

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

DEHRADUN, UTTRAKHAND



SCHOOL OF COMPUTER SCIENCE

OBJECT ORIENTED PROGRAMMING LAB (CSEG2120)

OBJECT ORIENTED PROGRAMMING LAB FILE

Submitted To:

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B. Tech CSE CCVT B-4 (4th Semester)

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EXPERIMENT 1:

Introduction to Java Environment

1.1 Explore and understand the role of JDK, JRE and JVM.

JDK (Java Development Kit):

- A software development environment used to develop Java applications.
- It includes tools such as the compiler (javac), debugger and libraries, along with JRE.
- It's essential for compiling and running Java programs.

JRE (Java Runtime Environment):

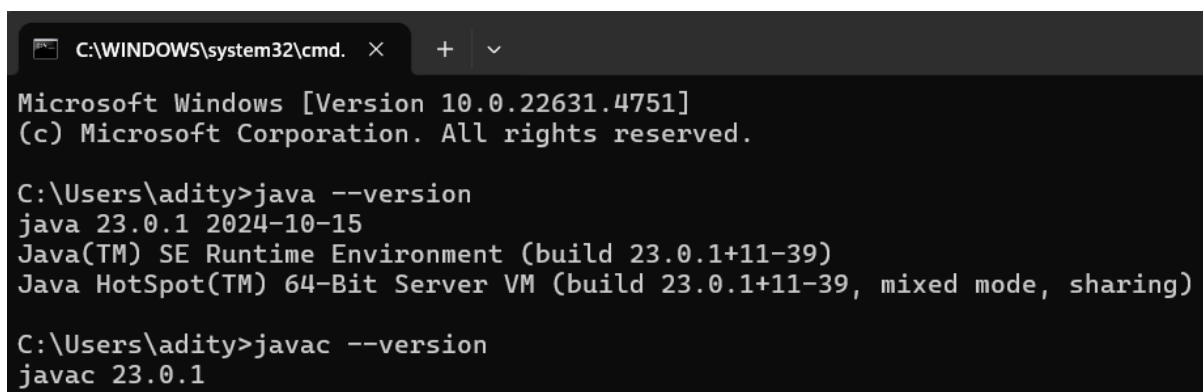
- It provides the runtime environment for executing Java applications.
- It includes JVM and libraries required for running compiled Java programs.
- JRE is needed only for running Java applications, not for development.

JVM (Java Virtual Machine):

- It's the runtime engine within the JRE.
- JVM converts the Java bytecode (produced after compilation) into machine code to run on any platform.
- It's responsible for platform independence and memory management.

