15th homework assignment; JAVA, Academic year 2011/2012; FER

As usual, please see the last page. I mean it! You are back? OK. Please continue reading.

Introduction

So far you have learned a lot about Java:

- what is Java in broader and narrower sense
  - Java as a programming language
  - Java as a platform
    - Java for desktop environment
    - Java for server applications
    - Java for mobile applications
- you acquired a general overview of object-oriented programming paradigm
  - what is a class and what is an object
  - what is class inheritance and how to utilize it
  - what rules apply to good usage of class inheritance (Liskov substitution principle)
  - what is a polymorphism
  - what kinds of polymorphism exist
  - usage of anonymous classes
- you learned and utilized several design patterns
- I hope that you understand the importance of design patterns and the importance to learn and understand as many of patterns as you can
- you learned the importance of writing self-explanatory code and the importance of writing code documentation
- you learned the most important parts of Java SE
  - writing simple Hello World program
  - reading from and writing to console
  - using binary and character streams for file and network operations
  - using Java Collection Framework and contracts your objects must satisfy to work properly in collections
  - threading, synchronization, thread pools, executors and fork-join framework for multiprocessor utilization
  - networking: packet-based applications (UDP) versus stream-based applications (TCP)
  - functioning of basic HTTP protocol and HTTP server
  - how to write HTTP applications based on Java Servlet and Java JSP specifications
  - what is Apache Tomcat and what it does
  - how to talk to relational database using Java Database Connectivity specification (JDBC)
  - using Apache Derby i.e. JavaDB
  - what is object-relational database mapper (i.e. ORM) and what it does
  - writing applications that utilize JPA specification and Hibernate as a provider for reading, storing and querying objects from/to relational database
  - the importance of testing in program development; what is unit testing and how to do it in Java
  - what is Test Driven Development (TDD) and how to do it
  - basics of Android platform; how it works and how to develop applications for it
  - what is build automation and how to achieve it
  - what are project repositories and versioning systems and how to use them

But the most important lesson you should have learned is that your learning of Java has just begun. Java is much more than the topics you learned so far, and there is an entire universe of Java technologies, Java frameworks and Java specifications for you to learn. Today, even the Java Virtual Machine (JVM) is a platform on its own, fostering an entire eco-system of other languages that run on JVM and can cooperate with Java programs: jython, scala and closure, just to name a few.

So continue what you started, and write code, write code and write code – that is the only way to actually learn and become fluent in Java. So this is my last homework for you, and you should do it only if you want to become even better in Java than you already are. There is no deadline for this homework.

Best regards,

MC

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Please note. You can consult with your peers and exchange ideas about this homework *before* you start actual coding. Once you open you IDE and start coding, consultations with others (except with me) will be regarded as cheating. You can not use any of preexisting code or libraries for this homework (whether it is yours old code or someones else). Document your code!