SYSTEMS ANALYSIS & DESIGN

SYSTEMS DEVELOPMENT LIFE CYCLE

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Chapter Description

Expected Outcomes

- To know the various stages in a system life cycle
- To understand few methodologies available for system development

References

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Introduction

- Software Development Life Cycle (SDLC) Model is a concept on standard and procedural to be followed when developing a system.
- Waterfall Model is among the first been introduced.
- Nowadays many SDLC model can be referred to.

SDLC Phases

Phases in SDLC:

i. Planning
ii. Analysis
iii. Design
iv. Implementation
v. Maintenance

SDLC Phases

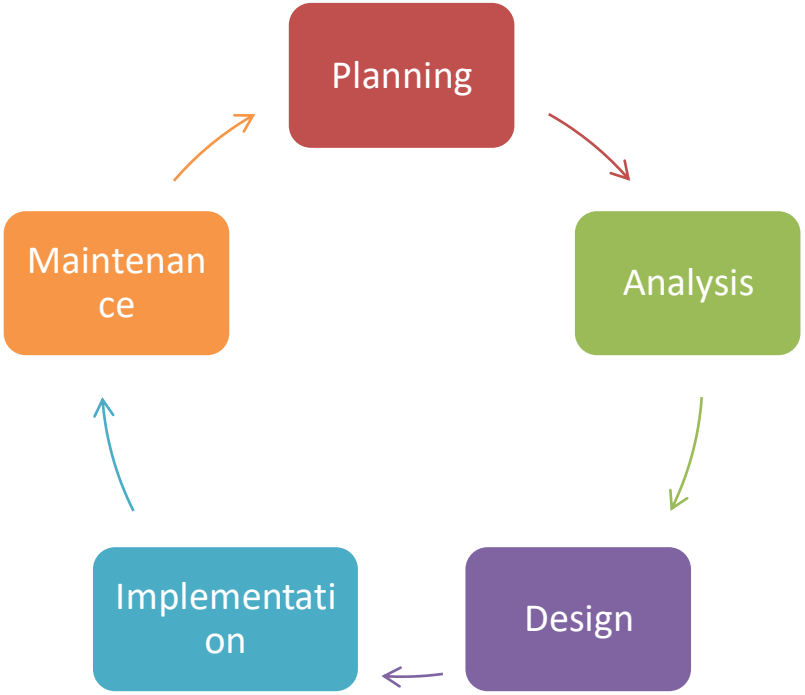

Figure 2.1 shows system development life cycle

SDLC Phases

- Planning stage involve many activities because it initiates with a project development request.
- The main goal is to identify the problem.
- Therefore need to establish either it is new or enhanced system.
- All possible alternative solutions must be think of. The best solution as a ‘proposed system’ shall be chosen.

Planning

The proposed system is assess for its feasibility, meaning, evaluate for its practical and beneficial to build that system.

Feasibility must be assess from developer and customer's point of view.

There are six feasibility factors :

i. Economical
ii. Technical
iii. Operational
iv. Legal
v. Schedule
vi. Political

Analysis

Analysis phase is a detailed investigation on operations, relationship among functional units and boundary of the system.

Study shall be conduct to elicit user's information requirement. Many tools are used during this phase such as Questionnaires, Observation, Data Flow Diagram, Use Case Diagram etc.

Analysis

System Analyst shall meet with client in order to elicit, gather and collect their requirement.

One of the output (deliverable) produce in this phase is Software Requirement Specification (SRS).

Design

Once the analysis completed, the system analyst must start design phase.

Software Requirement Specification shall be used as a reference in this phase.

During design phase , the structure or design for the proposed system is finalized.

Structure of files, databases, input, output, processes, and screen or interfaces are decided.

Design

One of the output (deliverable) in design phase is Software Design Document (SDD)

SDD include various graphical representations of reports, user interaction screens, database structure etc.

This document shall be used during implementation of the system.

Implementation

In this phase, the design is transform into the coding activities.

Programmers are responsible to coding and documenting their work.

These documents are important to test the program.

Several testing must be done on the system

Implementation

Testing stages:

i. Unit testing

ii. Integration testing

iii. System testing

iv. User Acceptance Test

Implementation

After user accept the system, it shall be deployed/install at user site.

Developer also need to provide support and training of the system to user

Maintenance

System also needs maintenance over period of time.

Maintenance can be on hardware and software.

The system need to be maintain especially to debug errors. It may also need to be upgraded such as new functionality or demand from user.

