Introductory Session

Jan 05 2022

Jan 07 2022

Types of SWE Projects

Software Engineering Projects - Maintenance

Most projects are *evolutionary* or *maintenance* projects, involving work on *legacy* systems

Corrective projects: fixing defects

Adaptive projects: changing the system in response to changes in

Operating system

Database

Rules and regulations

Enhancement projects: adding new features for users

Reengineering projects: changing the system internally so it is more maintainable

Software Engineering Projects – NEW

'Green field' projects

    New development
    The minority of projects
    Not easy to be part of one in the Indian context

Except

    Joining / Starting a start-up :-)

And of course,

    Your BTP

Software Engineering Projects – The Trend

Projects that involve building on a *framework* or a set of existing components.

A framework is an application that is missing some important details.

React , Angular JS
Django, Flask, Ruby on Rails

Tools like GWT

It allows developers to avoid needless coding, accelerate program building with stable working set of standard features, like data storage, mailing or printing, and economise your time and money, especially when you need to make your app available on different platforms.

Software Engineering Projects - The Trend

Projects that involve building on a *framework* or a set of existing components.

Such projects:

Involve plugging together *components* that are:
Already developed.
Has large functionality.

Benefit from reusing reliable software.

Provide much of the same freedom to innovate found in green field development.

Activities Common to SWE Projects
or
SDLC

Custom VS Green Field Project

Project Planning
Requirements Gathering, Analysis, **Specification**
Design and Modelling
Implementation [Coding / Programming]
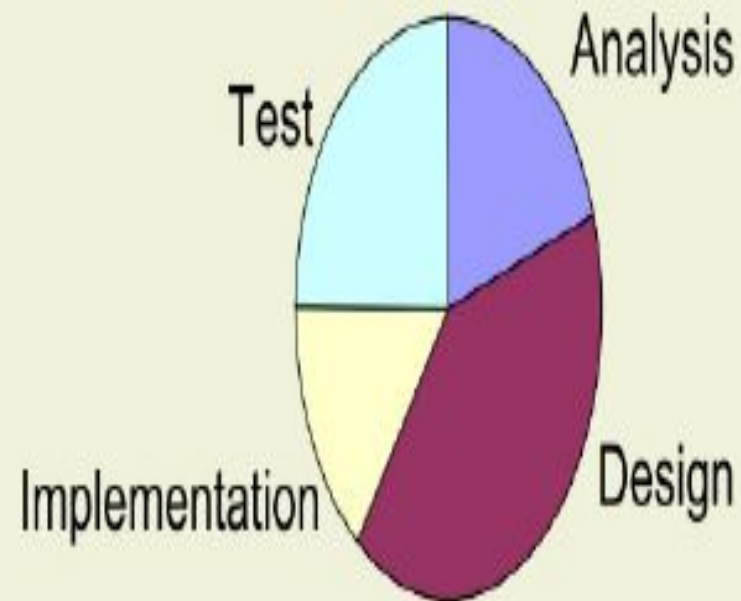**Testing**
Deployment
Maintenance

Quality Assurance

Effort Distribution – Two Different Takes

- Analysis   20%
- Design   40%
- Implementation   15%
- Test   25%

Project Planning

First Ask: Do we need to take this up?

Feasibility Analysis
Cost Estimations
Organizational Planning
    People
    Schedules & Deadlines

Requirements Specification

Domain analysis

- Need for domain expertise

Defining the problem

Requirements gathering

Obtaining input from as many sources as possible

Requirements analysis

Requirements specification

- Writing detailed instructions about how the software should behave
- Precise & Non-Conflicting
- No implementation Details - Just WHAT not HOW

SRS

Software Requirements Specification
Clear
Concise
Concrete

A software requirements specification (SRS) is a document that describes what the software will do and how it will be expected to perform.
   [*not HOW the software is developed*]

It also describes the functionality the product needs to fulfill all stakeholders (business, users) needs.

SRS – like construction contract

Avoid conflicts, always have a written Construction Contract

Activities Common to Software Projects DESIGN

Deciding how the requirements should be implemented, using the available technology

Systems engineering: Deciding what should be in hardware and what in software

Software architecture: Dividing the system into subsystems and deciding how the subsystems will interact

Detailed design of the internals of a subsystem

User interface design

Design of databases

Activities Common to Software Projects

Implementation

Testing

Deployment

Maintenance Maintenance Maintenance Maintenance
Maintenance Maintenance Maintenance Maintenance

Activities Common to Software Projects

Quality Assurance [not a separate phase]

Reviews and inspections

Testing

TESTING [Automation Scripts]

MAINTENANCE [Well Designed, Easily Maintainable]