

SOFTWARE ENGINEERING

①

Introduction $\Rightarrow$ • Software Engineering is the product of two words

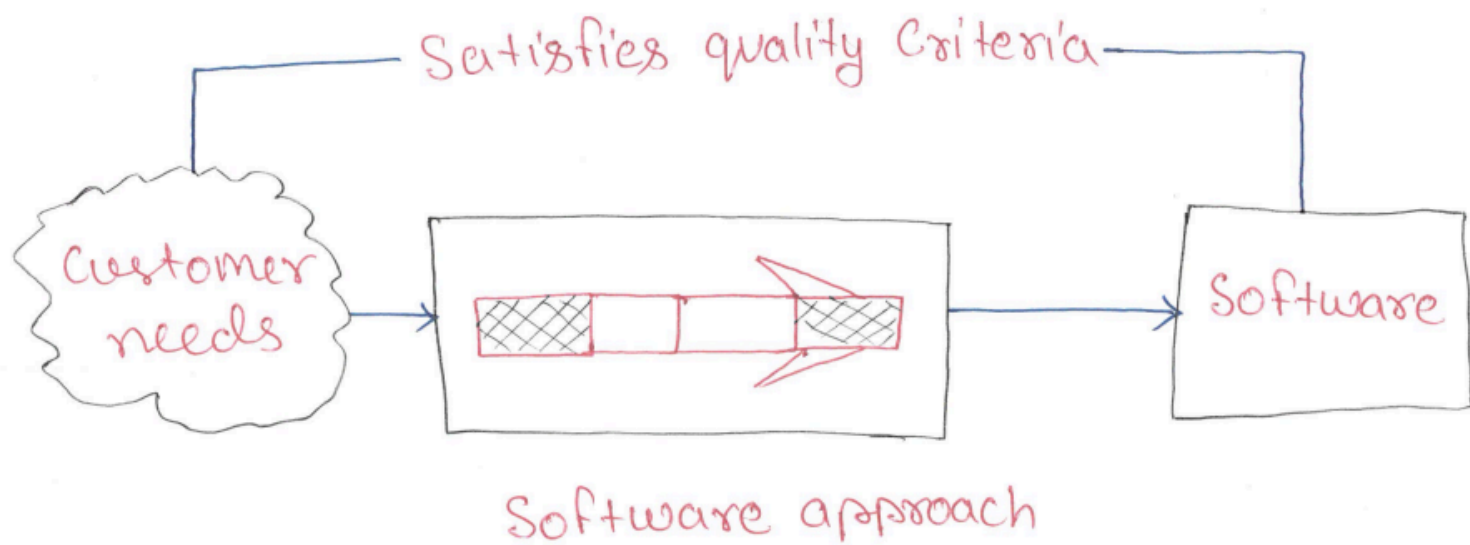
Software + Engineering = Software Engineering

Software $\Rightarrow$ Software is a program or set of programs containing instructions that provide desired functionality.

Engineering $\Rightarrow$ Engineering is the process of designing and building something that serves a particular purpose and find a cost-effective solution to problems.

- Software Engineering is the branch of Computer Science that deals with the design, development, testing and maintenance of Software application.
- Software Engineering is a Systematic and disciplined approach to Software development

that aims to create high-quality, reliable² and maintainable software.



- Software Engineering includes a variety of techniques, tools and methodologies, including requirement Analysis, design, testing, and maintenance.
- The main goal of Software Engineering is to develop software applications for improving quality, budget, and time efficiency.
- Software Engineering ensure that the software that has to be built should be consistent, correct, also on budget, on time, and within the required requirements.

Key Principles of Software Engineering ⇒ 3

- 1) Modularity: ⇒ Breaking the software into smaller, reusable components that can be developed and tested independently.
- 2) Abstraction: ⇒ Hiding the implementation details of a component and exposing only the necessary functionality to other parts of the software.
- 3) Encapsulation: ⇒ Wrapping up the data and functions of an object into a single unit, and protecting the internal state of an object from external modifications.
- 4) Reusability: ⇒ Creating components that can be used in multiple projects, which can save time and resources.
- 5) Maintenance: ⇒ Regularly updating and improving the software to fix bugs, add new features, and address security vulnerabilities.

- 6) Testing: → Verifying that the Software meets its requirements and is free of bugs.
- 7) Design Patterns: → Solving recurring problem in Software design by providing templates for solving them.
- 8) Agile methodologies: → Using iterative and incremental development processes that focus on customer satisfaction, rapid delivery, and flexibility.
- 9) DRY principle (Don't Repeat Yourself): → Avoiding duplication of code and data in the Software. This makes the Software more understandable, maintainable and less error-prone.

Want full handwritten notes?
Unlock complete notes for just ₹_9

 **WhatsApp: +91-7037206791**

Importance of Software Engineering 5



1. Reduces Complexity :- Big Software is always complicated

and challenging to progress.

- Software Engineering divides big problems into small issues. And then solve

Want full handwritten notes?
Unlock complete notes for just ₹_9

 **WhatsApp: +91-7037206791**

- Are paid highly as software needs a lot of hardwork and workforce development.
 - These are developed with the help of a large number of codes. But programmers in Software Engineering project all things and reduce the things which are not needed.
 - As a result of the production of SW, costs become less and more affordable for SW that does not use this method.
- 3 → To Decrease Time →
- Anything that is not made according to the project always waste time.
 - If you are making great software, then you may need to run many codes to get the definitive running code.
 - This is a very time-consuming procedure, if it is not well handled, then this can

Want full handwritten notes?
Unlock complete notes for just ₹_9

 **WhatsApp: +91-7037206791**