Mid-1 Solution

CLO # 2: Explain software development lifecycle.

Q1. Attempt this question on the question paper.

(a) Match each description below to the **SINGLE MOST APPROPRIATE OPTION** among the following. (**Note: terms or types may apply to one or more than one description**) [10]

A. Agile
B. Iterative process model
C. V-model
D. Spiral model
E. Extreme programming
F. Waterfall model
G. Scrum
H. Incremental process model

1. *Extreme programming* approach focuses on continuously testing and integrating small software releases to ensure high quality.
2. Scrum process emphasizes short development cycles called sprints with frequent feedback.
3. Waterfall model is suitable when requirements are well-defined upfront and unlikely to change.
4. Spiral model involves exploring and mitigating risks through a series of iterations.
5. Extreme Programming Utilizes "test-first development" – writing tests before coding helps to clarify requirements.
6. The Agile manifesto emphasizes individuals and interactions, working software, customer collaboration, and responding to change.
7. In the V-model, testing is planned in parallel with each development stage, ensuring early detection of defects.
8. Iterative approach emphasizes improving and refining the product incrementally over time rather than delivering it all at once.
9. In the Iterative process model, testing and feedback occur after each phase, allowing teams to make necessary adjustments for the next iteration.
10. One of the key benefits of the Spiral model is its focus on identifying and mitigating risks early in the development process

CLO # 3: Use different UML notations for software design

Q2. Case Study: Web-Based File Storage and Sharing System

(a) Identify 10 functional requirements [10]

Rubric: 0.5 for identifying correct functional requirement, 0.5 for written req. quality as per guidelines.

FR1: The system **shall allow** users to sign-up by providing a unique email address and a password that meets security criteria (e.g., minimum 8 characters, includes numbers and special characters).

FR2: The system **shall allow** users to upload files of any type (e.g., .pdf, .docx, .jpg) with a maximum size of 2 GB per file.

FR3: The system **shall allow** users to create folders.

FR4: The system **shall allow** users to share files or folders with other registered users by email.

FR5: The system **shall include** sharing permissions options to allow users to view, download, and edit shared content.

FR6: The system **shall allow** users to search for files and folders by file name, file type, or associated tags.

FR7: The system **shall allow** multiple users to edit shared files concurrently.

FR8: The system **shall notify** all collaborators of ongoing changes and prevent overwriting by maintaining a version history of all edits.

FR9: The system **shall maintain** a version history for each file, while tracking changes made by users

FR10: Users **shall be able** to revert to any previous version of a file.

FR11: The system **shall indicate** the timestamp and user responsible for each change.

FR12: The Administrators **shall be able** to perform CRUD operations on user accounts.

FR13: The Administrators **shall be able** to assign different roles (e.g., regular user, business user, administrator).

FR14: The Administrators **shall be able** to set storage limits for each type of user role.

(b) Create a use case diagram for the system [10]

1. All users are performing signup and login use case.
2. Regular can perform all use cases except Manage Accounts and Manage Storage

Rubric: 5 for identifying use cases in correct format, 5 for relationship between use cases.