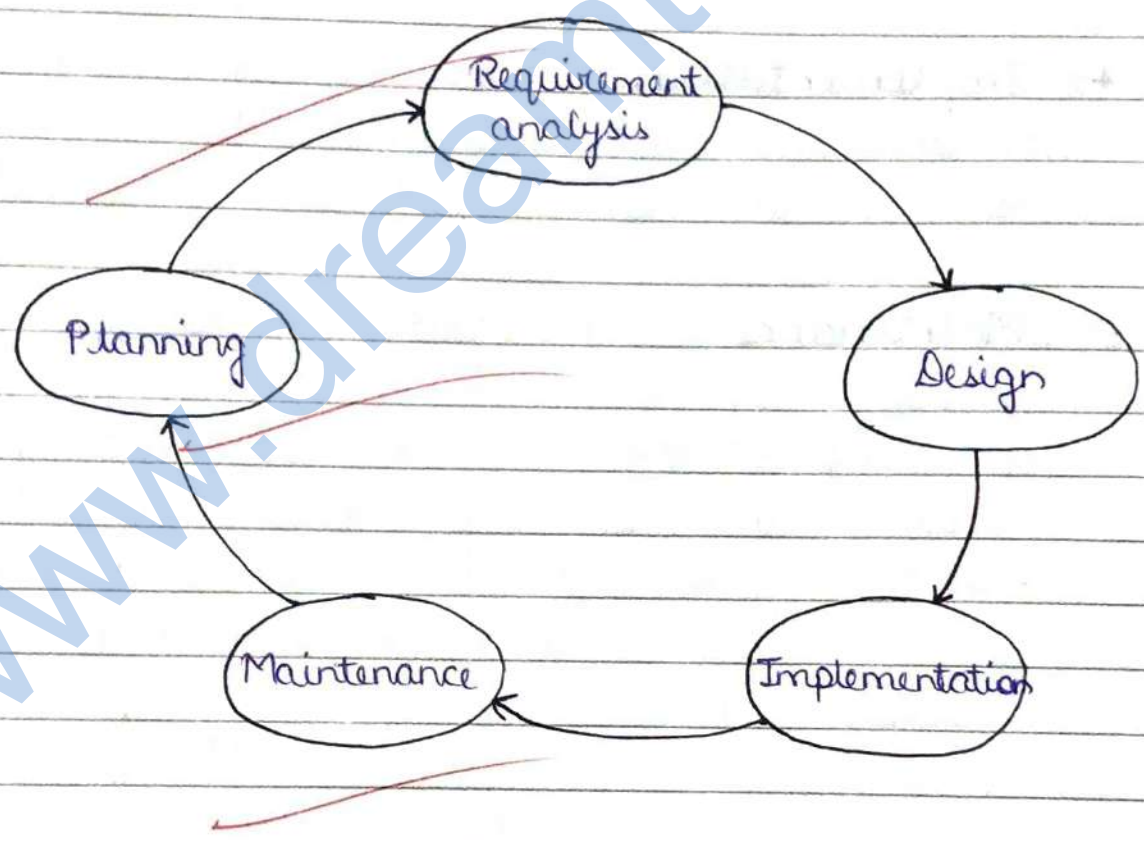


UNIT - 1

Overview Of System Analysis And Design

★ SDLC (System Development Life Cycle) :-
SDLC is a process used by the software industry to design, develop and test the high quality softwares. The aim of SDLC is to produce a high quality software that meet the expectation and reaches the completion of work within times and done the software cost estimation.

There are following phases of SDLC which is given below -



1- Planning - The planning of software production can be done by the software developer as per the requirement of client/user. It also plan the cost estimation for software.

2- Requirement analysis - The requirement analysis of client software can be made with the help of software engineering terms that is known as feasibility study.

