



Object Oriented Programming Lab CSE 1206

LAB 1

Course Teacher

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JDK Installation

- ▶ The **Java Development Kit (JDK)** is a software development environment used for developing Java applications

Download Link:

<http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html>

Setting JDK and JRE path on your computer:

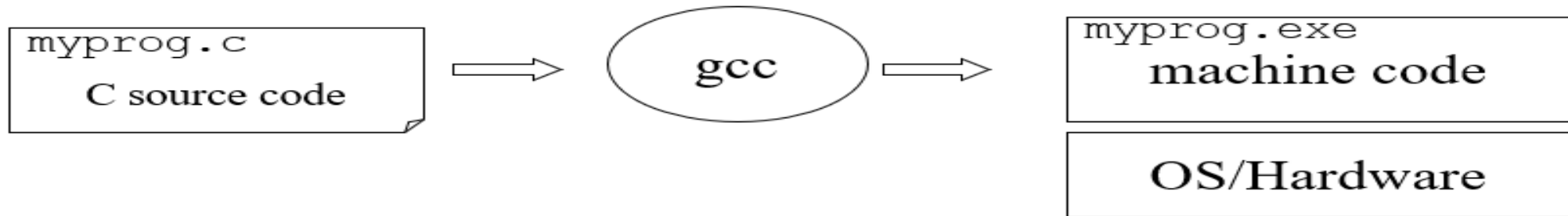
<https://www.youtube.com/watch?v=pgr-Bzkc4zg>

Setting JDK and JRE path

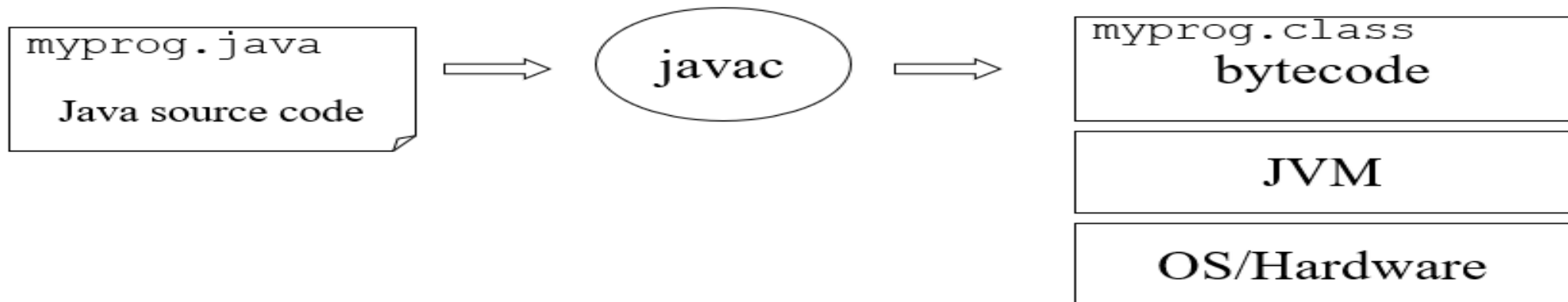
- ▶ Install the JDK file on your computer.
- ▶ Go to C drive -> Program Files -> Java -> jdk folder -> bin
copy this path
- ▶ Go to System -> Advance system settings -> Environment Variables
 - ❑ double click on **path** under **System variables**
 - ❑ Type ; (semi-colon) and paste the jdk path
- ▶ Go to C drive -> Program Files -> Java -> jre folder -> bin
paste this path in the way similar to jdk path.

