Labsheet 02

Reg. Number: SEU/IS/20/ICT/084
Academic Year :2020/2021
Date: 2023.01.24
Practical No : 02

Title: Java Basics

Aims:

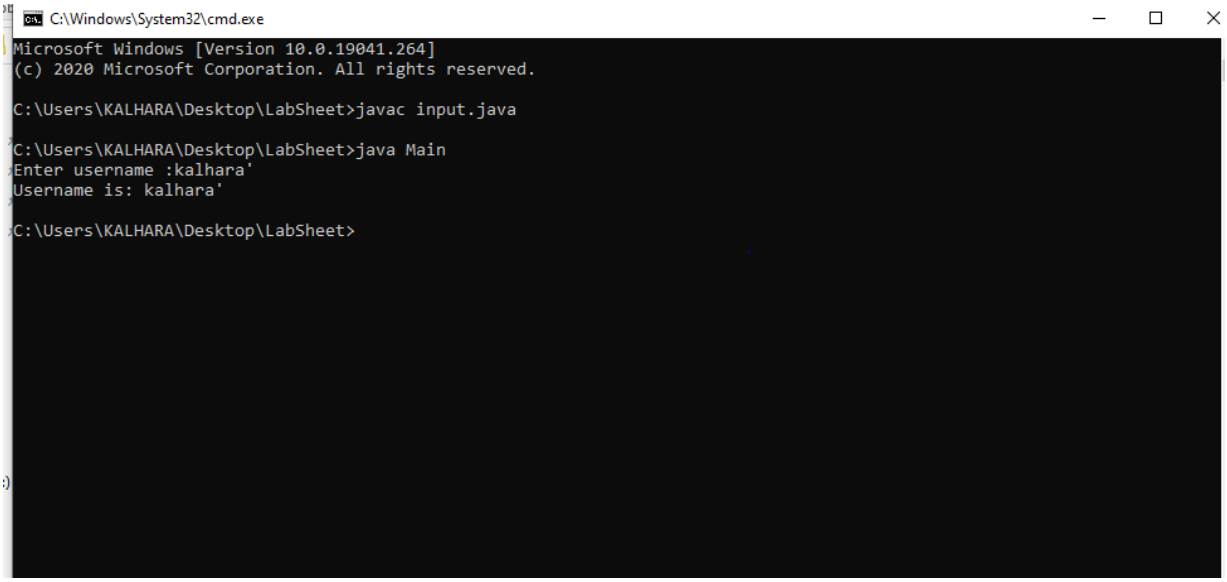
- **Practice with Java Basics programming Language environment preparation**

Tasks 01:

Java User Input String

```
import java.util.Scanner;
class Main {
    public static void main(String[] args) {
            Scanner myObj = new Scanner(System.in);
            String userName;
            System.out.print("Enter username :");
            userName = myObj.nextLine();
            System.out.println("Username is: " + userName);
    }
}
```

Output:



Tasks 02:

Java Output / Print Text

```
public class output {
    public static void main(String[] args) {
            System.out.println("Hello World!");
            System.out.println("I am learning Java.");
            System.out.println("It is awesome!");
    }
}
```

Output:

Tasks 03:

Java Output Numbers

```
public class Main {
    public static void main(String[] args) {
        System.out.println(3);
        System.out.println(358);
        System.out.println(50000);
    }
}
```

Output:

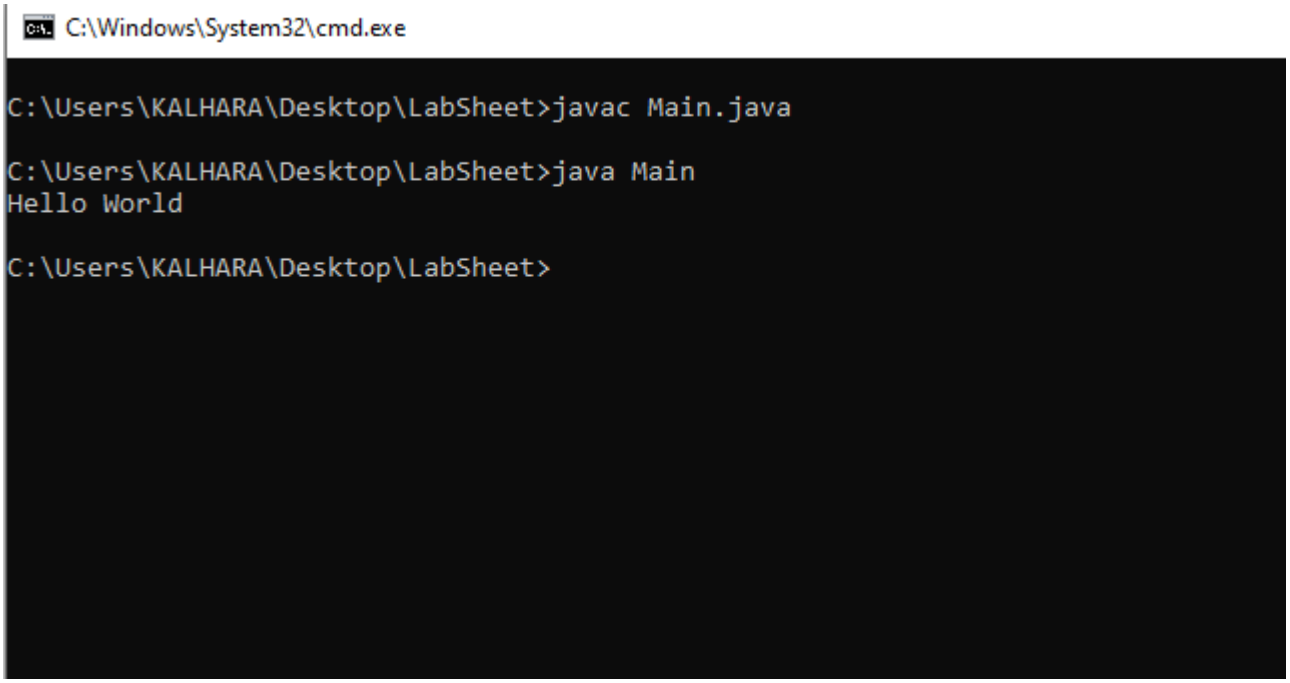
Tasks 04:

Java Comments

01.Single-line Comments

```
public class Main {
    public static void main(String[] args) {
    // This is a comment
    System.out.println("Hello World");// This is a comment
    }
}
```

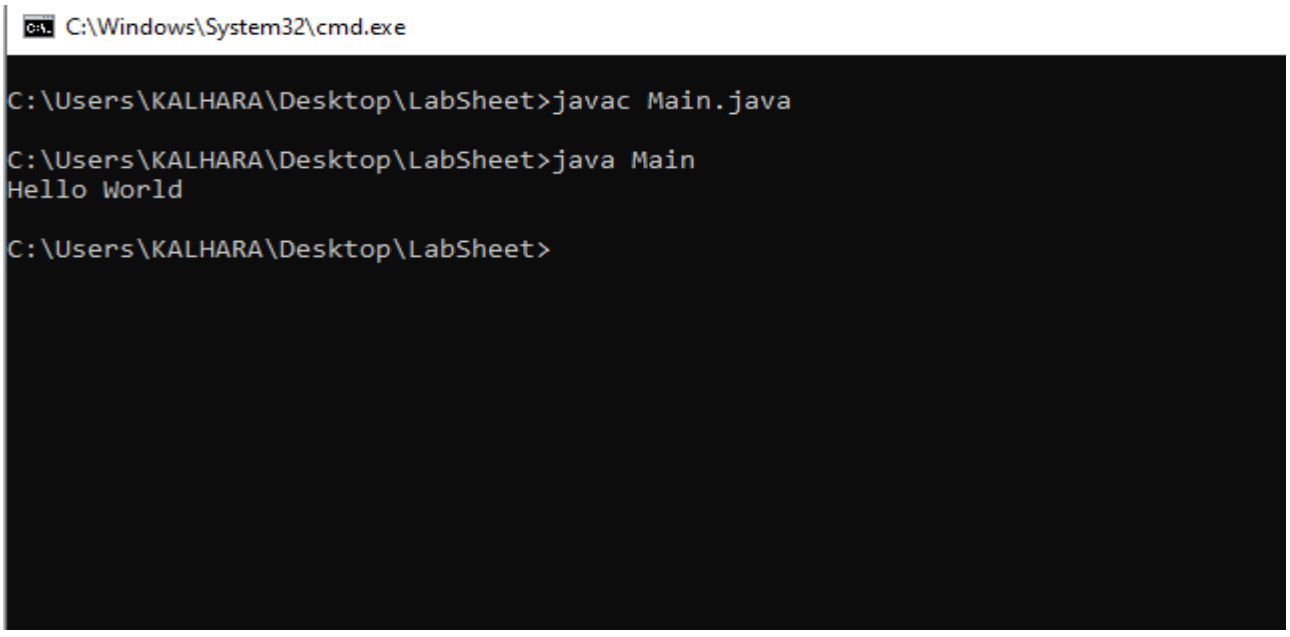
Output:



02. Java Multi-line Comments

```
public class Main {
    public static void main(String[] args) {
        /* The code below will print the words Hello World
        to the screen, and it is amazing */
        System.out.println("Hello World");
    }
}
```

Output:

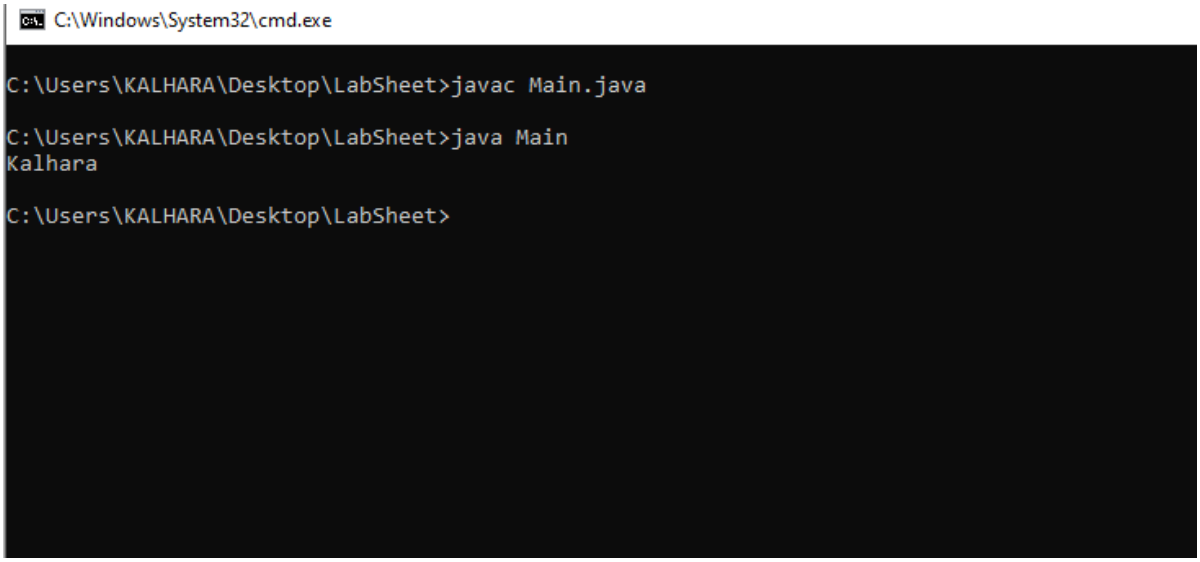


Tasks 05:

Java Variables String

```
public class Main {
    public static void main(String[] args) {
        String name = "John";
        System.out.println(name);
    }
}
```

Output:

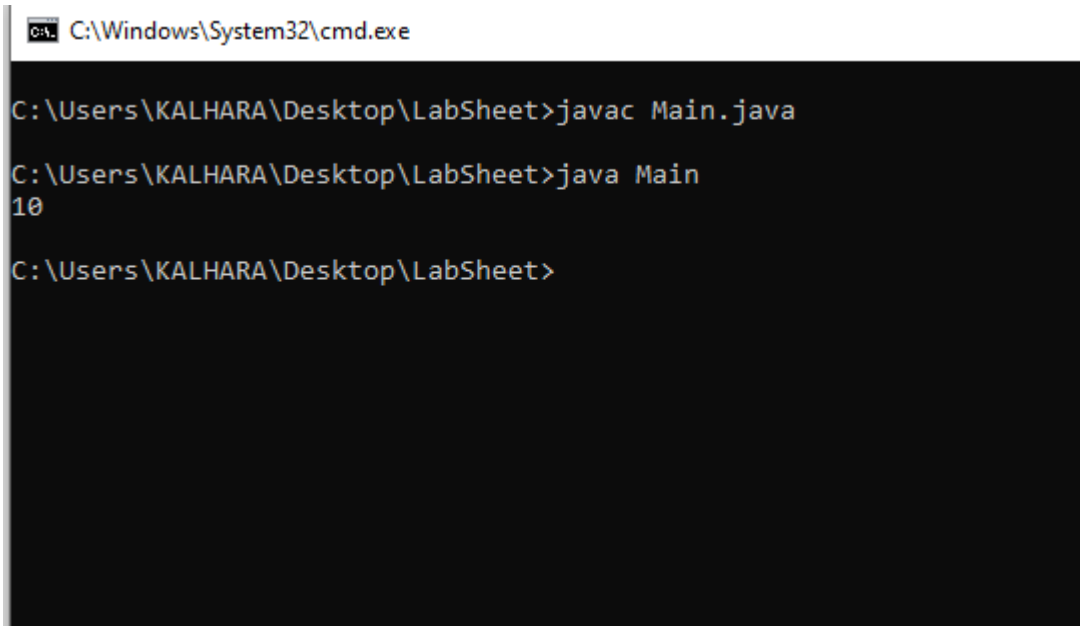


Tasks 06:

Java Variables Numbers

```
public class Main {
    public static void main(String[] args) {
        int myNum;
        myNum = 10;
        System.out.println(myNum);
    }
}
```

Output:

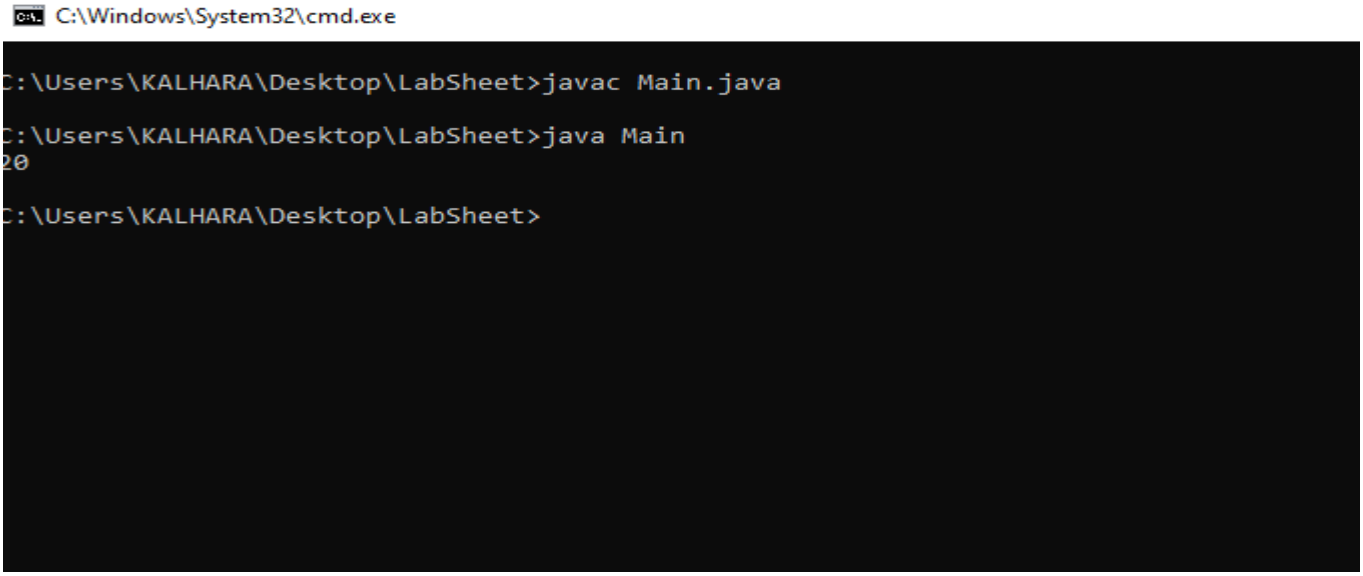


Tasks 07:

Java Variables Multiple Numbers

```
public class Main {
        public static void main(String[] args) {
                int myNum = 15;
                myNum = 20; // myNum is now 20
                System.out.println(myNum);
            }
    }
```

Output:

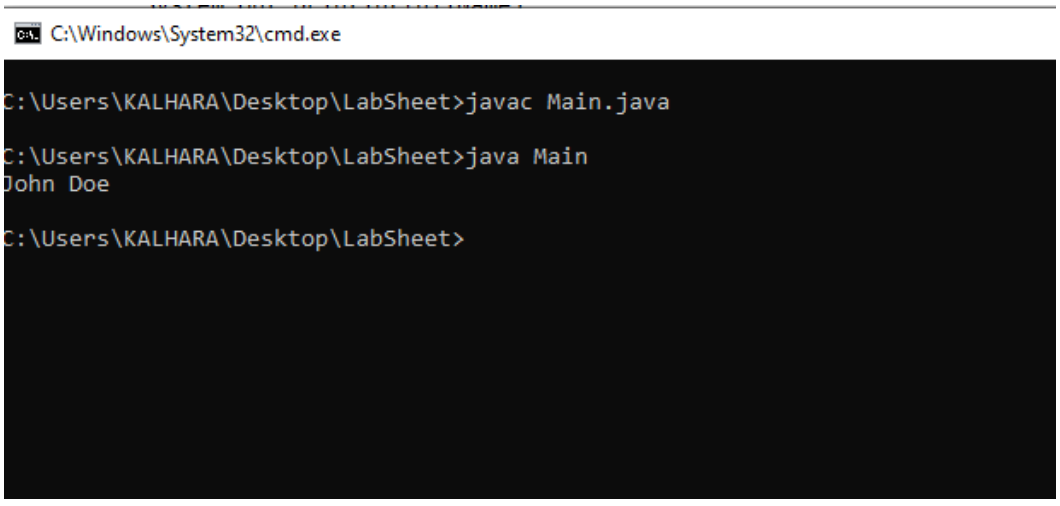


Tasks 08:

Display Variables

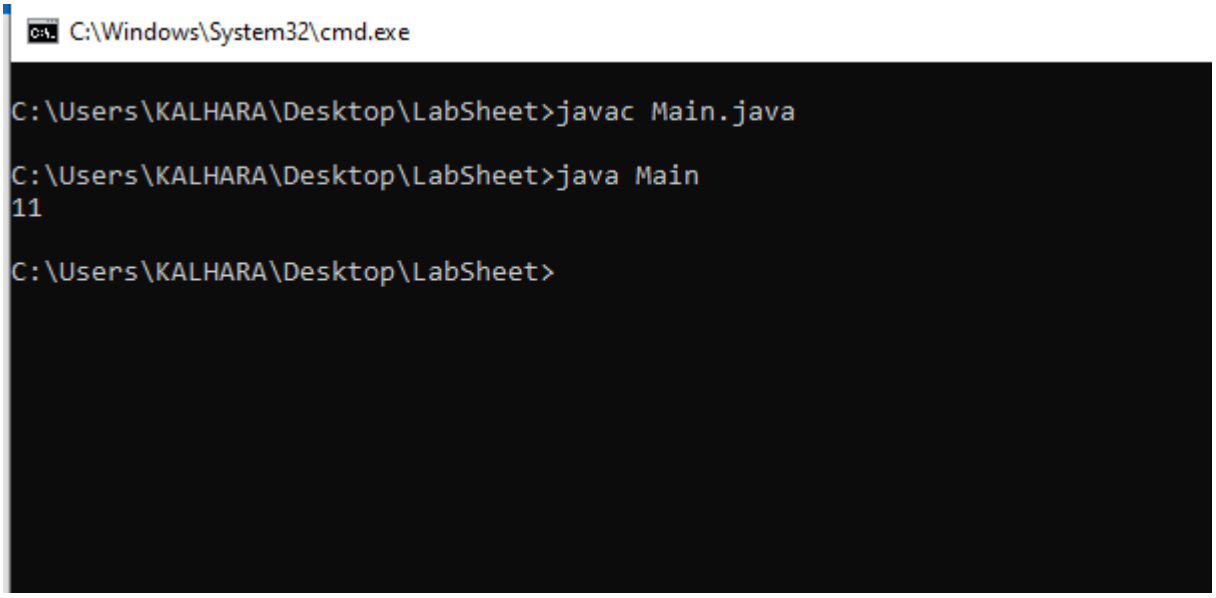
```
public class Main {
        public static void main(String[] args) {
                String firstName = "John ";
                String lastName = "Doe";
                String fullName = firstName + lastName;
                System.out.println(fullName);
        }
}
```

Output:



```
public class Main {
	public static void main(String[] args) {
		int x = 5;
		int y = 6;
		System.out.println(x + y);
	}
}
```

Output:

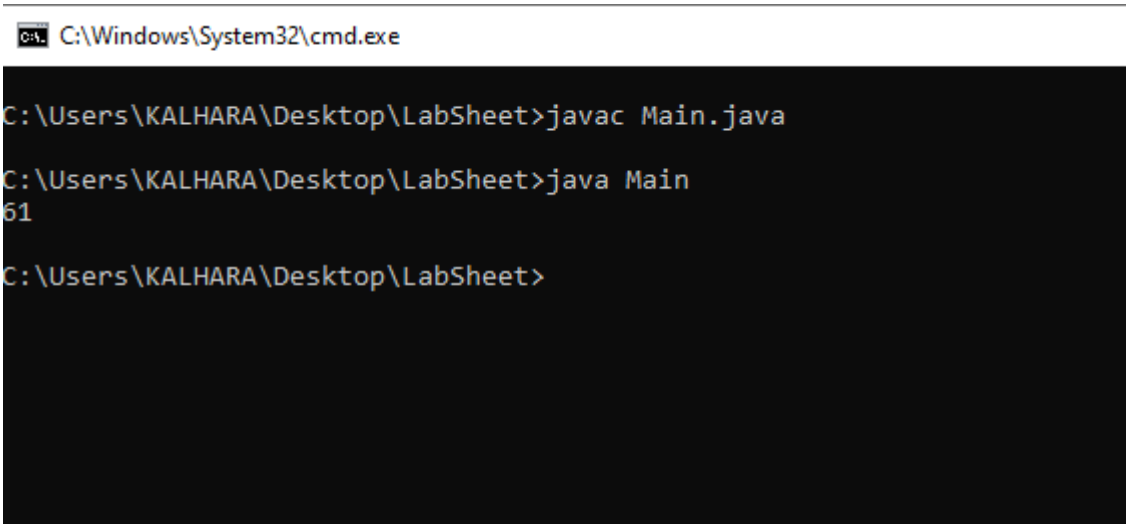


Tasks 09:

Declare Many Variables

```
public class Main {
	public static void main(String[] args) {
		int x = 5, y = 6, z = 50;
		System.out.println(x + y + z);
	}
}
```

Output:

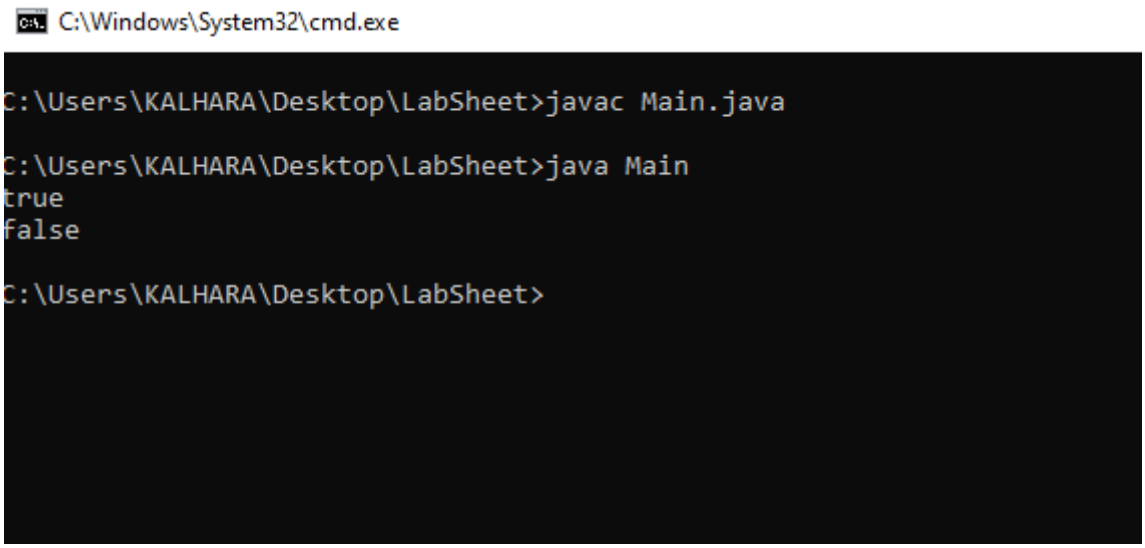


Tasks 10:

