Prototyping Model in Software Engineering

BY DINESH THAKUR Category: Software Engineering

Search Content

Custom Search Search

Prototyping Model in Software Engineering

What is SRS?List & Describe Various Characteristics of an SRS

What is Feasibility Study? Types of Feasibility. Explain Feasibility Study Process

Basic Courses

Computer Fundamental

Computer Networking

Structured Query (SQL)

Java Script

HTML Language

Cascading Style Sheet

C Programming (Theory)

C Programming (Pratical)

Visual Basic

The **prototyping model** is applied when detailed information related to input and output requirements of the system is not available. In this model, it is assumed that all the requirements may not be known at the start of the development of the system. It is usually used when a system does not exist or in case of a large and complex system where there is no manual process to determine the requirements. This model

What is software?
Characteristics and Classification of Software.
Discuss in Detail Coupling and Cohesion
Explain Software Process & Characteristics
Software Myths : What is software myth in software engineering.
Types of Software Maintenance
Principles of Software Design & Concepts in Software Engineering
What is Software Requirements Specification?
Explain Structure

C++ Programming
Java Programming
Java Servlet
Java Server Pages
Computer Graphics
Electronic Commerce
Management (MIS)
Data Structures
Software Engineering
Digital Electronics
C# Programming
Database System

Advance Courses

Website Developement
Struts 2 Tutorial
PHP
How to
python
AngularJS Tutorial
Compiler Design
Troubleshooting

allows the users to interact and experiment with a working model of the system known as **prototype.** The prototype gives the user an actual feel of the system.

At any stage, if the user is not satisfied with the prototype, it can be discarded and an entirely new system can be developed. Generally, prototype can be prepared by the approaches listed below.

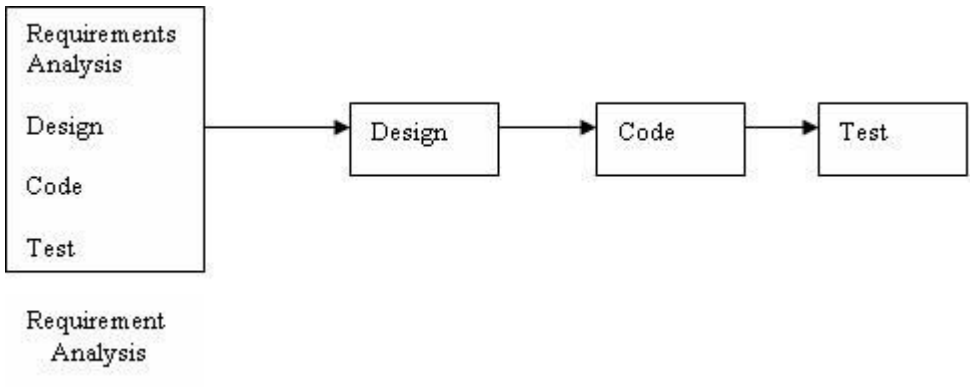
• By creating main user interfaces without any substantial coding so that users can get a feel of how the actual system will appear.
• By abbreviating a version of the system that will perform limited subsets of functions.
• By using system components to illustrate the functions that will be included in the system to be developed .

Using the prototype, the client can get an actual feel of the system. So, this case of model is beneficial in the case when requirements cannot be freezed initially.

This prototype is developed based on the currently known requirements. Development of the prototype obviously undergoes design, coding, and testing, but each of these phases is not done very formally or thoroughly.

By using this prototype, the client can get an actual feel of the system, because the interactions with the prototype can enable the client to better understand the requirements of the desired system.

and Characteristics of SRS.
Explain Software Configuration Management Process
Spiral model in Software Engineering
List & Explain Various Components of an SRS
What are Various Software Engineering Problems? Explain
What is Process Model? Explain Waterfall Model Along With its Limitations
Software Crisis in Software Engineering
Classification of Software Metrics in



Prototyping is an attractive idea for complicated and large systems for which there is no manual process or existing system to help determine the requirements. Risks associated with the projects are being reduced through the use of prototyping. The development of the prototype typically starts when the preliminary version of the requirements specification document has been developed.

