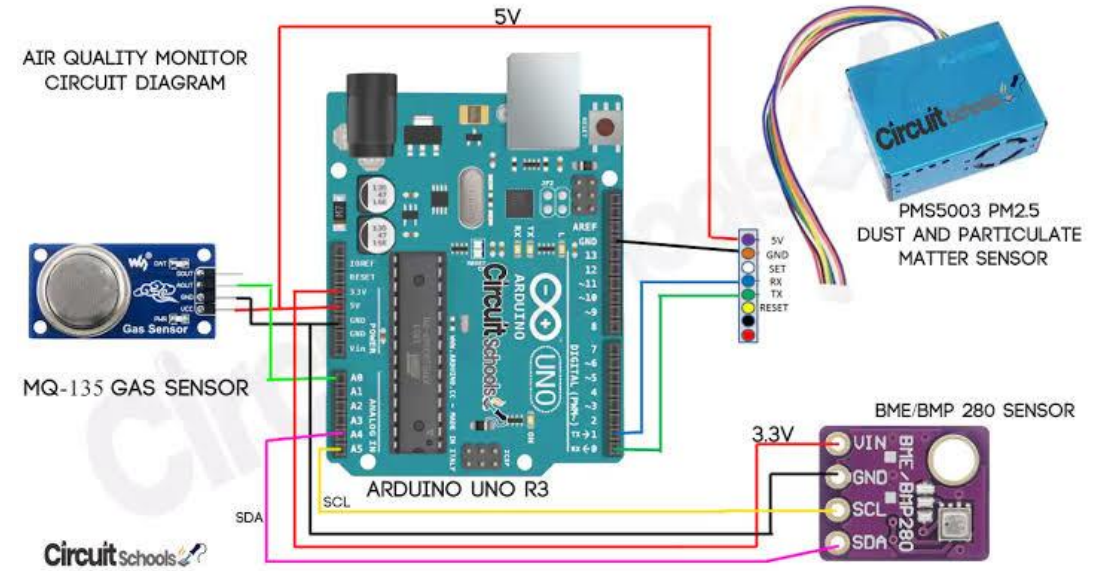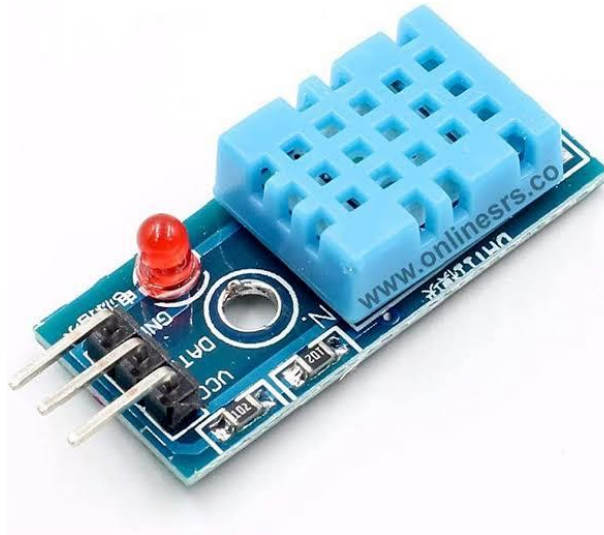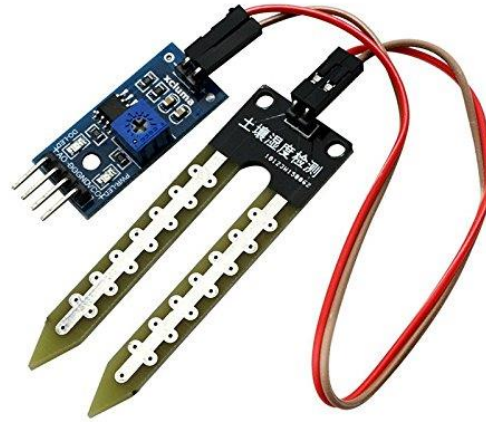Team leader name : Vimalanathan.G

Team based : Environmental Monitoring

College name : Chendu College of Engineering and Technology

Theme : Smart Environmental Monitoring and Plant Care System.