Boolean Types

```
public class Main {
        public static void main(String[] args) {
                boolean isJavaFun = true;
                boolean isFishTasty = false;
                System.out.println(isJavaFun);
                System.out.println(isFishTasty);
        }
}
```

Output:

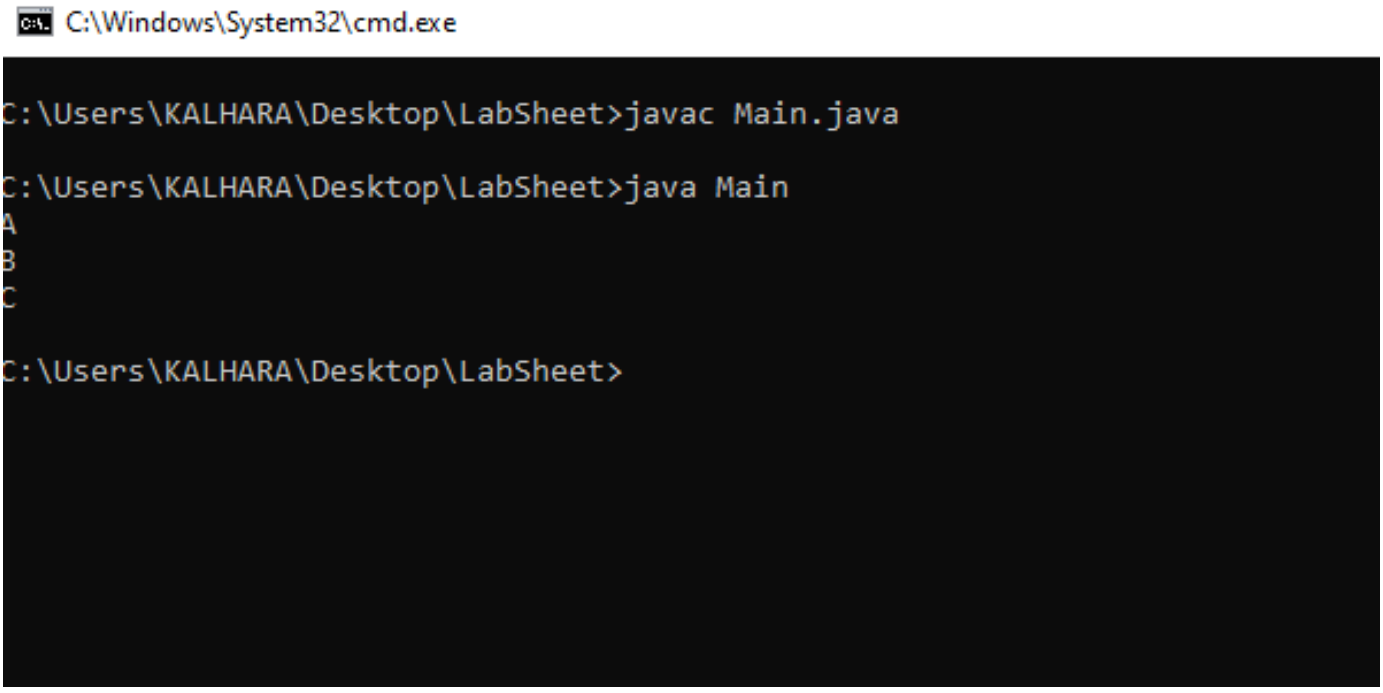


Tasks 11:

Java Characters

```
public class Main {
	public static void main(String[] args) {
		char myVar1 = 65, myVar2 = 66, myVar3 = 67;
		System.out.println(myVar1);
		System.out.println(myVar2);
		System.out.println(myVar3);
	}
}
```

Output:

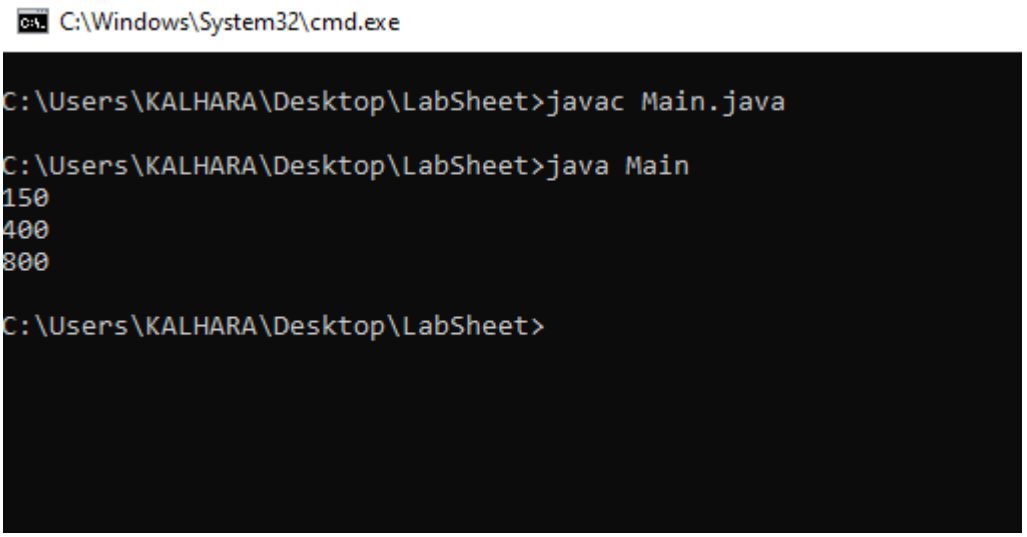


Tasks 12:

Java Operators

```
public class Main {
        public static void main(String[] args) {
                int sum1 = 100 + 50;
                int sum2 = sum1 + 250;
                int sum3 = sum2 + sum2;
                System.out.println(sum1);
                System.out.println(sum2);
                System.out.println(sum3);
        }
}
```

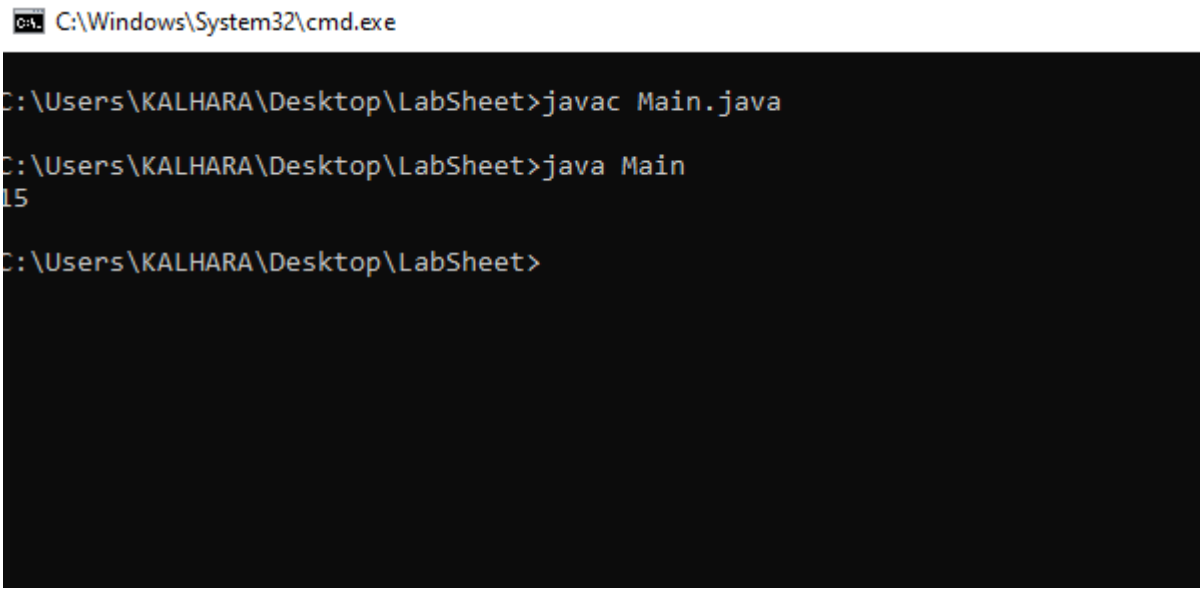
Output:



01.Arithmetic Operators

```
public class Main {
        public static void main(String[] args) {
                int x = 5;
                int y = 3;
                System.out.println(x * y);
        }
}
```

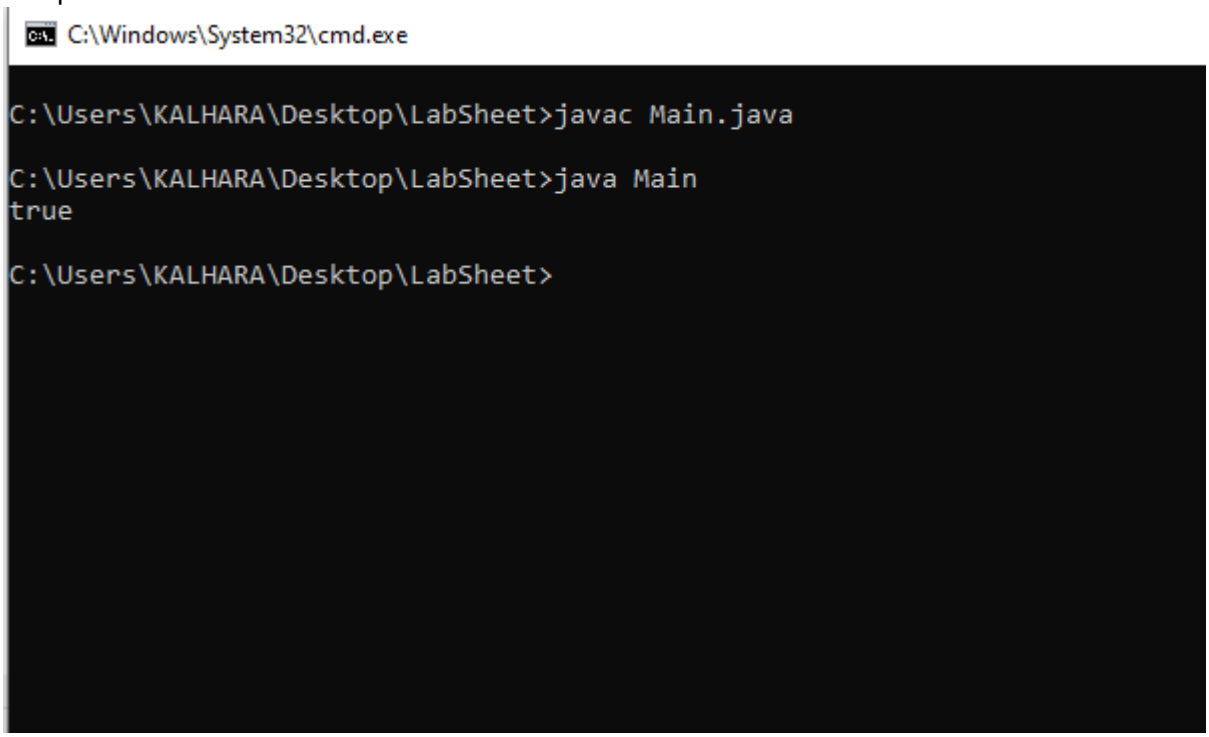
Output:



02.Comparison Operators

```
public class Main {
	public static void main(String[] args) {
		int x = 5;
		int y = 3;
		System.out.println(x > y); // returns true, because 5 is higher than 3
	}
}
```

