



FAST National University of Computer and Emerging Sciences

Assignment#1

Software Design and Architecture (SE 2002)

Submission Date: March 20, 2024 (by 4:00 PM)

You are tasked with understanding and applying the concepts of Object-Oriented Analysis and Design (OOAD), specifically focusing on the Unified Modeling Language (UML), the importance of UML in software engineering, creating a class diagram model, and developing a use case diagram.

Part 1: UML Importance (10 marks)

- Discuss the importance of UML in software engineering. Include the following points in your discussion:
- Explanation of UML and its purpose.
- Benefits of using UML in software development.
- How UML helps in communication among stakeholders.
- Different types of UML diagrams and their roles in the software development lifecycle.
- Importance of UML in achieving better design and maintainability of software systems.

Part 2: Class diagram and use-case model (15 marks)

You are having a project deal that is being developed for customers so that they can order their books. This project is a web based application, designed to help the customers to select books through online system. This application takes information from the customers through filling their details (their name, contact number and address for shipping). A customer being registered in the website has the facility to place an order on books which he require. It has an easy to understand interface which helps the customers to check for books. The books will be ordered into an economy, premium and so forth. Based on a type of book required by the customers, the customers will have able to make bookings based on title, author and subject. The selected books are displayed in a tabular format and the user can order their books online through credit card and debit card payment. The user can login using his account details or new customers can set up an account very quickly. The Administrator will have additional functionalities when compared to the common user. He can add and delete and update the book details.

You have been asked to design a piece of software which can accommodate the above requirements. Your design document should include the answers of following questions.

Q 1: Create a UML class diagram for the application mentioned above. A few methods and properties for important entities should also be included, as well as the relevant relationships and notation showing the multiplicity of these relationships (1..*, etc.).

Q 2: Create a UML use-case diagram for the above scenario.

Q 3: Seldom are requirements fulfilled the first time they are presented. Take into account the abovementioned specifications, the domain of book purchasing, and the billing procedure. Introduce a requirement that might exist even if the customer hasn't mentioned it. Finally, describe how you would modify one of the diagrams from above to reflect this modification.

Important Note:

- The students should develop the diagrams by themselves. **DO NOT** copy the content from any Internet source or fellows.
- All parties involved in any kind of cheating in any assessment will get zero in that assessment.