NUML
National University of Modern Languages

BS-Software Engineering 2nd-E

OOP

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Roll# SP-21-110
NUML-S21-23529

Title: Theory Assignment 1

Submitted to

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Object Oriented Programming

Q1(a). Describe the difference between static block and instance (initializer) block. Write the difference in a way that the concept of both these blocks is clarified.

Static block	Instance block
Known only as **static initialization block** in java.	Also known as **non-static initialization block** in java.
static blocks executes **before instance blocks** in java.	**instance blocks** executes **after static blocks** in java**.**
Only static variables can be **accessed** inside **static block**	Static and non-static variables (instance variables) can be **accessed** inside **instance block.**
static blocks can be used for **initializing** static **variables** **or** calling any static **method** in java.	**instance blocks** can be used for initializing instance **variables** ***or*** calling any instance **method** in java.
static blocks executes **when class is loaded** in java.	**instance block** executes only **when instance of class is created**, not called when class is loaded in java.
this keyword cannot be used in **static blocks**.	**this keyword** can be used in **instance block**.

Q1(b). Explain when and how many times each of these blocks gets executed.

Instance block will be executed **only once for each object during its creation**. So, the number of times an instance block is executed signifies the number of objects created in the program. The execution of instance block depends only on the object creation and not on the execution of a constructor.

Static block in java is executed **every time when a class loads**. This is also known as Static initialization block. Static block in java initializes when class load into memory, it means when JVM read the byte code.

Q2. Write a program that uses static block and instance (initializer) block.

We can have both static and initializer blocks in a Java program. But static block will execute **first** even before initializer block.

