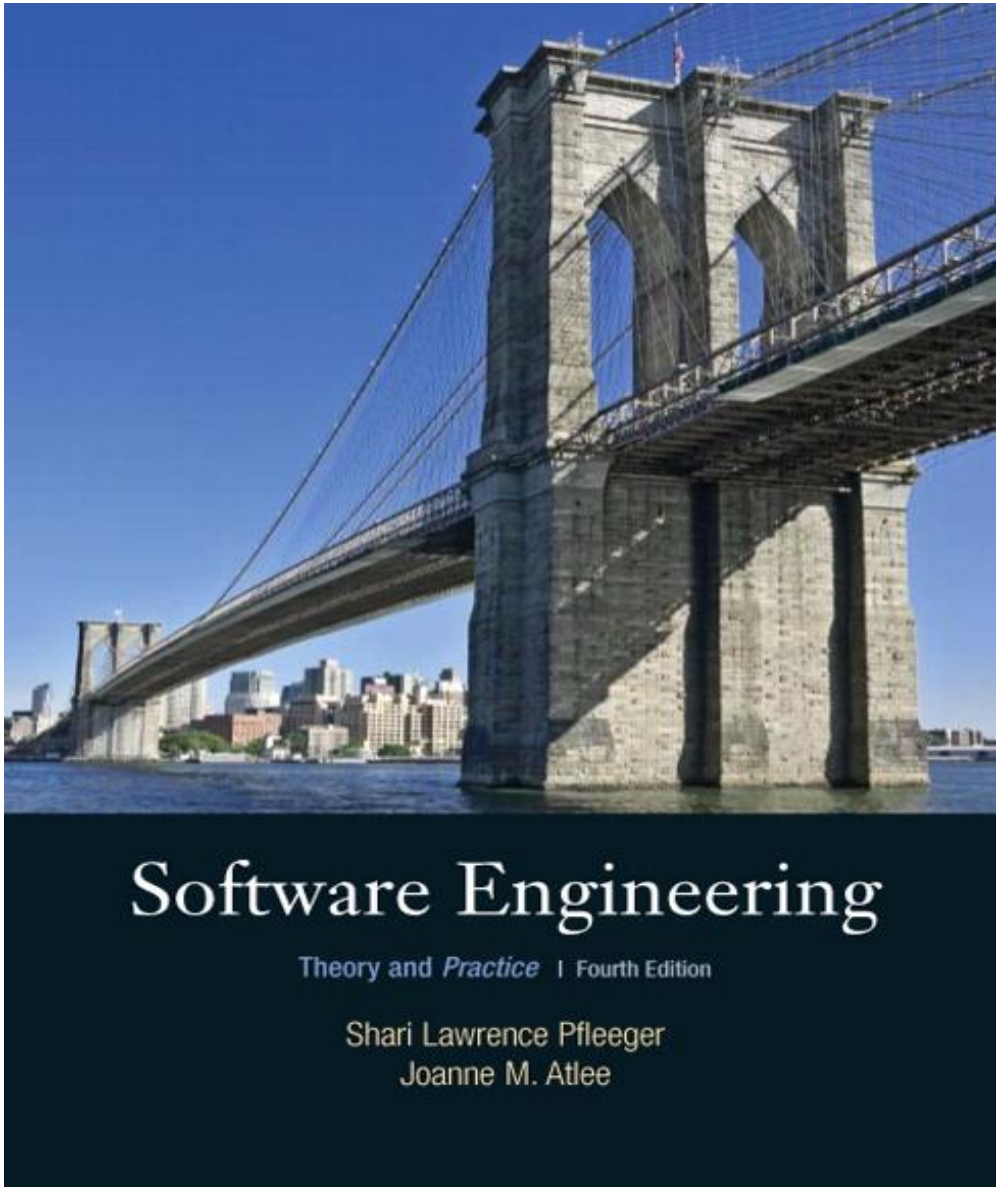
What is Software ?

Computer programs and associated documentation.