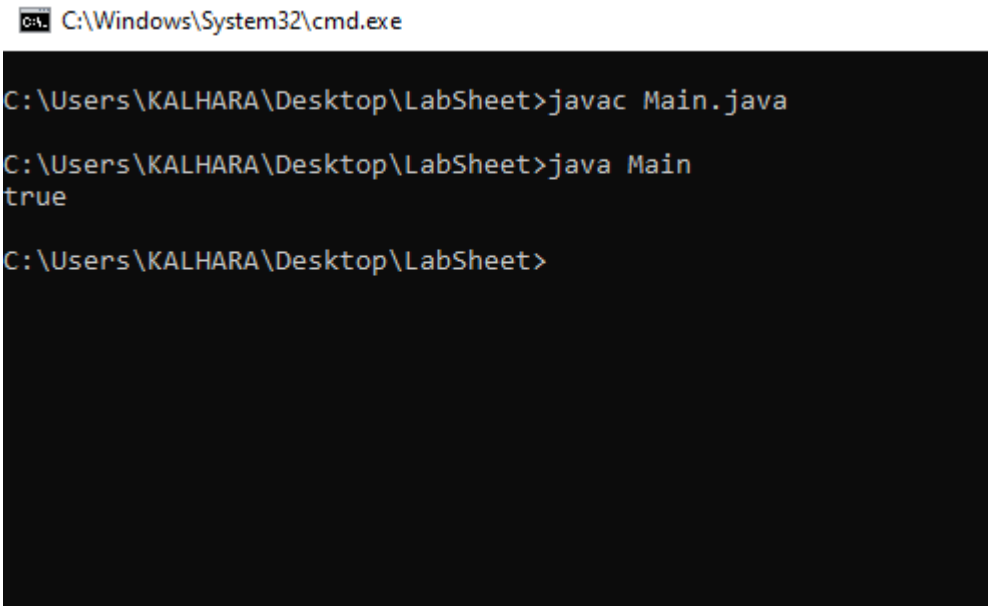
Output:



03.Logical Operators

```
public class Main {
	public static void main(String[] args) {
		int x = 5;
		System.out.println(x > 3 && x < 10);
	}
}
```

Output:



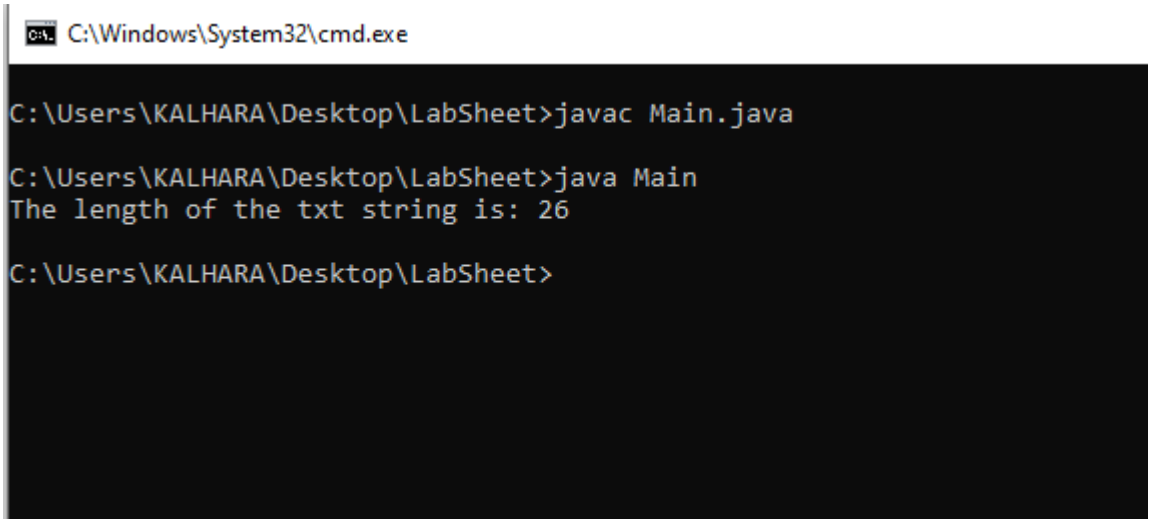
Tasks 13:

Java Strings

01.String Length

```
public class Main {
	public static void main(String[] args) {
		String txt = "ABCDEFGHIJKLMNOPQRSTUVWXYZ";
		System.out.println("The length of the txt string is: " + txt.length());
	}
}
```

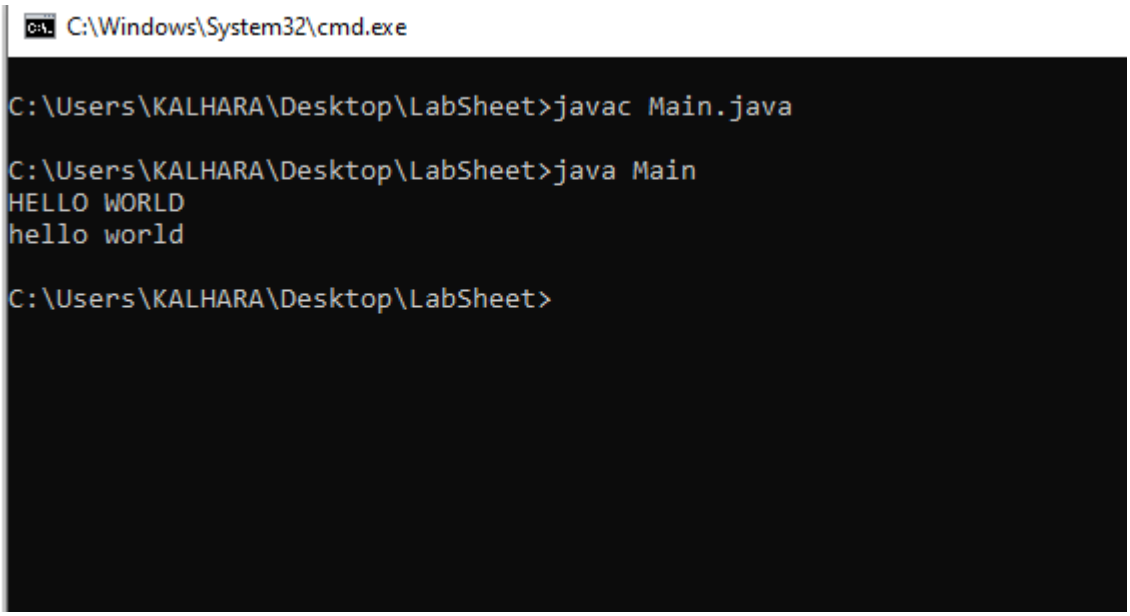
Output:



02.String Methods

```
public class Main {
	public static void main(String[] args) {
		String txt = "Hello World";
		System.out.println(txt.toUpperCase());
		System.out.println(txt.toLowerCase());
	}
}
```

Output:

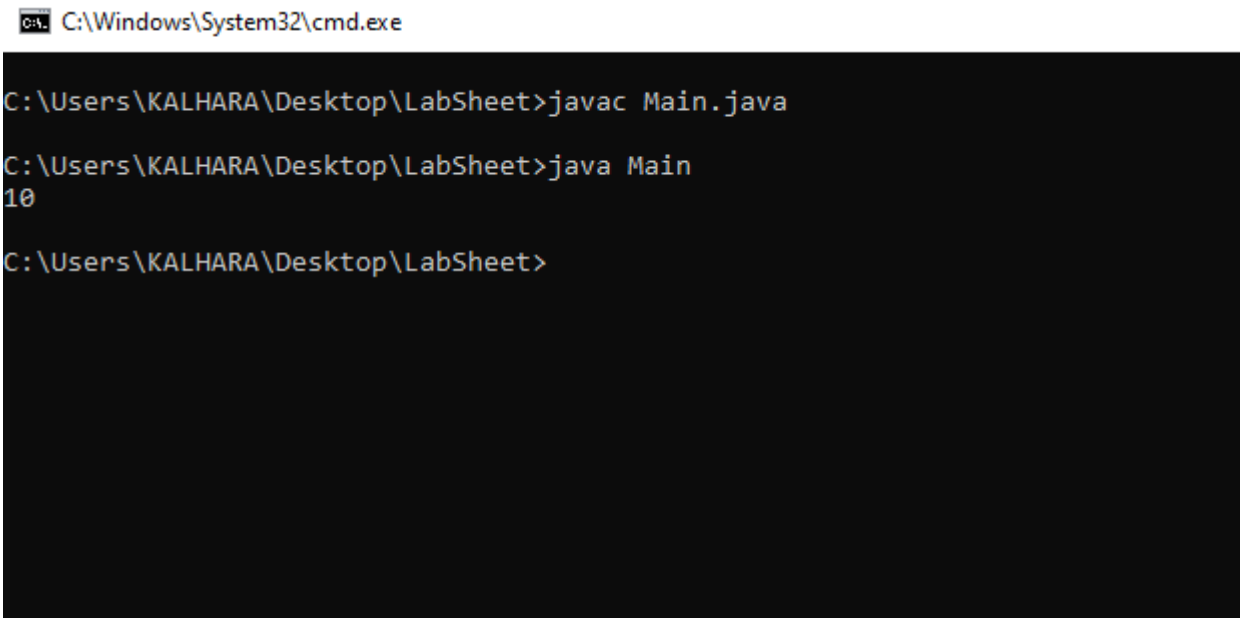


Tasks 14:

Java Math

```
public class Main {
	public static void main(String[] args) {
		System.out.println(Math.max(5, 10));
	}
}
```

Output:



Tasks 15:

Java Conditions and If Statements

01.if Statement

```
public class Main {
	public static void main(String[] args) {
		int x = 20;
		int y = 18;
		if (x > y) {
		System.out.println("x is greater than y");
		}
	}
}
```

Output:

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19041.264]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\Users\KALHARA\Desktop\LabSheet>javac Main.java

C:\Users\KALHARA\Desktop\LabSheet>java Main
x is greater than y

C:\Users\KALHARA\Desktop\LabSheet>
```

02.else Statement

```
public class Main {
	public static void main(String[] args) {
		int time = 20;
		if (time < 18) {
			System.out.println("Good day.");
		}
		else {
			System.out.println("Good evening.");
		}
	}
}
```

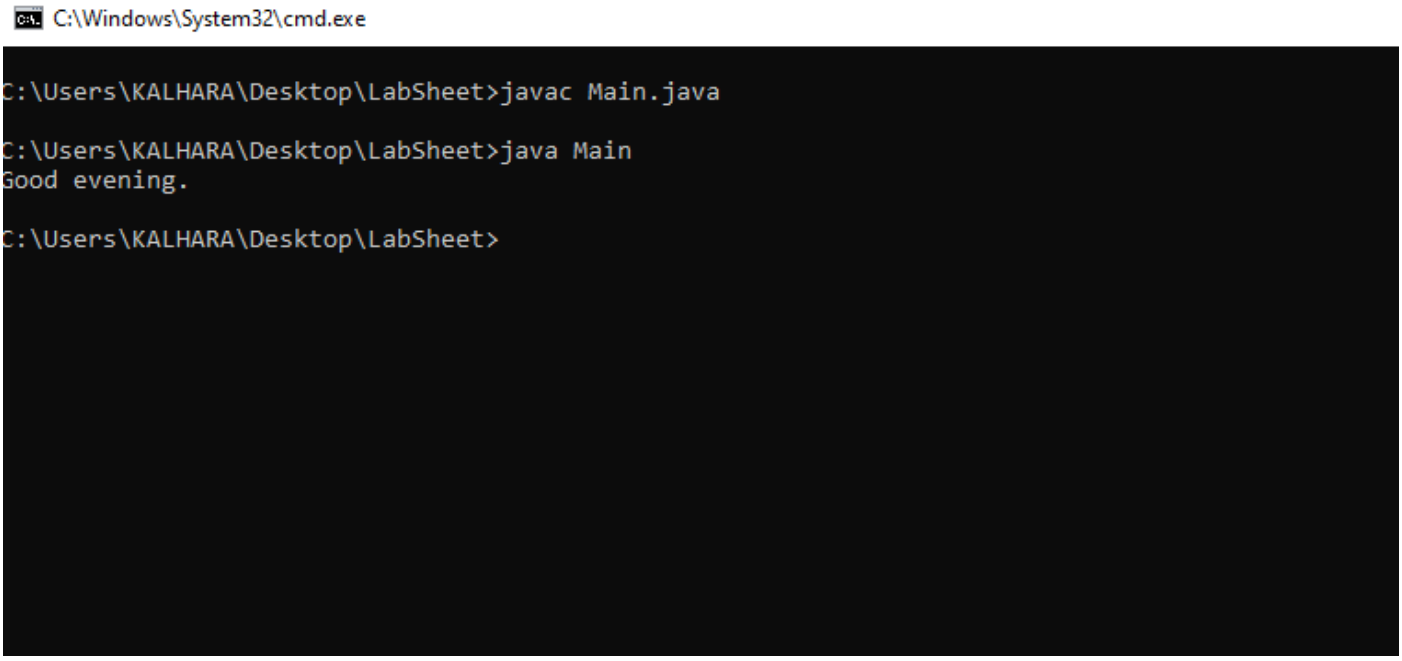
Output:

```
C:\Windows\System32\cmd.exe

C:\Users\KALHARA\Desktop\LabSheet>javac Main.java

C:\Users\KALHARA\Desktop\LabSheet>java Main
Good evening.