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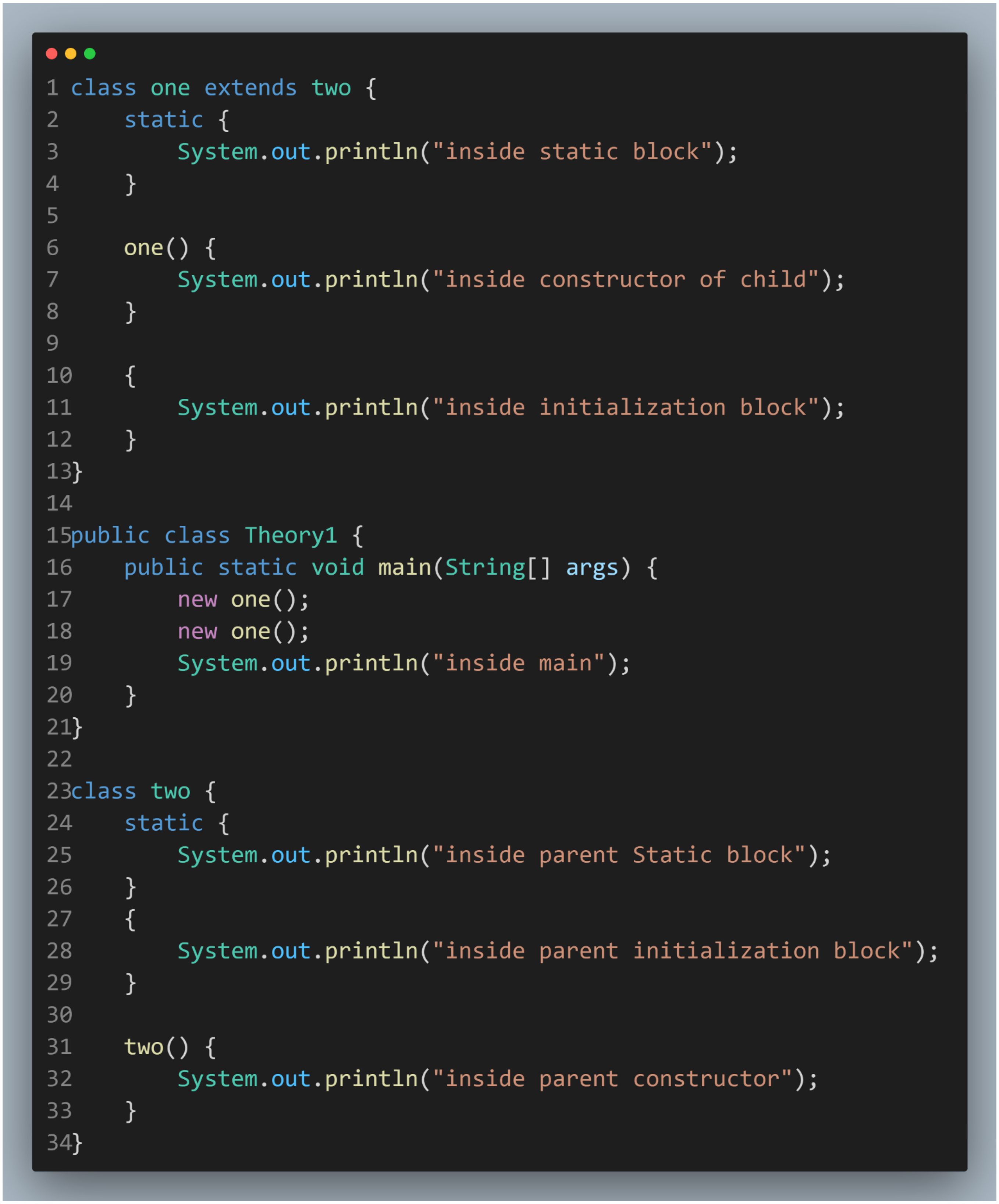
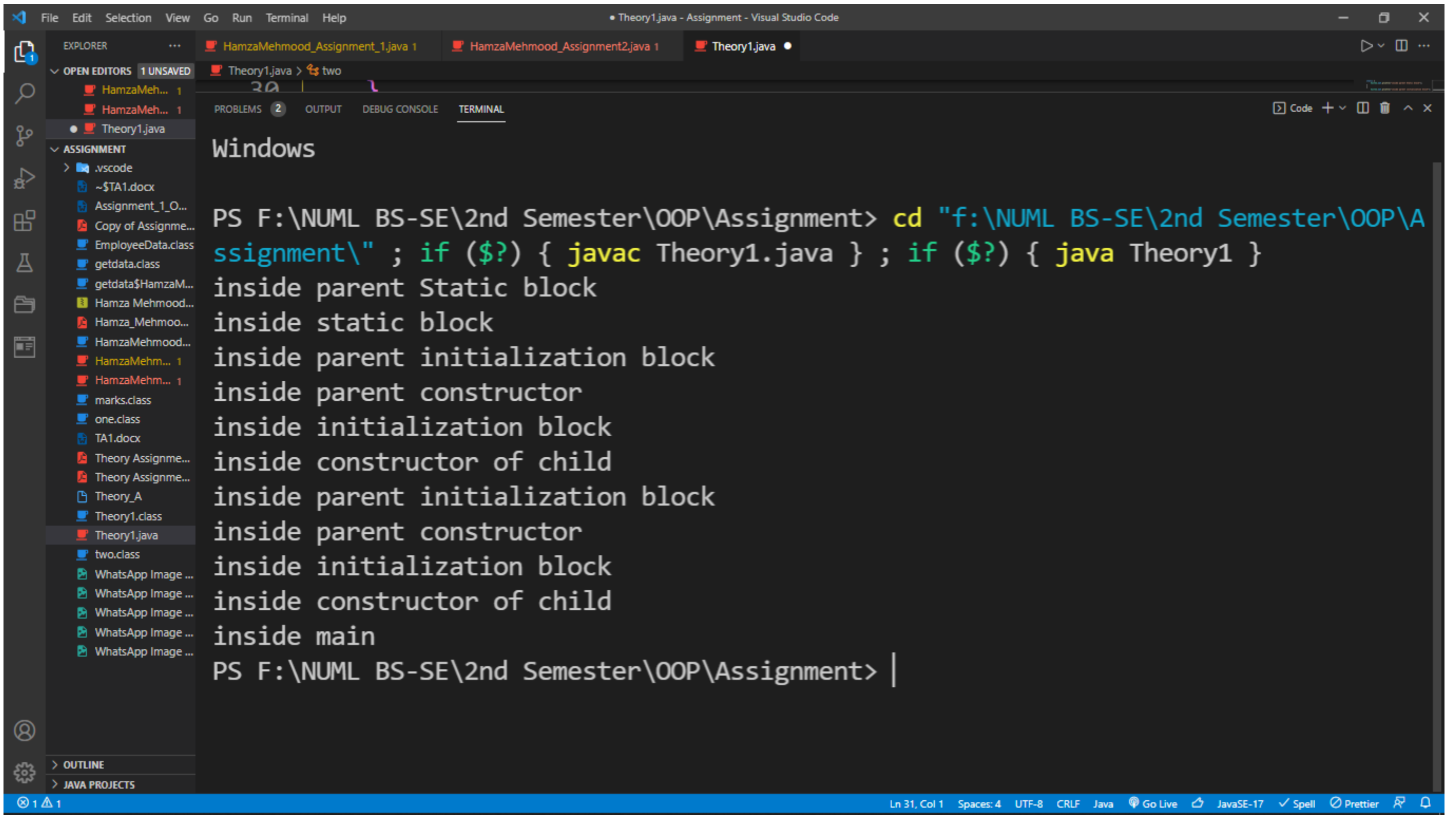
THEORY ASIIGNMENT 1



```java
class one extends two {
    static {
        System.out.println("inside static block");
    }

    one() {
        System.out.println("inside constructor of child");
    }

    {
        System.out.println("inside initialization block");
    }
}

public class Theory1 {
    public static void main(String[] args) {
        new one();
        new one();
        System.out.println("inside main");
    }
}

class two {
    static {
        System.out.println("inside parent Static block");
    }
    {
        System.out.println("inside parent initialization block");
    }

    two() {
        System.out.println("inside parent constructor");
    }
}
```

OUTPUT


File Edit Selection View Go Run Terminal Help
• Theory1.java - Assignment - Visual Studio Code
EXPLORER
HamzaMehmood_Assignment_1.java 1
HamzaMehmood_Assignment2.java 1
Theory1.java
OPEN EDITORS 1 UNSAVED
ASSIGNMENT
PROBLEMS 2
OUTPUT
DEBUG CONSOLE
TERMINAL
OUTLINE
JAVA PROJECTS
Ln 31, Col 1 Spaces: 4 UTF-8 CRLF Java Go Live JavaSE-17 Spell Prettier

```
Windows

PS F:\NUML BS-SE\2nd Semester\OOP\Assignment> cd "f:\NUML BS-SE\2nd Semester\OOP\A
ssignment\" ; if ($?) { javac Theory1.java } ; if ($?) { java Theory1 }
inside parent Static block
inside static block
inside parent initialization block
inside parent constructor
inside initialization block
inside constructor of child
inside parent initialization block
inside parent constructor
inside initialization block
inside constructor of child
inside main
PS F:\NUML BS-SE\2nd Semester\OOP\Assignment> |
```