OBJECT ORIENTED SOFTWARE ENGINEERING

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Software and Software Engineering

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In general we can define software as

- Software is a **product,** that software professionals build and then support over the long term.

- Software engineering encompasses
  - a **process**,
  - a collection of **methods** **(practice)** and
  - an array of **tools** that allow professionals to build high-quality computer software.

Nature of Software

Software performs- Dual role

Software as a product

- **Transforms information** - produces, manages, acquires, modifies, displays, or transmits information.
- Delivers computing potential of hardware and networks.

Software as a vehicle for delivering a product

- Supports or directly provides **system functionality**.
- Controls other programs (**operating system**).
- Effective communications (**networking software**).
- Helps in building other software (**software tools & environments**).

- What is Software ?

IEEE definition of Software:

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 and
(3) Documentation that describes the operation and use of the programs

Types of Software Product

- Software products may be developed for a **particular customer** or may be developed for a **general market**.

That is, a Software products may be
- **Generic** - Developed to be sold to a **range of different customers** e.g. PC software such as Excel or Word.
- **Customized** - Developed for a **single customer** according to his/her specification

Characteristics of Software are:

Hardware

- ☐ Manufactured
- ☐ wear out
- ☐ Built using components
- ☐ Relatively simple

Software

- ☐ Developed/ engineered
- ☐ deteriorate
- ☐ Custom built
- ☐ Complex

Manufactured Vs Developed

- Once a **hardware** product has been manufactured, it is difficult **or impossible to modify**.
  - In contrast, **software products** are routinely **modified** and **upgraded**.

- In hardware, hiring more people allows you to accomplish more work, but the same does not necessarily hold true in software engineering.

- Unlike hardware, software costs are concentrated in **design** rather than **production**.

Component based Vs Custom built

Hardware products typically employ many **standardized design components**.

Most software continues to be custom built.

The software industry does seem to be moving (slowly) towards component-based construction

Summary of Software Characteristics

- Software is **developed or engineered**, it is not manufactured.
- Software does not "**wear out**" but it does **deteriorate**.
- Software continues to be **custom built**, as industry is moving toward **component based construction**.
- It is **complex** when compared with hardware.

THANK YOU

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