



Getting started with Software Engineering

SE-113 Introduction to Software Engineering Course Teacher: S A M Matiur Rahman (SMR)



**Department
Of
Software Engineering
(Permanent Campus)**

SE-113 (Introduction to Software Engineering)

1/16/2020

Course Teacher: S A M Matiur Rahman

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Objectives



Objectives:

- Motivation.
- IEEE Definition of Software Engineering.
- Understanding Stages of software development.

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Motivation



- ▶ **Software can have a huge impact in any aspect of our society.**
- ▶ **Software is Almost Everywhere.**
 - ▶ Where can you find software?
 - ▶ Transport(aircraft, metro)
 - ▶ Some popular ones (Google, Facebook, Mobile)
- ▶ **Problems in software development.**

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Motivation



► Common issues

- The final software doesn't fulfill the needs of the customer.
- Hard to extend and improve: if you want to add a functionality later is mission impossible.
- Bad documentation.
- Bad quality: frequent errors, hard to use....
- More time and cost than expected.

Programming is not enough.

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Motivation



Software Engineering

- What does it mean?
 - Software engineering is the application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software, that is, the application of engineering to software. (IEEE, 1990)

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Solution



Objective

To produce software that is:

- ◆ **On time:** is delivered at the established date.
- ◆ **Reliable:** doesn't crash.
- ◆ **Complete:** good documentation, fulfill customer needs.

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Software Development Practices



By software development practices we refer to a requirement employed to prescribe a disciplined, uniform approach to the software development process(IEEE, 1990).

Following are the list of software development practices:

1. Requirement engineering.
 2. System analysis.
 3. High-level design/architecture.
 4. Low-level design.

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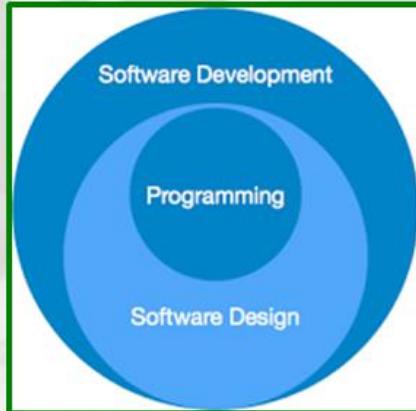
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Software Development Practices



- 5. Coding.
- 6. Integration.
- 7. Design and Code reviews.
- 8. Testing.
- 9. Maintenance.
- 10. Project Management.
- 11. Configuration management.

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Software Engineering



Essential attributes of Good Software:

1. **Maintainability.**
 2. **Dependability & Security.**
 3. **Efficiency.**
 4. **Acceptability.**
 5. **Usability.**
 6. **Reliability.**
 7. **Reusability.**

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Key Ideas of Software Engineering



- Computer Science is concerned with getting the computer to do what you want to do as efficiently as possible.
- Software engineers use their computer science skills to create products of practical use and economic values. Software engineers are ethically responsible for the correctness, stability and safety of their projects when possible, software engineers apply scientific and mathematical knowledge to their work.

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Key Ideas of Software Engineering



- **A software development process is a process by which user needs are translated into a software product. Software development processes are comprised of specific software development practices**
- **A software process model is a generalized abstraction of a family of software development processes.**

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Key Ideas of Software Engineering



- Plan-driven processes are best for project with a low degree of change or those with critical safety and security model.
- Software engineering is especially challenging because software is a tractable medium, requirements often change, and competitive pressures cause schedule pressure.

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Stages of Software Development



- Requirement Analysis
- Software Design
- Implementation
- Testing
- Maintenance

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