Java Program Execution States

Platform Dependent

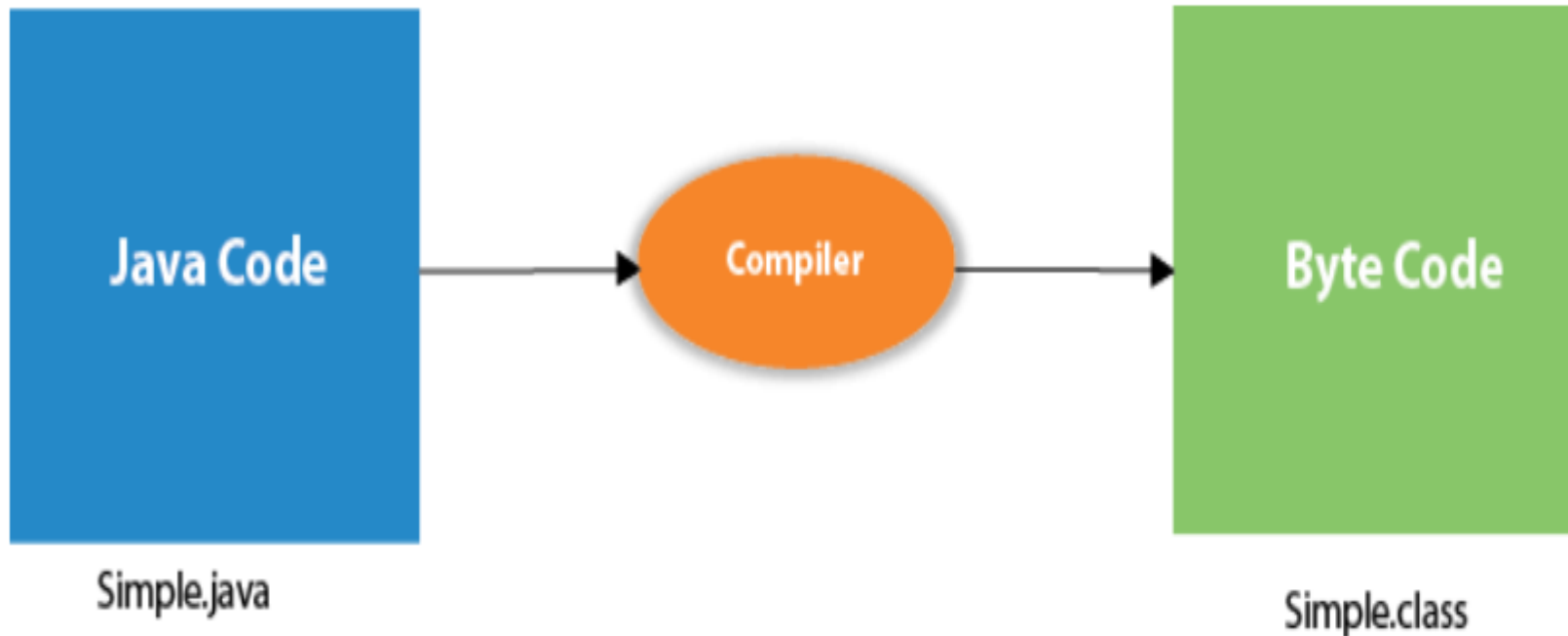


Platform Independent

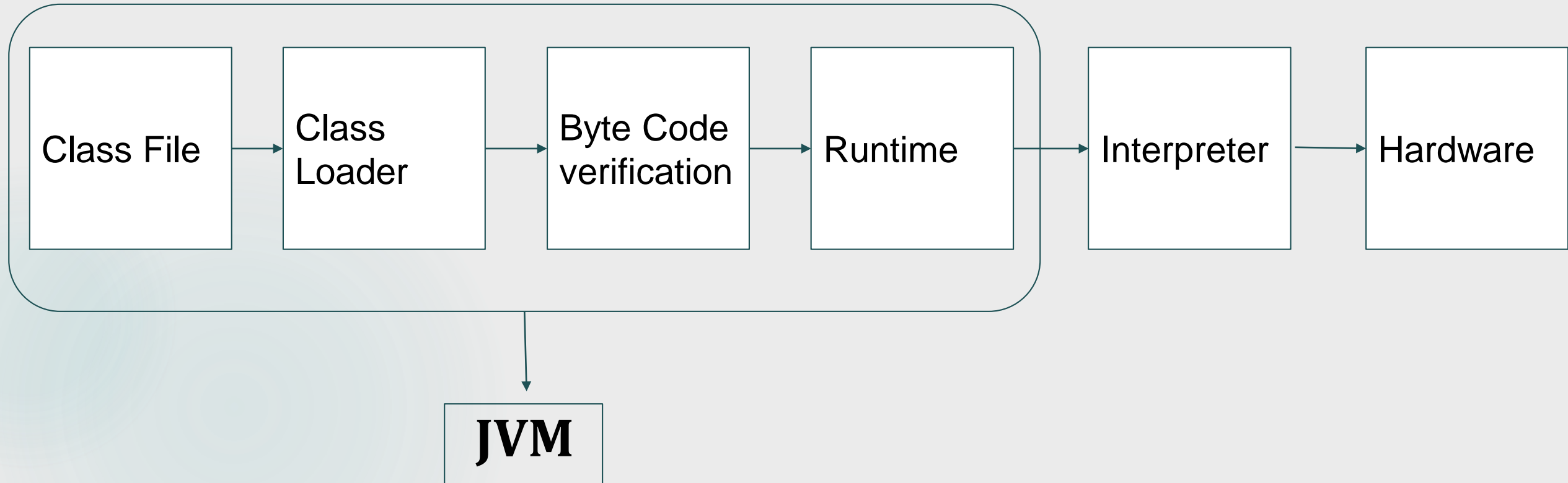


Java Program Compilation