SDLC Model

There are numbers of development models, which follow SDLC phases.

Traditional SDLC model is Waterfall Model.

It was developed in late 1960s in an attempt to introduce a more systematic engineering approach to software development.

Waterfall Lifecycle Model

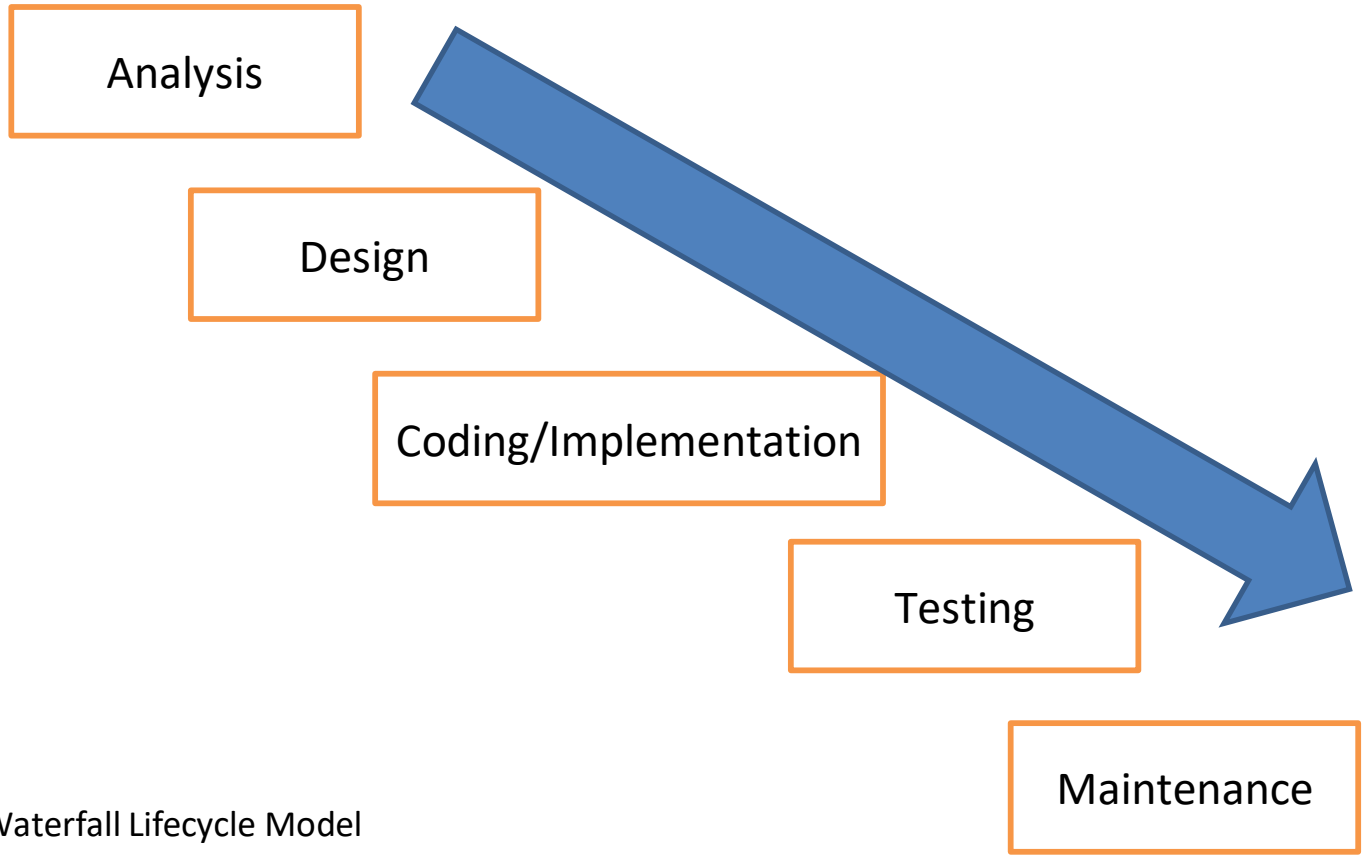

Figure 2.2 Waterfall Lifecycle Model

Waterfall Lifecycle Model

Advantages:

i. Provides structure approach to new developer
ii. Sets requirements early
iii. Easy to understand
iv. Milestones are better understood

Other SDLC Approaches

There are many other approaches to system development model such as:

i. Iterative Prototype Model
ii. Spiral Model
iii. Rapid Application Development
iv. V-Shaped SDLC Model
v. OOAD Approach