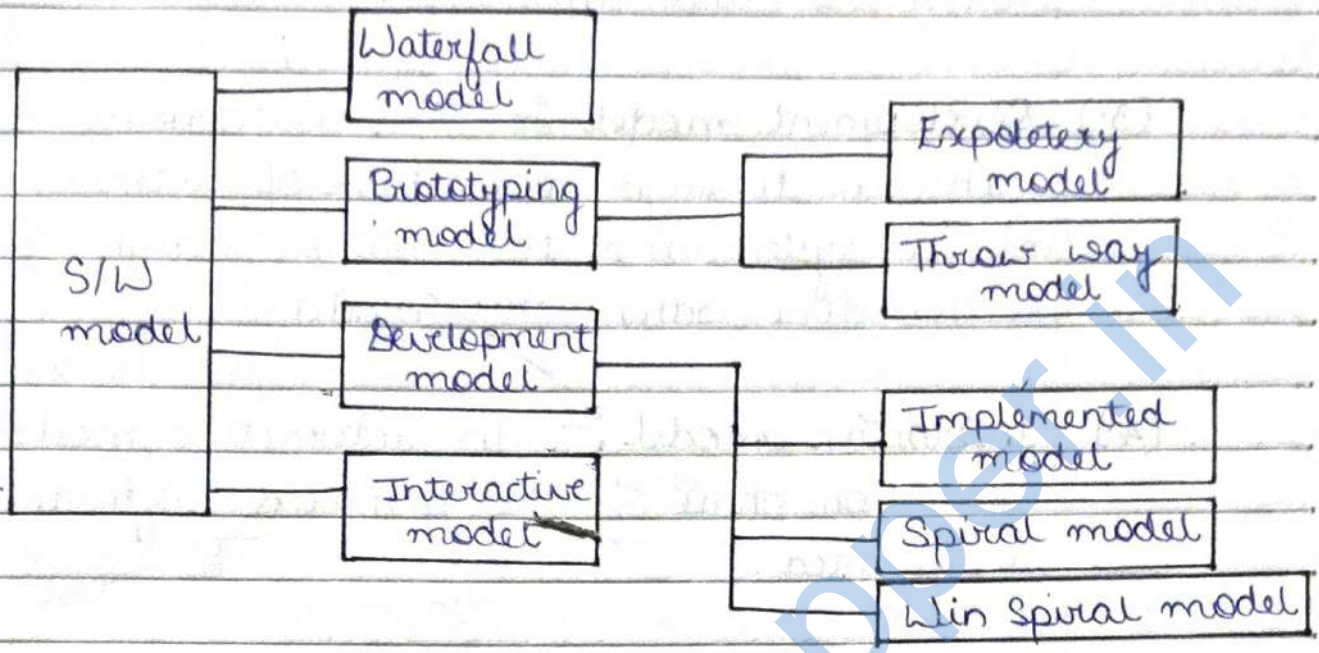
3- Design - After gathering all the user information to prepare a client software the web page designer will be prepare a static as well as dynamic web page to improve the productivity and efficiency of software. For each webpages the coding phase will be started by the developer. The designing of webpages can be made with high security measures.

4- Implementation - The implementation phase contain the two important factor which is source code and object code of design structures.

