



Internet Programming

Programming Project 1

Please return your homework:

- Submit your solutions per email to
 - 1) Bushra Al-Ghotiml bu2007ra@hotmail.com, and
 - 2) Leenah Al-Aql leenah.al-aql@hotmail.com, and
 - 3) Abeer Al-Aql alaqla@hotmail.com.
- Clearly mentioning your name, student ID, and group number,
- Not later than: *** Saturday March 5, 2011, 11:59 (noon) ***
- You can work in teams of max 3 students. If you do so, please submit only once while clearly mentioning the team members with name, ID and group member
- A code that is not well commented will be just compiled/executed, if it does not work, you get 0 points. If you comment the program you can still get some points, even if the program does not compile/execute.

Creation of JAVA Programs

A JAVA program is created with any text editor (for example, WordPad, eclipse, emacs, vi, etc). JAVA programs get the file name extension `.java`. These program sources are converted by a compiler (javac) into an executable format. These files have the filename extension `.class` and represent the program as a compact, so-called bytecode. `.class` files can be executed by the Java interpreter (virtual machine).

For different platforms, different Java compiler and interpreter (Linux, Unix, Windows, etc) are available. Select the appropriate compiler/interpreter, download them and install them on your platform. Commands

Java compiler: `javac hello.java`

JAVA interpreter: `java hello` (NOT `java hello.class`)

Java Program Structure

A "compilation unit" is a file, e.g., `hello.java`. Each JAVA "compilation unit" contains exactly one public class (public) and further non-public classes. The name of the public class determines the file name.

The Environment Variable CLASSPATH

When a Java program is running, it uses during the processing parts of the Java system library may parts of other libraries and the programs developed in JAVA. Any of those files are accessed dynamically. In the environment variable CLASSPATH is a list of directories stored (separated by semicolons ";" in Windows or colons ":" in UNIX), in which the Java interpreter looks after all of these classes.

Libraries may be combined as a compressed files (*. zip), and should appear in this list.

Initialization

- Start a shell or DOS prompt
- Create in your home directory a subdirectory called java, in which all source programs (. java) will be stored.
- Adjust your CLASSPATH to, so for example

Linux

```
setenv CLASSPATH $CLASSPATH:.$HOME/java
```

or DOS

```
set CLASSPATH=%CLASSPATH%;.;Z:\java
```

First Java Program: hello world

- Familiarize yourself with the creation of a Java program and its implementation, using examples from the lecture. Use the tools (editor, java and javac)
- Carry out the steps described in the lecture to your own computer:
 1. Type the program
 2. Compile the program
 3. Execute the program.

Assignment (You are required to only submit your solution to this assignment)

Please model, in a simple way and using object-oriented techniques, a bank and its customers (private, not business):

- Model the class inheritance hierarchy: *Account*, *CheckingAccount*, *SavingAccount*, and *SuperSavingAccount*.
- Model the *Customer* class
- Think about the most important attributes and methods for each class.
- Explain the relationships between the different classes.
- Return the class diagram as part of the solution!

Now implement these classes in Java. Comment the code well and submit the source code as well as the binaries as part of the solution!

Please be aware that the code developed here will be used in the future assignments during the course and that no solutions will be provided to you.