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**: http://cms-hcm.fpt.edu.vn/
- **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)	20%
01 Practical Exam (PE)	30%
Final exam (FE)	30%

Total score =Q + A + PE + FE

- Pass:
  PE>0 and Total score ≥ 50% and
  Final Examination score ≥ 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.
- Plagiarism
  Plagiarism is using the work of others without citing it; that is, holding the work of others out as your own work.
- Breach of Copyright
  If you photocopy a textbook without the copyright holder's permission, you violate copyright law.

- **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

Q & A