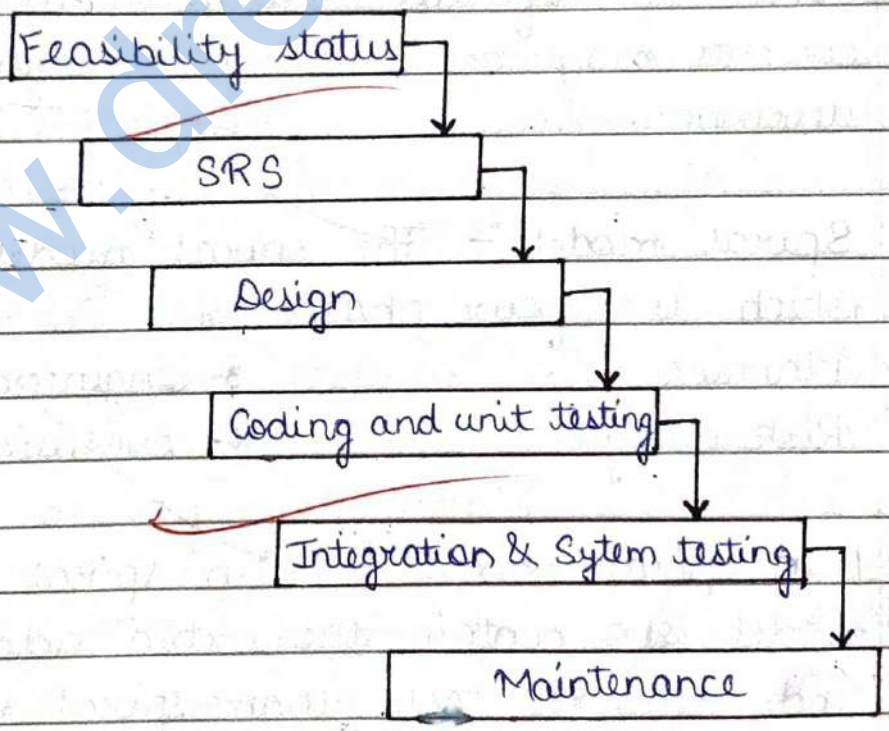
5- Post implementation &

Maintenance - The software maintenance will be prepared by software test engineer with the help of specified tools i.e. manual testing and automated testing. If any bug find out during the maintenance of software, the test engineer will fix the bugs and that eliminated by some specific queries.

* Software Models :-



(1) Waterfall model :- Waterfall model is a software model in a linear sequential flow. In the waterfall model the outcome of one phase act as an input for the next phase.



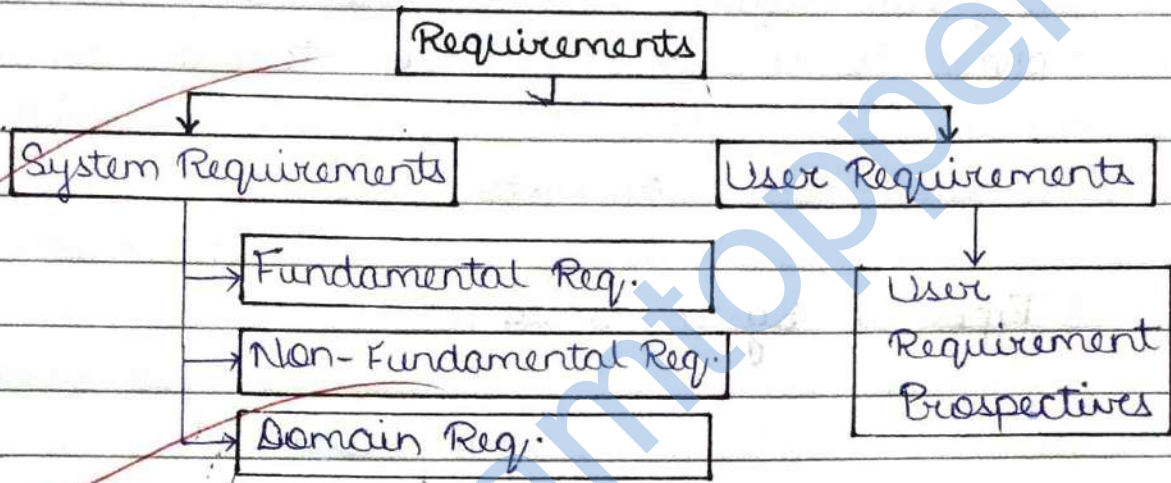
(2) Prototyping model :- Prototyping is the development approach of activities during the software development.

In a prototype model a web software is tested coding wise and unit wise.

