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Software Development Process Models

✓ Introduction

✓ **1. Waterfall Model** : The simplest, oldest and most widely used process model for software development is the waterfall model. In the early days the software develpment process was not really a process at all. This model acquires its name from the fact the classic software life cycle is represented as a sequence of descending steps.
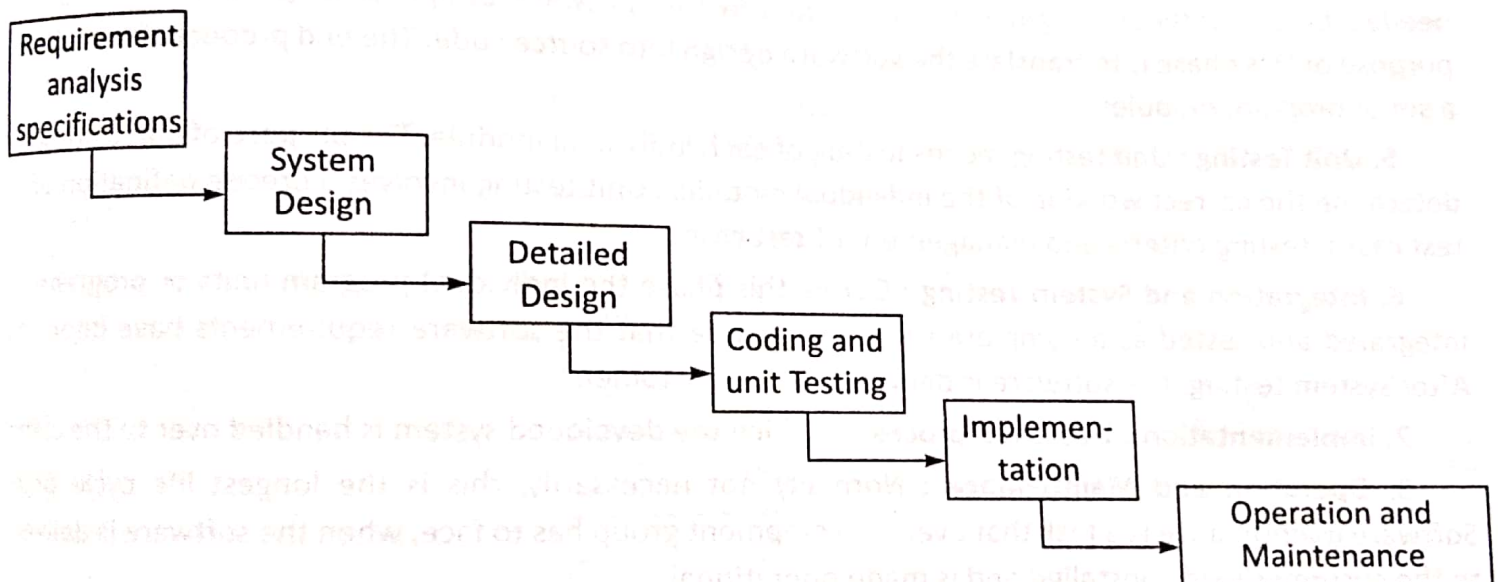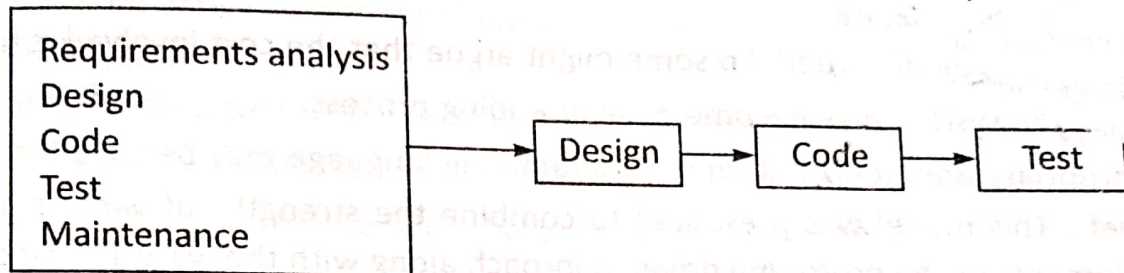

