

Software Engineering I

Course Overview

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2021



Software in modern world

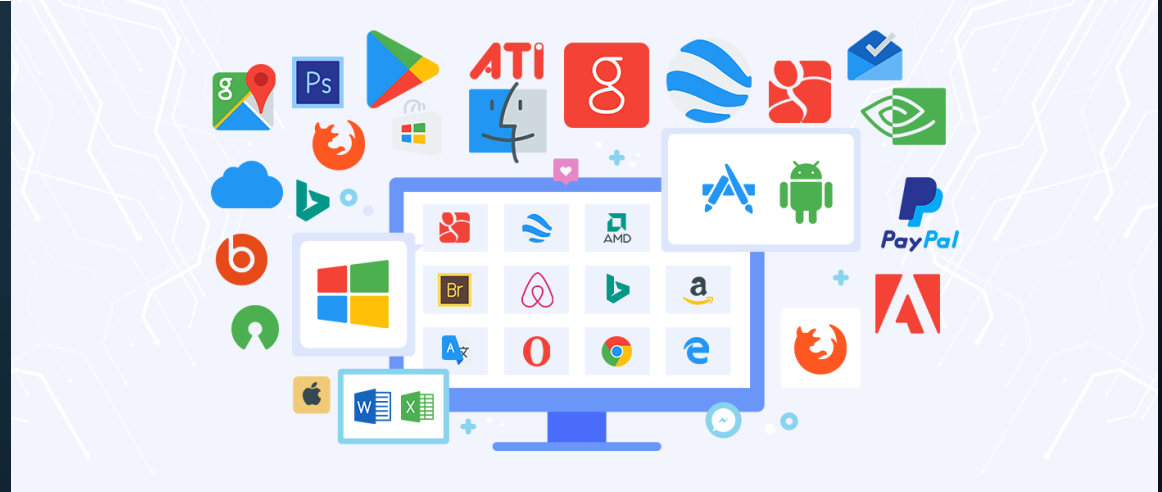
*Software is
eating
the world!*







Software in modern world





We can't run the modern world without software

- National infrastructures and utilities are controlled by computer-based systems.
- Most electrical products include a computer and controlling software.
- Industrial manufacturing and distribution is completely computerized.
- Entertainment, including computer games, and film and television, is software intensive.



Software Cost vs. Hardware Cost

- Business IT has changed significantly. Computing has become more distributed, portable, and personal.
- Even when hardware is issued by the company, employees use their own phones and computers to access email and apps.
- The business leverage has shifted to software, and budgets have followed.
- This change in spending is both a cause and effect of a broader shift of business IT from hardware to software and an important indicator of the future.



Software costs

- Software costs often dominate computer system costs. The costs of software on a PC are often greater than the hardware cost.
- Software costs more to maintain than it does to develop. For systems with a long life, maintenance costs may be several times development costs.
- Software engineering is concerned with cost-effective software development.



References

- 1- Dennis, Wixon, Tegarden, “System Analysis and Design, An Object Oriented Approach with UML”, 5th Edition, 2015.
- 2- R. S. Pressman, B. R. Maxim, “Software Engineering, A Practitioner’s Approach”, 8th Edition, 2015.
- 3- Sommerville, I., “Software Engineering”, 10th Edition, 2015.
- 4- J. Sutherland, “Scrum handbook,” 2010.



Table of Contents

- ❖ Introduction to System
- ❖ Software Development Life Cycle
- ❖ Software development methodologies
- ❖ RUP and Agile
- ❖ Scrum
- ❖ Software Analysis
 - ❖ Functional modeling
 - ❖ Structural modelling
 - ❖ Behavioral modelling
- ❖ Software Design
- ❖ Design principles
- ❖ Database design
- ❖ User Interface design
- ❖ Architecture design
- ❖ Design patterns(maybe)



Grading Policy

- $50 \pm 5\%$ on project.
- $40 \pm 5\%$ on Final exam.
- $10 \pm 5\%$ on Presentation.
- **Late policy:** no credit for late work.



Course Overview

Course is actually three courses in one.

- Object-oriented approach
- Software analysis and design in the medium.
- Team working.



You will learn...

- How to design software using some powerful abstraction mechanisms and a collection of patterns;•how to get it right, by construction and by modular reasoning;•how to articulate your design ideas and critique other people's designs;
- And on the way:•
 - How to think about a problem.
 - How to translate customer needs into diagrams.
 - How to analysis the models and try to improve them.
 - How to work in a team.



What we expect from you

- Attend in the lab;
- Attend lectures;
- Present your proposal;
- Attend project reviews;
- Complete project activities;
- Help your team;



Course goals

- Think about the problem.
- Software Analysis.
- Design a software in an object-oriented manner.
- Design graphical user interfaces
- Work suitable in a team.



Life strategy

- Think in advance: don't rush to code.
- Design is more fun than debugging!
- Focus on ideas.
- Don't be blinded by technology.



For the next week

- Form a group with three or four members.
- Imagine your group as a company, select a name.
- Think about your project.



What we will talk about next...

- Introduction
- How to write a proposal.
- Introduction about System, Software Development Life Cycle(SDLC).

THANKS!

