

PERIPHERALS LAB RULEBOOK

overview:

Peripherals Lab is an IoT-HCI (Internet of Things & Human-Computer Interaction (HCI)) challenge where participants design a real-time game controlled via virtual IoT hardware simulation (Wokwi/ESP32) using professional communication protocol (MQTT/WebSockets). Participants are tasked with design, & development of a full digital game where primary input is not a standard keyboard or mouse, but a virtual IoT controller built in Wokwi (ESP32-based). Students bridge the gap between firmware logic and game mechanics using real-world communication protocols - the theme emphasizes:

- Connectivity
- Data Fusion
- Gamification

ELIGIBILITY & Team Formation:

- Team size: 1-4 participants
- Open to all relevant branches/years
- Single submission per team
- Interdisciplinary/Cross-domain teams encouraged

EVENT STRUCTURE:

Phase 1 - Problem Analysis: (30 Marks)

- Final Deadline (within): 7 Days
- Submissions Needed:
 - Problem Statement
 - Stakeholder Analysis
 - Constraints (latency, system limit, etcetera)
 - Use-case flow

Phase 2 - Final Presentation: (30 Marks)

- Final Deadline (within): 3 Days
- Submissions Needed:
 - PPT (8–10 slide ppt)
 - Live demo
 - Technical report
 - Future scope

TECHNICAL REQUIREMENT & RESTRICTION:

- virtual IoT controller: Wokwi simulation (like ESP32-based)
- game environment: GDevelop / p5.js / equivalent
- Communication:
 - MQTT or,
 - WebSockets
- Real-time data transmission
- Sensor-to-action mapping
- Low latency interaction
- Keyboard/mouse as primary control (not allowed)
- Fully pre-built templates (not allowed)
- External hardware (not allowed) - unless approved earlier.

SUBMISSION GUIDELINES:

- All submissions must be complete before deadline given.
- Required documents to be linked when needed:
 - Source code/links (if applicable)
 - Circuit diagrams (if applicable)

- PPT, & final report document

DEMO RULES:

- Live demo mandatory
- No pre-recorded demos
- Judges may:
 - Test system/hardware simulation randomly
 - Inspect game code.

CODE OF CONDUCT:

- No plagiarism or teams having repetition of any part of solutions are allowed.
- Awards (Winner; Runner-Up; Best Design; Best Debugging; Innovation Award) will be awarded at the discretion of the challenge's 'IEEE Judging Panel' in accordance with judging criteria outlined (given: in event information documentation).