IT4490 - SOFTWARE DESIGN AND CONSTRUCTION

0. INTRODUCTION TO COURSE

Lecturer

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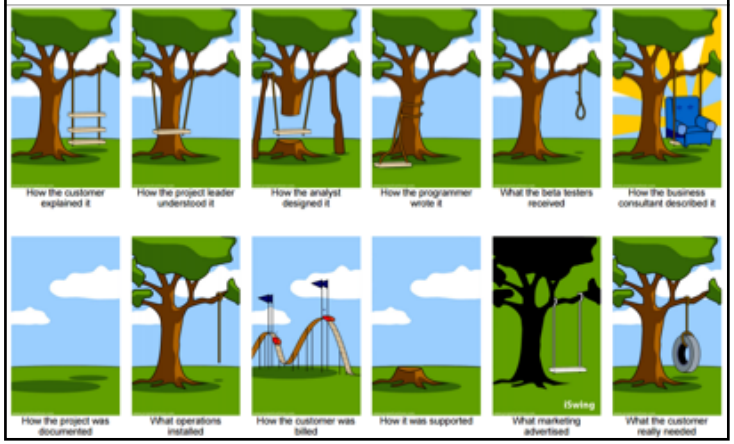
What is the real software to be built?



Alan Perlis ⓘ Epigrams ⓘ

- It is easier write an incorrect program than understand a correct one.
- Most people find the concept of programming obvious, but the doing impossible.
- To understand a program you must become both the machine and the program.
- There are two ways to write error-free programs; only the third one works.

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Course objectives

- Design effective program structures with
  - appropriate modularity
  - separation of abstraction and implementation concerns
  - use of standard design patterns
  - use of standard libraries/frameworks
- Use modern programming languages effectively
  - type systems, objects and classes, modularity
  - identity and equality, exceptions and assertions
- Gain experience with contemporary software tools
  - integrated development environments (IDE)
  - test frameworks, debuggers, version control
  - documentation processing tools

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Programming language/tools

- Software design tool: Astah
  - Free for students
- Programming language: Java
- IDE: Eclipse
- Version control: Bitbucket
- Test framework: JUnit
- Architectural model / pattern: 3 tiers / MVC

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Assessment

- Mid-term score:
  - Homework
  - Final Project
  - Work in groups, but individual score
- Final score
  - Final Project
  - Exam

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Text books

- [SW-Design] D. Budgen. *Software Design, 2nd Edition*. Addison-Wesley. 2004.
- [OO-Design] Cay Horstmann. *Object-Oriented Design and Patterns*. John Wiley & Sons, Inc. 2006
- [PRAG-Prog] Andrew Hunt and David Thomas. *The Pragmatic Programmer.* Addison-Wesley, 2000.
- [JAVA-Eff] Joshua Bloch. *Effective Java, 2nd ed.* Addison-Wesley, 2008
- [TESTING] Boris Beizer. Software Testing Techniques, 2nd Edition. International Thomson Computer Press

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Course Materials

- Lecture notes for students (pdf): Slides in 4-page handouts
- Assignments
- Project descriptions
- Announcements…
- Interaction channels:
  - Facebook group:
    - 110695.SoftwareDevelopment.ITSS.20191
  - https://bitbucket.org/account
    - Add to your project member: dattt-student

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Naming convention

- Naming your project and description
  - SoftwareDevelopment.ITSS.20191-01
  - SoftwareDevelopment.ITSS.20191-02
  - SoftwareDevelopment.ITSS.20191-03

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Introduce yourselves

- Full name
- Experience in Computer Science
  - Operating System
  - Programming Languages
  - (Mini-)Projects
  - …
- Strength and Weakness
- A course you like best and hate
- Desire to study in this course