At compile time, java file is compiled by Java Compiler (It does not interact with OS) and converts the java code into bytecode.



Runtime of a Java Program



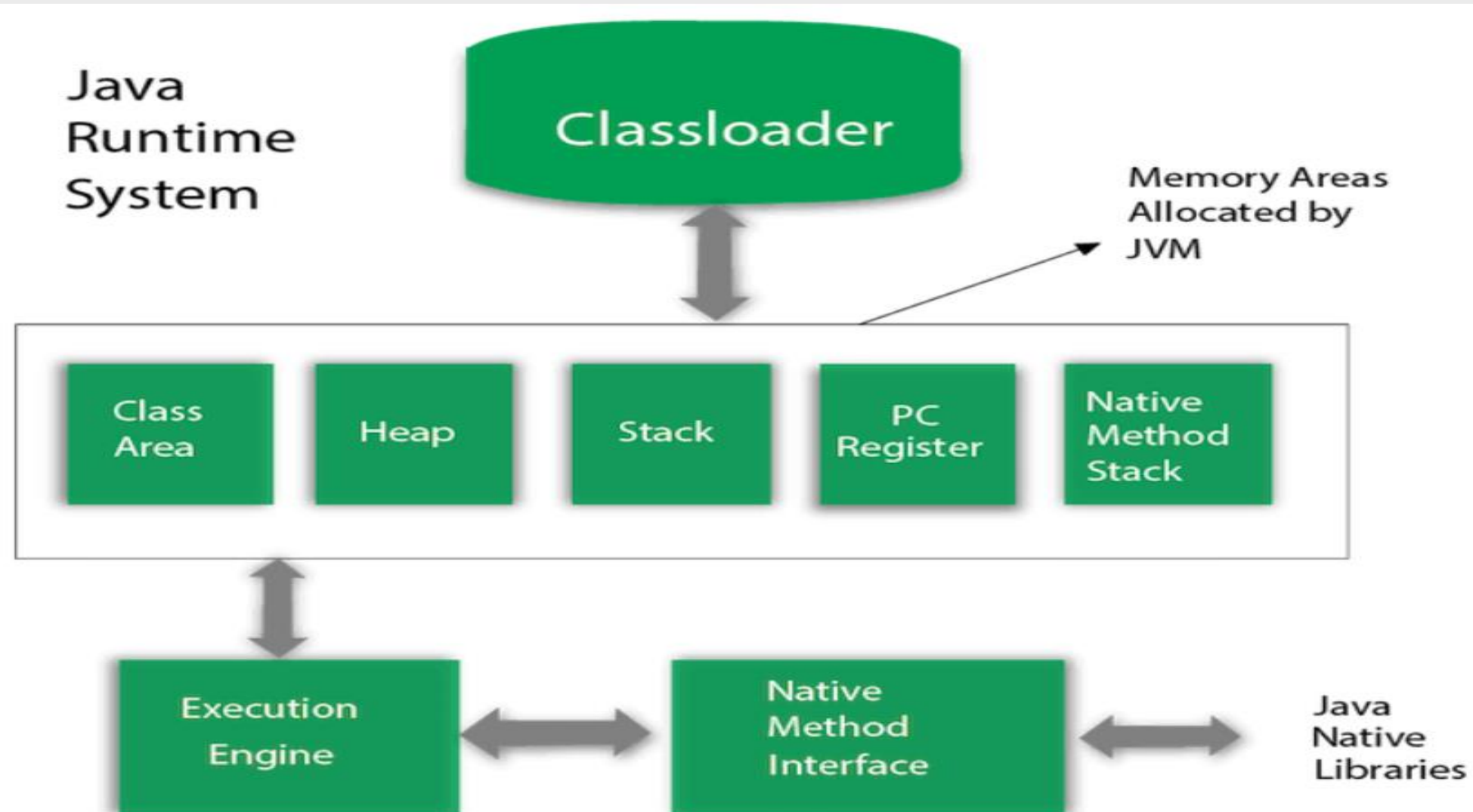
Java Virtual Machine(JVM)