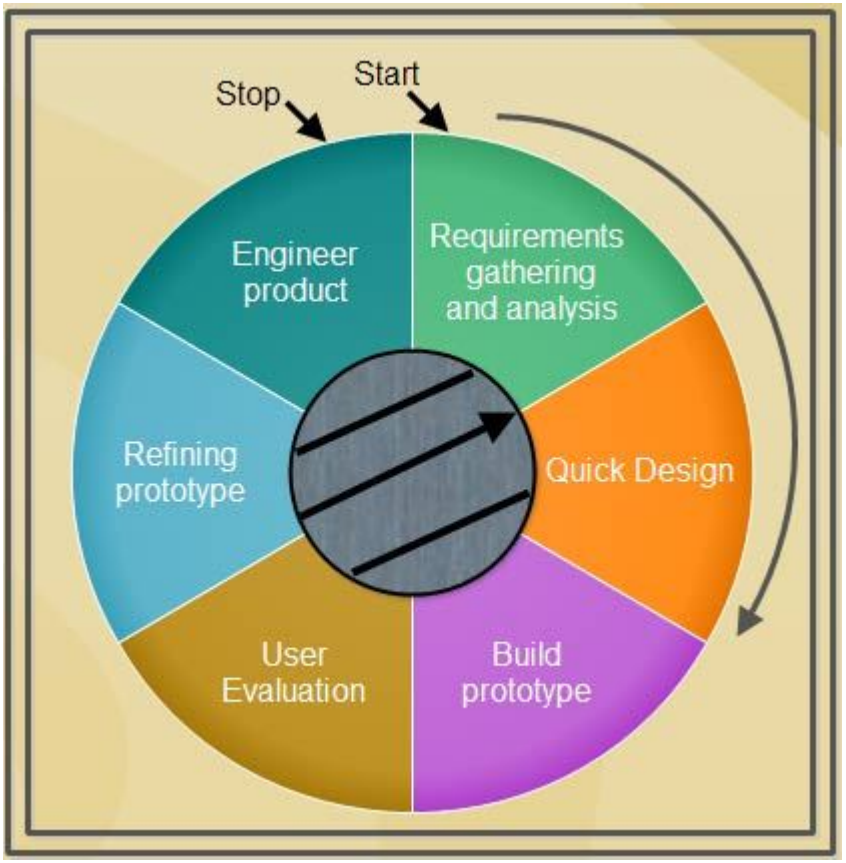
At this stage, there is a reasonable understanding of the system and its needs are unclear or likely to change. After the prototype has been developed, the end users and clients are given an opportunity to use the prototype.

They provide feedback to the developers regarding the prototype: what is correct, what needs to be modified, what is missing, what is not needed, etc. Based on the feedback, the prototype is modified to incorporate some of the suggested changes that can be done easily, and then the users and the clients are again allowed to use the system.

This cycle repeats until, in the judgment of the prototypes and analyst. Based on the feedback, the initial requirements are modified to produce that final requirements specification, which is then used to develop the production quality system.

Figure Illustrates the steps carried out in the prototyping model. These steps are listed below.

Software Engineering
Project Planning in Software Engineering
Architectural Design in Software Engineering
Software Engineering - What is Software Engineering? Write Basic Objective and Need for Software Engineering
What is Structural Testing? Explain any Two Techniques used in it
Requirements Analysis in Software Engineering
Rapid Application Development (RAD) Model and its Advantages and



1. Requirements gathering and analysis: A prototyping model begins with requirements analysis and the requirements of the system are defined in detail. The user is interviewed in order to know the requirements of the system.

2. Quick design: When requirements are known, a preliminary design or quick design for the system is created. It is not a detailed design and includes only the important aspects of the system, which gives an idea of the system to the user. A quick design helps in developing the prototype.

3. Build prototype: Information gathered from quick design is modified to form the first prototype, which represents the working model of the required system.

4. User evaluation: Next, the proposed system is presented to the user for thorough evaluation of the prototype to recognize its strengths and weaknesses such as what

Disadvantages of RAD Model
Differentiate Between Top Down and Bottom UP Approaches
Differentiate Between Error, Fault and Failure
Differentiate Between Process, Project and Products
Object-Oriented Testing
Software Metrics in Software Engineering
What is Software Requirement? Types of Requirements.
Describe Difference Between Top-Down & Bottom up Coding Techniques for Programming

is to be added or removed. Comments and suggestions are collected from the users and provided to the developer.

5. Refining prototype: Once the user evaluates the prototype and if he is not satisfied, the current prototype is refined according to the requirements. That is, a new prototype is developed with the additional information provided by the user. The new prototype is evaluated just like the previous prototype. This process continues until all the requirements specified by the user are met. Once the user is satisfied with the developed prototype, a final system is developed on the basis of the final prototype.

6. Engineer product: Once the requirements are completely met, the user accepts the final prototype. The final system is evaluated thoroughly followed by the routine maintenance on regular basis for preventing large-scale failures and minimizing downtime.

Various advantages and disadvantages associated with the prototyping model are listed in Table.

Table *Advantages* and Disadvantages of Prototyping Model

Advantages	Disadvantages
1. Provides a working model to the user early in the process, enabling early assessment and increasing user's confidence. 2. The developer gains experience and insight by developing a prototype there by resulting in better implementation of requirements.	1. If the user is not satisfied by the developed prototype, then a new prototype is developed. This process goes on until a perfect prototype is developed. Thus, this model is time consuming and expensive. 2. The developer loses focus of the real purpose of prototype and hence, may compromise with the quality of

What is Formal Methods Model?
Advantages and Disadvantages of Formal Methods Model
Debugging in Software Testing
What is build and fix model or ad hoc model? and Explaini its Advantages and Disadvantages
When is Cost Estimation Done?
Discuss the COCOMO Model along with the Parameters Defined in it
Software Testing Strategies - Types of Software Testing Strategies
Discuss the Different Levels of Testing

3. The prototyping model serves to clarify requirements, which are not clear, hence reducing ambiguity and improving communication between the developers and users. 4. There is a great involvement of users in software development. Hence, the requirements of the users are met to the greatest extent. 5. Helps in reducing risks associated with the software.	the software. For example, developers may use some inefficient algorithms or inappropriate programming languages while developing the prototype. 3. Prototyping can lead to false expectations. For example, a situation may be created where the user believes that the development of the system is finished when it is not. 4. The primary goal of prototyping is speedy development, thus, the system design can suffer as it is developed in series without considering integration of all other components.

