

Introduction to Software Engineering



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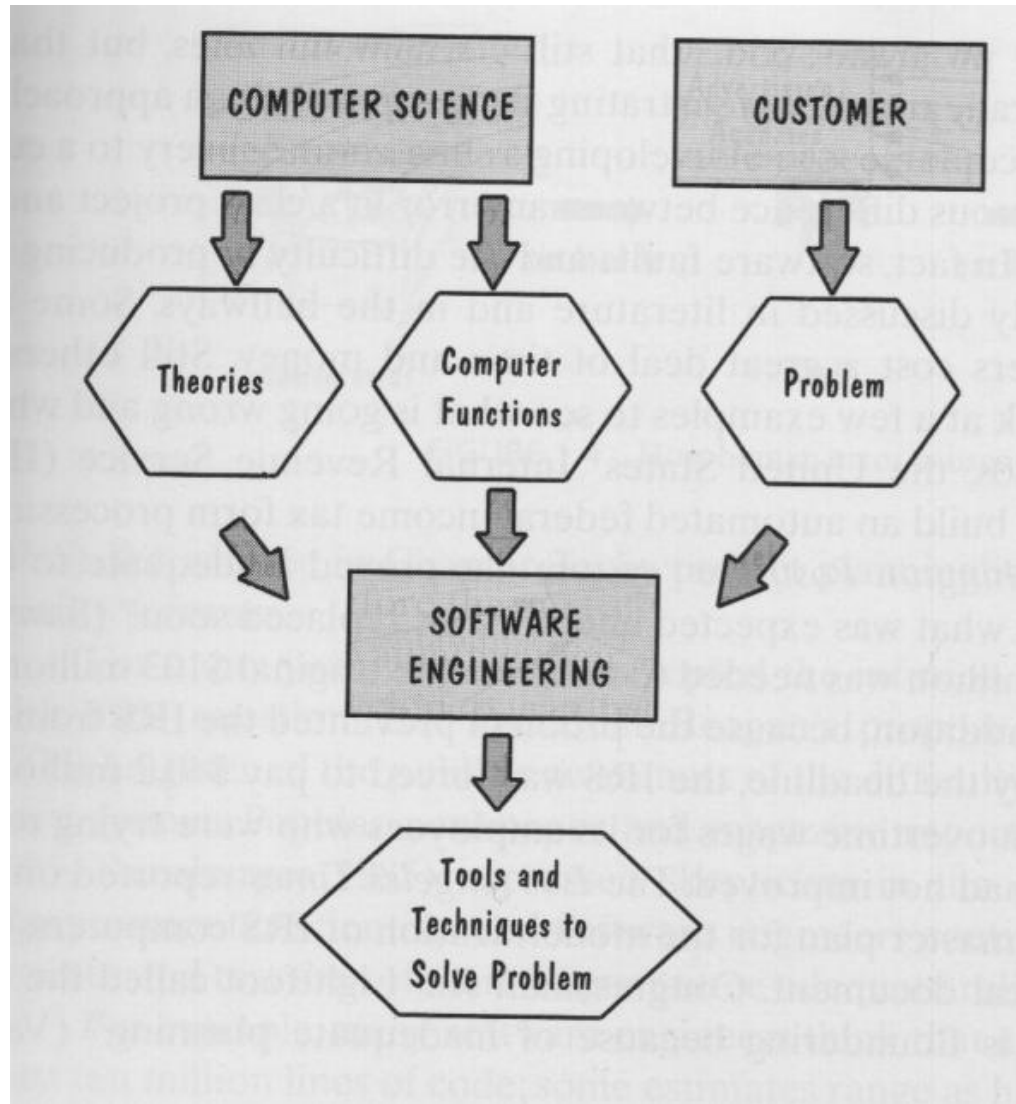
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What is Software Engineering?



- ❖ Software engineering is about the creation of large pieces of software.
- ❖ **Definition:** Software engineering is an engineering discipline concerned with all aspects of software production.
- ❖ **Engineering discipline:** Engineers apply theories, methods and tools to create solutions to problems within organizational and financial constraints.
- ❖ **All aspects of software production:** Engineers are concerned with all the activities related to the creation of software.

Computer Sci. and Software Eng.



An Enjoyable Craft



- ❖ The joy of:
 - ❖ building
 - ❖ of being useful
 - ❖ being fascinated with complex, puzzle-like objects
 - ❖ learning
 - ❖ of using an abstract medium

The dark side



- ❖ It must perform perfectly
- ❖ Others set the goals, we are not under control
- ❖ Plenty of tedious work (documenting, debugging, etc).

I guarantee you, the benefits overweight the drawbacks

Building a House



- ❖ Determining and analyzing the requirements
- ❖ Producing and documentation the overall design
- ❖ Producing the detail specifications of the house
- ❖ Identifying and designing the components
- ❖ Building each component
- ❖ Testing each component
- ❖ Integrating the components
- ❖ Making final modifications after residents have moved in
- ❖ Continuing maintenance

Building Software



- ❖ Requirements analysis and definition
- ❖ System design
- ❖ Program design
- ❖ Writing the programs (program implementation)
- ❖ Unit testing
- ❖ Integration testing
- ❖ System testing
- ❖ System delivery
- ❖ Maintenance

Qualities of Software



- ❖ Meeting user needs
- ❖ Low cost of production
- ❖ High performance
- ❖ Portability
- ❖ Low cost of maintenance
- ❖ High reliability
- ❖ Delivery on time

SEng 265



- ❖ Soft. Engineers use tools, techniques, procedures, and paradigms to enhance the quality of their software
- ❖ This course is about:
 - ❖ An introduction to the basic concepts of software engineering (software life cycle, software development methodologies)
 - ❖ The techniques (programming, debugging, testing)
 - ❖ The tools (C, Perl, make, CVS, Unix)