**Module** 1(**Fundamental** **of** **software** **testing**)

1. What is software testing ?

: software testing is a process used to identify the correctness, completeness and quality of developed computer software.

1. What is SDLC ?

: Software development life cycle (SDLC) is structure for the development of software product that defines process for planning, implementation,

Testing, documentation, deployment and ongoing maintenance and support.

1. Write SDLC phases with basic introduction .

: Phases of SDLC :

* **Requirement collection :**

: This is the first and important phase for the software development. In this phase communication takes place between developers and customers regarding what requirements that have from software.

* **Analysis :**

: In this phase the requirement collected from requirement phase analysed and requirement document has been made and that defines the requirement of system.

* **Design :**

: After collecting requirement document the design team maps the requirement into architecture .

* **Implementation :**

**:** After collecting requirement document and architecture document the team should build exactly what has been requested .

* **Testing :**

**:** This phase refers to checking, reporting and fixing the system for any defects . Testing continues until the project has achieved the quality .

* **Maintenance :**

: The maintenance phase is the phase which comes after deployment of software into the field. It is the process of enhancing deployed software as well as fixing defects.

1. Explain phases of waterfall model **:**
2. **Verification phase :**

* **Business requirement analysis :**

**:** This is the first phase in development cycle where the product requirement are understood from the customer perspective . This phase involves detailed communication with customer to understand his expectation and exact requirement.

* **System Requirement(System Design) :**

**:** Once you have the clear and detailed product requirements, its time to design the complete system . System design would comprise of understanding and detailing of the complete hardware and communication set up for the product under development.

* **Architectural Design (Technical specification) :**

: Architectural specification are understood and designed in this phase. Usually more than one technical approach is proposed and based of technical and financial feasibility the final decision is taken. System design is broken down further into different modules .

* **Module Design (Program Specification) :**

: In this phase the detailed internal design for all the system module is specified . It is important that the design is compatible with other modules in the system architecture and the other external systems.

1. **Code Phase :**

: The actual coding of the system modules designed in the design phase taken up in the coding phase. The best suitable programming language is decided based on the system and architectural requirements . The coding is performed on the coding guidelines and standards .

1. **Validation Phase :**

* **Unit Testing :**

: Unit tests are executed on the code during this validation phase . Unit testing is the testing at code level and helps eliminate bugs at an early stage.

* **Integration Testing :**

: It is associated with the architectural design phase . This tests are performed to test the coexistence and communication of the internal modules within the system.

* **System Testing :**

: System testing is directly associated with the system design phase . system test check the entire system functionality and the communication of the system under development with external systems .

* **Acceptance Testing :**

: Acceptance testing is associated with the business requirement analysis phase and Involves testing the product in user environment.

1. Write phases of spiral model .
2. Determination objectives, alternatives and constraints .
3. Analysis of alternatives and identification/ resolution of risks.
4. Development of next level product.
5. Assessment of the results of engineering.
6. Write agile manifesto principles .
7. Customer satisfaction through early and continues software delivery.
8. Accommodate changing requirements throughout the development process.
9. Frequent delivery of working software.
10. Collaboration between the business stakeholders and developers throughout the project.
11. Support, trust and motivate the people involved.
12. Enable face to face interactions.
13. Working software is primary measure of progress.
14. Agile processes to support a consistent development pace.
15. Attention to technical detail and design enhances agility.
16. Simplicity
17. Self-organizing team encourage grate architectures, requirements, and designs.
18. Regular reflections on how to become more effective.
19. Explain working methodology of agile model and also write pros and cons.

* **Working methodology Agile model :**

: Agile model is a combination of iterative and incremental process model. Agile methods breaks project into small

incremental builds . this builds are provided in iterations. every iteration involves cross functioning teams working simultaneously on various areas like planning, requirement analysis, design, coding, unit testing and acceptance testing . at the end of iteration a working product is displayed to the customer and important stakeholders

* **Pros:**
  + It is a very realistic approach to software development.
  + Promotes teamwork and cross training.
  + It can be managed easily.
  + Suitable for changing requirements.
  + Resources requirements are minimum.
  + It gives flexibility to developers.
* **Cons :**
* No suitable for handling complex dependencies.
* Depends heavily on customers interaction, so if customer is nit clear then team can be driven in the wrong directions.
* There is very high individual dependency , since there is minimum documentation generated.

1. What is SRS ?

: System requirements specifications(SRS) is a complete description of the behaviour of the system to be developed.it includes a set of use cases that describe all the interactions that users will have with the software.

1. What is agile methodology ?

**:** The agile methodology is a project management approach that involves breaking the project into phases and emphasizes continuous collaboration and improvement.

1. What is Oops ?

: Object oriented programming(oops) is methodology to design a program using classes and objects.

1. Write basic concepts of Oops .

* Object
* Class
* Encapsulation
* Inheritance
* Polymorphism
* Overriding
* Overloading
* Abstraction

1. What is object ?

: Object is a instance of class.

1. What is class ?

: class is a structure in which member function and variables are there .

1. What is encapsulation ?

: Encapsulation is a wrapping of data into single unit.

1. What is inheritance ?

: inheritance means that one class inherits the characteristics of another class.

1. What is polymorphism ?

**:** polymorphism means having same function name but different behaviour.

1. Draw use case on online book shopping :

https://drive.google.com/file/d/1IFbjsc66gOtFMiNVUWz0ksxpgR3tusyT/view?usp=sharing

1. Draw use case on online bill payment system (paytm) :

<https://drive.google.com/file/d/19PcSpOvhbLyGCCLVw-K59XU4KUwbZSag/view?usp=sharing>

1. Draw use case on online shopping product using cod **:**

<https://drive.google.com/file/d/1wvbOKC0isHOW-P3DIjAeRi35WjGr3YKN/view?usp=sharing>

1. Draw use case on online shopping product using payment gateway :

https://drive.google.com/file/d/1KtnDfdgfB88pfqI9Vnw09CGxorrPB5s-/view?usp=sharing