2022/2023(1)
IF184301 Object Oriented Programming

Lecture #1a

Introduction

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Topic

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Course description

- This course introduces the concepts of object-oriented programming for students who have experienced procedural programming, especially in C/C++.
- The topics cover object-oriented principles and object-oriented programming techniques using Java language.

PLO Charged on the Course

- The ability to analyse, design and develop good quality software both technically and managerially using the principles of software engineering processes.
- The ability to design and analyse algorithms and apply them in programs to solve computational problems effectively and efficiently.
- The ability to work and communicate effectively both individually and in groups.

Course Learning Outcome (CLO)

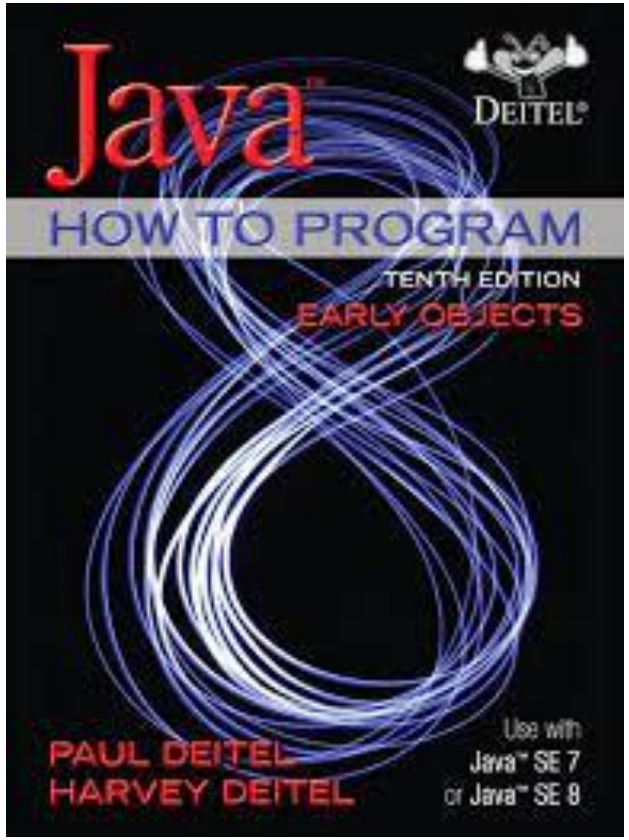
- Students can explain object-oriented programming concepts and object-oriented programming language features.
- Students can analyse problems and model their solutions using an object-oriented approach.
- Students can implement programming solutions to a problem using an object-oriented language.

Prerequisites

- IF184202 Data Structure.
- Having a good understanding of procedural or structured programming concepts such as variable, function, array, structs, and pointers.
- Having a little experience in one of these programming languages: C, C++, Java, or C#.

References

- Deitel and Deitel (2015) Java How to Program. 10th edition, Prentice Hall.
- The internet.



Technical requirements

- PC/Mac computer, laptop, netbook
- Windows, MacOS or Linux operating system
- Java 8, JDK 8
- Eclipse IDE

Assessment & evaluation plan

- Quiz 1 (25%)
- Midterm exam (25%)
- Quiz 2 (25%)
- Final exam (25%)

Course plan

- Introduction to object-oriented programming
- Using IDE, creating a project, project structure, debugging, creating executable/packaging.
- Class, object, abstraction concept, object construction, class notation.
- Encapsulation and information hiding, object invariant.
- Composition, inheritance (single inheritance).
- Polymorphism, interface, abstract class, overriding, typecasting.
- Object life cycle, constructor and destructor calling chain.
- Exception handling.
- Java SDK: String, Characters, StringBuilder, StringBuffer
- Java SDK: Array, ArrayList, Generic collections.
- Java SDK: Files and stream operations.
- Case study projects