

Introduction

Object Orientated Analysis and Design

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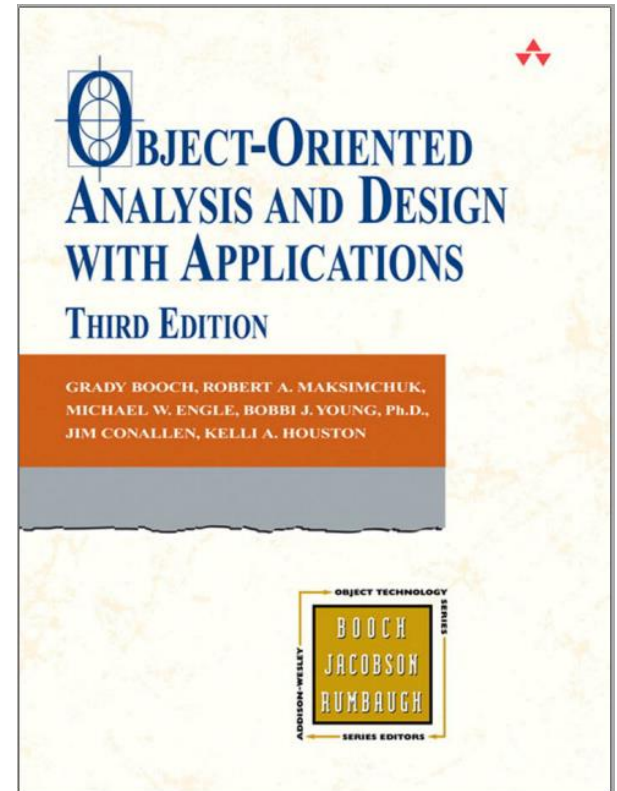
Outline

- What do we mean by Object Orientated?
- Why do we need to analyze and design our solutions?
 - ▷ Give examples
- What analysis and design tools are available?
- Course structure
- Grading/assessment

Recommended Book

■ Object Oriented Analysis and Design with Applications 3rd Edition by Booch

- ▷ Ebook Available:
<https://zjnu2017.github.io/OOAD>
- ▷ Complete Reading Chapter 1
Before Next Week



Recommended

- Also read around the subject to gain a broad/comprehensive understanding of the topic
 - ▷ Articles, books, online-tutorials, ...

Question

■ What is a Great Software Solution?

Answer

- A great software must satisfy the customer
- The software must do what the customer wants it to do!
- Great software is also
 - ▷ well-designed
 - ▷ well-coded
 - ▷ easy to maintain, reuse, and extend

Question

■ How do we make Great Software Solutions?

