Unit-1
Introduction to Software Engineering

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Outline

- Introduction
- Software Definition
- Software Application Domain
- Software Engineering
- Software Engineering Practice

- What is it?
- Who does it?
- Why it is important ?
- What are the steps ?
- What are the work products ?
- How do I ensure that I have done it right?

Software Definition

- Software is:
    1. instructions (computer programs) that when executed provide desired features, function, and performance
    2. data structures that enable the programs to adequately manipulate information
    3. descriptive information in both hard copy andvirtual forms that describes the operation and use of the programs.

Software has characteristics that are considerably different than those of hardware eg. Software doesn't wear out.

Software Application Domain

Seven broad categories of computer software

- System software, Application software, Engineering/scientific software,Embedded software, Product-line software, Web applications, Artificial intelligence software

Challenges of computer software

- Open-world computing, Netsourcing, Open source

Legacy software

- Older programs, Poor quality, Do nothing
- Evolve - Adapted, Enchancement, Extended, Re-architected

Software Engineering

Challenges

- Concerted effort, Design, High quality, Maintainable

IEEE definition

- Software Engineering: (1) The application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software; that is, the application of engineering to software. (2) The study of approaches as in (1).

Figure: Software Engineering Layers

Summary

- What is a software ?
- Many different types of software can be developed overcoming the challenges.
- Software Engineering has to met the challenges to develop a product.
- Software Engineering steps follow layered approach.

Assessment

- Define software engineering.
- What are the various categories of the software ? Specify the domain, software name, programming language used to develop it.
- What are the challenges in software ? Specify the reason behind the challenges.
- What are the layers in SE?
- What is software crisis?