**Chapter 1 Software Engineering**

What is Software?

* Software is the detailed instructions that control the operation of a computer system.
* Without software, computer hardware could not perform the tasks we associate with computers.

Function of software

* Manage the computer resources of the organization
* Provide tools for human beings to take advantage of these resources
* Act as an intermediary between organizations and stored information.

Generic Product and Bespoke product different

* Cost
* The control of requirement

Different of software engineering and system engineering

* Software engineering is a part of system engineering.
* System engineering is to identify the roles of hardware, software, people, database and other system elements involved with that system which is going to be developed.
* Software engineering is to tell the practicalities of developing and delivering useful software.

Attributes of good software

* Availability
* Functional
* Efficient
* Economical
* Reliable
* Flexible
* Secure
* General
* Buildable
* Manageable
* Maintainable
* Usable
* Reusable
* Safety

Key Challenge of SE

1. The legacy challenge

* the challenge of maintaining & updating legacy software in such a way that excessive costs are avoided and essential business services continue to be delivered

1. The heterogeneity challenge

* the challenge of developing techniques to build dependable software which is flexible enough to cope with different types of computer & support systems

1. The delivery challenge

* the challenge of shortening delivery times for large &complex system without compromising system quality.

Chapter 2

Software Process

* Software specification
* Software development
* Software Validation
* Software Evolution

Waterfall Model

* Communication – Project Initiation
* Planning – Tracking, Scheduling
* Modelling – Analysis, Design
* Construction - Code, Test
* Deployment – Delivery, support, Feedback
* Easy To Follow
* Systematic

Prototype model

1. Throwaway

* Validate or device the system requirement
* Discarded

1. Evolutionary

* Deliver a working system

Benefit of the prototyping

* Missing user services may be detected
* Misunderstanding between software developers and users may be identified as the system function are demonstrated
* Difficult-to-use or confusing user services may be identified and refined