Chap 1: Introduction

What is SOFTWARE?

Software = Computer program(s) + associated documentation

May be developed for:

- a particular customer (be spoken)
- or a general market (market driven)

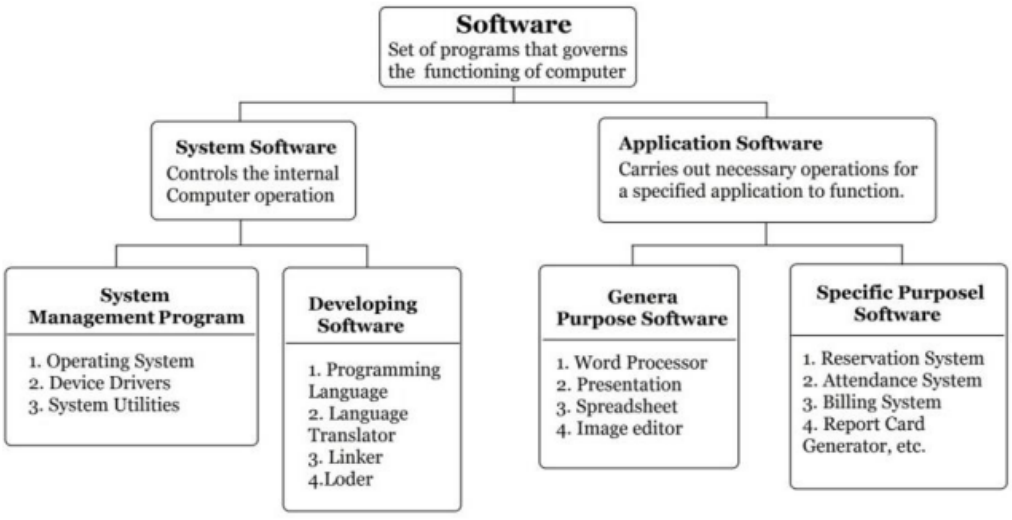
SOFTWARE IS COMPLEX

Complex ≠ complicated

Complex = composed of many simple parts related to one another

Complicated = not well understood, or explained

Type of SOFTWARE



SOFTWARE ENGINEERING

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

engineering: using appropriate theories and methods to solve problems bearing in mind organizational and financial constraints

all aspect: technical process of development, project, management, the development of tools, methods, etc

Who is in charge for the specification?

Product specification at initial stage and the changes later

Generic products

- The software engineering team

Customized products

- The customer

Agile Value. Working software over Comprehensive document

good SOFTWARE?

Good is general attribute:

- of a high quality or level
- to be desired or approved of

Break-down good into attributes:

- performance
- maintainable
- dependable
- usable

SOFTWARE costs

Software costs ~ computer system costs
Costs to maintain > to develop

Software engineering is concerned with cost-effectivesoftware development.

Fundamental SOFTWARE ENGINEERING activities

General issues that affect most SOFTAWRE

Heterogeneity:

systems are required to operate as distributed systems across networks that include different types of computer and mobile devices.

Business and social change:

Business and society are changing incredibly quickly as emerging economies develop and new technologies become available. They need to be able to change their existing software and to rapidly develop new software.

Security and trust:

As software is intertwined with all aspects of our lives, it is essential that we can trust that software.

SOFTWARE diversity

Many different types of software system

- Stand-alone
- Transaction-based
- Embedded system

- Batch processing
- Entertainment
- Modeling and simulation
- System of systems

Software development is context-specific:

- Large companies
- SME
- Startups
- In-house
- Outsourcing

NO UNIVERSAL SET OF SOFTWARE TECHNIQUES APPLICABLE TO ALLLLLLLL

SOFTWARE ENGINEERING ETHICS

- Involve wider responsibilities than simply the application of technical skills
- Must behave in an honest and ethically responsible way if they are to be respected as professionals
- Ethical behaviour is more than simply upholding the law but involves following a set of principles that are morally correct