Software Engineering Concepts (CSC291)

Software &
Software Engineering

Slide Set to accompany

Software Engineering: A Practitioner's Approach, 7/e

by Roger S. Pressman

Today Agenda

- The Course Chemistry
- Important Rules
- Perception about Software
- Why Software Engineering?
  - Crisis Era of Software
- What is Software Engineering?
  - Definition

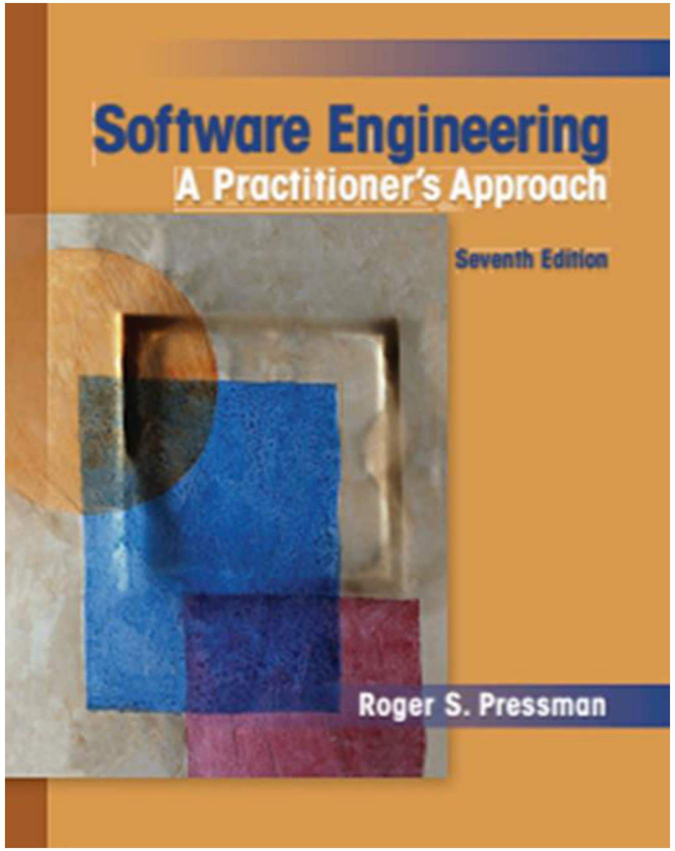
The Course Chemistry

❑Lecture

- x32

❑Assessment

– Mid Term	x1
– Assignment	x2
– Quiz	x2
– Final	x1



Important Rules

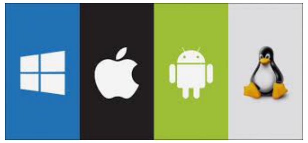
- ❑ Class Decorum
  - – Punctuality
  - – Do not miss right of query
  - – Questions are welcome anytime during class
  - – Attendance – Min 80%

Perception about the Course

?

Let's Start with a Query

- ❑Have you ever developed a program in any language?



Program = Software

Set of instructions that when executed provide desired features, functions & Performance

Examples of Software

Hardware vs Software

Software Indispensible

- In 1950, no one predicted Software would be indispensible technology for
  - Business, Sciences, Engineering

- [Law of unintended Consequences]
- Even Software enabled creation of
  - New technologies (Genetic Engineering/ Robotics)
  - Extension of Existing Technologies (Telecom)
  - Demise of older technologies (Printing Industry)

Software Everywhere

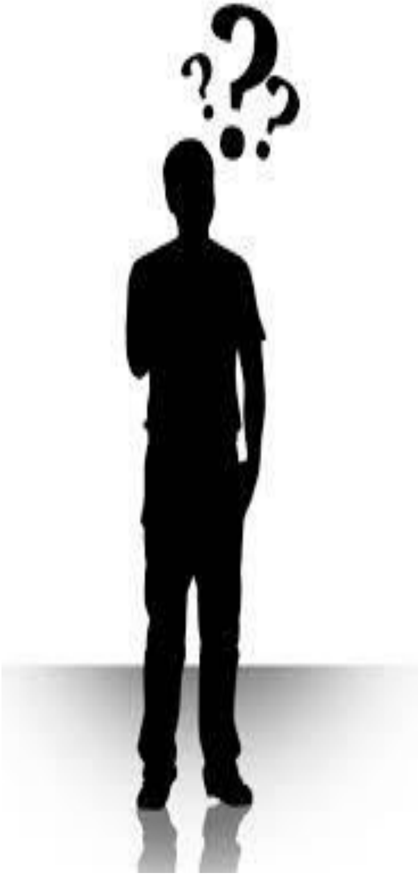
❑ No one could foresee that software will be embedded in all systems

- Transportation
- Medical
- Telecommunication
- Military
- All industries
- Entertainment etc

Brief History: Crises Era of Software

❑Time came when Software community started thinking

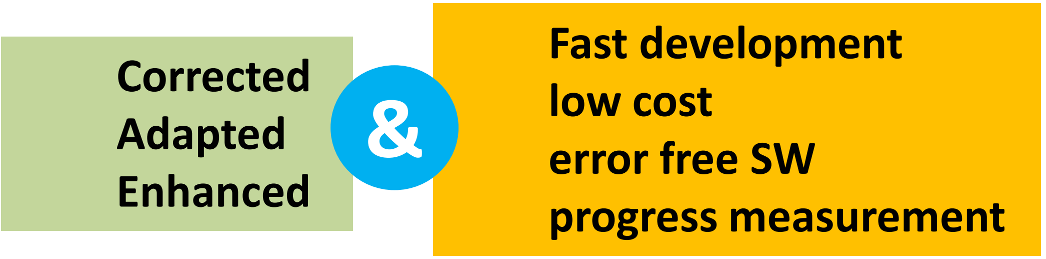
- – Why long time spent on development?
- – Why development cost is high?
- – Why can't find error before delivery?
- – Why spend too much time on maintenance?
- – Why we face difficulty in measuring progress?



