**Self-Assessment**

Understand Approaches to system Development and Project planning.

1. Your Lecturer has chosen you to define SDLC, which one is the correct definition? (1 Mark)
2. Software development length cycle
3. System Development Life cycle Is an approach which converts the work into phases that are required to implement or modify Information.
4. **SDLC is a conceptual model which includes policies and procedures for developing or altering systems throughout their life cycles.**
5. SDLC refers to the framework that is used to structure, plan, and control the process of developing an information system.
6. SDLC has several phases, one of the following is not a phase which one is it?

(1 Mark)

1. Communication
2. Coding
3. **Application**
4. Feasibility
5. Kate was asked to mention advantages of Spiral Model. She mentioned following answers which one is not an advantage ?(1 Mark)
6. Allows extensive use of prototypes.
7. Requirements can be captured more accurately.
8. Users see the system early.
9. **Allows extensive use of prototypes.**
10. **Your are a developer of a system and a client asks you to state the importance of a **Design phase**? (2marks)**

***The requirements is specified in the form of a document. It is then converted into a logical structure which needs to be implemented in a specific programming language. The design phase is also helpful for specifying hardware & system requirements. It also allows defining complete system architecture. The output is designed to document that acts as an input for all the subsequent SDLC phases.***

1. In system development there are the two major components of Systems, describe them below? (4 Marks)

***Stage 1 – Planning***

***The very first phase of the SDLC starts with requirement gathering. This is known as the planning stage. It is the most important phase of the entire SDLC from the perspective of project managers and stakeholders.***

***Stage 4 – Development & Testing***

***Once the system design documentation is complete, the whole task is divided into modules or units. Now, the actual coding starts.***

***Because this phase includes coding, it is the most important phase of the SDLC for the developer team. Once the code is fully developed, testing of the same is carried against the requirements.***

1. Smith’s company hires you as a system developer, how would you tell a client,What is the function of a prototyping software development methodology ? (3Marks)

***Prototype is a working model of software with some limited functionality. The prototype does not always hold the exact logic used in the actual software application and is an extra effort to be considered under effort estimation.***

***Prototyping is used to allow the users evaluate developer proposals and try them out before implementation. It also helps understand the requirements which are user specific and may not have been considered by the developer during product design.***

1. There are several activities involved in the system planning of SDLC, Discuss them ?(15marks)

**Communication**

***This is the first step where the user initiates the request for a desired software product. He contacts the service provider and tries to negotiate the terms. He submits his request to the service providing organization in writing.***

**Requirement Gathering**

***This step onwards the software development team works to carry on the project. The team holds discussions with various stakeholders from problem domain and tries to bring out as much information as possible on their requirements. The requirements are contemplated and segregated into user requirements, system requirements and functional requirements.***

**Feasibility Study**

***After requirement gathering, the team comes up with a rough plan of software process. At this step the team analyzes if a software can be made to fulfill all requirements of the user and if there is any possibility of software being no more useful. It is found out, if the project is financially, practically and technologically feasible for the organization to take up. There are many algorithms available, which help the developers to conclude the feasibility of a software project.***

**System Analysis**

***At this step the developers decide a roadmap of their plan and try to bring up the best software model suitable for the project. System analysis includes Understanding of software product limitations, learning system related problems or changes to be done in existing systems beforehand, identifying and addressing the impact of project on organization and personnel etc. The project team analyzes the scope of the project and plans the schedule and resources accordingly.***

**Software Design**

***Next step is to bring down whole knowledge of requirements and analysis on the desk and design the software product. The inputs from users and information gathered in requirement gathering phase are the inputs of this step. The output of this step comes in the form of two designs; logical design and physical design. Engineers produce meta-data and data dictionaries, logical diagrams, data-flow diagrams and in some cases pseudo codes.***

**Coding**

***This step is also known as programming phase. The implementation of software design starts in terms of writing program code in the suitable programming language and developing error-free executable programs efficiently.***

**Testing**

***An estimate says that 50% of whole software development process should be tested. Errors may ruin the software from critical level to its own removal. Software testing is done while coding by the developers and thorough testing is conducted by testing experts at various levels of code such as module testing, program testing, product testing, in-house testing and testing the product at user’s end. Early discovery of errors and their remedy is the key to reliable software.***

**Integration**

***Software may need to be integrated with the libraries, databases and other program(s). This stage of SDLC is involved in the integration of software with outer world entities.***

**Implementation**

***This means installing the software on user machines. At times, software needs post-installation configurations at user end. Software is tested for portability and adaptability and integration related issues are solved during implementation.***

**Operation and Maintenance**

***This phase confirms the software operation in terms of more efficiency and less errors. If required, the users are trained on, or aided with the documentation on how to operate the software and how to keep the software operational. The software is maintained timely by updating the code according to the changes taking place in user end environment or technology. This phase may face challenges from hidden bugs and real-world unidentified problems.***