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Section : B

Subject : INTRODUCTION TO SOFTWARE ENGINEERING

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Q-NO 1:

Describe waterfall model and list the stages of waterfall model for software development and list three of its advantages and disadvantages?

ANS:

WATERFALL MODEL

- The term was first introduced in a paper published in 1970 by Dr. Winston W. Royce and continues to be used in applications of industrial design.
- The Waterfall Model is a classical model used in System Development Life Cycle (SDLC) to create a system with a linear and sequential approach. It is also referred to as a linear-sequential life cycle model.
- It is termed as waterfall because the model develops systematically from one phase to another in a downward fashion.
- In a waterfall model, each phase must be completed fully before the next phase can begin
- This model is divided into different phases and the output of one phase is used as the input of the next phase.
- At the end of each phase, a review takes place to determine if the project is on the right path and whether or not to continue or discard the project.
- In this model software testing starts only after the development is complete. In waterfall model phases do not overlap.

STAGES

It has the following phases:

1. Communication __Requirements Gathering
2. Planning __Estimating/Scheduling
3. Modeling __Analysis & Design
4. Construction __Coding/Implementation/Test

5. Deployment __Delivery/Support

ADVANTAGES:

1. Upfront documentation and planning stages allow for large or shifting teams to remain informed and move towards a common goal.

2. Forces structured , disciplined organization.

3. Is simple to understand, follow and arrange tasks.

4. Facilitates departmentalization and managerial control based on schedule or deadlines.

DISADVANTAGES

1. Design is not adaptive; often when a flaw is found, the entire process needs to start over.

2. Ignores the potential to receive mid-process user or client feedback and make changes based on results.

3. Delays testing until the end of the development life cycle.

4. Does not consider error correction.

Q-2:NO

LIST THE STAGES OF SOFTWARE DEVELOPMENT LIFE CYCLE(SDLC) DESCRIBE EACH STAGE IN PHRASE

ANS

Stage 1: Planning and Requirement Analysis : –

Requirement analysis is the most important and fundamental stage in SDLC. – It is performed by the senior members of the team with inputs from the customer, the market surveys and domain experts in the industry.

– **Planning** for the quality assurance requirements and identification of the risks associated with the project is also done in the planning stage.

Stage 2: Defining Requirements : – Once the requirement analysis is done the next step is to clearly define and document the product requirements and get them approved from the customer – This is done through 'SRS' – Software Requirement Specification document which consists of all the product requirements to be designed and developed during the project life cycle.

Stage 3: System Design:

Based on the requirements in SRS desired features and operation in detail are specified and documented in a DDS(Design Document Specification) – Including Screen layouts, Business rules, Process diagrams and other documentation

Stage 4: Building or Developing the Product : In this stage of SDLC the actual development starts and the product is built. The programming code is generated as per DDS during this stage.

Stage 5: Testing the Product : This stage refers to the testing of the product where products defects are reported, tracked, fixed and retested, until the product reaches the quality standards defined in the SRS.

Stage 6: Deployment : Once the product is tested and ready to be deployed it is released formally in the appropriate market. (i.e. where the software is put into production and runs actual business)

Maintenance: What happens during the rest of software's life: changes corrections, additions and more.

Q-No.03

USER LEVEL REQUIREMENT

i.The end-user must be enrolled in university.

ii. The system should take the ISBN number as an input from the end-user.

SYSTEM LEVEL REQUIREMENTS

i.Each book must have a unique identification number.

ii. There should be more than one copy of a book.

iii. The system should be able to retrieve information like the availability of the book and due date.

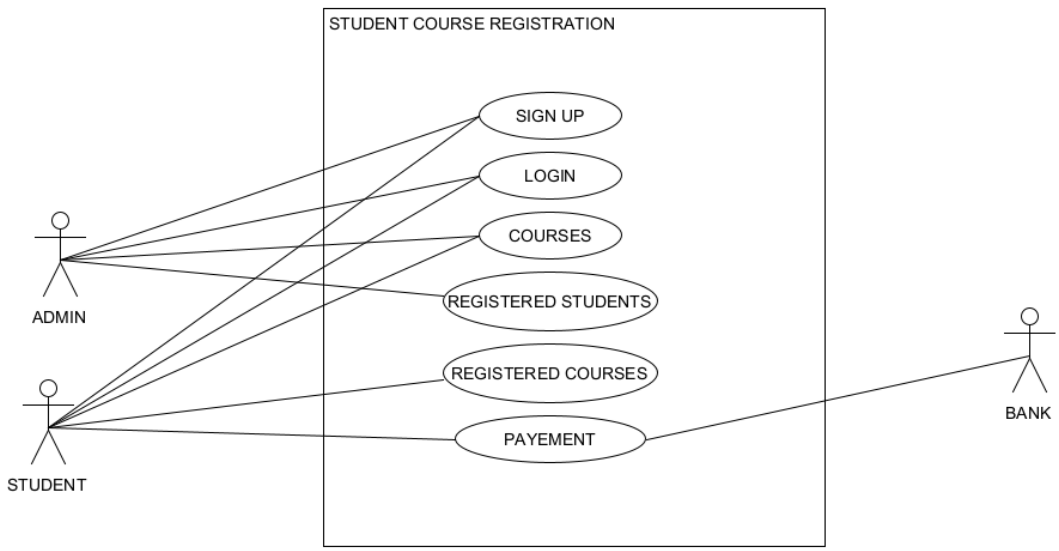
iv. The system should be able to keep record of the book borrower like his registration number, department name etc.

v.A book can be loaned only for two weeks at a time.

