BAHRIA UNIVERSITY, (Karachi Campus)

Department of Software Engineering

Assignment 2 - Spring 2024

COURSE TITLE:	**Intr. to Software Engineering**	COURSE CODE:	**SEN-210**
Class:	**BSE-II (A, B, C)**	Time Allowed:	**2 Week.**
Course Instructor:	**ENGR. RAHEMEEN**	Max. Marks:	**7 marks**
Submission Date:	**19-05-2024**		

Note:

- This assignment should be submitted in to group (only 2 memebers)
- Strictly follow the given deadline.
- Assignment must be submitted on LMS.
- Must be in PDF file only.

Question No. 1 **[5 Marks]**

A UAV, or unmanned aerial vehicle, is an aircraft without a human pilot onboard. It is typically controlled remotely or autonomously and is used for various purposes such as surveillance, reconnaissance, photography, mapping, and even delivery services.

A leading aerospace company "Aerotech Aviation" needs a solution to develop a software, for a sophisticated flight control system for a new unmanned aerial vehicle (UAV) project. The flight control system is critical to the UAV's safe and efficient operation during surveillance missions in remote areas.

The project specifications include real-time data processing, precise navigation algorithms, fault tolerance mechanisms, and integration with various sensors and actuators onboard the UAV. Additionally, the software must comply with strict aviation regulations and safety standards.

In this assignment with your group members, your task is to propose a detailed software development plan for the UAV flight control system project. Your plan should cover the following aspects:

1. Requirements Analysis

Conduct a thorough analysis of the functional and non-functional requirements for the flight control system, considering the operational environment, performance constraints, and safety-critical aspects.

2. System Architecture Design

Propose a high-level system architecture for the flight control software, including the allocation of software components, communication protocols, and interfaces between subsystems.

3. Software Development Methodology

Select an appropriate software development methodology (e.g., Waterfall, Agile, Spiral) and justify your choice based on the project requirements and constraints. Provide a detailed description of the development process, including iteration plans, milestone definitions, and version control strategies.

4. Risk Management

Identify potential risks and challenges associated with the development of the flight control software, such as technology dependencies, regulatory compliance issues, and integration complexities. Propose risk mitigation strategies to address these challenges effectively.

5. Testing and Validation

Define a comprehensive testing and validation strategy to ensure the correctness, reliability, and safety of the flight control software. Specify the types of tests to be conducted, testing environments, and criteria for acceptance.

6. Documentation and Maintenance

Outline a plan for documentation and maintenance of the flight control software throughout its lifecycle, including user manuals, system specifications, and maintenance procedures.

Note: Your document file should be well-structured, supported by relevant research and industry best practices, and demonstrate a clear understanding of software engineering principles and methodologies.

Question No. 2: **[2 Marks]**

(Viva)