2023/2024(1)
EF234302 Object Oriented Programming

Lecture #1a

Introduction

Misbakhul Munir IRFAN SUBAKTI

司馬伊凡

Мисбакхул Мунир Ирфан Субакти

About Me

Latest Work Experiences:
- Lecturer, Department of Informatics, ITS, Surabaya, Indonesia **1998-present**
- ICT consultant **1996-present**
- Farming: durians & other fruits, agribusiness **2017-present**
- Owner & handler of subakti.com (education) **2017-present**
- Owner & handler of rusindo.com (business) **2017-present**

Education/Certification:
- The Institution of Engineers, Indonesia **2022-**
  IPM (Insinyur Profesional Madya−Senior Professional Engineer) of Informatics
- Institut Teknologi Sepuluh Nopember, Indonesia **2021-2021**
  Insinyur (Ir.), Informatics expertise areas
- Государственный Технический Университет (ТГТУ), Russia **2017-on leave**
  Аспирант, Ph.D. program, Institute of Automation and Information Technologies
- University of Birmingham, UK **2011-2017**
  Master of Philosophy (M.Phil.)
- National Taiwan University of Science and Technology, Taiwan **2010-on leave**
  Ph.D. program, Department of Electrical Engineering
- National Taiwan University of Science and Technology, Taiwan **2003-2005**
  Master of Science in Engineering (M.Sc.Eng.)
- Institut Teknologi Sepuluh Nopember, Indonesia **1992-1999**
  Sarjana Komputer (S.Kom.), Department of Informatics

Contact:
- Email: yifana@gmail.com
- Website:
  - subakti.com
  - rusindo.com
  - youtube.com/@rusindo
  - youtube.com/@ElenaSubakti
- Twitter: @rusindocom
- Instagram: @rusindocom

Topic

- Course description

- Programme Learning Outcome (PLO) Charged on the Course

- Course Learning Outcome (CLO)

- Prerequisites

- References

- Technical requirements

- Assessment & evaluation plan

- Course plan

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.

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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.

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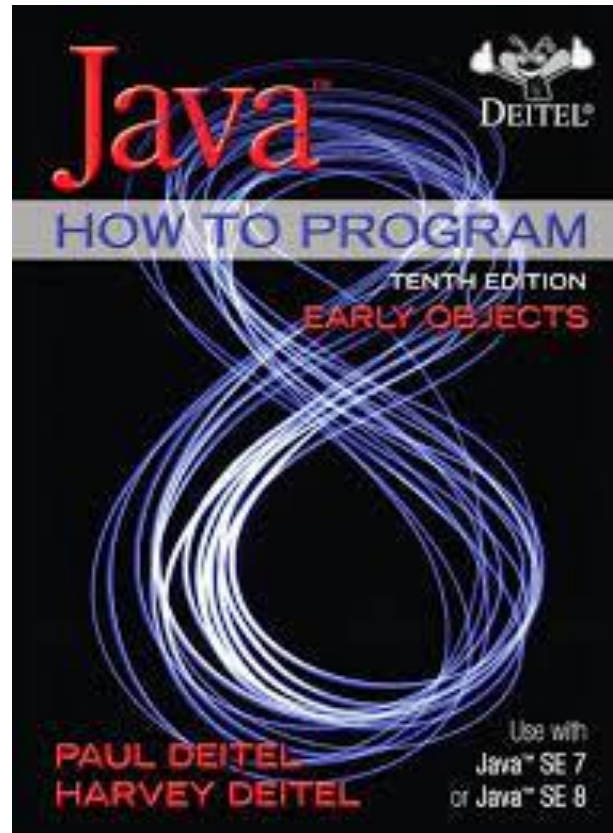
Technical requirements

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

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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