



TEAM_BUBT

In Collaboration with IEEE BUBT Student Branch



Sensor to Solution

IoT Workshop & Hackathon

Hackathon Challenge Rulebook

Smart Agriculture + IoT Innovation

Learn. Build. Innovate. Compete.

Section 2: Hackathon Challenge

Event Details

Venue: BUBT Cafeteria

Theme: Smart Agriculture + IoT Innovation

Status: Registration Open

Registration: Hackathon Reg: 200 BDT

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Challenge format: 1 scenario and 10 tasks

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1. Hackathon Overview

The Hackathon Challenge is the second section of the event. Teams will solve one smart agriculture scenario by building an IoT-based prototype. The challenge includes hardware, software, documentation, and presentation deliverables.

Theme: Smart Agriculture + IoT Innovation

2. Scenario

A smart farming field needs an IoT-based monitoring and automation system. The system should collect environmental or field data, process it, display it on a dashboard or output device, and provide useful decisions or alerts for farmers. Teams must design and demonstrate a working prototype based on this scenario.

3. Team Rules

- Each team can have 1-3 members unless organizers announce otherwise.
- Each participant can join only one team.
- Teams must complete the project within the given hackathon time.
- Projects must follow the smart agriculture scenario.
- Copied projects without explanation or modification may be disqualified.
- Judges decisions will be final.

4. Task Structure

The hackathon has **12 evaluated items**: 3 hardware tasks, 5 software tasks, 2 documentation tasks, and 2 presentation tasks. If organizers need a 10-task version, the two documentation and two presentation items can be merged into two final deliverables.

5. Hardware Tasks - 3

Hardware Task 1: Microcontroller Setup

Set up ESP32, Arduino, NodeMCU, or another supported microcontroller and prepare it for sensor-based data collection.

Hardware Task 2: Sensor Integration

Connect at least two smart agriculture related sensors such as soil moisture, temperature, humidity, light, water level, gas, or ultrasonic sensor.

Hardware Task 3: Output or Automation Control

Add at least one output or automation device such as LED, buzzer, relay, servo motor, fan, or water pump simulation.

6. Software Tasks - 5

Software Task 1: Data Reading Program

Write code to collect real-time data from the connected sensors.

Software Task 2: Data Processing Logic

Process the sensor data and create decision logic, such as irrigation needed, high temperature warning, or low water alert.

Software Task 3: IoT Communication

Send sensor data using WiFi, Bluetooth, serial communication, Firebase, ThingSpeak, MQTT, Blynk, or another suitable platform.

Software Task 4: Dashboard or Display

Create a dashboard or display system to show sensor values using web dashboard, mobile dashboard, cloud dashboard, LCD, or OLED.

Software Task 5: Alert or Notification System

Add an alert system for abnormal conditions such as low soil moisture, high temperature, low water level, or device offline status.

7. Documentation Tasks - 2

Documentation Task 1: Project Document

Submit a short project document with title, problem statement, components, connection diagram, workflow, features, and future improvement.

Documentation Task 2: Technical Diagram or Workflow

Provide a circuit diagram, block diagram, data flow diagram, or system workflow that clearly explains how the prototype works.

8. Presentation Tasks - 2

Presentation Task 1: Project Pitch

Present the problem, proposed solution, smart agriculture relevance, innovation, and expected impact within the given time.

Presentation Task 2: Live Demo and Q&A;

Demonstrate the working prototype and answer judges questions about hardware, software, limitations, and future development.

9. Judging Criteria

Criteria	Marks
Hardware Implementation	20
Software Functionality	25
IoT Communication / Dashboard	15
Innovation and Smart Agriculture Relevance	15
Documentation	10
Presentation and Live Demo	15
Total	100

10. Allowed Tools and Components

- ESP32, Arduino, NodeMCU, or similar microcontroller.
- Soil moisture, DHT11/DHT22, ultrasonic, light, gas, water level, or related sensors.
- Relay, buzzer, LED, OLED, LCD, servo motor, fan, or pump simulation.
- Firebase, ThingSpeak, MQTT, Blynk, local web dashboard, mobile dashboard, or serial monitor.
- Any suitable programming language or platform approved by the organizers.

11. Disqualification Rules

- Copying another team project or using unfair external help.
- Damaging hardware intentionally or using unsafe wiring.
- Submitting work that does not match the scenario.
- Misbehavior with organizers, judges, volunteers, or participants.
- Failure to present or explain the team own work.