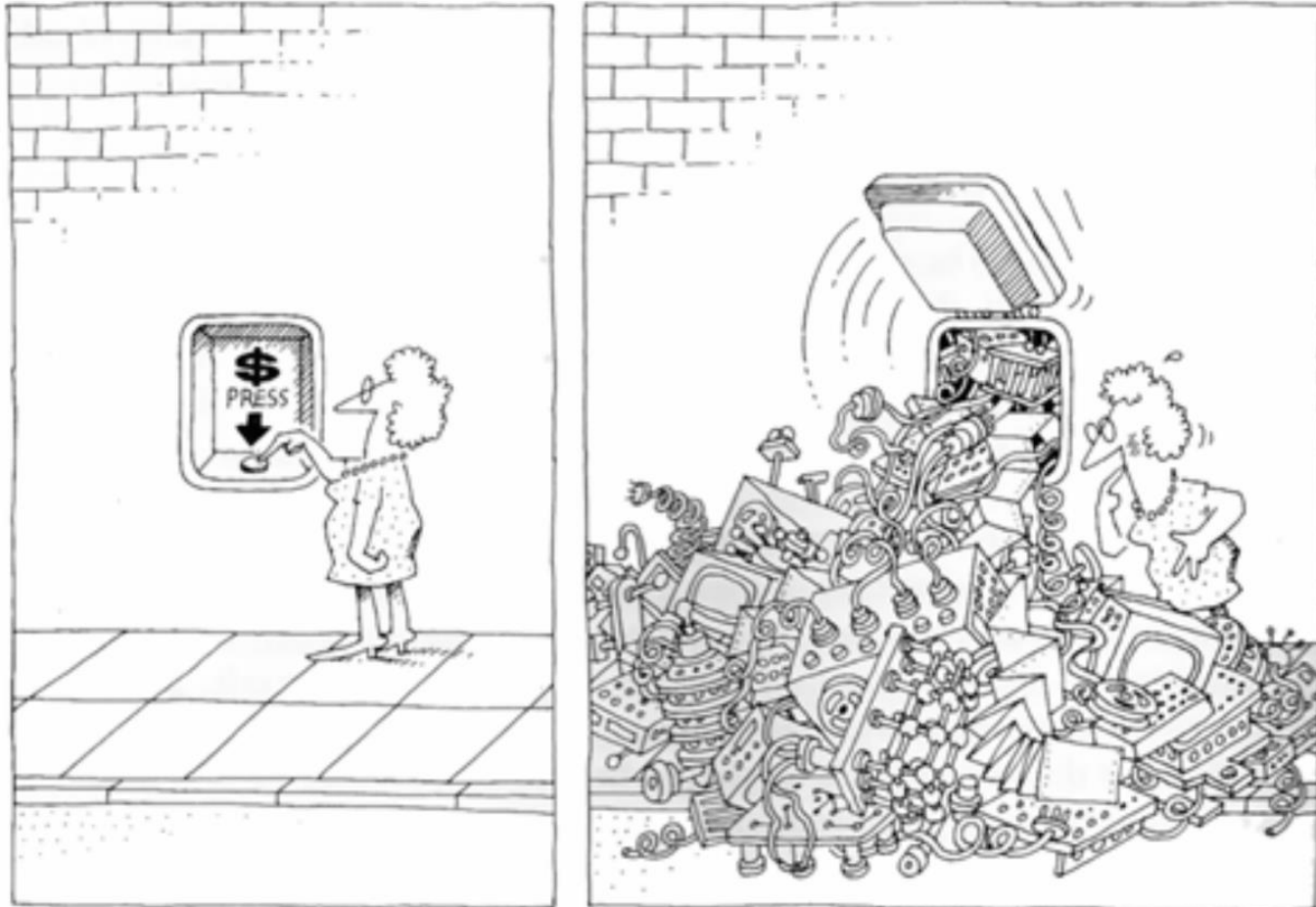
Answer

■ Apply Object Orientated Analysis and Design Processes

- ▷ e.g., Make sure your software does what the customer wants it to do
- ▷ Use OO principles to add flexibility
- ▷ Strive for a maintainable, reusable design
- ▷ ...

Why do we need Object
Orientated Analysis and
Design (OOAD)?

Why we need OOAD?



Why we need OOAD?

- Software is inherently complex
 - ▷ Complexity of software systems often exceeds the human intellectual capacity
- Illusion of simplicity
- Order to Chaos
 - ▷ Add meaningful logic

Object Orientated Analysis and Design

- Techniques that allow us to decompose problems/tasks into manageable components
- Employs object-oriented methods for organising the complexity of the system
- Provides a rich set of models to understand the different aspects of the system under consideration

Class Participation

- Welcome participation by students
- Feel free to interrupt me during lectures to ask questions!
- Stupid Questions — No such thing!
- No participation leads to “silent tomb” - Boring!
- If I speak too fast or you are unsure of something, stop me and ask/tell me to slow down

Class Participation

- Quizzes

- Discussion

- Homeworks

 - ▷ Reading Chapters

 - ▷ Researching Topics

 - ▷ Case studies

Question

■ Which of the following is the functionality of 'Data Abstraction'?

- a) Reduce Complexity
- b) Binds together code and data
- c) Parallelism
- d) None of the mentioned

Answer

■ Answer: a

Explanation: An essential element of Object Oriented Programming is 'Data Abstraction' which means hiding things. Complexity is managed through abstraction.

Goals

- Provide students with knowledge and skills in:
 - ▷ Object-oriented concepts
 - ▷ OO analysis, design, and implementation techniques
 - ▷ Object-oriented design methods
 - (aka software development life cycles)
- Students should view OO software development as a software engineering process that has well-defined stages with each stage requiring specific tools and techniques

Grading

- Attendance 10%
- Experiments & Discussion 40%
- Final Exam 50%

Structure Topics

The primary tasks in object-oriented analysis (OOA) are

- Find the objects
- Organize the objects
- Describe how the objects interact
- Define the behavior of the objects
- Define the internals of the objects

Common models used in OOA are use-cases and object models

Contact Details

■ Questions/Issues

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■ Open Door Policy

▷ Problems/Help

▷ Within Reason

Question

■ Which of the following mechanisms is/are provided by Object Oriented Language to implement Object Oriented Model?

- a) Encapsulation
- b) Inheritance
- c) Polymorphism
- d) All of the mentioned

Answer

☒ d) All of the mentioned

Summary

- Clear idea of the goal of this course/topic
- Structure of the course
- Assessment/grading

This Week

- Review Slides
- Read Chapter 1

Questions/Discussion