**Name: Ameer Ali**

**Reg No. # 4302-FBAS/BSSE/F21/A**

**Question No. 01:**

**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.

**Stages of Waterfall Model:**

It has following stages…

* Requirements
* Analysis
* Design
* Coding
* Testing
* Deployment
* Maintenance

**Disadvantages of Waterfall Model:**

* Design is not adaptive; often when a flaw is found, the entire process needs to start over.
* Does not consider error correction.
* Reduces efficiency by not allowing processes to overlap.

**Advantages of Waterfall Model:**

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

**Question No. 02:**

**Stages of software development lifecycle (SDLC)**

1. **Planning & Requirement Analysis Phase**

In the Planning phase, project leaders evaluate the terms of the project. This includes calculating labour and material costs, creating a timetable with target goals, and creating the project’s teams and leadership structure.

1. **Requirement Definition Phase**

Defining requirements is considered part of planning to determine what the application is supposed to do and its requirements.

1. **Designing Phase**

Based on the requirements in SRS desired features and operation in detail are specified and documented in a DDS (Design Document Specification).

1. **Development Phase**

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.

1. **Test Phase**

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.

1. **Deployment Phase**

Once the product is tested and ready to be deployed it is released formally in the appropriate market.

1. **Maintenance Phase**

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

**Question No. 03:**

**User level requirement:**

Proper place given on the screen to enter the book borrower’s details.

**System Level Requirements:**

A book must have an ISBN.

The copy number of book must be written on it.

Status of the book (either available or borrowed).

Id of the borrower must be given.

**Question No. 04:**

**Use Case Diagram:**

Librarian

Login or sign up

Number of issued books

Copies of Books

Issued Books

Available Books

**Domain Model:**

|  |
| --- |
| User |
| +ID: string |
| +Books  +Request borrowing |

|  |
| --- |
| Librarian |
| +Search book with ISBN  +Borrower’s history  +Due date  +Record borrowing |

|  |
| --- |
| Book |
| -name: string  -ISBN: string  -no. of copy: int  -status: bool |

**Question No. 05:**

**Non-functional requirements for a bike racing game:**

* Ease of use.
* Secure the users achievements.
* Performance.
* Secure platform for in game transaction.
* Good frame rate for every possible low-end platform.
* Frequent updates to enhance user experience.

**Non-functional requirements for online banking system:**

* **Performance**

The banking system should be up to the mark in terms of performance. The user should not face any delay in transactions or wait for any response time.

* **Usability**

The website and apps owned by banks should be user friendly that even a person with not that much technical background could use their service.

* **Availability**

The banking website and apps should be available 24/7 for its users for any kind of transaction if not it might lose some users.

* **Security**

The bank should have a secure server that should contain multiple firewalls that will protect it and people money from unwanted users or any intruders.