Object Oriented Programming

Java: installation, configuration and tools

Java

- Download **JDK**.
- Inspect version installed in the terminal:
  - To obtain version, execute `java -version`

Java Platform

- Java technology is distributed for 3 plataforms:
  - J2EE (*Entreprise Edition*), to develop enterprise applications.
  - J2ME (*Micro Edition*), to embedded devices (mobiles and PDA's).
  - **J2SE (*Standard Edition*), to desktops and servers**.

Java Platform

- Inside Java platform there is:
  - **J2xx Runtime Environment (JRE)**:
    - JVM interpreter, environment classes, …
    - Used only to run applications.
  - **J2xx Development Kit (JDK)**:
    - JRE, compiler, utility classes (Swing,…), …
    - Used for application development.

Java – Linux (1)

- Usually, **in Linux Java is located at**:
  - **/usr/java/jdkYOURVERSION**
    - **Compiler (javac) and JVM Interpreter (java)**
      - **/usr/java/jdkYOURVERSION/bin/**
    - **JVM Interpreter (java)**
      - **/usr/java/jreYOURVERSION/bin/**
- Pre-defined Java classes are organized in the system file following the name of the packages where they are found:
  - **/usr/java/jdkYOURVERSION/src.zip**
    For instance, class `String` is defined in package `java.lang` therefore it is found in the zip file `src.zip` inside `java/lang/String.java`

Java – Linux (2)

- Configuration:
  - Update **PATH variable** if you want to run JDK executables are needed (`javac`, `java`, `javadoc`, etc) from the working directory without having to use the complete path to the executables.
  - Similarly, update **CLASSPATH variable** if the directory to other classes are needed (for instance, to a library) and you do not want to use the complete path to them.
  - Are you using the updated PATH?

```
% which java
% java: Command not found
```

Java – Linux (3)

- For C shell (csh):
  - Add to the startup file (`~/.cshrc`) the directory of the compiler and the JVM interpreter:

```
setenv Ljava /usr/java/jdk1.5.0_06
set path=($path $Ljava/bin)
```

    - Load the startup file and check java path:

```
source ~/.cshrc
which java
```

  - Directory to other classes (for instance, environment classes) are indicated in the environment variable CLASSPATH

```
setenv CLASSPATH .:$Ljava
```

Java – Linux (4)

– For ksh, bash or sh:
  - Add to the startup file (`~/.profile`) the directory of the compiler and the JVM interpreter:
    ```
    PATH=/usr/java/jdk1.5.0_06/bin:$PATH
    ```
    – Load the startup file and check java path:
    ```
    . $HOME/.profile
    which java
    ```
  - Directory to other classes (for instance, environment classes) are indicated in the environment variable CLASSPATH
    ```
    CLASSPATH=/usr/java/jdk1.5.0_06:$CLASSPATH
    ```

Java – Windows (1)

- Usually, **in Windows Java is located at**:
  - **C:\Program Files\Java**
    - **Compilader (javac) and JVM interpreter (java)**
      - **C:\Program Files\Java\jdkVERSION\bin**
    - **Interpreter JVM (java)**
      - **C:\Program Files\Java\jreVERSION\bin**
- Pre-defined Java classes are organized in the system file following the name of the packages where they are found:
  - **C:\Program Files\Java\jdkVERSION\src.zip**
    For instance, class `String` is defined in package `java.lang` therefore it is found in the zip file `src.zip` inside `java/lang/String.java`

Java – Windows (2)

- Configuration:
  - Update **PATH variable** if you want to run JDK executables are needed (`javac`, `java`, `javadoc`, etc) from the working directory without having to use the complete path to the executables.
  - Similarly, update **CLASSPATH variable** if the directory to other classes are needed (for instance, to a library) and you do not want to use the complete path to them.

Java – Windows (3)

- Include in PATH variable the directory of Java executables (typically in `User variables` or `System variables`).
- Directory to other classes (for instance, environment classes) are indicated in the environment variable CLASSPATH (typically in `Environment Variables` + `User variables`).