

Software Development

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Course Details

Course Code CS381

Course Name Software Development & Professional Practice

Coordinate Unit CS depart. FCI

Term Semester I (Fall)

Level Undergraduate - Level 3

Course Objectives

- To introduce software development and explain its importance.
- To build efficient software architecture.
- To effectively use design patterns.
- To gain best practice in software development.

Topics Covered in Course

Ch1 Introduction to software development.

Ch2 Process life cycle models.

Ch3 Code construction.

Ch4 SOLID principles.

Ch5:8 Design patterns.

Ch9 Software Architectures.

Ch10 Programming Paradigms.

Communications and Course Materials



In this course, our materials will be based on the following book. Also, our discussions and announcements will be on **Thinqi Platform**.

Main Book

Software Development - from **Minia Portal**

Password: **CS381**

Grading Policy

Attendance & Take-home sheets	10
Practical assignments	10
Lab Exam	10
Midterm exam	10
Final exam	60

Policies

- Show mutual respect and listen.
- Everyone is punctual tried their best to attend the lecture on time.
Exception 15 minutes.
- Please turn off mobiles. If your mobile goes on you will be asked to answer a random question.
- Expect interaction. You will be asked at least one question in lecturers between now and the end of term.
- Avoid distractions. Sneak in quietly and take the nearest available seat.
- Discussions will be in my office during office hours.
- People sitting on the back row!!!!.



Book Review



Ch1: Introduction

Overview

- What is software development?



The process of creating apps, websites, games, and software we use in daily life. It also includes testing, modifications and maintenance.

Differences



Developer



Coder



Programmer



Software engineer

Developers Types



Application Developer



Web Developer

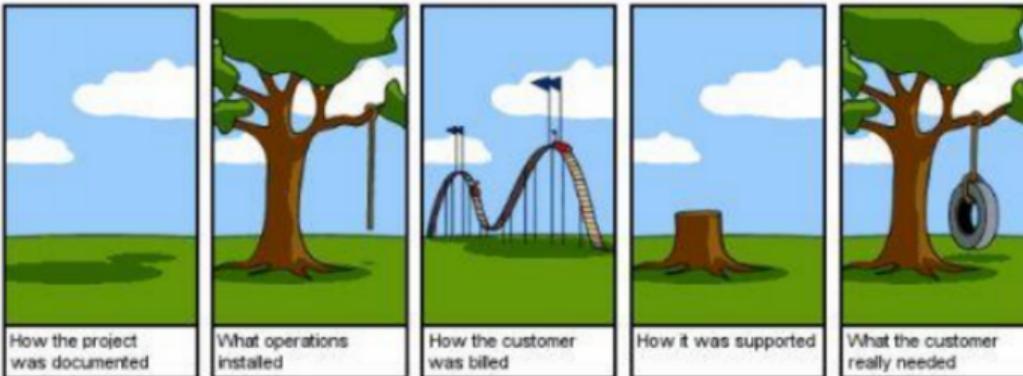
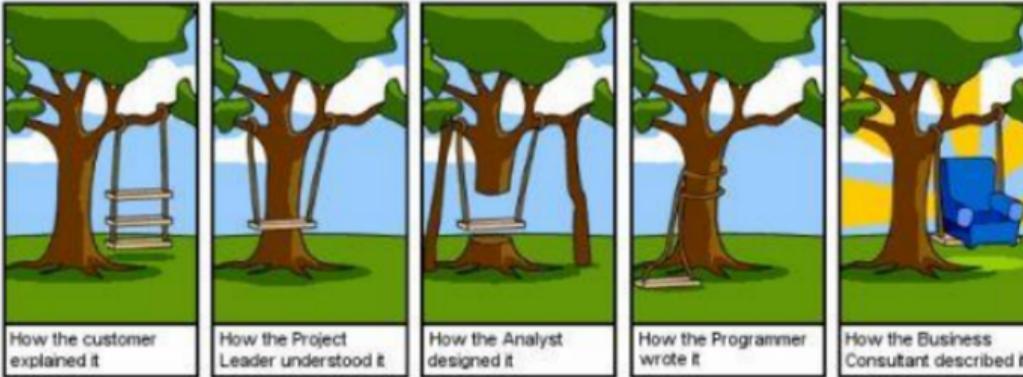


Game Developer



System Developer

Software Development Challenges



Software Development Challenges ...

Client : Why don't you clearly understand my requirements ?

His Requirement :



Software Development Challenges ...



Software Quality

$$\text{Quality} = f(\text{Code}, \text{Target})$$

A quality

of a product does exactly what the users want it to do.

Software Quality

$$\text{Quality} = f(\text{Books}, \text{Target})$$

Maintainability

Software should be written in such a way so that it can evolve to meet the changing needs of customers. This is a critical attribute because software change is an inevitable requirement of a changing business environment.

Software Quality

$$\text{Quality} = f(\text{Books}, \text{Target})$$

Dependability

It includes a range of characteristics including reliability, security, and safety. Dependable software should not cause physical or economic damage in the event of system failure. Malicious users should not be able to access or damage the system.

Software Quality

$$\text{Quality} = f(\text{Books}, \text{Target})$$
An icon depicting a stack of three books standing next to a target with an arrow hitting the bullseye.

Acceptability

Software must be acceptable to the type of users for which it is designed. This means that it must be understandable, usable, and compatible with other systems that they use.

Software Quality

$$\text{Quality} = f(\text{Books}, \text{Target})$$

Efficiency

Software should not make wasteful use of system resources such as memory and processor cycles. Efficiency therefore includes responsiveness processing time and memory utilization.

Good Software Attributes

- The variables that affect software quality are:
 1. Operational Characteristics.
 - Correctness.
 - Usability.
 - Integrity.
 - Reliability.
 - Efficiency.
 - Security.
 - Safety.

Good Software Attributes ...

- The variables that affect software quality are:

2. Revision Characteristics.

- Maintainability.
- Flexibility.
- Extensibility.
- Scalability.
- Testability.
- Modularity.

Good Software Attributes ...

- The variables that affect software quality are:
 3. Transition Characteristics.
 - Interoperability.
 - Reusability.
 - Portability.

Development Team Requirements for Software Development

- Initially, you don't know everything.
- Well-coordinated team.
- Good teams communication.
- Good customer communication.
- A process to followup.
- Process flexibility.
- Aware about whereabouts.
- Tell in failure.
- Right tools and practices.