From Procedural Programming to Object-Oriented Programming (OOP)

A preliminary step by step approach

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Adapted from Paulo Maio's original version

Content Overview

- Procedural Programming
  - Revision
- **Systematization**
- Raising the need for OOP
  - Classes as Data Structures
- Towards OOP
  - Primary Concepts and Principles

While practicing
  - Main Software Engineering Activities
  - Promoted Working Method

Systematization

Main Software Engineering Activities

- Requirements
  - What functionalities and qualities needs to have
- Analysis
  - Interpret and comprehending the problem/requirements
- Design
  - Defining a conceptual solution for all requirements
- Construction/Implementation
  - Coding the conceptual solution
- Testing
  - Verifying and Validating the solution (to be) built

Promoted Working Method (1/2)

- Sequence of Engineering Activities
  - Requirements
    - Use Cases / User Stories / Acceptance Criteria / FURPS+ / Other Texts
  - Analysis
    - Inputs & outputs / Domain Concepts / Domain Model
  - Design
    - Method headers / Classes / Components / Modularization
  - Testing
    - Specify a set of tests covering all/most common and uncommon scenarios
  - Implementation
    - Code the design methods and classes
- Repeat the above sequence as needed

Promoted Working Method (1/2)

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  - Requirements
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Promoted Working Method (2/2)

- Activities
  - Each one has a well-defined information/artifacts as input
  - Each one has a well-defined artifacts as output
  - Outputs of one activity are used as inputs on other activities

- Supported by best engineering practices
- Promotes best engineering practices too
- Clear, simple and easy to adopt