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FACULTY OF EGINEERING

SOFTWARE ENGINEERING
LECTURE-04

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OUTLINE

- SDLC Models
- Waterfall Model
- RAD Model
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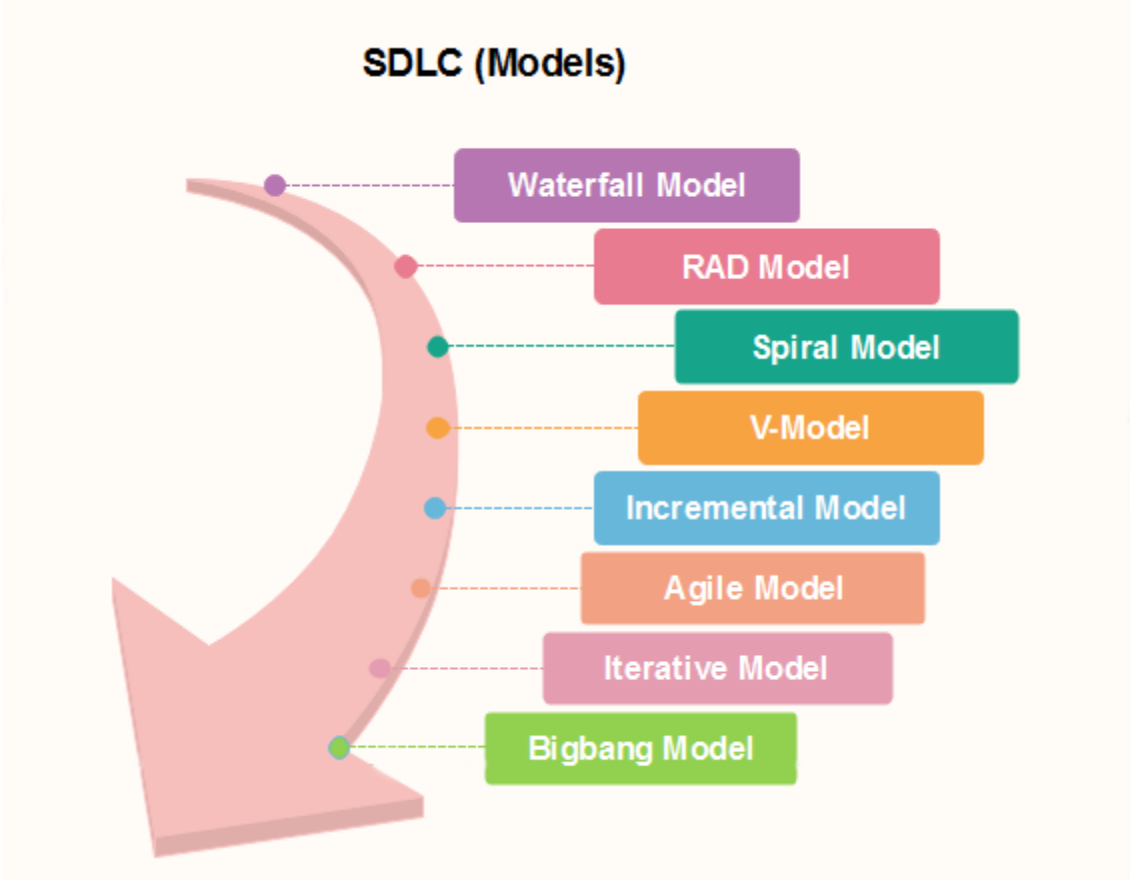
SDLC Models

Software Development life cycle (SDLC) is a spiritual model used in project management that defines the stages include in an information system development project, from an initial feasibility study to the maintenance of the completed application.

There are different software development life cycle models specify and design, which are followed during the software development phase. These models are also called "Software Development Process Models." Each process model follows a series of phase unique to its type to ensure success in the step of software development.

SDLC Models


SDLC (Models)
Waterfall Model
RAD Model
Spiral Model
V-Model
Incremental Model
Agile Model
Iterative Model
Bigbang Model

Waterfall Model

The waterfall is a universally accepted SDLC model. In this method, the whole process of software development is divided into various phases.

The waterfall model is a continuous software development model in which development is seen as flowing steadily downwards (like a waterfall) through the steps of requirements analysis, design, implementation, testing (validation), integration, and maintenance.

Linear ordering of activities has some significant consequences. First, to identify the end of a phase and the beginning of the next, some certification techniques have to be employed at the end of each step. Some verification and validation usually do this mean that will ensure that the output of the stage is consistent with its input (which is the output of the previous step), and that the output of the stage is consistent with the overall requirements of the system.

RAD Model

RAD or Rapid Application Development process is an adoption of the waterfall model; it targets developing software in a short period. The RAD model is based on the concept that a better system can be developed in lesser time by using focus groups to gather system requirements.

- Business Modeling
- Data Modeling
- Process Modeling
- Application Generation
- Testing and Turnover

Spiral Model

The spiral model is a risk-driven process model. This SDLC model helps the group to adopt elements of one or more process models like a waterfall, incremental, waterfall, etc. The spiral technique is a combination of rapid prototyping and concurrency in design and development activities.

Each cycle in the spiral begins with the identification of objectives for that cycle, the different alternatives that are possible for achieving the goals, and the constraints that exist. This is the first quadrant of the cycle (upper-left quadrant).

The next step in the cycle is to evaluate these different alternatives based on the objectives and constraints. The focus of evaluation in this step is based on the risk perception for the project.

The next step is to develop strategies that solve uncertainties and risks. This step may involve activities such as benchmarking, simulation, and prototyping.

V-Model and Incremental Model

In this type of SDLC model testing and the development, the step is planned in parallel. So, there are verification phases on the side and the validation phase on the other side. V-Model joins by Coding phase.

Incremental Model

The incremental model is not a separate model. It is necessarily a series of waterfall cycles. The requirements are divided into groups at the start of the project. For each group, the SDLC model is followed to develop software. The SDLC process is repeated, with each release adding more functionality until all requirements are met. In this method, each cycle act as the maintenance phase for the previous software release. Modification to the incremental model allows development cycles to overlap. After that subsequent cycle may begin before the previous cycle is complete.

MCQ

1. **The systems which can preserve and reproduce the knowledge of experts but have a limited application focus is:**

   A). Applications

   B). Expert system

   C). Benefits and limitations

   D). knowledge base

2. **Top-down software design scheme is:**

   A). Is the process of designing a program by first identifying its modules

   B). Decomposes major components into lower level components

   C). Both (a) and (b)

   D). None of these

3. **A system analyst does not need to consider:**

   A). Technical feasibility

   B). Economics feasibility

   C). Operational feasibility

   D). None of these

MCQ

4. Structured design methodology is an approach to design that adheres to rules based on principles such as:

A). Bottom-up design

B). Data flow analysis

C). Top-down refinement

D). All of these

5. Software compatibility means:

A). Being able to connect machines together

B). Being able to transfer data between the old and new machines

C). Being able to use existing programs with the new program

D). Both (b) and (c)

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