

NAME: M. N. KHAN

ID: 2216080041

Course code: CSI - 3H 321

C. title: Sys Software Engineering.

Batch: 08 (evening)

Ans to the Q: No: 01 - (a)

(a) Ans: Software engineering is the branch of computer science that deals with the design, development, testing and maintenance of software applications. Software engineers apply engineering principles and knowledge of programming languages to build software solutions for end users.

Software engineers design and develop computer games, business applications, operating systems, network control systems and middleware - to name just a few of the many career paths available.

A career as a software engineer can be both fun & challenging with opportunities to work in almost any industry including large and small business, government agencies, non profit organization, healthcare facilities & more.

It therefore works flexibility and more opportunities to enter the field.

— x —

Ans: to: the: q: NO: 01(b)

Ans: Waterfall Model:

The waterfall model is a traditional software development methodology that follows a linear and sequential approach. It consists of several distinct phases, each building on the outputs of the previous phase. The phases in the waterfall model typically include:

- ① Requirements gathering: In this phase, project requirements are gathered from stakeholders. It involves detailed discussion and analyzing to understand the project scope and objectives.
- ② System design: The gathered requirements are used to create a system design document. This phase involves planning the software architecture, system components, and data flow.
- ③ Implementation: In this phase, the actual coding and programming of the software occur.
- ④ Integration and testing: The individual components or modules developed in the previous phase are integrated into a complete system.

⑤ Deployment;

Once the software passes test and validation, it is deployed to the customer environment. This phase involves installation, configuration, and sometimes training for end-users.

⑥ Maintenance: After deployment, the system requires maintenance to fix bugs update features, and maintenance that arise in the operational phase.

Validation process:

Validation is the process of evaluating a system or component during or at the end of development process to determine whether it satisfies the specified requirements. Here are the key steps in the validation process:

① Planning: Define the validation objectives scope & criteria. Create a validation plan outlining the testing strategies, resources and schedules.

② Testing: Execute various types of testing such as functional testing, performance testing, security testing, and user acceptance testing to ensure that the system meets the specified requirements.

③ Verification: compare the developed system with the requirements to verify that all the

requirements have been implemented correctly.

(4) Validating testing: validate the system from the end-user's perspective to ensure it fulfills their needs and expectations.

(5) Documentation: Documents the result of validating testing, including any issues found, resolutions and approval of the system's compliance with the requirements.

(6) Review and approval: Review the validation results with stakeholders and obtain their approval for the system to move forward in the development process or be deployed to the users.

Both the waterfall model and the validation process are crucial in ensuring that a software product is developed systematically meets the desired quality standards and satisfies the users' requirements.

5
Ans: to 1. the 1. q. NO. 01 (c)

Ans: Characteristics of a good SRS

An SRS should be:

- (a) Correct.
- (b) Unambiguous.
- (c) Complete.
- (d) Consistent.
- (e) Ranked for importance and/or stability.
- (f) Verifiable.
- (g) Modifiable.
- (h) Traceable.
- (i) Useable during the Operation and maintenance phase.

Ans: the : 9 : NO: 02 (a)

Ans: Categories of software maintenance:

Software maintenance:

① Corrective maintenance:

This refers to modifications initiated by defects in the software.

② Adaptive maintenance:

It includes modifying the software to match changes in the ever changing environment.

③ Perfective maintenance:

It means improving processing efficiency or performance, or restructuring the software to improve changeability. This may include enhancement of existing system functionality improvement in Computational efficiency etc.

— x —

Ans:

(1) Black box testing

(1) The black box test is a test that only considers the external behavior of the system.

(2) It is carried out by testers.

(3) This method is used in system testing or acceptance testing.

(4) It is the most time consuming.

(5) It is also known as data-driven testing.

(6) It is the behavior testing of software.

white box testing

(1) The white box test is a method used to test a software taking into consideration its internal functioning.

(2) It is carried out by software developers.

(3) This method is used in unit testing or integration testing.

(4) It is most time consuming.

(5) It is also known as clear box testing.

(6) It is the logic testing of the software.

Ans: Software quality assurance plan abbreviated as SQAP comprises of procedures, techniques, test strategy and tools which makes sure that services are aligned within the defined SRS (software requirements specific). The SQA consists of following section in plan documents.