Brief History: Crises Era of Software

- ❑ While developing new software stakeholders wish:
  - Fast development, low cost, error free software, progress measurement

- ❑ As times passes software needs need maintenance
  - Removing errors from a program Corrected
  - Tuning it as per new standards Adapted
  - Add more functionalities to a program Enhanced
- ❑ In Past, no one have foreseen that million of computer programs have to be



Corrected
Adapted
Enhanced

&

Fast development
low cost
error free SW
progress measurement

Software Engineering as Discipline

- ❑Software Community realized to introduce a discipline to
  - Develop and maintain high quality software
  - Easier, faster, low cost

Software Engineering (SE) introduced (1966)

Software Engineering

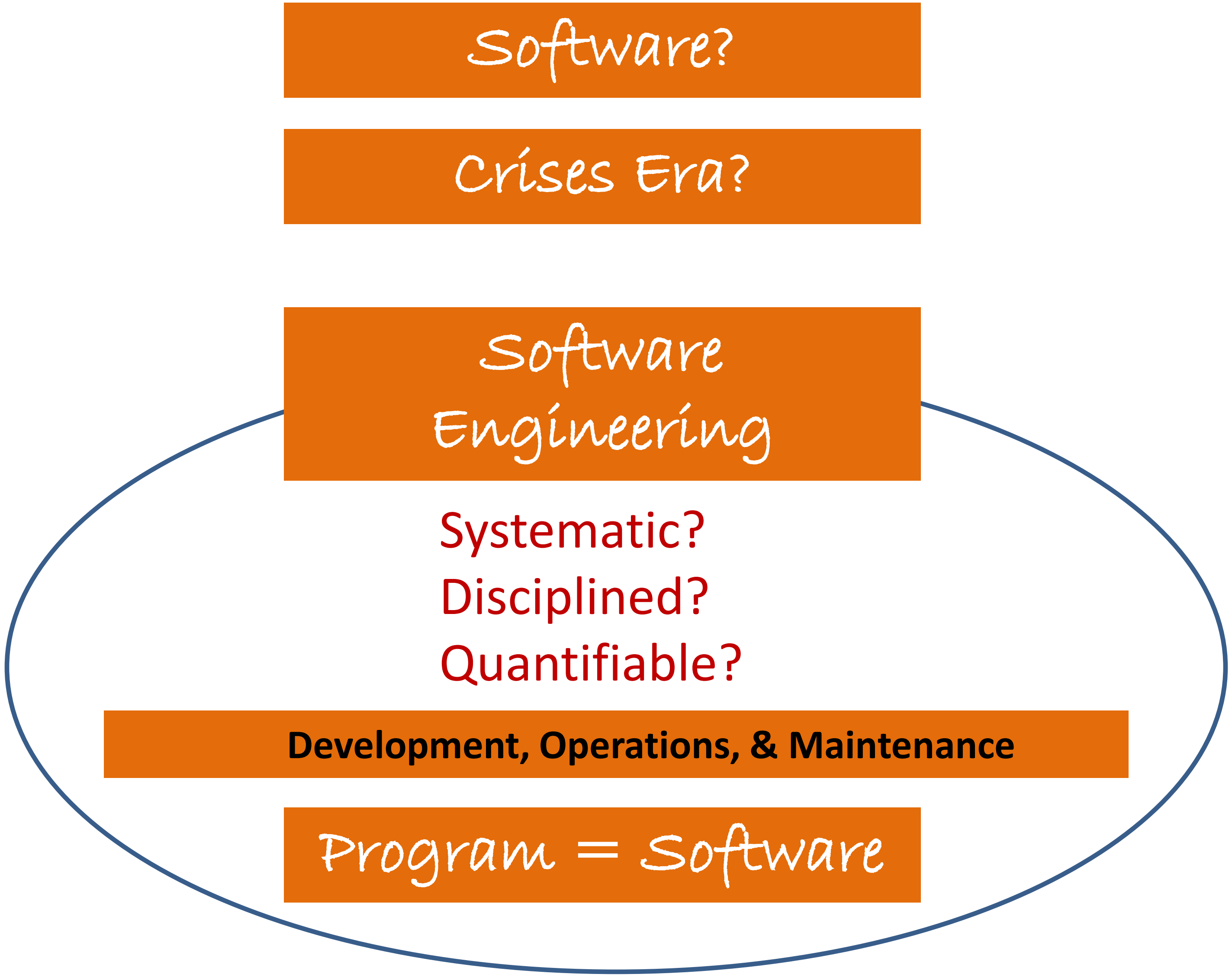
- ❑ IEEE Definition
  - The application of

    Systematic
    Disciplined
    Quantifiable

  - approach to the

    Development
    Operations
    Maintenance of Software

Summary



Software?

Crises Era?

Software Engineering

Systematic?
Disciplined?
Quantifiable?

Development, Operations, & Maintenance

Program = Software