Tutorial 1 – Java Virtual Machine

I. Instructions

Reading the provided slides for understanding about Java Virtual Machine (JVM). From then (1) to know how give java program with extensions (kind of library to share between programs), (2) to understand ClassLoader, when & how to custom it (step Loading – in Program execution life cycle).

1. Read the following sections of the Java tutorial trail "The extension mechanism" and complete the `RectangleArea` code example.
   (a) Creating and using extensions
      i. Installed extensions

Note: you can create a `.jar` file containing the code example using the `jar` tool (found in the `bin` folder under your JDK installation). For example, to create the `area.jar` file of the example in the same directory as the `RectangleArea.class` file, type:

```
jar cf area.jar RectangleArea.class
```

2. Read the technical paper titled "*Understanding the Java ClassLoader*" by Greg Travis on IBM developerWorks to understand in more detail the role of Java's class loader. Follow the instructions to create the `CompilingClassLoader` and test it with the example classes given in the paper.

Don't worry if you don't fully understand the source code!

Note: make some changes to the console outputs that are produced by the test classes and run them again directly through the `CCLRun` class (i.e. without first re-compiling). To make it easier to complete this exercise, you should run the `CCLRun` program using the terminal (`cmd` for Windows).

Answer these questions:

(a) What are the features of the Java class loader?

(b) Under what situations would we need to write a custom class loader?

(c) List the main steps that need to be carried out in order to implement a custom class loader?

(d) How is the `CompilingClassLoader` used? Why?

(*) Additional reading about ClassLoader in recent versions of Java:

https://www.infoworld.com/article/3700054/all-about-java-class-loaders.html