◄ Previous Article

What is SRS?List & Describe Various Characteristics of an SRS

About Dinesh Thakur

What is Functional Testing? What are the Different Techniques used in it

Incremental Model or iterative enhancement model in software engineering

Write and Explain Software Development Phases

What is a Test Plan?

What should a Test Plan Include

Definition of Software Engineering and Software Engineering Layers

What are the Different Methods Used for Monitoring a Project

Dinesh Thakur holds an B.SC (Computer Science), MCSE, MCDBA, CCNA, CCNP, A+, SCJP certifications. Dinesh authors the hugely popular Computer Notes blog. Where he writes how-to guides around Computer fundamental , computer software, Computer programming, and web apps. For any type of query or something that you think is missing, please feel free to Contact us.

Software Engineering Challenges

Explain Software Components

Applications Requirements

Validation in Software Engineering

Component-Level Design in software engineering

Explain Various DESIGN TECHNIQUES

What is Risk Management? Give Brief Ideas for Risk Assessment and Control

Time Boxing Model in Software Engineering

Discuss the Objectives of the

Design Phase

What do you Mean by Structured Analysis.

Coding Guidelines in Software Engineering

Explain Classical Life Cycle Model or linear sequential model

Software Testing – What is Software Testing?

Characteristics of Software Test.

What is Exhaustive Testing

Software Testing Techniques

Programming Practices with Top-Down, Bottom-Up, Structured Programming, and Information Hiding

What are Test Case Specifications

What do you Mean by Staffing

Data Design in Software Engineering

Software Process Assessment

Write Different Software Quality Factors

Discuss Briefly the Validation of SRS

What is Quality Assurance Plans?

Discuss the Different Approaches Used

What are Function Points? How are they Computed?

Explain

What is V-model ?

Advantages and Disadvantages of V Model.

Code Verification Techniques in Software Engineering
Software Measurement in Software Engineering
Software Engineering Phases
What are the Matrices, Measurements and Models of Project Management
Process
Discuss Briefly Test Cases and Test Criteria
Criteria for Selecting Software Process Models
What is Black Box Testing
Software Maintenance Models

What are the Different Verification Methods Used for Detailed Design

Explain Object Oriented Analysis and Dsign Tools

Software Maintenance in Software Engineering

Software Design Documentation (SDD)

Test Case Design | Software Testing

Coding Documentation in Software Engineering

What do you Mean by Process Improvement and Maturity. Explain the CMM Model

What are Requirement Reviews

Emergence of Software Engineering

Requirements Management

Process in Software Engineering

Levels of Software Testing

Software Maintenance Life Cycle

Write a Note on Software Design Phases

Software Design Reviews in Software Engineering

Explain Various Phases of Process Management

What are Test Oracles

Measuring Software Quality in Software Engineering

What are Various Types of Errors that Occur in SRS

Object Oriented Metrics in Software Engineering

What is Static Analysis? How is it Performed? What are its Uses

Coding Methodology in Software Engineering

What is Mutation Testing

Write Major Problems in System (Software) Development

Tools for Software Maintenance

What are the Different Techniques

Used for Proving the Correctness of a Program
Explain Various Programming Practices used in Coding. What is meant by Information Hiding
Write a Short Note on Project Control
Termination Analysis
What is the Psychology of Testing
What is Design Review? How Automated Cross-Checking Determines Review of System
Write Down Various Software Problems
Software Testing Tools

Requirements Elicitation or requirements capture or requirements acquisition
Write Role of Management
Apart from Requirement
Reviews what are the other Methods Used for the Validation of SRS
What is Bottom-Up Design?
Test Plan | Software Testing
Analysis Patterns in Software Engineering
Software Requirements Engineering Tools
Features of Software
Code in Software

Engineering

Quantitative Process Management (QPM)

Issues in Software Metrics

Process Change Management (PCM)

Organization Process Definition (OPD)

Technology Change Management (TCM)

Coding Tools in Software Engineering

Organization Process Focus (OPF)

Software Engineering

- Coding Methodology in Software Engineering
- Emergence of Software Engineering
- Measuring Software Quality in Software Engineering
- Rapid Application Development (RAD) Model and its Advantages and Disadvantages of RAD Model
- What do you Mean by Structured Analysis.

Most Read Article

What is Computer?
Uses of Computer
Block Diagram of Computer and Explain its Various Components
Classification of Computers | Type of Computer
Functions of Operating System
Types of Operating System

Latest News

What is Primary Memory? - Definition
What is Secondary Memory? - Definition
What is embedded system? - Definition
What is Cluster Computing? - Definition
What is Router | Definition of Router

- Tools for Software Maintenance
- What is Design Review? How Automated Cross- Checking Determines Review of System Characteristic of a Computer

what is diode | diode definition

What is database query? Definintion