Assignment #2
Introduction to software engineering
Reg number :4314 FBAS/BSSE f21(b)

Q 1. Describe waterfall model and it's stages? Also discuss pros and cons.

Ans.. The Waterfall Model was the first Process Model to be introduced. It is very simple to understand and use. In a Waterfall model, each phase must be completed before the next phase can begin and there is no overlapping in the phases.

As the Waterfall Model is the software development process in a linear sequential flow; hence it is also referred to as a Linear-Sequential Life Cycle Model.

Stages model:

1..Requirements analysis:

The first phase involves understanding what needs to design and what is its function, purpose, etc.

Here, the specifications of the input and output or the final product are studied and marked.

2..System Design:

In this process,class diagrams,alogarithms and glow chart etc design.

3.Implepentation:

IN this process,all program will be code in required language.

4.Testing:

In this process,testing of program occurred. If any error occurs,then clear that.

5.Deployment of system:

Once the functional and non-functional testing is done, the product is deployed in the customer environment or released into the market.

6.Maintainance:

This step occurs after installation, and involves making modifications to the system or an individual component to alter attributes or improve performance

Advantages:

1. Reinforces good coding habits to define before design and then code.
2. Allows for early design or specification changes to be made easily.
3. Clearly defines milestones and deadlines.

Disadvantages:

1. Delays testing until the end of the development life cycle.
2. Does not consider error correction.
3. Does not handle requests for changes, scope adjustments, or updates well.

Q 2 .List down stages of SDLC?

Phases of sdlc are following..

1. Planning and Requirement Analysis:

It is the most important and fundamental step in SDLC. It is performed by senior members of the organization with the information given by the customer. Planning for the quality assurance requirements and identification of the risks.

2. Defining Requirements:

In this step, SRS (Software Requirement Specification) document is made on the information and input given by the customer. SRS document includes all requirements for the product.

3. System Design:

On the basis of the SRS document DDS (Design Document Specification) is made in which features and operations performed by the system are described. DDS also involves business rules and project diagrams.

4. Implementation:

In this phase development is start on the project source code is generated according to DDS.

5. Testing the Product:

Testing is performed on the Project. Various testing such as beta testing and high and low-level testing is performed on the project. Most testing is performed by the end-user or customer.

6. Deployment:

In this, the product is made operational or deployed in a live environment. The product takes real-world data from the different operations on it and gives output.

7. Maintenance:

changes corrections, additions, and more things are done on the product according to customer needs.

Question:no:03 User Requirement and System Requirements for the library:

Answer: **User Requirement:**

users must be able to access the system and have the necessary permissions to perform their tasks and view book names and can see their dues and get information and news about the library.

System Requirement:

1. Functional requirements:

login:

There is a login that must be available for users and librarians. all have to log in before performing or entering the system and the user and librarian must have a unique ID and password.

Regin:

If there is a new user comes then the user must have to enter their name, CNIC, address, Phone number and other information to make his account or membership.

Search:

There is a search function that must be available for the user or customer (in limitation) and librarians to check whether the search book is available or not or is borrowed or not. The book is searched by the ISBN no which must be assigned to all books present in the

library. The borrowed book customer shell was only seen by the librarians only.

Pay Dues:

The user can pay their dues online and the librarian shall see the dues. Their shell be a notification generated for the user and librarian that the user had paid his dues and if the user had not paid his dues or the last date to pay dues then there will be a notification generated to pay your dues.