- JVM loads byte codes
- verifies the byte codes
 - Uninitialized Variables
 - Access rules for private data and methods are not violated
 - Method calls match the object Reference.
 - etc
- execute codes
- provides runtime environments

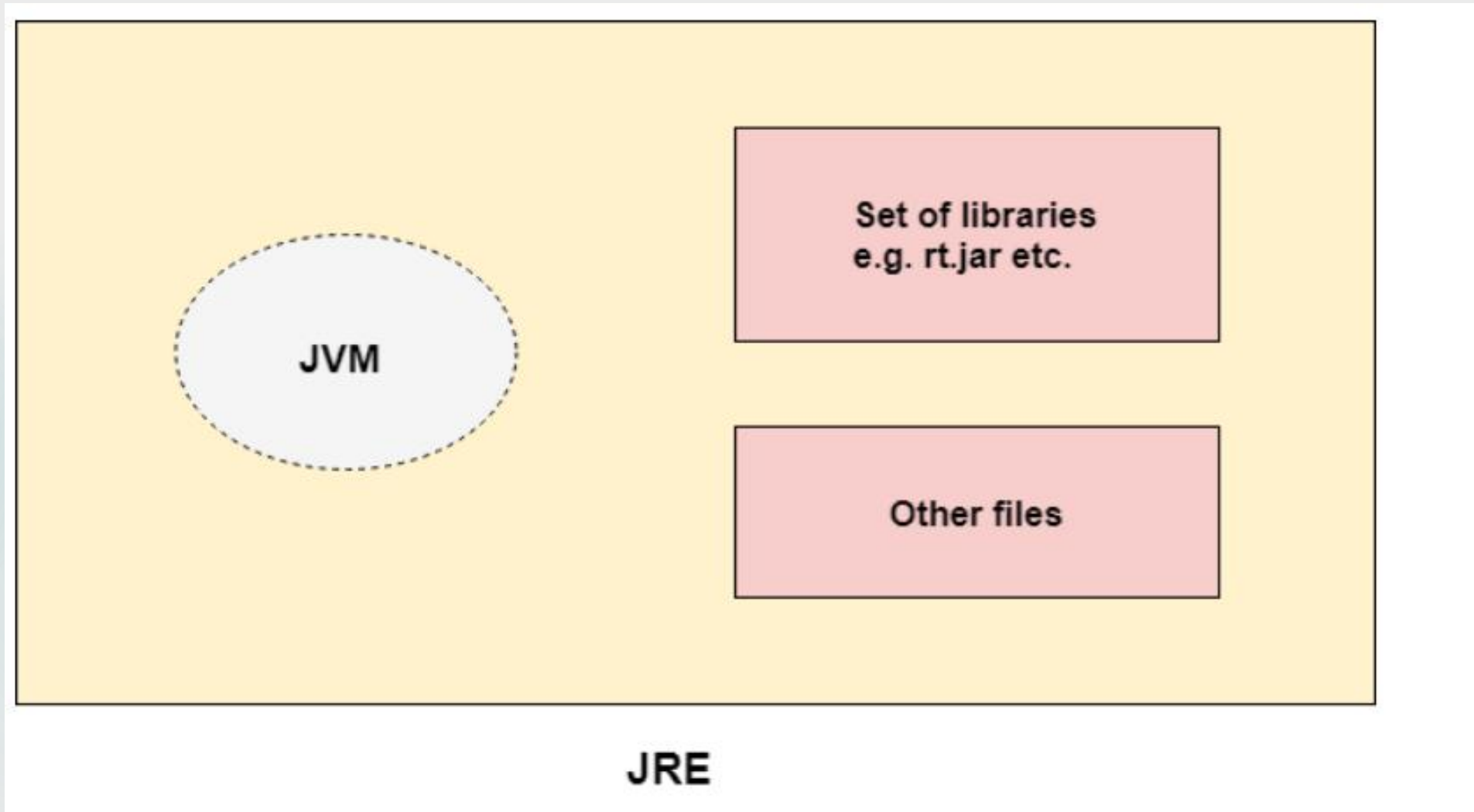
Java Virtual Machine(JVM)