Components Required :

- ❑ 12c lcd display

- ❑ Jumper cable

- ❑ Gas sensor

- ❑ Led light

- ❑ Breadboard

- ❑ Arduino uno

- ❑ Soil moisturation

- ❑ Humidity sensor

- ❑ Temperature sensor

- ❑ Raindrop sensor

ENVIRONMENTAL MONITORING :

Environmental monitoring powered by IoT (Internet of Things) is revolutionizing how we understand and protect our planet. With sensors and connectivity, it provides real-time data on environmental conditions, offering crucial insights for sustainable practices and addressing environmental challenges. This brief overview explores the transformative potential of IoT in environmental monitoring.

Solution :

❑ Utilize a variety of sensors to measure parameters like temperature, humidity, air quality, water quality, soil moisture, and more. This provides a comprehensive view of the environment.

❑ Implement data analytics and machine learning algorithms to process and analyze the collected data for trends, anomalies, and predictive insights.

❑ Design energy-efficient sensors and devices to prolong battery life in remote or off-grid locations. Use renewable energy sources where applicable.

❑ Integrate data from external sources such as weather forecasts, satellite imagery, and government databases to enhance environmental insights.

❑ Promote public awareness by making certain environmental data accessible to the general public through websites or mobile apps.

WORKING EXPLANATION :

•**Data Analysis and Decision-Making:** The Arduino Uno incorporates algorithms to analyze data from various sensors, including temperature, humidity, and soil moisture. Based on this analysis, the system determines whether outdoor activities are advisable for users and conveys the appropriate message, such as "OK for Outdoor" or "Not Advised for Outdoor," on the LCD display.

•**Automated Plant Watering:** The system continuously monitors soil moisture levels in real-time. If the soil moisture drops below a predefined threshold, the Arduino Uno activates a water release system to provide the necessary irrigation for plant soil. This ensures that plants receive adequate moisture for optimal growth.

•**Temperature Monitoring:** A temperature sensor measures the current temperature and transmits the data to an Arduino Uno using both wired and wireless communication methods. The Arduino Uno displays the temperature information in real-time on a 12C LCD display, providing users with up-to-date temperature readings.

•**Humidity Monitoring:** An integrated humidity sensor continuously tracks air humidity levels. The collected humidity data is sent to the Arduino Uno via both wired and wireless communication. The Arduino Uno processes this data and presents the humidity levels on a 12C LCD display, enabling users to monitor atmospheric humidity conditions.

Benefits of IoT in environmental monitoring

❑ Real-time Data Collection: IoT sensors can continuously collect data on various environmental parameters such as air quality, water quality, temperature, humidity, and more. This real-time data allows for more accurate and timely monitoring of environmental conditions.

❑ Remote Monitoring: IoT devices can be deployed in remote or hard-to-reach areas, enabling monitoring in locations that were previously challenging or expensive to access. This is especially valuable for monitoring in remote forests, oceans, or industrial sites.

❑ Cost-Efficiency: IoT technology reduces the need for manual data collection and on-site visits, leading to cost savings in monitoring operations. It also minimizes the risk to human operators in hazardous environments.

❑ Data Accuracy and Precision: IoT sensors provide highly accurate and consistent data, reducing the potential for errors associated with human data collection. This accuracy is crucial for making informed decisions about environmental management.

❑ Data Accessibility: IoT data can be easily accessed and shared with relevant stakeholders, including researchers, policymakers, and the public, fostering transparency and collaboration in environmental management.

❑ Reduced Environmental Impact: By optimizing resource usage and reducing emissions through data-driven insights, IoT can contribute to a reduction in the overall environmental impact of various industries.

❑ Predictive Analytics: IoT data can be used to build predictive models that forecast environmental changes, such as weather patterns, pollution levels, or the likelihood of natural disasters. This helps in proactive decision-making and disaster preparedness

Team Members Details

ROLE IN	NAME	BRANCH IN B.E	YEAR
TEAM LEADER	VIMALANATHAN.G	CSE	3rd
TEAM MEMBER 1	HARI VIGNESH.M	CSE	3rd
TEAM MEMBER 2	ABINESH.M	CSE	3rd
TEAM MEMBER 3	SIVARAMAN	CSE	3rd