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**Introduction to Software Engineering**

**#Assignment 01**

**Q#01**

**Waterfall Model**

■ 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.

■ This type of software development model is basically used for the project which is

small and there are no uncertain requirements.

■ In this model software testing starts only after the development is complete.

In waterfall model phases do not overlap.

**Stage of waterfall model**

1. Requirement
2. Analysis
3. Design
4. Coding
5. Testing
6. Operation
7. Maintenance

**Advantages of waterfall model**

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.

**Disadvantages of waterfall model**

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.

**Q#2**

**Stages of SDLC**

■ Stage 1: Planning and Requirement Analysis :

It is performed by the senior members of the team with inputs from the

customer, the market surveys and domain experts in the industry.

■ 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

■ 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)

■ 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#5**

**Non-Functional requirements**

1. **Bike Racing**

The user must experience a strong and attractive environment

The game must be fun

The game must be atmospheric

The game must be efficient

The game must be accessible

The game must be accessible for all user segments

Good performance

1. **Online banking system**

User must experience attractive user interface

Good Performance

Security

Usability

Availability

**Q#4**

**Use case Diagram university grading scheduling**

1..1

1..\*

Teaches

1..1

1..\*

Enrollment

Hire

0..\*

1..\*

Student

-Id: char

-Name: char

-Address: char

+FillAdmission

Form()

+GetEnrolled()

+WriteExam()

+CheckTimetable()

+CheckGrades()

+Attendance()

Teacher

-Id: char

-Name: char

-Address: char

+CheckTimetable()

+UpdateGrades()

+CheckAttendance()

+UpdateAttendance()

+Checkstudent

data()

+

Admin

-Id: Char

-Name: Char

-Password: Char

+Login()

+Logout()

+AddNewTeachers()

+ModifyTeachers()+AddNewStudent()+ModifyStudent()

+ModifySubject()

+AddNewClass()

+ModifyClass()

**Q#3**

**User level requirements:**

Portal in access to user where user can enter and save all the details of borrower and track all books in stack.

**System level requirements:**

1. ID of borrower must be mentioned.
2. The book must be identified.
3. Time conducted.
4. Book must have an ISBN.
5. Copies of the book must be identified.

Admin

student