Training Day 2 Report:

Date: *26 June,2025(Wednesday)*

Location:*PG Block HPC Lab*

Guided by:*Training Instructors (Classroom-Based)*

Main Objective:

To understand the IoT architecture model, types and working of sensors and actuators, simulators, differences between common IoT hardware platforms, and get hands-on experience with Arduino, Python, and Anaconda.

Summary of the Day's Work

Today's session focused on deepening the conceptual and practical understanding of smart systems, sensors, simulators, and the IoT development environment.

Topics/Areas Covered:

- IoT Architecture View – 7 Layered Model
- Sensors & Smart Sensors
- Actuators & Smart Actuators
- Robotic Systems & Smart Appliances
- Sensor-Actuator Pair Concept
- Wokwi Simulator Introduction
- Difference between Arduino, NodeMCU & Raspberry Pi
- Python (Basics)
- Pin Configuration of Sensors
- LED, DHT11 & PIR Sensor Connections with Arduino
- Installing Arduino IDE & Anaconda

Details of Work Done / Concepts Learned:

- Understood the role and seven levels of IoT architecture.
- Explored the functioning of smart sensors and actuators, and what defines a "smart" system.
- Used simulators for virtual IoT circuit connections and logic testing.
- Differentiated between Arduino, NodeMCU, and Raspberry Pi boards and understood their applications.
- Learned Arduino "setup()" and "loop()" structure for continuous sensor reading.Understood DHT11 sensor for humidity/temperature measurement and PIR sensor for motion detection.
- Gained experience with basic pin configuration, sensor connection wiring, and setup of Arduino IDE and Anaconda.

Tools / Platforms Used

- Wokwi Simulator
- Arduino UNO
- Arduino IDE
- Anaconda

Tasks Assigned

- Write code on simulator to read humidity & temperature using DHT11 + Arduino
- Install Anaconda
- Compare NodeMCU, Raspberry Pi, and Arduino boards

Observations / Reflections

Simulators helped me understand circuit connections without needing physical hardware. I also started comparing the features of different microcontroller boards. My understanding of sensor logic and wiring is improving.

Key Takeaways

- Built confidence in using simulators for testing IoT projects before hardware implementation.
- Gained clarity on the architecture and functioning of smart sensors/actuators.
- Understood comparative advantages of different IoT boards.
- Established a workflow for sensor programming and platform setup.