UNIVERSITI SAINS MALAYSIA

CPC357: IoT Architecture & Smart Applications

Assignment 2

Group Members:

1. Name: _____ Matric No. : _____

2. Name: _____ Matric No. : _____

Design and Development of an IoT Application on Google Cloud Platform

Objective:
The aim of this assignment is to design and develop an IoT application, requiring students to comprehend and implement the intricate interplay between software and hardware components. They are expected to analyze system constraints, prioritize security, trust, and privacy, and actively engage in the development process. Additionally, students will explore and implement preventive measures to address potential challenges in the IoT ecosystem.

Scenario:
As a current member of a company specializing in designing and developing IoT solutions, you are tasked with creating a proof of concept for an IoT application. Your assignment is to draft a system design document, providing a detailed overview of the software architecture, design choices, and step-by-step development procedures. You are required to use Google Cloud Platform (GCP) for this assignment.

Requirements:

1. System Architecture (30 points):
    - Provide a high-level architectural overview.
    - Offer a detailed description of each component/module.
2. Design Considerations (20 points):
    - Identify factors influencing design decisions.
    - Document any trade-offs made during the design phase.
3. Development Process (40 points):
    - Present a step-by-step guide to the development process.
    - Include a code repository containing the developed IoT application on GCP along with development environment setup.
    - Utilize visual representations, such as screenshots or diagrams, to enhance understanding.
4. Security Considerations (10 points):
    - Offer detailed information on security measures implemented.
    - Outline strategies for data protection and access control.

Assignment Due Date: 26 January 2024, 5pm (MY time)

GRADING RUBRICS:

Criteria	Weight	Excellent (70-100%)	Sufficient (52-69%)	Fair (36-51%)	Poor (0-35%)
System architecture	30%	Clear and detailed high-level architectural overview; comprehensive description of each component/module.	Sufficient architectural overview.	Basic understanding of system architecture with some inaccuracies or omissions.	Incomplete or inaccurate architectural overview.
Design considerations	20%	Thorough identification and clear explanation of factors influencing design decisions; well-documented trade-offs made during the design phase.	Sufficient explanation of factors influencing design decisions.	Some identified design considerations with limited explanation.	Missing or unclear factors influencing design decisions.
Development Process	40%	Clear, accurate, and comprehensive step-by-step guide; inclusion of a well-organized code repository with development environment setup; effective use of visual representations.	Sufficient step-by-step guide; inclusion of a code repository with development environment setup.	Basic step-by-step guide with some inaccuracies or omissions.	Incomplete or inaccurate development process.
Security considerations	10%	Comprehensive and accurate information on security measures implemented; clear outline of strategies for data protection and access control.	Sufficient information on security measures implemented; with strategies for data protection and access control.	Basic understanding of security measures with some inaccuracies or omissions.	Missing or inaccurate information on security measures.

All assignments MUST be submitted before/on the given date. Late submissions without prior approval will not be accepted.

Plagiarism/pirating and copying are serious academic offence. Students that are found to plagiarize/or copying will get an F for the assignment/report or for the whole coursework grade.

Thank you