Chapter 1

What is Software engineering

-What is Software engineering

-type of software

-Process of SE

-SE key question

- Thing to keep in mind

Introduction to Software Engineering

- Lecture 0
- We Will study detail of Software development process and activities
  - Software engineering process
    - Software specification
    - Software development
    - Software Validation
    - Software evaluation
    - Software process model
  - Project documentation and user satifaction
  - Software engineering tools and methods
  - Software engineering management

What is Software Engineering

- What is software Engineering
- Why SE ? / Software crisis & it solution
- Why SE is popular?
- key questions about SE?
- Things to keep in mind as Software Engineer

Software Engineering is

is an engineering discipline that is concerned with all aspects of software production

in other word create software with knowledge of engineering and not has many mistake and within time

or in conclude SE is Job that know how to create software with right tools, and can evalutate time and dicide the job to any SE or progranmer

or A process of analyzing user requirements and then designing, building, and testing which will satisfy those requirement

Types of Software products

Generic
- Sold on openmarket (playstore, App store, etc)
- often called (Commercial off the Shelf)
- Cheaper and more reliable Comparing to Custom

Custom
- Specific customer, Specific purpose

Seven broad Categories of Computer Software

- System Software
- Application Software
- Engineering and Scientific Software
- Embedded Software
- Product-line Software
- Web Application
- A.I. Software

Process of SE (Big Picture)

- Planning
- Analysis
- Design
- Programming
- Development
- Testing → ~~Deployment~~
- Maintenance

Ethics in SE: IEEE/ACM code of ethic

SE shall

- act consistently with public interest
- act in the best interest of their client
- dev / main with highest standards
- maintain integrity and independence
- participate in life long learning

Software crisis

Because of we don't know how to create the software in the right way so in 1968 we first propose SE then it popular in now on

Why SE is popular well

- talk about nature of software
  - complex, large, tangible
  - adaptability
  - changeability
  - Scalability
  - costly
- Quality Management
  - offer better method of software dev to provide quality software produc

" people get smarter so do the technologies. User get ever smarter. They ask for something smarter, faster, easier to use "

Key questions about SE

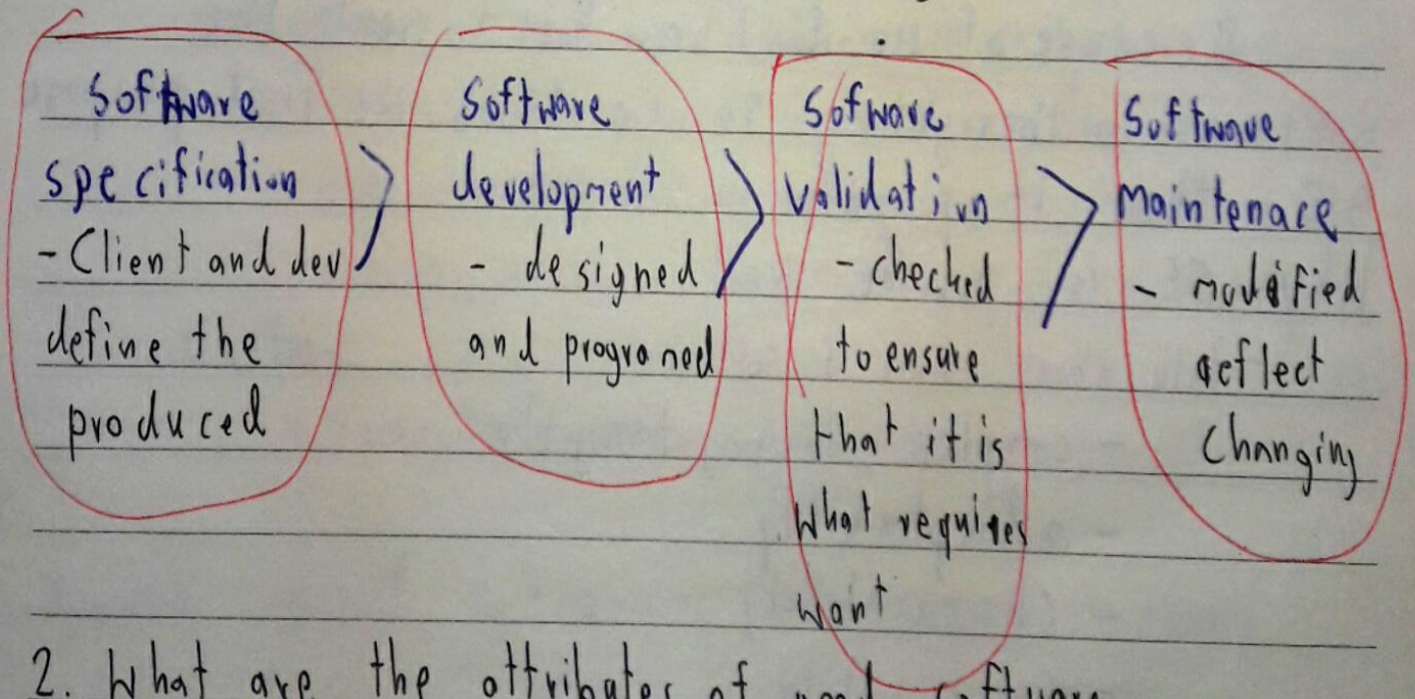
1. What are Software engineering Methods?

a structured apporach to software dev whose aim is to facilitate the production of high-quality software in a cost-effective way.

- function-oriented method
- object-oriented method
- Unified Modeling Language

"Sometime less formal opporches are more efficent in certain case"

What are the fundamental Software engineering activities?



2. What are the attribates of good software

Functionality: deliver required functions and performance

Maintainability: accomodate chages and evolution of Softwr

Dependability: trustworthy

Efficiency: does not wasete system resources

Usability: usable by the intended user

3 What are the key challenges facing software engineering

- Legacy System: need to maintain and update old system
- Diversity: dev and mait communication among soft sys
- Complexity: deal with the increased complexity
- Delivery: develop a quality in short time
- trust: can be trusted by its users

4 What are the costs of SE

- depending on
  - type of software
  - Size of software
  - Complexity
  - requirement
  - System reliability
- maintenance consume 40 - 80 % of software cost
- In safety-critical areas are higher by live are at risk

Things to keep in mind as SE

- Engineering is a licensed profession
  - to protect the public, safety, health, welfare
  - accept practice involve the sci, math, econ
  - Ethical practice
- In many countries doesn't require an engr lice but still an engineer.