Fig. The Waterfall Model

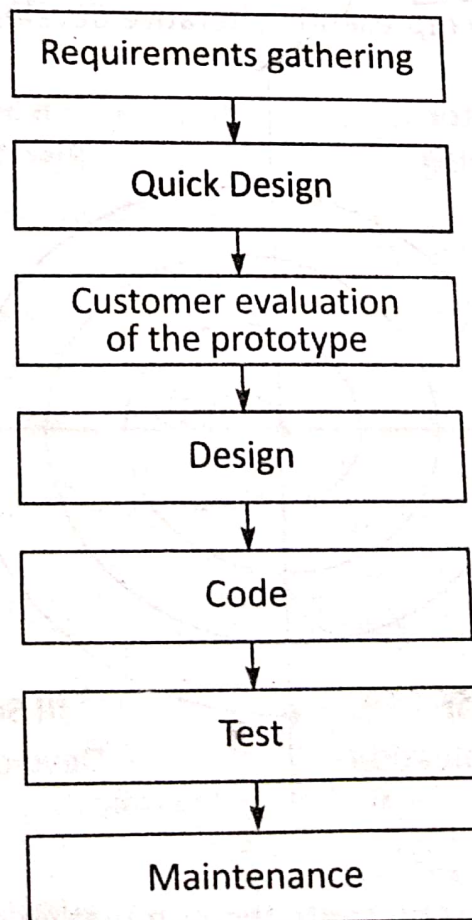The waterfall model is also known as classical waterfall model or linear sequential model.

The various characteristics of this model are as follows :

(i) It brought a definite structure to the process of software development which was a major improvement over the previous "code and fix" culture.

(ii) Each phase is distinct and is mandatory for every project irrespective of project size.

(iii) Every phase has a well defined entry and exit criteria.

(iv) This can be achieved through process of reviews and documentation.

(v) At every phase there is a provision for verification and validation and correction of errors and inconsistencies.

2. Prototyping Model : The prototyping model suggests software a working prototype of the system should be built first. A del : toy implementation of a system. Prototyping is a technique that a limited performance version of the eventual software to be delivered ι development process.

nach spiral.

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┌─────────────────────┐
│ Requirements analysis│
│ Design              │         ┌────────┐     ┌──────┐     ┌──────┐
│ Code                │ ──────▶ │ Design │ ──▶ │ Code │ ──▶ │ Test │
│ Test                │         └────────┘     └──────┘     └──────┘
│ Maintenance         │
└─────────────────────┘
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Prototyping Model

OR

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┌──────────────────────────┐
│  Requirements gathering   │
└──────────────────────────┘
            │
            ▼
┌──────────────────────────┐
│       Quick Design        │
└──────────────────────────┘
            │
            ▼
┌──────────────────────────┐
│   Customer evaluation      │
│     of the prototype       │
└──────────────────────────┘
            │
            ▼
┌──────────────────────────┐
│          Design           │
└──────────────────────────┘
            │
            ▼
┌──────────────────────────┐
│           Code            │
└──────────────────────────┘
            │
            ▼
┌──────────────────────────┐
│           Test            │
└──────────────────────────┘
            │
            ▼
┌──────────────────────────┐
│        Maintenance        │
└──────────────────────────┘
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(3) Irrequ...

