Lecture -3

Dronacharya College of Engineering

Topic Covered in this lecture:

1.What is Software Process Model

2. Software Process a Frame Work Activity

3. Type of Software Process Models

Software Process Model

☐ To solve an actual problem the software developer or team of developer must incorporate development strategy that encompasses the process, this development strategy is termed as software process model

Software Process a Frame Work Activity

- A structured set of activities required to develop a software system

  ➢ Specification

  ➢ Design

  ➢ Validation

  ➢ Evolution

- A software process model is an abstract representation of a process. It presents a description of a process from some particular perspective.

Software Process Model

- There are a number of software process model available that can be grouped in to two broad category

➢ Classic software development models

➢ Evolutionary software development models

Classic Software Development Models

1. Linear sequential model

2. Prototyping model

3. Rapid application development model

Evolutionary Software development models

1. Incremental model

2. Spiral model

3. Win win spiral model

Characteristics of a Good Process

1. Should be precisely defined – no doubt about what is to be done, when, how, etc.

2. It must be predictable – can be repeated in other projects with confidence about its outcome

   ➢ Predictable with respect to effort, cost:

3. Facilitates early detection of and removal of defects

   ➢ Defects add to project cost

   ➢ Late detection/correction is costly

4. It should facilitate monitoring and improvement

   ➢ Based on feedback

   ➢ Permit use of new tools, technologies

   ➢ Permit measurements

Software Process Model

The software engineers has five choices for the selection of software process models. The models are :
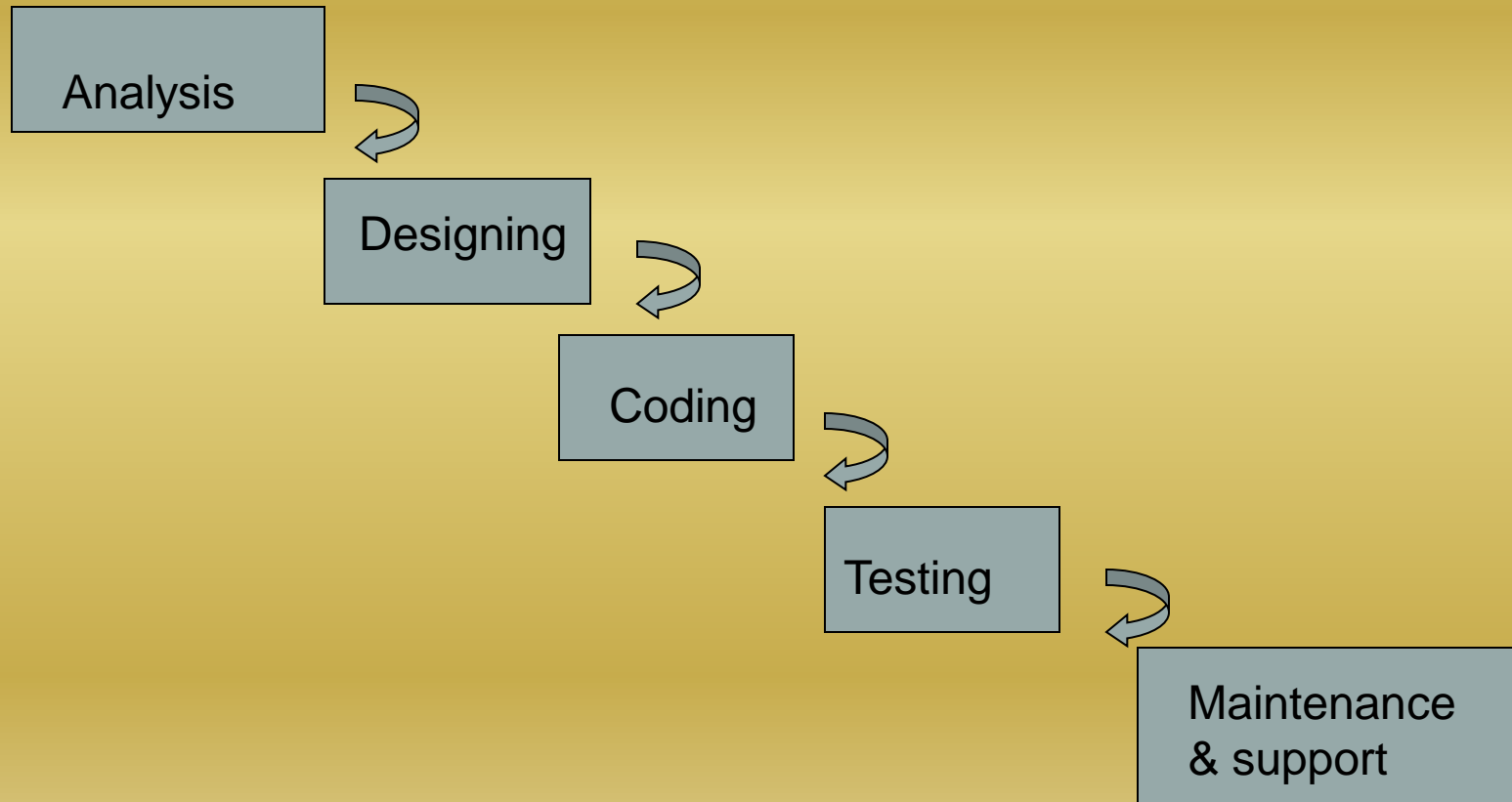
- Linear Sequential Model (LSM)

- The Prototype Model (PRM)

- The Rapid Application Development Model (RAD)

- The Incremental Model (INS)

- The Boehm Spiral Model (BMS)

In all models , core activities are Analysis, Design , Code, Test are common . However their execution differs from model to model.

The Linear Sequential Model (LSM)

- It is one of the earliest development models. The linear sequential model provides a systematic approach to software development. In this approach ,the process of software development is represented by a sequence of steps. The sequential phases are what make this model linear, simple and systematic in nature. Each phase must be completed before you can move to next phase. This model is also known as the Waterfall Model or classical life cycle .

Phases of Linear Sequential Model

Phases of Linear Sequential Model

The following are the phases of LSM:

- **System and Information Engineering:**

    In this phase ,the requirements for all the elements   are worked out.

    System engineering denotes the requirements of system level and information engineering denotes the strategic requirements at business level.

- **Software requirement analysis:**

    In this Phase , the requirements for the software are established through discussion with client and are then documented.

Phases of Linear Sequential Model

- Designing:

   In this phase , the requirements are converted into design to be used in the next phase. The design includes various elements such as database structures, software architecture and procedures.

   The design is first passes through the quality test and then documented.

- Coding:

   In this phase the actual coding of the software is done. The design of the previous phase is converted into the code.

Phases of Linear Sequential Model

- Testing:

  In this phase, the output generated is checked to ensure that it matches the requirements. The programs developed in the previous phase are checked for the logical and syntax errors.

- Maintenance and Support:

  The software developed needs to maintenance and support. This refers to the changes as well as new requirements in the software after delivery.

Advantages of Linear Sequential Model

The Linear Sequential model offers the following advantages:

- It is easy to understand and implement.

- It prohibits skipping any phase in the sequence.

- It is ideal for small projects and when the requirements and goals of the project are well established in advance.

Disadvantages of Linear Sequential Model

The following are the disadvantages using Linear sequential model:

- In practical conditions ,software projects are rarely sequential. Iteration and overlapping often occur . This model is not suitable for such projects.

- The working version of the software is available to the customer after testing. Therefore, if there is any major error during the coding it will till end of the testing.

- Due to linear nature is any phase is not completed , the software analyst and developers cannot proceed further.