- (3.) Development model :- The development model is achieved through application of interactive process of a system and the analysis design of every model done within this model.
- (4.) Interactive model :- In interactive model the exhibition phase of the prepared software will be implemented.
- (5.) Exploitory model :- In exploitory model some new contents about software will be searched for the implementation in the coding phase.
- (6.) Throw away model :- It is a temporary storage model of software related contents in which the contents may be used on emergency by a software developer.
- (7.) Spiral model :- The spiral model is a model in which the four phases will be use.
 - 1- Planning
 - 2- Risk analysis
 - 3- Engineering
 - 4- Evolution
- (8.) Win spiral model :- Win spiral model is a model who contain the extra additional features and software tools than spiral models.

* Requirements :- A requirement is simply the statements of what the system must do and what are the characteristics. During the analysis phase, requirements are return in the form of business environment and also the requirements in the designing phase are return in form by the developer prospectuses.

Types of Requirements -



* Requirement determination :- The requirement determination activity is the most difficult part of system analysis. The requirement determination address gathering the documentation to make a system software as per the requirement of client.

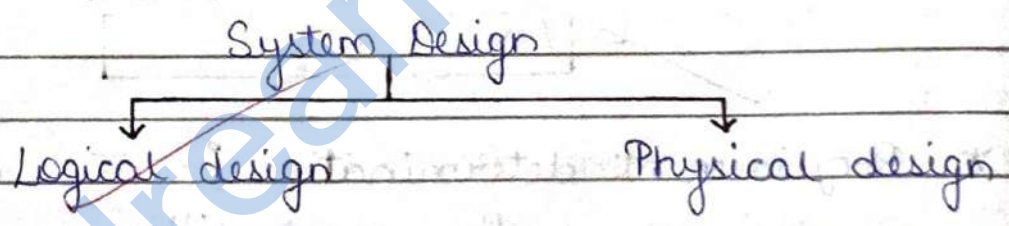
The requirement determination involves and studies the current business system to find out how it works and where improvement should be made. Hence, we can say that requirement determination is the data gathering activities done during the requirement analysis. It contains four sub-activities -

- 1- Requirement anticipation
- 2- Requirement elicitation
- 3- Requirement assurance
- 4- Requirement specification

* System Design :- The system design is the process of art of defining the architectures, components, modules, interface and the data for a system to satisfy the specified requirement. The system design phase starts after the requirement analysis will be over.

(The system analyst must understand the logical design of the system before beginning the physical design of any one component. The designing phase is second important step in System Development Life Cycle. The final step in system design is to prepare a system design specification.

Types of System Design -



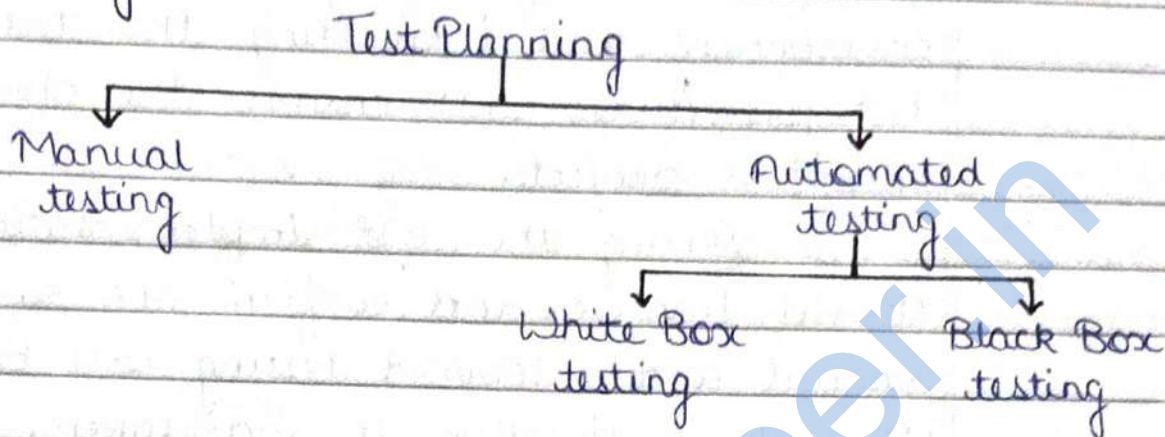
1- Logical design - In the logical design, the programmer and developer implemented their strategies and plans against the designing module. The logical design define the functions and features of system and relationship among its components.

