

Question #1

Waterfall model: -

- This classical model was first introduced by Winston Royce in 1970.
- This model is also known as **Linear and sequential model**. Because it follows the name systematic pattern as clear from the name **waterfall**.
- You cannot enter the second phase before the completion of the first phase.
- The output of the first phase is the input of the second phase.

Stages: -

1. **Communication:** requirements gathering
2. **Planning:** Estimating/scheduling/Tracking
3. **Modeling:** Analysis and design
4. **Construction:** Coding /Implementation/Testing.
5. **Deployment:** Delivery/Support/Feedback

Advantages: -

- Easy to understand and simple to use.
- Clearly defines our destination and deadlines.
- Support managerial control and discipline the organization.

Disadvantages: -

- Model is not flexible I-e does not allow changes once the development phase started.
- Delays the testing until the end of the development life cycle.
- Not ideal for complex, High risk, Object oriented Programming.

Question #2

SDLC (Software development life cycle): -

The process which the organization follows to develop quality software. The process covers design, **Development and testing**.

Stages: -

1. Planning: -

Requirement analysis is the most fundamental step. In this stage the senior member team, which includes market analysis and domain experts, take all the information regarding what the customer actually wants.

2. **Defining: -**

It is actually the process of documentation and defining the requirements.

This is done through SRS (software requirement specification).

3. **designing: -**

It is the process of giving diagrammatical representation to the SRS.

Here we make the DDS (document design specification) of the already prepared SRS.

4. **Development: -**

Process of generating code as per DDS.

Here we make the actual product through coding.

6. **Testing: -**

Here the product defects are reported, tracked, fixed and retested until they reach the quality standards defined in SRS.

7. **Deployment: -**

Process of deployment of the software into the area where it runs into business.

8. **maintenance: -**

Whatever happens at rest of the life of software it includes changes, correction, addition and more.

Question #3

User Requirements: -

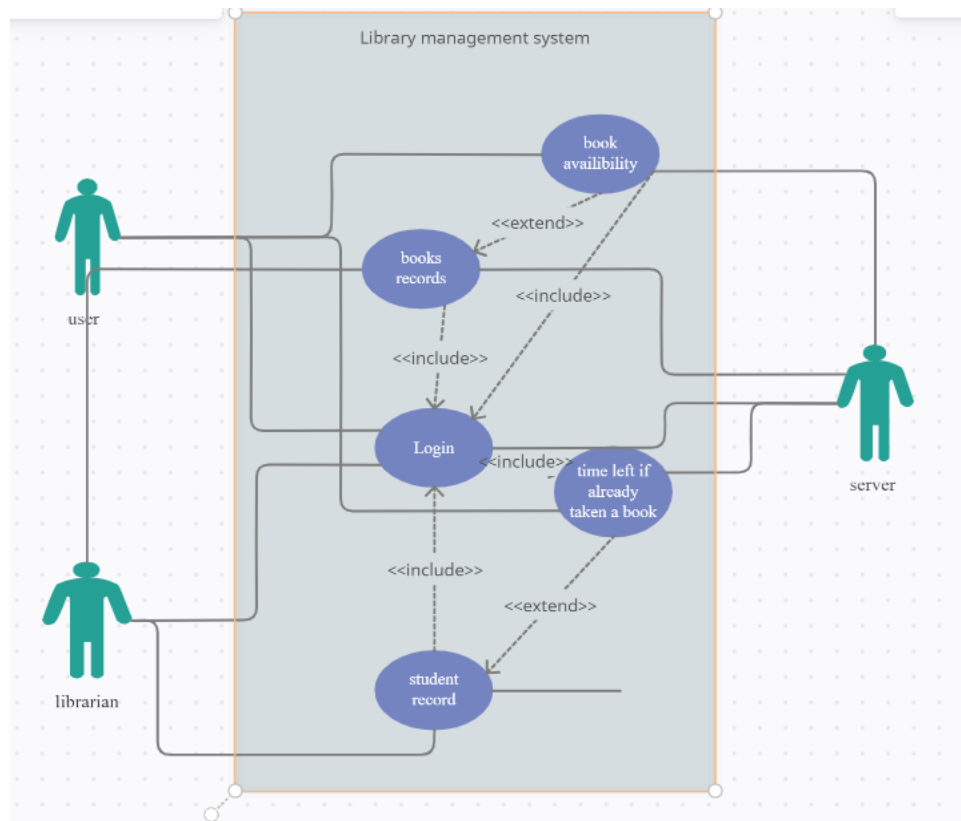
When the user enters the **book name** and **id** of the he easily gets the response.

System level Requirements: -

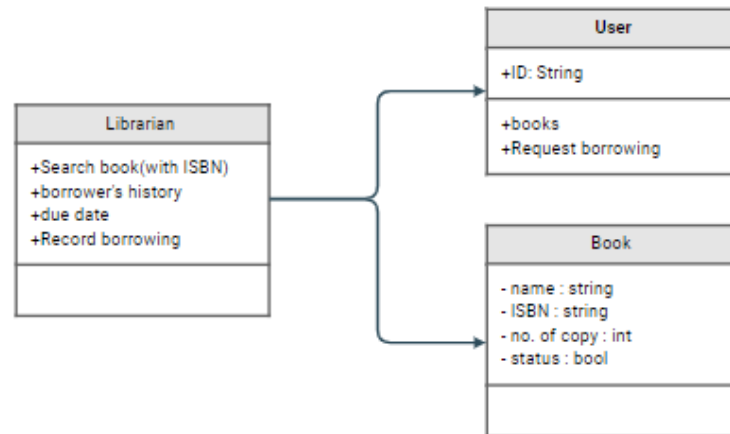
- Data base must have the unique IBN number of each book and the borrowers' id that maps to the specific IBN.
- Number of copies of particular books have, with the proper sub numbers.
- Status of the book whether available or not.

Question #4

Use case diagram : -



Domain Model: -



Question #5

Non-functional requirements of bike racing game: -

- Compatibility
- Time taken to run (performance)
- Ease of use
- Space requirement
- Updating with time

Non-functional requirements of online banking system: -

- Compatibility
- Scalability
- Security
- Avalibilty
- performance