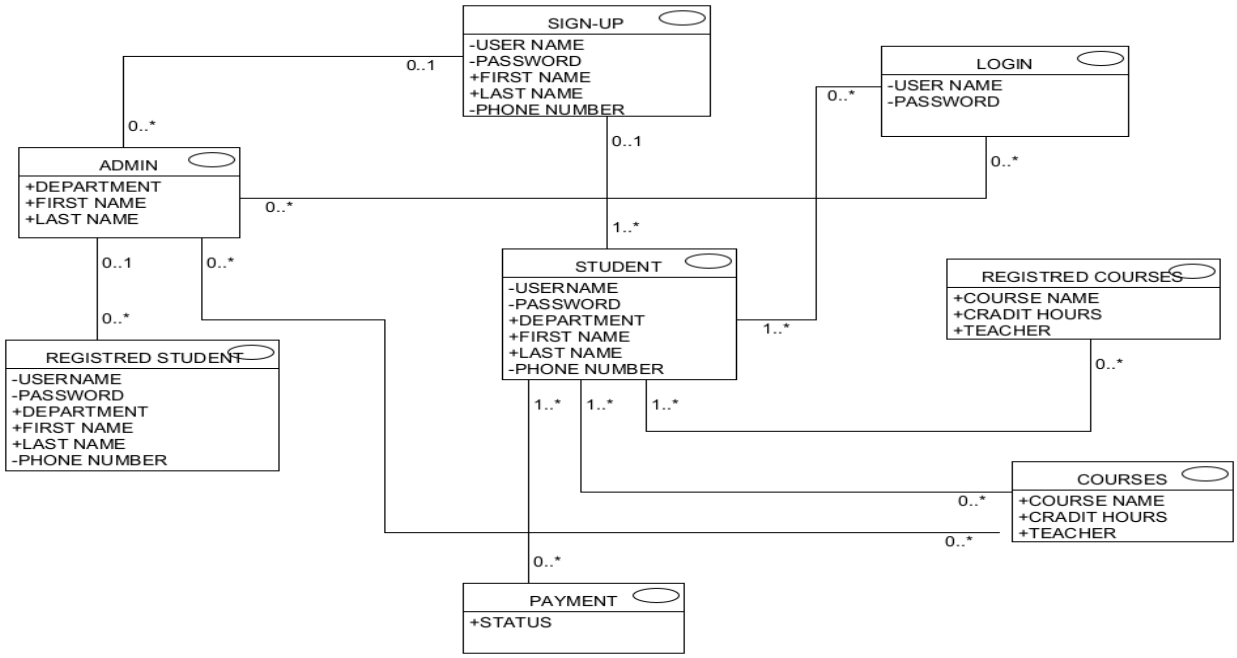
vi. The system should be able to search a book.

Q-No:4

Ans: **Use Case**



DOMIAN MODEL



Q-No:5

Ans:

a) Non-Functional Requirments of Online banking system :

Non-functional requirments of online banking system are as follow;

Security

Security is the feature of the system which ensures that system must be protected from the unintentional or malignant harm; unauthorized access to the data is not permissible. For the safety purpose the data must be backed up after certain period of time say 24 hours and the backed up data must be stored in a secure location.

Usability

As online banking is carried by various types of clients i.e. whether they have knowledge of computers or not so the application designed for online baking must be easy to use and enable the client to manage their accounts or transactions with simplicity. The application must have graphical user interface and it must have the ability to provide informative error messages.

Availability

The online banking should be available round the clock. It means for how long the system is available for its users or clients and for how long the system will be operational.

Confidentiality

Client should be able to access the online banking account after successful authentication. The data entered by the client is not accessible to other clients using online banking. As far as the confidentiality of the is concerned it means to maintain the secrecy as online banking is round the clock to access the account.

Visibility

It alludes to condition of having the capacity to see online banking empowers the client to see the login screen and the configuration of the online banking application as per the client desire.

Performance

The bank management system is a multi-client system that must reach response time targets for each of the clients during simultaneous calls and must be able to run a target number of transactions per second without failure.

Reliability

Reliability reflects the capacity of the software to maintain its performance over the time. It implies how well the system performs in peak hours.

b) Non-Functional requirments of Bike racing system

1. The user must experience a strong story.
2. The game must be fun.
3. The game must be atmospheric.
4. The game must not crash.
5. The game must be accessible for all user segments.
6. The game must load within seconds.
7. It should give multiple camera views to the user, i.e (first person, second person, top-down and isometric views) to make the game more realistic and interesting.