The logical design define what must take place and it include the output that must be produce by the systems and the input needed by the client.

2- Physical design - The physical design is made up on the system logical design and describe the

specific requirement and their implementation.

★ Test planning :-



The system testing is considered as a part of implementation process. Using the test data, the testing can be done by two types -

- 1- Program test (Automated testing)
- 2- System test (Manual testing)

1- Program test - When the program have been coded, compiled, they must be individually tested with the prepared ~~the~~ test cases at any undesirable error, finding out and fix the bugs.

2- System test - After carrying out the program test for each of the program of the system and errors ^{are} remove then system test is done. (The test planning involve the scheduling and estimating the system testing process and establishing the standard and describe the test that should be carried out.

The test planning is particularly important in large software development as well as small software development processes.

V.V. good
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* Test implementation :- Test implementation includes and organises the test cases into the test procedures and finalising the test data and testing environment and formatting the test cases. The test procedures will ensure the objective of identified project.

(During the test implementation, the tester should finalise and confirm the order in which manual and automated testing will be take place.)

(When the automation is undertaken, the test implementation include the creation of test procedure and testing script. The tester should carefully check the mapping constraints that might required to be run in a particular order.)

The dependency on the test environment or the test data must be known and checked by a developer. During the test implementation, the tester must ensure that both responsible for the creation and maintenance of the testing environment and all the test supporting tools and associated procedures are ready for use.

This include the configuration management, test logging and their management. In addition, the tester must verify the procedures that gather the information, data and the test result reporting to the senior software test engineer. In this case, some percentage of test execution efforts is allocated to the testing team which does not follow the predetermined script.

* Performance Evaluation :- Evaluating a system include the hardware and software as a unit. Hardware and software selection require an analysis of several performance categories -

- 1- System requirements - When the system will be available for hardware and software installation for the purpose of analyse the specific requirement by the development team.
- 2- Cost - In this, cost estimation, the maintenance and the operational cost will be identified.
- 3- Performance - What are the capacity and throughput of the system.
- 4- Usability - How easy is to program modifying and operate the system.

For the software evaluation, the following factors are to be considered -

- (a) Programming language and its suitability for the application.
- (b) Easy of installation and training.

In addition to hardware/software evaluation, the quality of vendor services should be examined.

* Interviewing :- Interviews are the commonly used and most popular method for requirement determination. The bidding analyst uses the interviews skills to collect information from the individuals and from the group.

In this method, the analyst and the engineer of requirement engineering process discuss our organisation specification to the different clients to obtain the different projects.

★ Group Dynamics / Facilitating Group :-

While working in a joint application development (JAD) a system analyst and the bidding analyst required these skills. In this approach, there is a group of members and system analyst work with that group during the software development. These analyst can be asked to work and their progress and it also conduct the design review about the running project.

There are following guidelines which is given below -

- 1- The purpose of project development should be clear.

- 2- Make sure that the group members understand what is the expectation of our client.

- 3- Be a good listener.

- 4- Reward the group members for their participation with thanks and respect.

★ Presentation Skills for project development :-

At many points during the system development, the project analyst (bidding analyst) makes the documentation and the progress report of the project and communicate that with the group members. This communication takes the following forms -

1. Meeting agenda

2. Minutes of meeting
3. Project summary
4. Project schedules
5. Description
6. Request for new proposal from the new vendors and new contractors.

* Structure Walkthrough :-

It is the review of the findings from investigation and of the model which is designed by the development team because the bidding analyst have the review process into a set of procedures.

The objective of the structure walk through is to find errors or problems. Its purpose is to ensure that the model which is developed by development team is correct. The fundamental concept is one of making the documentation of gathered requirement.

