Software Engineering I

Course Overview

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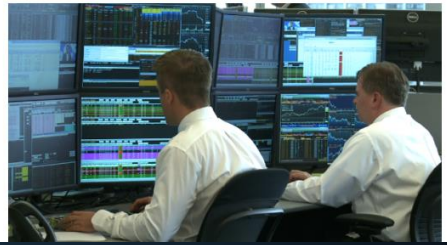
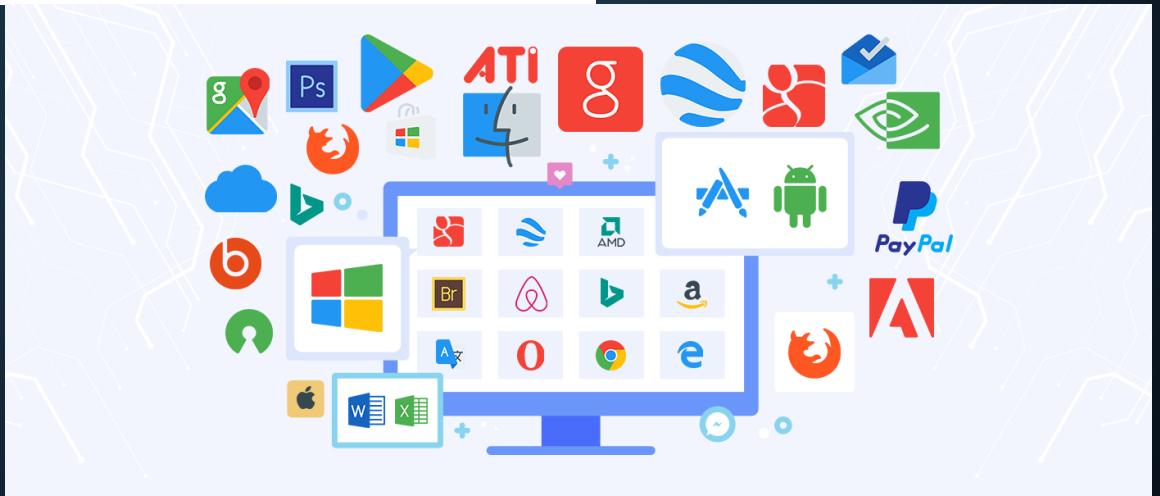
Software in modern world

Software is eating the world!



Software in modern 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.

زیرساختها و تاسیسات ملی توسط سیستمهای کامپیوتری کنترل میشوند.

- بیشتر محصولات الکتریکی شامل کامپیوتر و نرم افزار کنترل است.
- تولید و توزیع صنعتی کاملا کامپیوتری می باشد.
- سرگرمی ها، از جمله بازی های رایانه ای، و فیلم و تلویزیون، نرم افزار فشرده است.

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.

اهرم کسب و کار به سمت نرم افزار تغییر کرده است و بودجه نیز به دنبال آن بوده است.
این تغییر در هزینهها هم علت و هم نتیجه تغییر گستردهتر فناوری اطلاعات کسبوکار از سختافزار به نرمافزار و یک شاخص مهم برای آینده است.

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.

- هزینه های نرم افزار اغلب بر هزینه های سیستم کامپیوتری غالب است. هزینه های نرم افزار در رایانه شخصی اغلب بیشتر از هزینه سخت افزار است.
- هزینه نگهداری نرم افزار بیشتر از توسعه آن است. برای سیستم هایی با عمر طولانی، هزینه های نگهداری ممکن است چندین برابر هزینه های توسعه باشد.
- مهندسی نرم افزار با توسعه نرم افزار مقرون به صرفه سروکار دارد.

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.

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Grading Policy

- 65 ± 5% on project.
- 20 ± 5% on Final exam.
- 15 ± 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!