C:\Users\KALHARA\Desktop\LabSheet>
```

03.else if Statement

```
public class Main {
	public static void main(String[] args) {
		int time = 22;
		if (time < 10) {
			System.out.println("Good morning.");
		}
		else if (time < 18) {
			System.out.println("Good day.");
		}
		else{
			System.out.println("Good evening.");
			}
	}
}
```

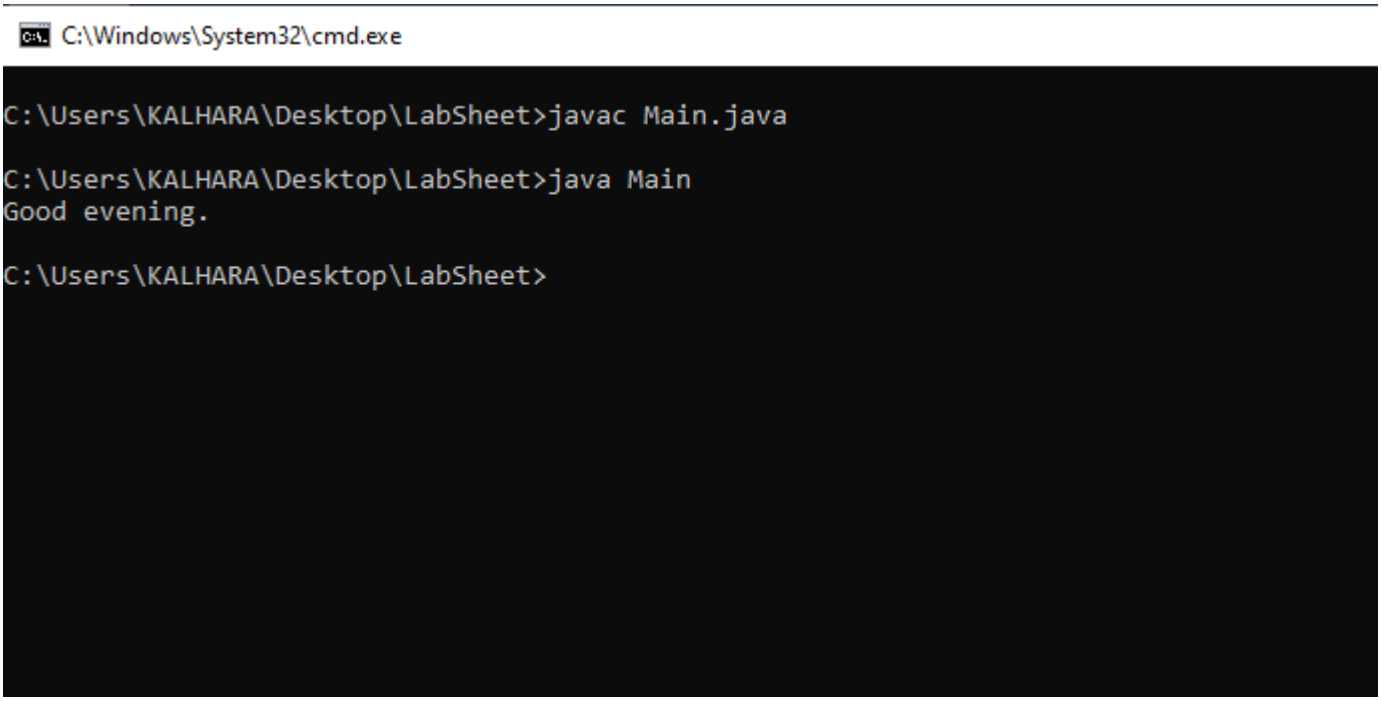
Output:



03.If...Else

```
public class Main {
	public static void main(String[] args) {
		int time = 20;
		if (time < 18) {
			System.out.println("Good day.");
		}
		 else {
			System.out.println("Good evening.");
		}
	}
}
```

Output:

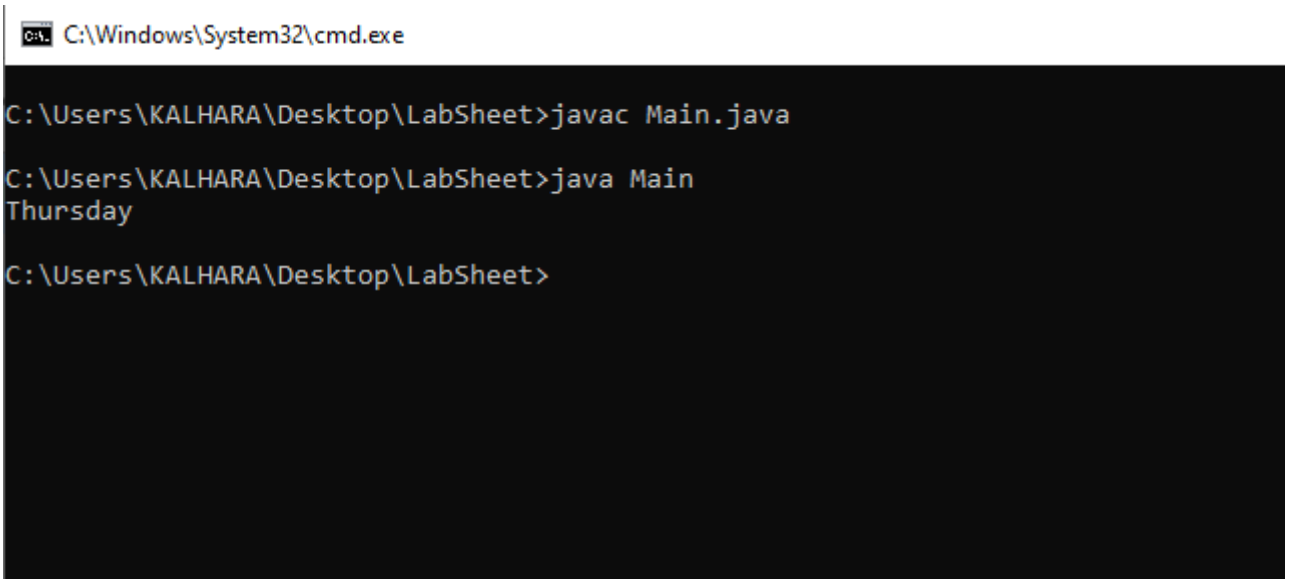


Tasks 16:

Java Switch Statements

```
public class Main {
	public static void main(String[] args) {
		int day = 4;
		switch (day) {
			case 1:
				System.out.println("Monday");
				break;
			case 2:
				System.out.println("Tuesday");
				break;
			case 3:
				System.out.println("Wednesday");
				break;
			case 4:
				System.out.println("Thursday");
				break;
			case 7:
				System.out.println("Sunday");
				break;
			}
	}
}
```

Output :

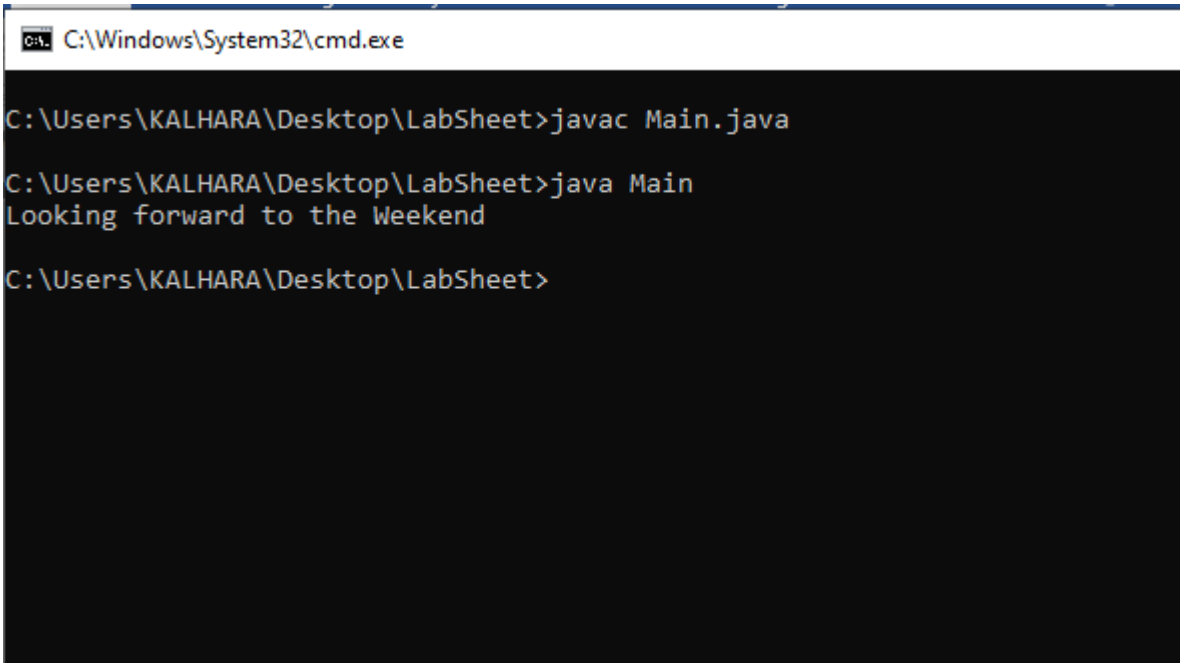


Tasks 17:

default Keyword

```
public class Main {
	public static void main(String[] args) {
		int day = 4;
		switch (day) {
			case 6:
				System.out.println("Today is Saturday");
				break;
			case 7:
				System.out.println("Today is Sunday");
				break;
			default:
				System.out.println("Looking forward to the Weekend");
			}
	}
}
```

Output:



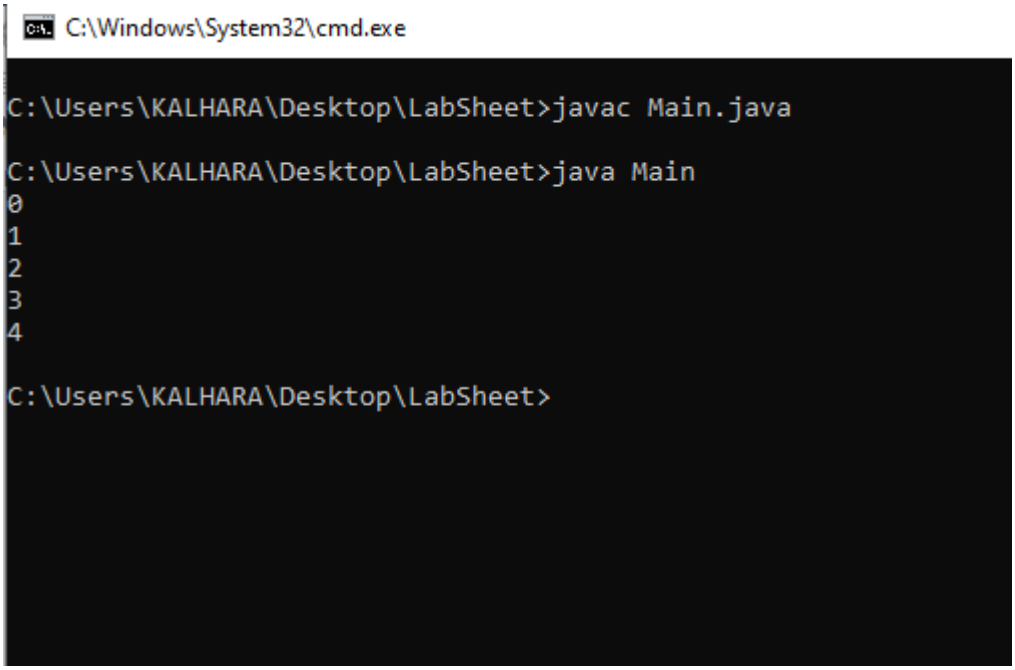
Tasks 18:

Java Loops

01. Java While Loop