A structure walk through is not a performance review, the manager should be involve in this structure analysis basically the review of a bidding analyst work not for any other company person.

One of the major responsibilities of the project manager is to ensure the quality of the final system, offer by the project manager to the bidding team. To complete the work within specific deadline of the project completion, structure walk through can be perform to validate the gathered information and give the project summary to the every member of the team.

Process of Structure Walk through

There are following points which are required to complete the process of structure walk through:

1. For verification
2. For validation
3. Preparation
4. Execution of project
5. Follow-up

* Prototyping :- To prepare a working model of the system in order to find out that how the system is working and what are the its prototyping.

The traditional approach sometime may take years to analyse, design and implement a system. In order to avoid such delay, the organisation are using prototyping technique to develop smaller system such as decision support system, management information system and expert system.

The goal of prototyping approach is to develop an extended version of the previous prototype. A prototype is a usable system or system component that is prepare quickly at lower cost.

When a prototype is developed, that satisfy all the user requirement either it is refine and turned into the final system.

Experimenting with a prototype help user to identify additional requirement. Prototyping can also be used in the development of transaction processing system. It is most commonly used during the system design.

For example - To develop the mock screen for input.

Advantages of Prototyping -

The prototyping requires the involvement by the system user. System user experiment with each version of the prototype through an interactive process. Hence the error in the project development are easily detected and eliminated.

Disadvantages of Prototyping -

The user may not be able for willing to spend the amount of time required under the prototyping approach. Prototyping may have behaviour problem with system user, these problems include the dissatisfaction by the user if the system developers are unable to meet all the user demand for improvement in the project bidding.

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★ Database design :- During the actual design, of the database these details and features are evaluated with the different phase of database design which are involved during the design of any database. There are different phases of database design which is given below -

1- Requirement gathering - It is the process of conducting meetings and interviews with customer, end user, other individual in the company. For that the following information will be required -

- (a) Business rules and process
- (b) Information about the current database.
- (c) Future need of the business as related to the database.

2- Data modelling - It is the process of representing the data for business and prepare the business model to connect the business model with any database management system. The following are the few model is to be require -

- (a) Hierarchical model
- (b) Network model
- (c) Object-oriented model

3- Database design with normalisation - It is a phase in which the business model is converted into the physical model. The normalisation with the tables performed by the different database is -

- (a) Primary key
- (b) Foreign key
- (c) Candidate key.
- (d) Super key etc.

4- Database schemas - The database provide the schema for the overall designing of the database in the structural manner. There are following types of schemas available with database which is given below

- (a) Conceptual schema (Logical schema)
- (b) Physical schemas
- (c) Temporary schemas

* Software Quality :- Software quality is the degree to which a system component or process specifies requirement and meets customer or user needs or expectation. The quality of the software is accessed by a number of variables. These variables can be divided into two criteria -

- 1. External quality criteria
- 2. Internal quality criteria

1- External quality criteria - External quality is what a user experience when running the software in its operational mode. Some of external quality are-

- (a) Features
 - (b) Speed
 - (c) Space
 - (d) Network uses
 - (e) Robustness
 - (f) Security
 - (g) Power consumption
- Stability
 - End-of-use
 - Back compatibility

2- Internal quality criteria - Internal quality refers to aspect that are code dependent that are not visible to the end user. The external quality is critical

to the user while internal quality is meaningful to the developer only.

Some of the internal qualities are -

- (a) Test coverage
- (b) Portability
- (c) Testing ability
- (d) Threat-determination
- (e) Documentation
- (f) Skill ability
- Scalability

* Software evaluation and package :-

Package is a software rather than application program specifically written for an installation is becoming more readily available and certainly ~~of~~ comfortable for use.

The evaluation of software can be done with the help of software and hardware cost. Specifically there are six categories on which behalf a software may be graded -

1. Performance
2. Effectiveness
3. Performance efficiency
4. Easy to use
5. Flexibility
6. Quality of documentation
7. Manufacturer support

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12/02/20