1. Non.functional requirements:

1-The system shell remains operational from Mon-Fri **(9.00 am to 2.00 pm).**

2-The system should be simple enough so everyone can understand it easily and get relevant information without any special training. The system should be available in different languages according to the given requirements **(English and Urdu etc.).**

3-The system shall be easily maintainable. There should be enough flexibility or space in the system so you can add more functionalities to the system in the future according to the requirements.
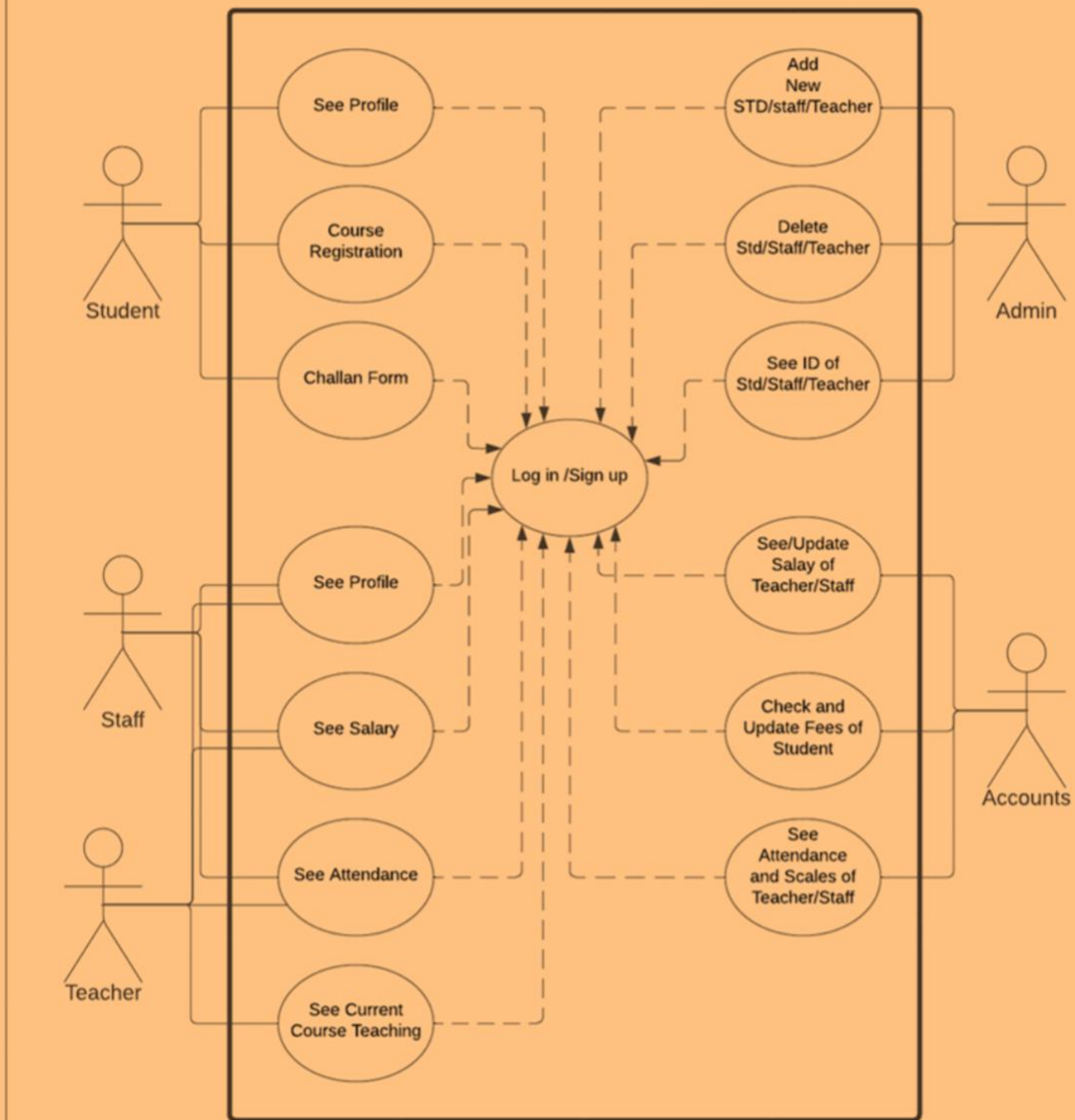
4-The system should run on windows/Linux and apple OS (operating system).