```
public class Main {
        public static void main(String[] args) {
                int i = 0;
                while (i < 5) {
                        System.out.println(i);
                        i++;
                }
        }
}
```

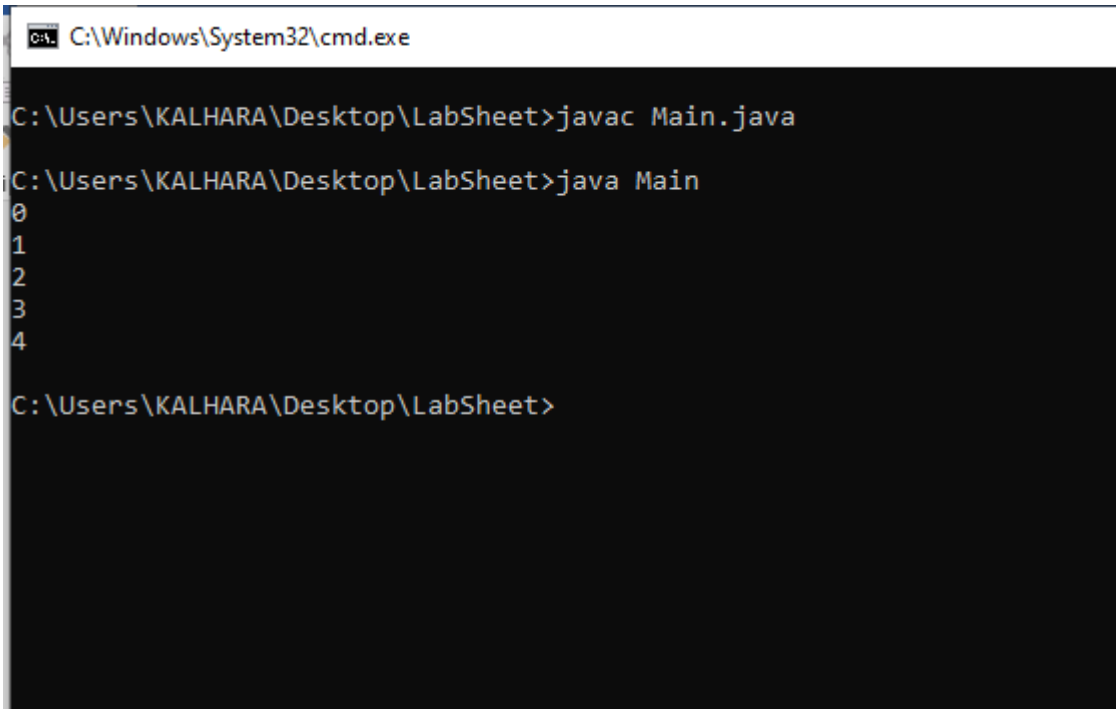
Output:



02.Java Do/While Loop

```
public class Main {
        public static void main(String[] args) {
                int i = 0;
                do {
                  System.out.println(i);
                  i++;
                }
                while (i < 5);
        }
}
```

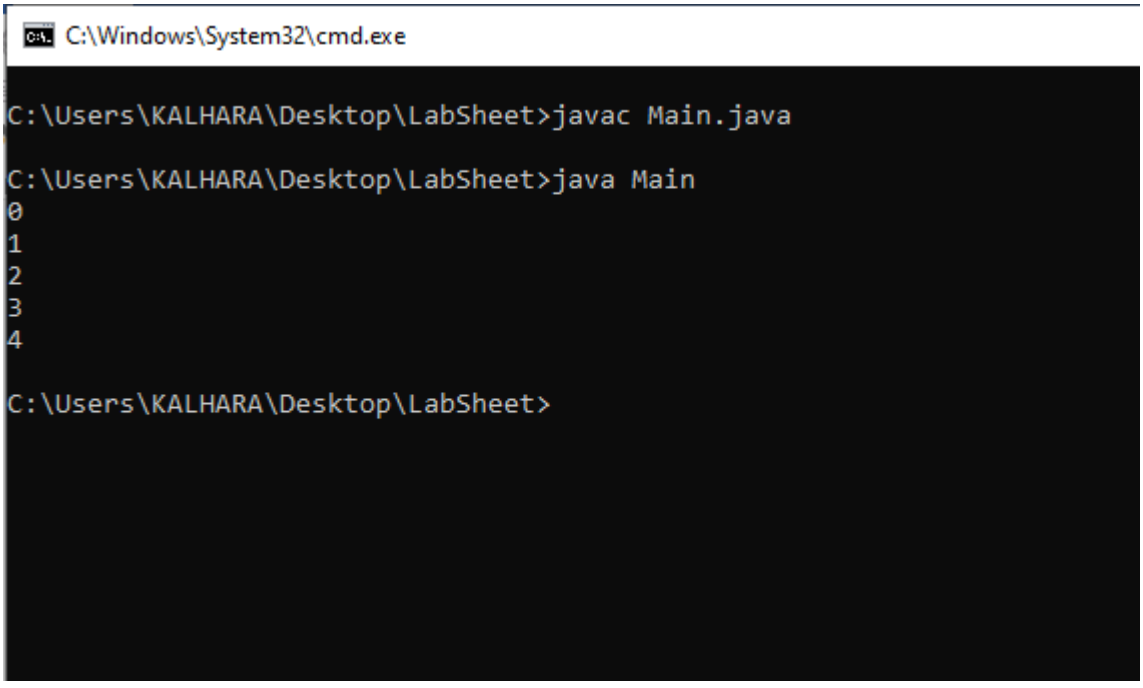
Output:



03.Java For Loop

```
public class Main {
	public static void main(String[] args) {
		for (int i = 0; i < 5; i++) {
			System.out.println(i);
		}
	}
}
```

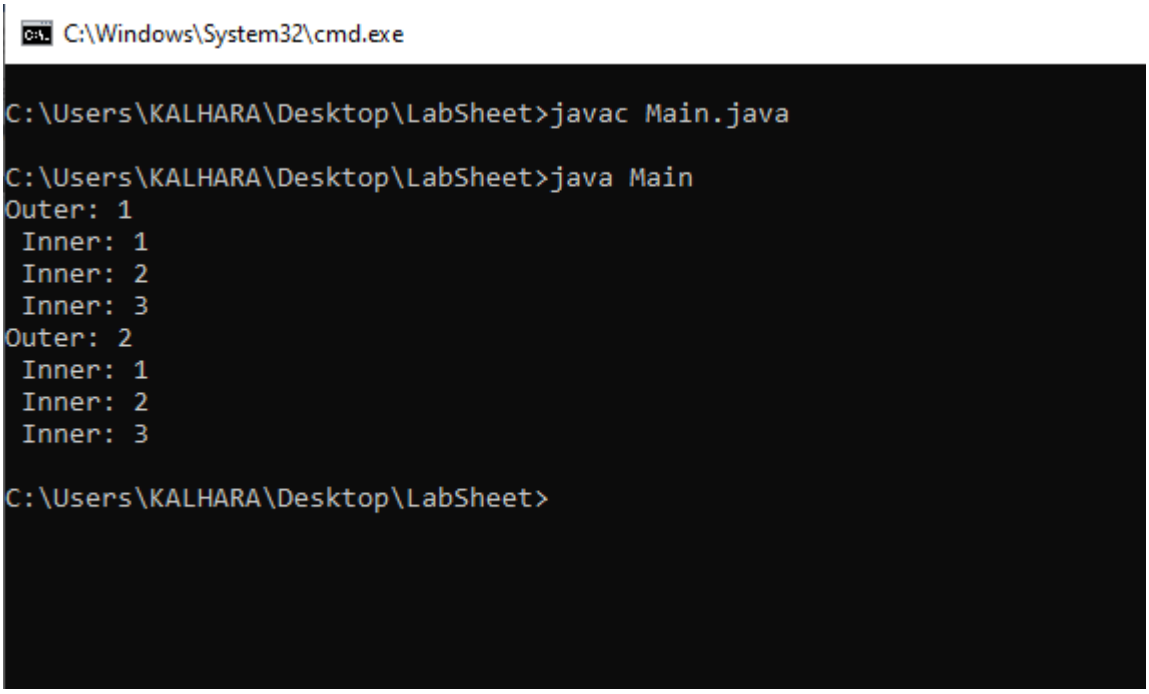
Output:



04.Nested Loops

```
public class Main {
	public static void main(String[] args) {
		for (int i = 1; i <= 2; i++) {
			System.out.println("Outer: " + i);
			for (int j = 1; j <= 3; j++) {
				System.out.println(" Inner: " + j);
			}
		}
	}
}
```

Output:



05.For-Each Loop

```
public class Main {
	public static void main(String[] args) {
		String[] cars = {"Volvo", "BMW", "Ford", "Mazda"};
		for (String i : cars) {
			System.out.println(i);
		}
	}
}
```

Output:

```
C:\Windows\System32\cmd.exe

C:\Users\KALHARA\Desktop\LabSheet>javac Main.java

C:\Users\KALHARA\Desktop\LabSheet>java Main
Volvo
BMW
Ford
Mazda

C:\Users\KALHARA\Desktop\LabSheet>
```

Tasks 19:

Java Break and Continue

01.Java Break

```
public class Main {
        public static void main(String[] args) {
                for (int i = 0; i < 10; i++) {
                        if (i == 4) {
                                break;
                        }
                        System.out.println(i);
                }
        }
}
```

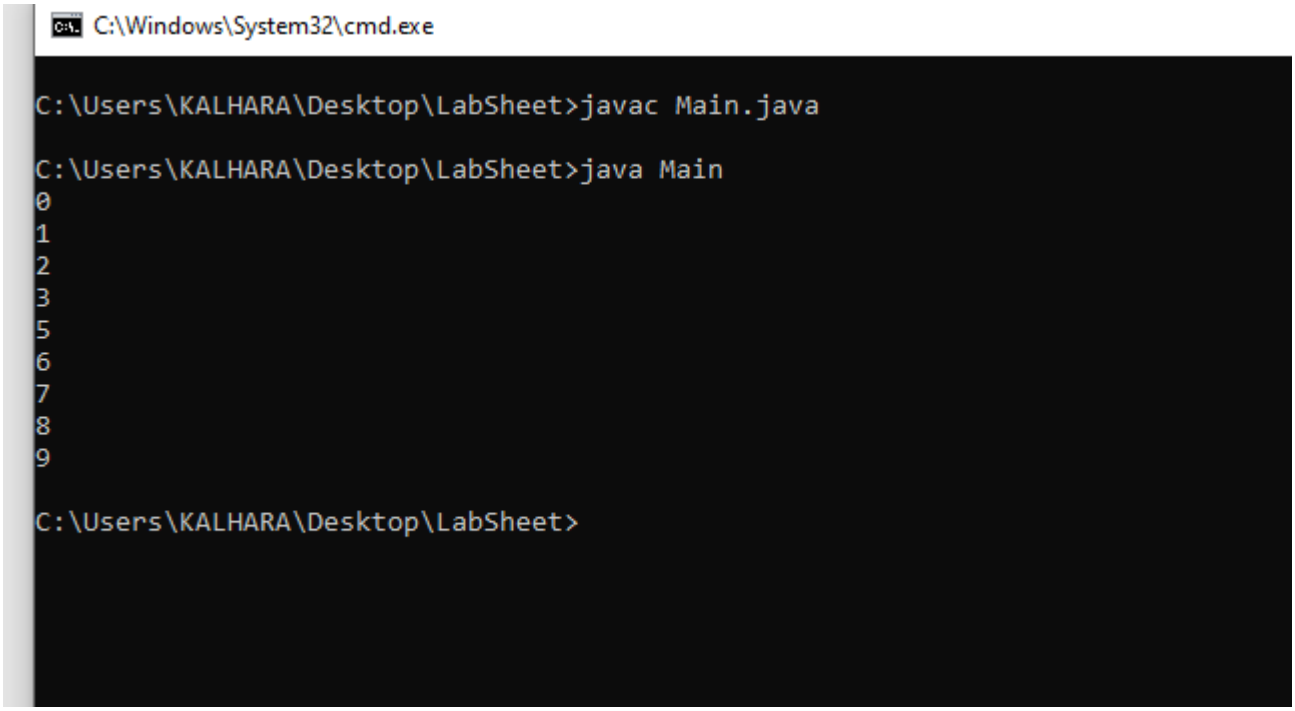
Output:

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19041.264]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\Users\KALHARA\Desktop\LabSheet>javac Main.java

C:\Users\KALHARA\Desktop\LabSheet>java Main
Volvo
BMW
Ford
Mazda

C:\Users\KALHARA\Desktop\LabSheet>
```

