



Assignment Requirements

Each team must **propose, design, and implement** an IoT-based solution that includes:

Requirement	Description	Weight
IoT Device Connection	<ul style="list-style-type: none">- Set up a Raspberry Pi 4 with an Azure IoT Hub.- Configure MQTT communication or Azure SDK-based messaging.- Verify data transmission using Azure tools.	10%
Sensor Data Collection	<ul style="list-style-type: none">- Choose at least two Grove sensors for monitoring (<i>e.g., temperature, motion, heart rate, light, etc.</i>).- Write a Python script to collect real-time data and store it locally.- Ensure data is timestamped and logged for analysis.	15%
Telemetry Transmission to IoT Hub	<ul style="list-style-type: none">- Format sensor readings as JSON.- Implement secure data transmission with MQTT or HTTP to Azure IoT Hub.- Apply error handling and retry mechanisms.	15%
Data Visualisation	<ul style="list-style-type: none">- Use Azure Time Series Insights or Power BI to visualise sensor trends.- Display key parameters (<i>e.g., temperature history, motion activity, heart rate trends</i>).- Ensure real-time updates are reflected on the dashboard.	15%
Data Processing & Actuation	<ul style="list-style-type: none">- Implement an automated response based on sensor readings.- Use Azure Functions to analyse data and trigger actuations (<i>e.g., turning on a fan, sending an emergency alert</i>).- If applicable, integrate Custom Vision AI for real-time decision-making (<i>e.g., recognising falls, detecting abnormal medication intake</i>).	30%
Project Presentation & Documentation	<ul style="list-style-type: none">- Submit a report with:- System architecture diagrams.- Code snippets and explanations.- Screenshots of dashboards and telemetry data.- Challenges faced and solutions implemented.- Deliver a 5-minute demo video showcasing the project.	15%