1.2 Install the latest available JDK and verify the Java Environment.

- JDK was already installed in the machine.
- For verifying the Java Environment, 'java --version' or 'javac --version' command is used in the Command Prompt.



```
C:\WINDOWS\system32\cmd.  X  +  v

Microsoft Windows [Version 10.0.22631.4751]
(c) Microsoft Corporation. All rights reserved.

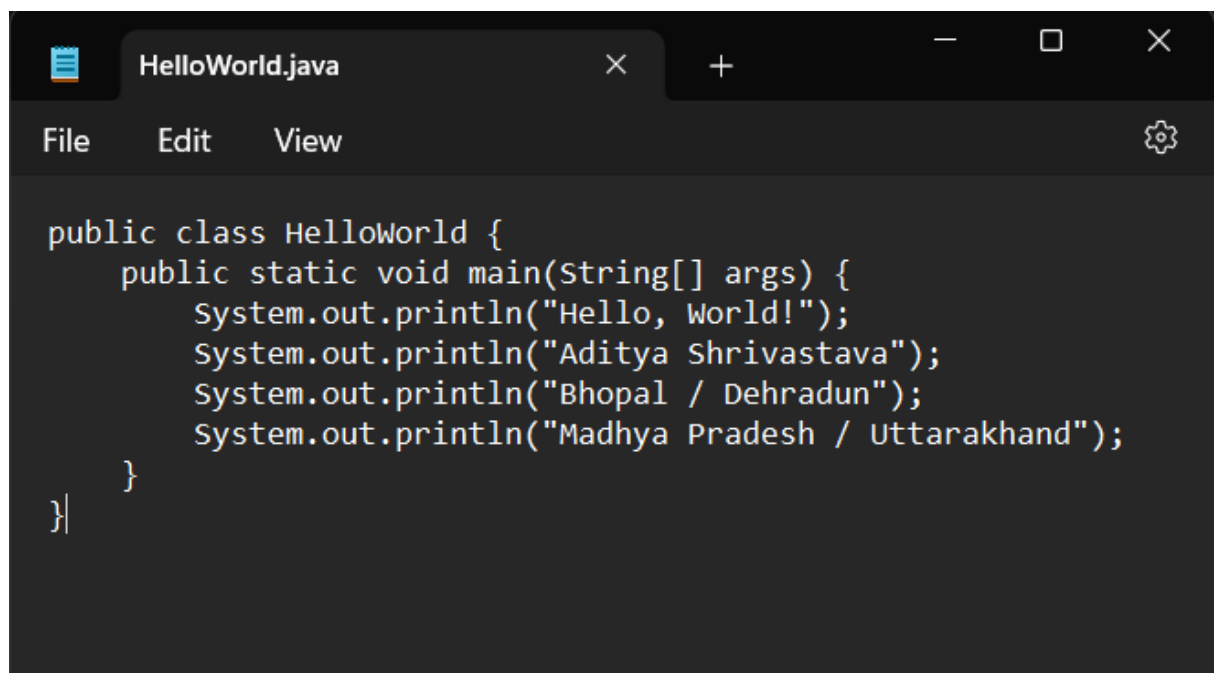
C:\Users\adity>java --version
java 23.0.1 2024-10-15
Java(TM) SE Runtime Environment (build 23.0.1+11-39)
Java HotSpot(TM) 64-Bit Server VM (build 23.0.1+11-39, mixed mode, sharing)

C:\Users\adity>javac --version
javac 23.0.1
```

- 1.3 Create a Sample Hello World Program using a simple text editor (e.g., Notepad) and show the steps to compile and execute the program using the command prompt.
- 1.4 Display your name and complete address in different lines.

Steps:

1. Write the Program:
 - Open a simple text editor like Notepad.
 - Save the file as HelloWorld.java (the extension is .java).

A screenshot of a text editor window with a dark theme. The title bar shows a single tab labeled 'HelloWorld.java' with standard window controls (minimize, maximize, close). The menu bar includes 'File', 'Edit', and 'View', with a settings gear icon on the right. The code area contains a Java program with the following text:

```
public class HelloWorld {  
    public static void main(String[] args) {  
        System.out.println("Hello, World!");  
        System.out.println("Aditya Shrivastava");  
        System.out.println("Bhopal / Dehradun");  
        System.out.println("Madhya Pradesh / Uttarakhand");  
    }  
}
```

The cursor is positioned at the end of the final closing brace on the last line.

2. Compile the Program:

- Open the Command Prompt.
- Navigate to the directory where HelloWorld.java is saved using the 'cd' command.
- Compile the program by typing 'javac HelloWorld.java'

```
C:\WINDOWS\system32\cmd. x + v
Microsoft Windows [Version 10.0.22631.4751]
(c) Microsoft Corporation. All rights reserved.

C:\Users\adity>cd Downloads\OOPS\

C:\Users\adity\Downloads\OOPS>javac HelloWorld.java

C:\Users\adity\Downloads\OOPS>|
```

- A file named 'HelloWorld.class' will be created.

```
C:\Users\adity\Downloads\OOPS>dir
Volume in drive C is Windows
Volume Serial Number is 96E0-2891

Directory of C:\Users\adity\Downloads\OOPS

29-01-2025  23:25    <DIR>          .
29-01-2025  22:40    <DIR>          ..
16-01-2025  10:48                478,700 EXP 01.docx
29-01-2025  23:25                544 HelloWorld.class
29-01-2025  23:17                291 HelloWorld.java
                3 File(s)          479,535 bytes
                2 Dir(s)  53,360,427,008 bytes free
```

3. Run the Program:

- Execute the program by typing 'java HelloWorld'

```
C:\Users\adity\Downloads\OOPS>java HelloWorld
Hello, World!
Aditya Shrivastava
Bhopal / Dehradun
Madhya Pradesh / Uttarakhand
```

System.out.println statement is used for displaying name and address in different lines.