0.Java Continue

```
public class Main {
	public static void main(String[] args) {
		for (int i = 0; i < 10; i++) {
			if (i == 4) {
				continue;
			}
			System.out.println(i);
		}
	}
}
```

Output:

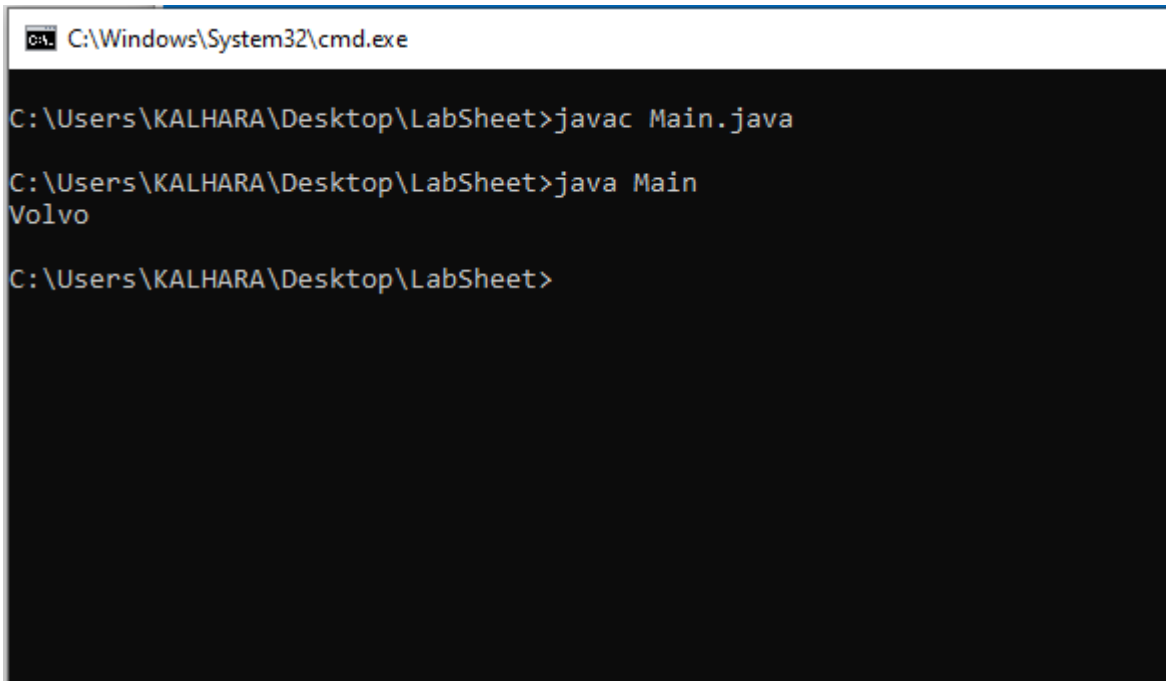


Tasks 20:

Java Arrays

```
public class Main {
	public static void main(String[] args) {
		String[] cars = {"Volvo", "BMW", "Ford", "Mazda"};
		System.out.println(cars[0]);
	}
}
```

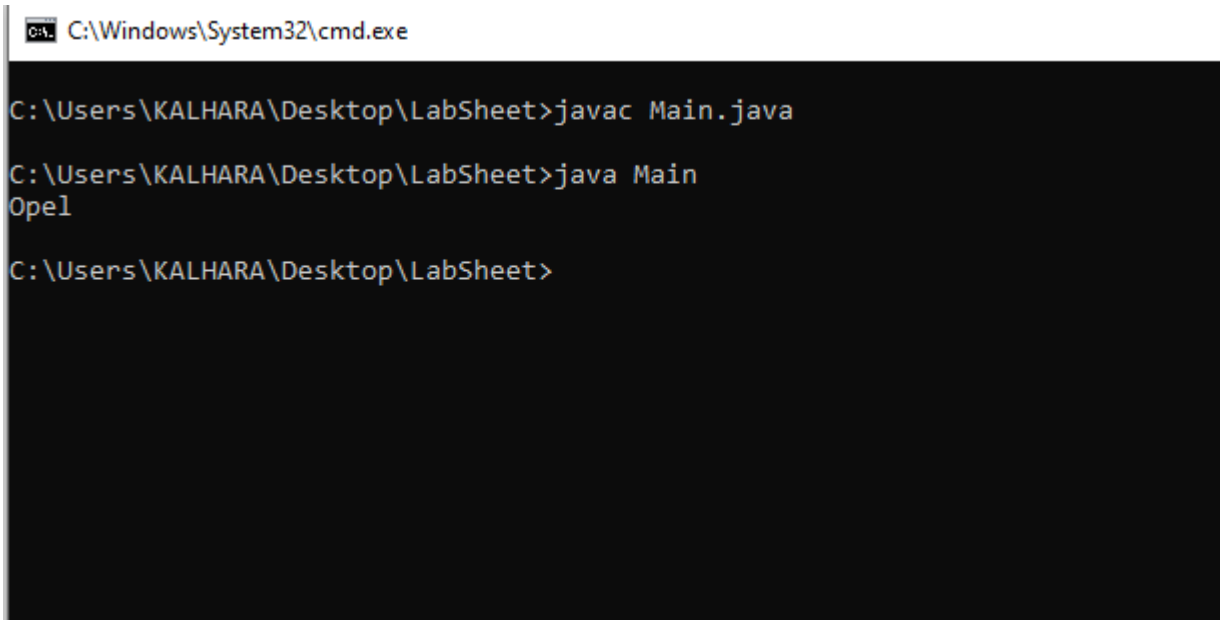
Output:



01.Change an Array Element

```
public class Main {
	public static void main(String[] args) {
		String[] cars = {"Volvo", "BMW", "Ford", "Mazda"};
			cars[0] = "Opel";
			System.out.println(cars[0]);
	}
}
```

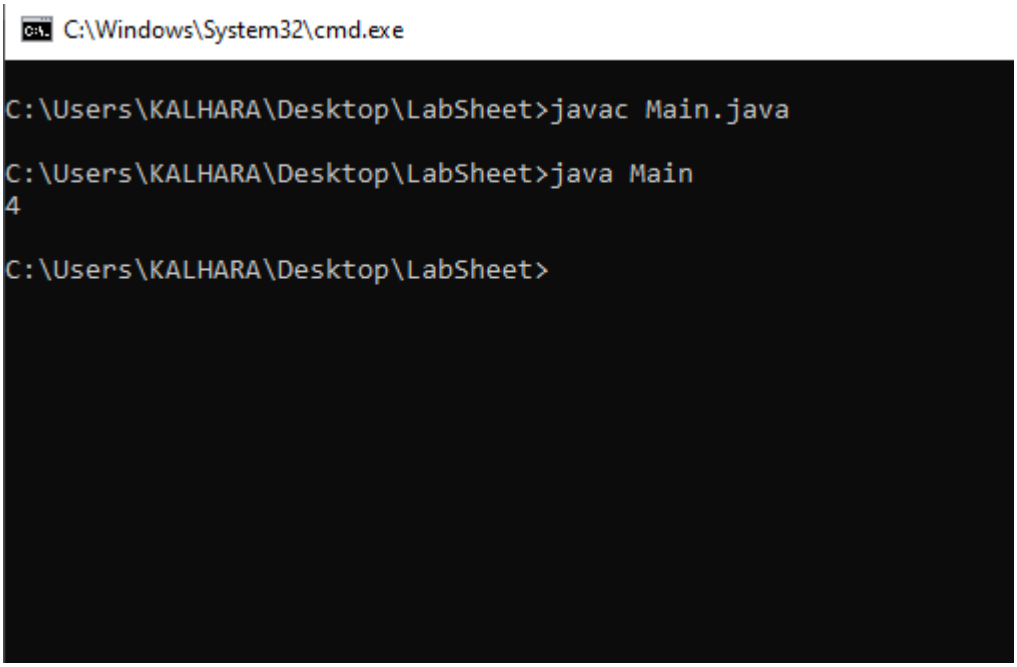
Output:



02.Array Length

```
public class Main {
	public static void main(String[] args) {
		String[] cars = {"Volvo", "BMW", "Ford", "Mazda"};
		System.out.println(cars.length);
	}
}
```

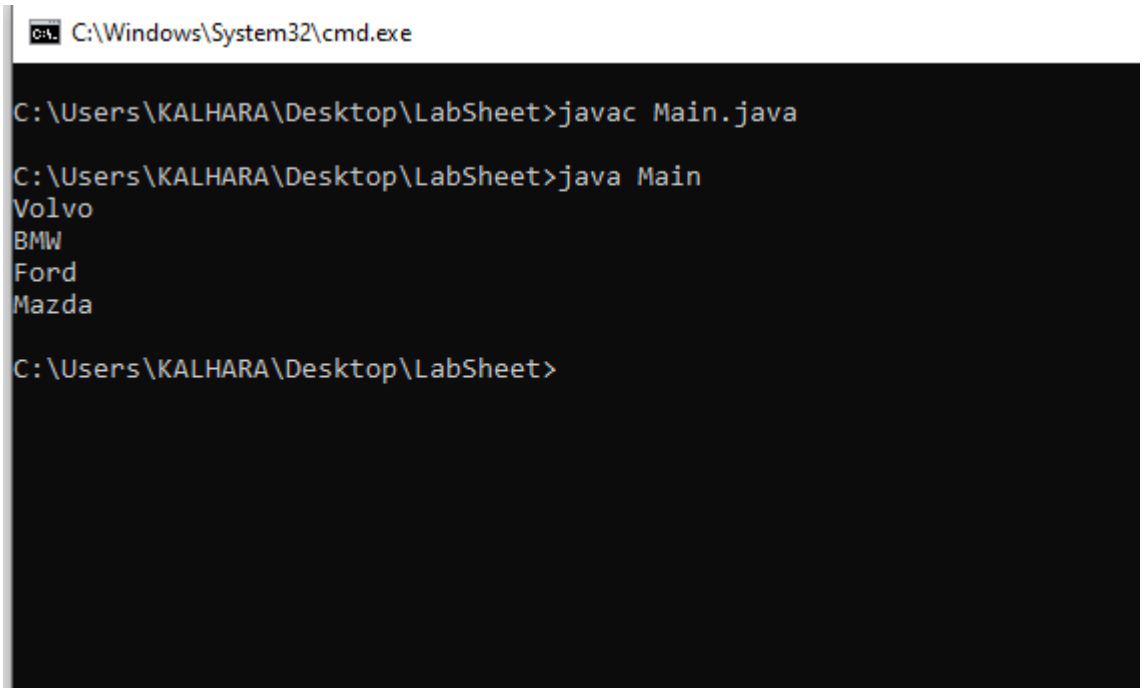
Output:



03.Loop Through an Array

```
public class Main {
	public static void main(String[] args) {
		String[] cars = {"Volvo", "BMW", "Ford", "Mazda"};
		for (int i = 0; i < cars.length; i++) {
			System.out.println(cars[i]);
		}
	}
}
```