- Memory area
- Class file format
- Register set
- Garbage-collected heap
- Fatal error reporting etc.

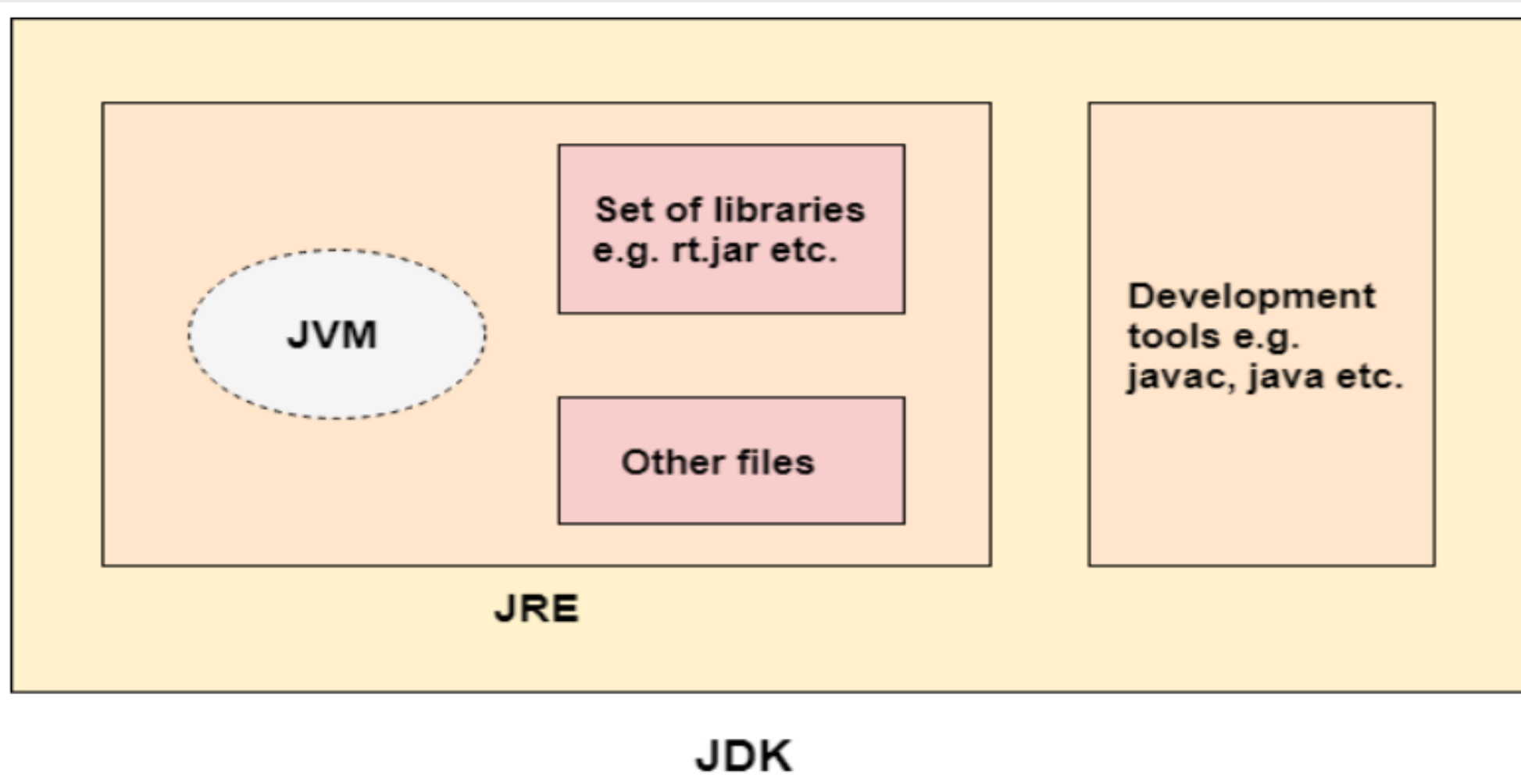
JVM Architecture



Java Run Time Environment



Java Development Kit(JDK)



Sample Java program

Open notepad/ notepad++ and copy the following code there. Save the file with the name **Hello.java**

You must remove the .txt extension.

```
public class Hello {  
  
    public static void main(String[] args) {  
  
        System.out.println("Hello Java");  
    }  
  
}
```

Run from CMD (command prompt)

Type in the command prompt window.

▶ **pushd** *address of the path of the java file*

[pushd stands for push directory, used to push the path where java file has been saved]

▶ **set path="C:\Program Files\Java\jdk1.8.0_77\bin"**

▶ **javac Hello.java**

▶ **java Hello**

*Additional command if required:

cd..

[cd stands for change directory].

C:\Windows\System32>cd..

C:\Windows>pushd E:\lab_1

E:\lab_1>set path="C:\Program Files\Java\jdk1.8.0_77\bin"

E:\lab_1>javac Hello.java

E:\lab_1>java Hello
Hello Java

E:\lab_1>

Similar to C programming language

- ▶ Comments: Single-line (`//`), Multiline (`/*` and `*/`)
- ▶ Data types: `int`, `float`, `double`, `char`, `boolean`, `String`
- ▶ Operators: `+`, `-`, `*`, `/`, `=`, `==`, `>`, `<`, `%`, `++`, `--`, `<=`, `>=`,
`!=`, `&&`, `||`, `!`, etc.
- ▶ Conditional Statements: `if`, `else`, `else if`, `switch`, `break`, `default`


```
if (condition1) {  
    // block of code to be executed if condition1 is true  
} else if (condition2) {  
    // block of code to be executed if the condition1 is false and condition2 is true  