- (1) Purpose.
 - (2) Reference.
 - (3) Software configuration management.
 - (4) Problem reporting and corrective action.
 - (5) Tools, technologies and methodologies.
 - (6) code control
 - (7) records: collection, maintenance and retention
 - (8) testing methodology.
-

Ans: Software project management is the process of planning and leading software projects. It is a sub-discipline of project management in which software projects are planned, implemented, monitored and controlled.

It is an art and discipline of planning and supervising software projects. It is a sub discipline of software project management in which software projects planned, implemented monitored and controlled.



Ans: Role of the project manager:

The project manager is the individual responsible for delivering the project. The individual leads and manages the project team, with authority and responsibility from the project board to run the project on a day-to-day basis.

As well as the formal responsibilities set out in methods such as, the project manager has an important role in interfacing between the project and the business area.

Any project the readiness of the business, there are likely to be disruptions and delays in the plan for benefits realisation.

Specific responsibilities of the project manager:

The project manager, operating within agreed reporting structures is responsible for:

designing and applying appropriate project management standards for incorporation in the NS gateway review process.

* Managing the production of the required deliverables.

* planning and monitoring the project.

* Adopting any delegation and use of project, assurance roles within agreed reporting structure.

* Preparing and maintaining project, stage and exception plans as required.

* Managing project risks including the development of contingency plans.

* Maintaining an awareness of potential interdependencies with other projects and their impact.

* Preparing any follow-on action recommendations.

Ans: Iterative model:

The iterative model is a software development methodology where the project is divided into small parts or iterations. Development allows for revisiting and refining previous stages before moving on to the next iteration. It emphasizes also. Here are the advantages and disadvantages of the iterative model.

Advantages:

① Flexibility: It accommodates changing requirements effectively.

② Feedback loop:

Regular interaction means that stakeholders and users get to see a working version of the software sooner, providing valuable feedback that can be incorporated into subsequent iterations.

19

③ High management: Issues and risks can be identified and addressed early in the development process.

(i) Progress visibility: Since there are multiple iterations, project progress is visible at regular intervals, making it easier to track the project's status.

Disadvantage!

① Complexity: Managing multiple iterations simultaneously can be complex.

② Higher cost: The iterative model may require more time and resources due to the repetitive nature of the process.

③ Uncertain end date: Because the project doesn't have a fixed end point and can continue to iterate, it can be challenging to predict the exact completion date.

—x—

Answer quality:

Quality makes sure that a high-class product is being produced. Quality is important for customer satisfaction that ultimately results in customer loyalty. Quality management assists an organization to create and develop a product service which is desired by the customer.

Importance of Quality:

Meeting the expectations of the customer:

Inrespective of the industry, customers will not choose particular product merely based on the price, nonetheless often on quality. According to some studies, customers are willing to pay a higher price for a product.

Gaining competitive advantage:

Companies want to attain competitiveness with differentiation. This happens when there are distinctive qualities in a product that can not be imitated by rivals.

15
Quality is crucial for the satisfaction of customers;
If an Organization fails to meet the expectations of its customers, then it will look for replacements.

Quality develops reputation.

Quality signals on an organization's reputation.

Nowadays, there is an increasing significance of social media which means that the customers are effortlessly share both positive.

Influence on sales volume:

If a product matches the requirements of the customers then the demand for that particular product will increase, hence allowing the company to boost its profit levels.

Quality helps in managing costs effectively:

Poor quality products escalate costs. If an Organization does not have an efficient quality control system.

← α →

Ans: to the Q: no: 04(b)

Ans: SQA (Software Quality Assurance) activities encompass a set of systematic and planned actions to ensure that software processes are products adhere to specified requirements and standards.

- * Process definition.
- * Process implementation.
- * Quality standards and procedures.
- * Establish standards.
- * Compliance monitoring.
- * Reviews and audits.
- * Design and documentation reviews.
- * Process audits.
- * Testing execution.
- * Defect reporting.
- * Training & resource management.
- * Training.
- * Resource Allocation.

- * measurement & metrics.
- * Define metrics.
- * Data collection & analysis.
- * process improvement.
- * Best practice adoption.

* SQA activities are integral to achieving high-quality software products, ensuring they meet user requirements, perform reliably & are delivered within specified time frames & budgets.