Software Engineering
Theory and *Practice* | Fourth Edition
Shari Lawrence Pfleeger
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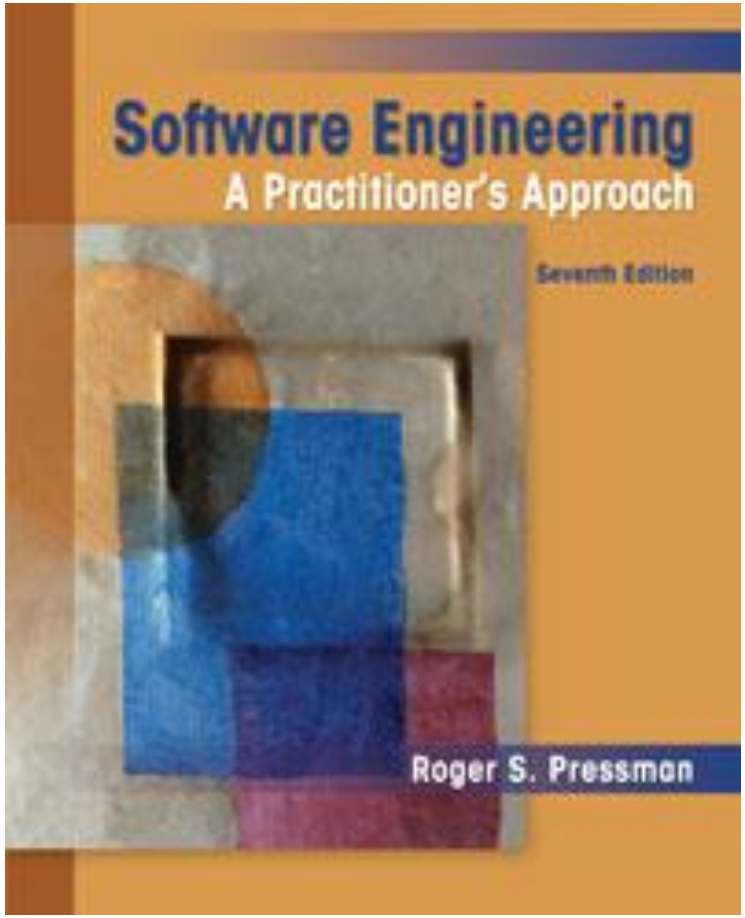
Software Engineering
TENTH EDITION
Ian Sommerville


Software Engineering
A Practitioner's Approach
Seventh Edition
Roger S. Pressman

What is Software Engineering ?

- Software engineering is an engineering discipline which is concerned with all aspects of software production

What is difference between Software engineering and computer science ?

- Computer science is concerned with theory and fundamentals. Software Engineering is concerned with the practicalities of developing and delivering useful software
- Ex.How Physics is related with Electrical Engineering?

Difference between Software engineering and System engineering ?

- System engineering is concerned with all aspects of computer based system development including H/w , s/w and process. Software engineering is a part of it

What is software process ?

- A set of activities whose goal is the development or evolution of software

What is software process model ?

- A simplified representation of a software process

What are costs of software engineering ?

- Roughly 60% of costs are development costs and 40% are testing costs

What is CASE ?

- Computer Aided Software Engineering. Software systems developed for automated support for software process activities. Useful for method support

Attributes of good software ?

- Software should deliver required functionality and performance to the user and should be maintainable, dependable and usable

What is a System ?

A collection of things : a set of entities, a set of activities, relationship among entities and activities

Activities and Objects(entities)

Activity : some event which occurs in a system

Object or entity : Elements involved in the activity

Example

An employee history may contain objects for each employee :

Name, Employee code, Salary

System Boundary

Bug ?

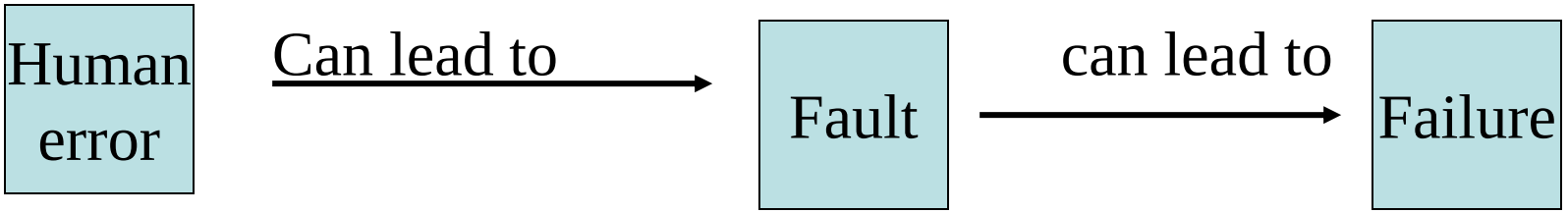
A mistake in our interpretation of a requirement or syntax error in a program

Fault Vs Error

Fault occurs when we make a mistake, called an error, in performing some software activity

Failure ?

Departure from system’s required behavior. It can be discovered before or after system delivery or during testing


Human error
Can lead to
Fault
can lead to
Failure

Human error → Can lead to → Fault → can lead to → Failure

A Fault occurs when a human error results in a mistake in some software product

A Failure is the departure of the system from its required behavior

Faults represent problems that the developer sees, while Failures are problems that the user sees.

VERIFICATION Vs. VALIDATION

Verification – Was the Product built right?
Validation - Was the right product built?

Verification - Process of confirming that software meets its specifications. Involves Review, Inspection, etc.

Validation - Process of confirming that software meets user requirements. Involves actual testing and takes place after verification

Requirement : Eg. Need a Library Management system

Specification : Eg. Response time should be < 2 minutes

- What is the Role of Software engineer?
- Who are customers?
- Who are users?
- Who are endusers?
- What causes software failures?
- What is Software Quality?
- Forward Engineering / Reverse Engineering / Re-engineering