} else {  
    // block of code to be executed if the condition1 is false and condition2 is false  
}
```

```
switch(expression) {  
    case x:  
        // code block  
        break;  
    case y:  
        // code block  
        break;  
    default:  
        // code block  
}
```

Similar to C programming language

- ▶ Loop Statements: **for** , **while** , **do while**

```
for (int i = 0; i < 5; i++) {  
    System.out.println(i);  
}
```

```
int i = 0;  
while (i < 5) {  
    System.out.println(i);  
    i++;  
}
```

```
int i = 0;  
do {  
    System.out.println(i);  
    i++;  
}  
while (i < 5);
```

- ▶ **break** and **continue** statements: to break or continue loops

Basic Java Syntax

w3school:

https://www.w3schools.com/java/java_syntax.asp

Tutorials point:

https://www.tutorialspoint.com/java/java_basic_datatypes.htm

New Java Syntax

► Java Strings: String str = "Hello";

https://www.w3schools.com/java/java_strings.asp

► User Input:

https://www.w3schools.com/java/java_user_input.asp

```
import java.util.Scanner; // Import the Scanner class
```

```
class Hello {
```

```
    public static void main(String[] args) {
```

```
        Scanner myObj = new Scanner(System.in); // Create a Scanner object
```

```
        System.out.println("Enter username");
```

```
        String userName = myObj.nextLine(); // Read user input
```

```
        System.out.println("Username is: " + userName); // Output user input
```

```
    }
```

```
}
```

Resources

Images were collected from the following websites

<https://www.javatpoint.com>



Thank You