Lecture 7

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Software Engineering Layers

Software Engineering is a layered technology

Tools
Methods
Process
A Quality focus

Few important characteristics:

i) Maintainability -> Software can be maintained by anyone.

ii) Dependability -> Users can trust the software against specifications

(iii) Efficiency -> Produce same results when used again efficiently.

(iv) Usability -> Easy to be used and user interface should be easy to follow and use

Attributes to good quality:

i) Completeness -> Few functionalities that makes it complete.
eg. Editor should have "thesaurus"

(ii) Compatability -> Software should work in all different ways.
eg. Compatible with all file formats

(iii) Portability of Software: ⟶ Data can be ported from any system to any other. Formatting/ info should not be lost.

(iv) Internationalisation ⟶ Can be used in any part of the world by anyone. May include language translation.

(v) Scalability ⟶ Software should work flawlessly even if number of users increases. Also "Too much success is a failure" if the company is not able to support a huge user base.

(vi) Robustness ⟶ Software should be robust enough to handle attacks, security threats, errors, self check, recover data automatically in emergency.

(vii) Testability ⟶ Capability to test in a disciplined ware exhaustively in an automatic fashion.

(viii) Reusability ⟶ Can software be recycled for releasing new versions or can it be used again or modified.

(ix) Customisation ⟶ Better ~~than~~ the software, more customisable it is. How much can it be modified easily with ~~Same~~ same algorithm used.

Process defines a framework for a set of key process areas (KPAs) that must be established ~~for a set~~ for effective delivery of software engineering technology.

Software engineering methods provide the technical how-to's for building software. Methods encompass a broad array of tasks that include requirements analysis, design, program construction, testing, and support.

Software engineering tools provide automated or semi-automated support for the process and the methods. When tools are integrated so that information created by one tool can be used by another, a system for the support of software development called "computer-aided software engineering" is established.