HW3

**Q1. What are JDK, JRE and JVM?**

Ans:

JDK：The JDK is the Java development kit. The JDK was the core of the entire JAVA environment, including the JAVA Runtime Environment JRE, a stack of JAVA tools, and the basic JAVA class library.

JRE: The JRE is Java runtime environment. Through it, Java developers can release their own programs into the hands of users and let them use them.

JVM: JVM is Java Virtual Machine. It is the core part of the entire Java implementation of cross-platform, and all Java programs are first compiled into “.class” class files that can be executed on virtual machines.

**Q2. What is the relation between the three (JDK, JRE, JVM)? How is Java code executed in a Java program.**

Ans:

The JDK is the heart of the Java universe, including the Java runtime JRE, Java tools, and Java base class libraries. The JRE is a collection of environments necessary to run JAVA programs, including the JVM standard implementation and JAVA core class libraries. The JVM is the core part of the overall Java implementation that is cross-platform and capable of running programs written in the Java language.

Assuming that we have a program was written on Windows. The first step we would like to do is import different classes from JDK’s Java base class libraries. Then with the help of JRE, we can release our own programs into the hands of users and let them use them. The program can also execute on Linux, because the JVM would able to masks information related to specific operating system platforms, allowing Java programs to run unmodified on multiple platforms by simply generating object code (bytecode) that runs on the Java virtual machine.

**Q3. With the help of the code for Hello World program in Java (you can copy code with citation), explain when this program needs JDK (and not JRE and JVM), JRE (and not JVM) and JVM.**

Ans:

The code of Hello World program shows below:

public class TestJava{

public static void main(String[] args){

System.out.println("Hello World!");

}

}

In this program, we need JDK when we execute “public class” and “public static”. And we need JRE to make sure we can run this program under our environment. We need JVM to compile our file into “.class” form file so that it could be running under another platform.