

# Data structure and Algorithm (with Java)



## Course Overview

### Prerequisite:

- Completed EN051 or obtain 500+ TOEFL equivalent international certificates
- Object-Oriented Paradigm
- Discrete mathematics 2
- Core Java



### Course Overview

- Course Website: <a href="http://cms-hcm.fpt.edu.vn/">http://cms-hcm.fpt.edu.vn/</a>
- **Discussion Group**: CMS forum at this course
  - The group is a forum for discussion for *all*. It is *not* simply for the instructor to broadcast announcements to the class! Try to post course-related questions and comments to the forum instead of addressing the instructor/TA's individually (if it's convenient to do so, of course). This way everybody sees them and everybody is welcome to respond, not just the instructor/TA's. *Then everybody benefits*!
  - Please check the forum frequently and please participate in discussions!
- Required Textbook:

Adam Drozdek, Data structures and algorithms in Java. Thomson course technology, 2nd edition, 2005 /or 3rd edition, 2008



# **Objectives**

### **Knowledge**

- The connection between data structures and their algorithms, including an analysis of algorithms' complexity
- Data structure in the context of object-oriented program design
- How data structure are implemented in an OO programming language such as Java



# **Objectives**

#### **Skills**

- Organize and manipulate basic structures: array, linked list, graph, tree, heap, hash
- Use algorithms for traversing, sorting, searching on studying structures
- Select a suitable algorithm to solve a practical problem
- Use JAVA programming language for solving some problems
- Use Eclipse/Netbeans tool for developing programs in JAVA
- Implement some programs in JAVA to solve practical problems based on the studying algorithms



## Course Plan

Chapter 3: Linked Lists (1.5 sessions) Chapter 4: Stacks and Queues (1.5 sessions) Chapter 5: Recursion (1 session) Chapter 6: Binary Trees (3 sessions) Chapter 8: Graphs (2 session) Chapter 9: Sorting (1 session) Chapter 10: Hashing (1 session) Chapter 11: Data Compression (1 session) Practical exam (1 session) See more details in course plan on CMS.



# **Course Requirements**

- Following lessons in classrooms
- Reading textbook and documents at home
- Completing chapter assessment in time
- Discussing actively in your teams and in classrooms



# Grading

08 Quiz (Q - after each chapter)	20%
02 Assignment (A) 01 Practical Exam (PE) Final exam (FE)	20% 30%

Total score = Q + A + PE + FE

Pass:

PE>0 and Total score  $\geq$  50% and Final Examination score  $\geq$  4 (of 10)

Retake only the Final Exam when not passed



# Academic policy

Cheating, plagiarism and breach of copyright are serious offenses under this Policy.

Cheating

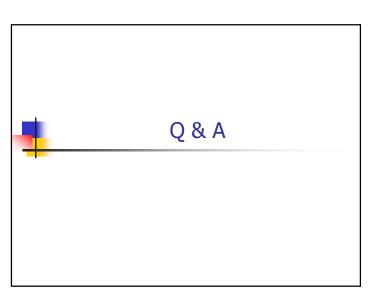
Cheating during a test or exam is construed as talking, peeking at another student's paper or any other clandestine method of transmitting information.

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### Enjoy the Course!

Be enthusiastic about the material because it is interesting, useful and an important part of knowledge and skill of a software engineer. Our job is to help you learn and enjoy the experience. We will do our best but we need your help. So let's all have fun together with Data structure and Algorithm