5-The front hand shall be written in Angular while the back end be written in JavaScript

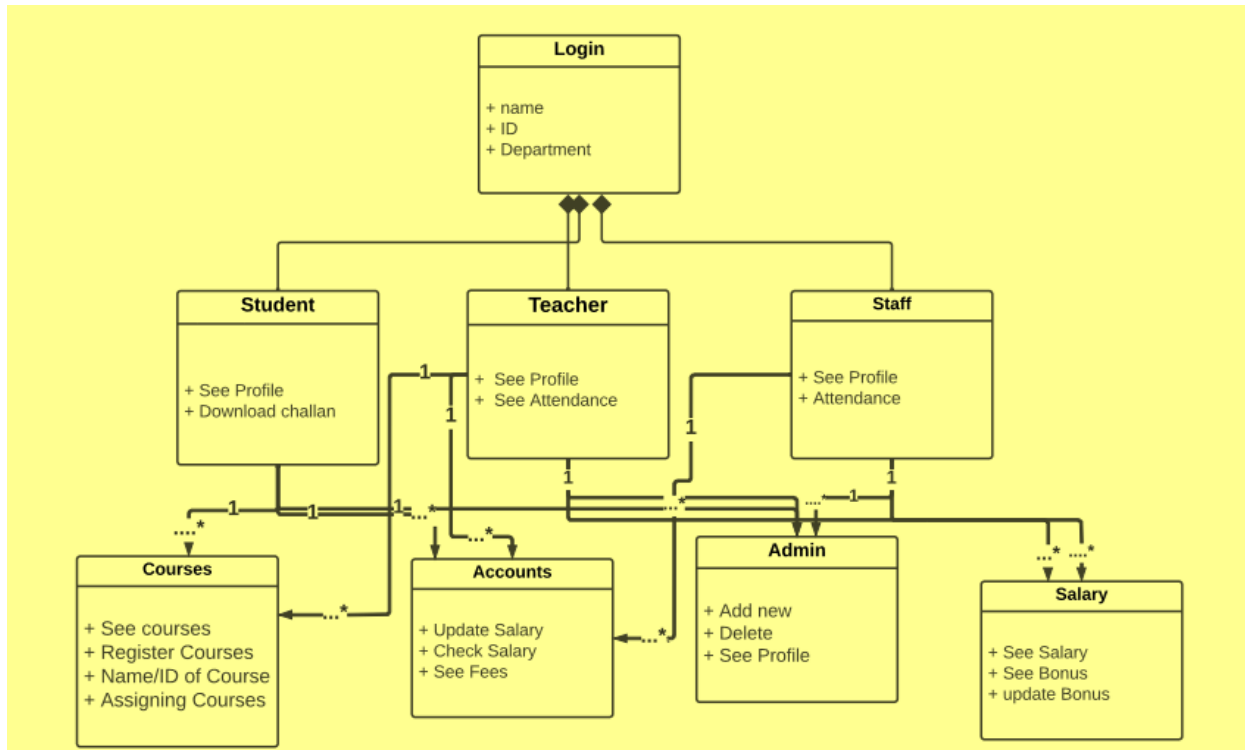## Question:no:04: Draw use-case diagram and Domain Model?

Answer: **University Management System**

Use case diagram:

Domain Model for **University Management System**

Question : no : 05: Write the non-functional requirements for following two projects:

Answer:

Bike racing game ::

High graphics:

The game must have high-quality graphics which must attract people or gamers. The high-quality graphics give the game a realistic look.

Distance:

This is ,how many distance a bike should cover in one race and how many distractions are on the road to complete game.

High performance:

The speed of the game becomes high as the gamers reach the upper level of the game and the game must give its best performance.

Timing:

This is requirement that how much time a game will take to complete.

Usability:

The game must be developed according to the gamer requirements and market survey so that more people are interested in the game.

Online banking system::

Security:

The personal information of a user and their account must be secure no one can access the user account except the user and admin.

Performance:

The system must give its best performance so users can easily access it.

Operational:

The server should not be down during working hours (9.00 am – 2.00 pm) and also there is a backup available for it.

Regulation:

The system must work according to the rules and regulations were given by the authority and also registered in a particular authority so that there will be a belief of user.