4. Rapid Application Development Model :
Rapid application development is a linear sequential software development model that emphasizes on an extremely short development cycle. The RAD model is a high speed adaption of the linear sequential model in which rapid development is achieved by using a component based construction approach. If the requirements are well understood the RAD model enables a development team to create a fully functional system within a very short time period. In RAD a model number of teams can work on a single project. Major function can be developed by a separate rapid application development team and then integrated to form a whole.
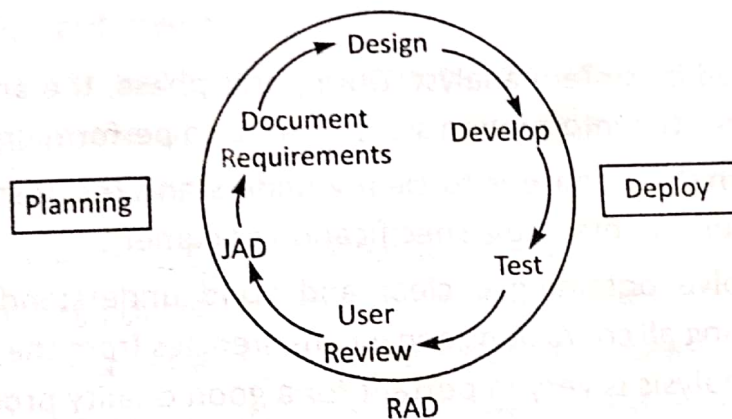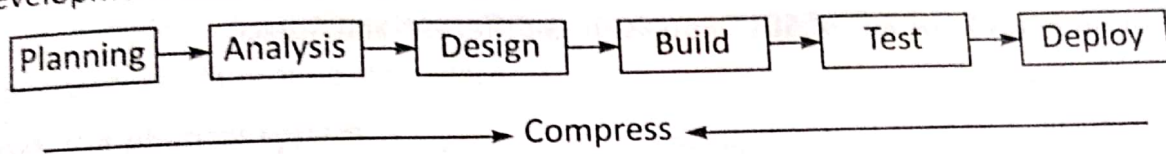
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Planning → Analysis → Design → Build → Test → Deploy
         ————————————→ Compress ←————————————
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Fig. RAD Model

Advantages of RAD Model
(1) RAD model is very useful for very short time period.

(2) It advocate the use and development of reusable components.

(3) It follows a modular approach for development.

Disadvantages of RAD Model
(1) For large and medium size projects RAD model requires sufficient human resources.

(2) RAD approach may not work when technical risks are high.

when he

Process of Communication

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┌────────┐   ┌─────────┐   ┌────────────┐   ┌─────────┐   ┌──────────┐
│ Source │──▶│ Message │──▶│ Perception │──▶│ Channel │──▶│ Receiver │
└────────┘   └─────────┘   └────────────┘   └─────────┘   └──────────┘
    ▲                         ┌──────────┐                      │
    └─────────────────────────│ Feedback │◀─────────────────────┘
                              └──────────┘
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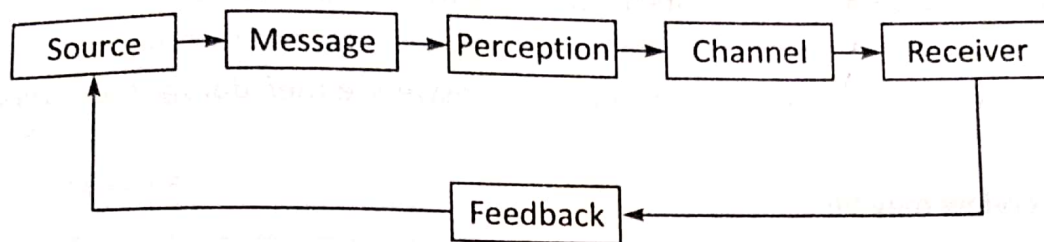
Fig. Communication Model

1. **Source :** The source of a communication or message is known as the encoder, sponsor, advertiser or sales representative. The source is the sender of the message.

2. **Message :** The term "message" refers to the content of the communication. It is the creative ideas of communication, it may include words, pictures, symbols etc.

3. **Perception :** Perception is an important factor in the communication process. The message can be perceived by the receiver according to his nature and culture, its attention, interest, desire and action.

4. **Channel :** The message is carried through some channel a newspaper, magazine, radio or television, from the sender to the receiver.

5. **Receiver :** The receiver is the target audience. The receiver's characteristics are evalauted to design the communication and message.

The individual who receives the information is known as receiver.

6. **Feedback :** Feedback is an essential factor in making communication more effective. It indicates how the communication process is working. Feedback is received from the receivers. It may be positive or negative.