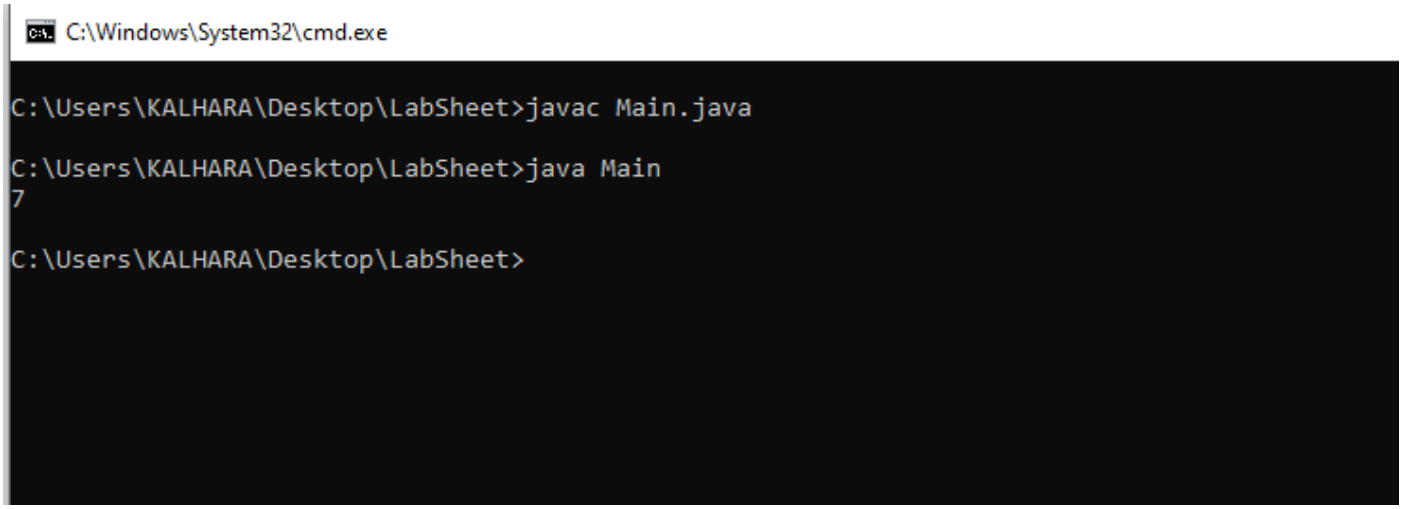
Output:



04.Multidimensional Arrays

```
public class Main {
	public static void main(String[] args) {
		int[][] myNumbers = { {1, 2, 3, 4}, {5, 6, 7} };
		System.out.println(myNumbers[1][2]);
	}
}
```

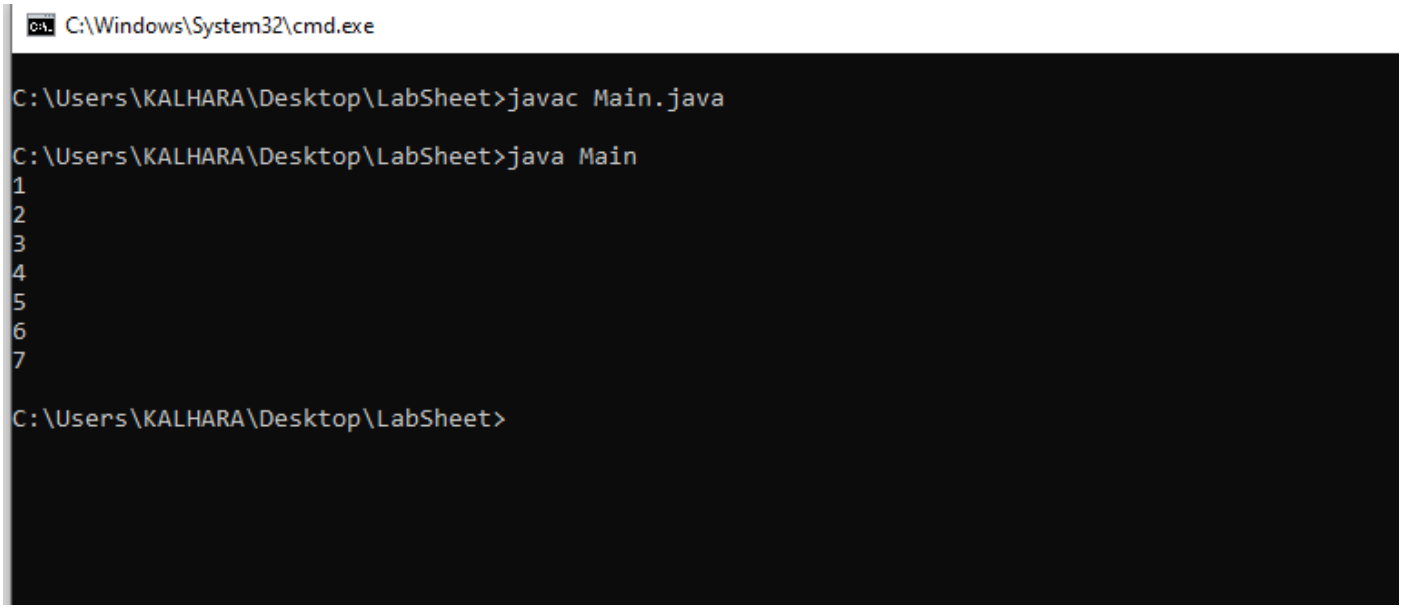
Output:



05.Loop Through a Multi-Dimensional Array

```
public class Main {
	public static void main(String[] args) {
		int[][] myNumbers = { {1, 2, 3, 4}, {5, 6, 7} };
		for (int i = 0; i < myNumbers.length; ++i) {
			for(int j = 0; j < myNumbers[i].length; ++j) {
				System.out.println(myNumbers[i][j]);
			}
		}
	}
}
```

Output:



Exercise 01:

1) Create your first java program that will print, "Hello, Welcome to Object Oriented Programming!".

a) Make the name of the class as '**HelloWorld**'.

b) Write the main method that will execute the print statement given.

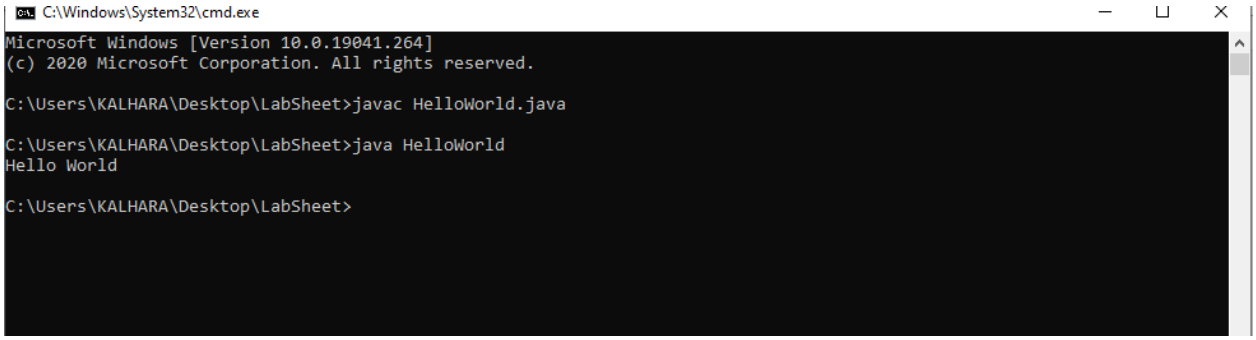
c) Save the program by giving the file name same as class class and with the .java extension.

d) Compile the program you created.

e) Execute the program you created.

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

}
```

Output:

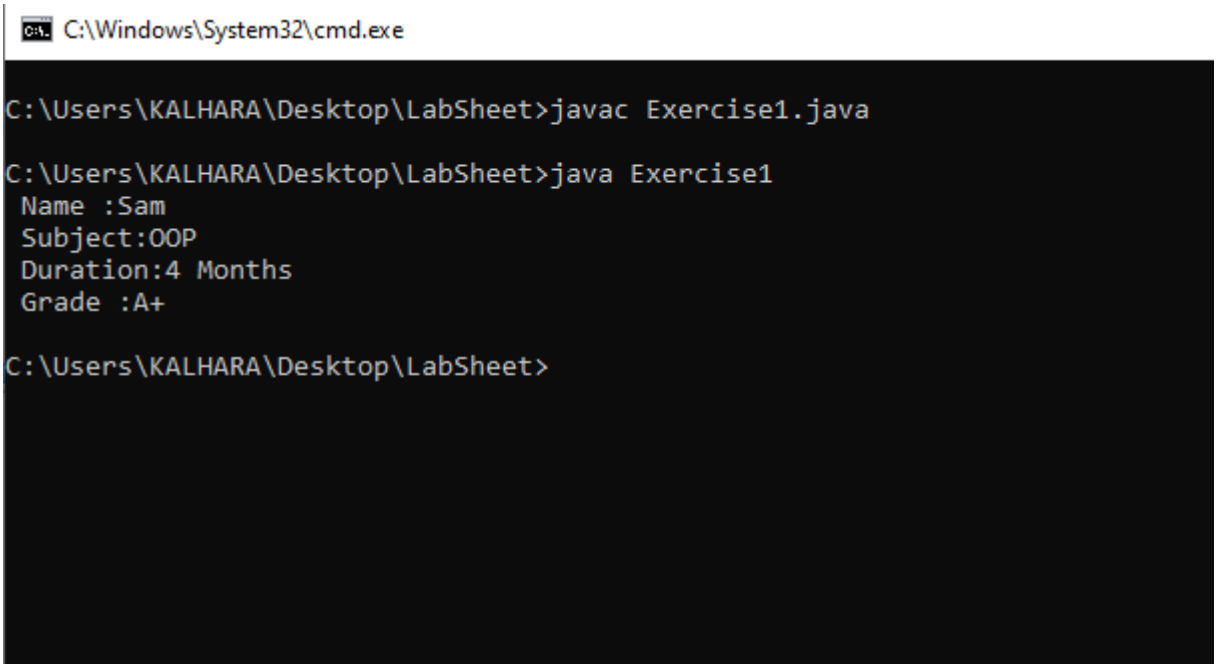


2. Create a class to display the following.

Name : Sam
Subject: OOP
Duration : 4 Months
Grade : A+

```
public class Exercise1{
	public static void main(String[] args){

	String Name="Sam";
	String Subject ="OOP";
	String Duration ="4 Months";
	String Grade="A+";

	System.out.println(" Name :"+ Name);
	System.out.println(" Subject:"+ Subject);
	System.out.println(" Duration:"+Duration);
	System.out.println(" Grade :"+ Grade);

	}


}
```

Output:



Exercise 02:

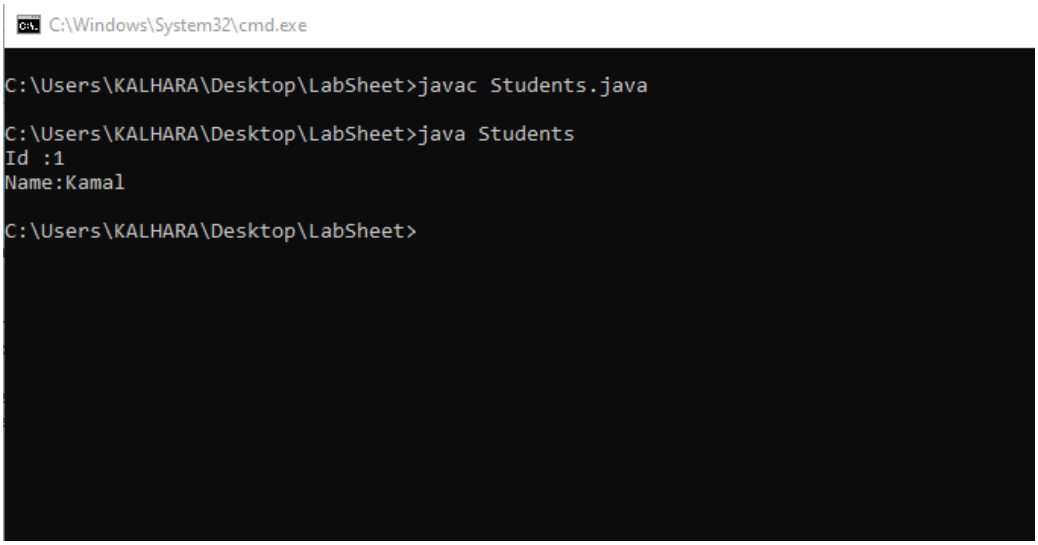
1. Create a class called **Student**. Within this class,

   a. Define two variables namely **id** and **name.**

   b. Initialize **id** to **1** and **name** to **Kamal.**

   c. **Display everything inside the Method.**

```
public class Students{
        public static void main (String[] args){
                int id=1;
                String Name ="Kamal";
                System.out.println("Id :"+id);
                System.out.println("Name:"+Name);

        }
}
```



Exercise 03:

1. Create a class called **Employee.** Within the class,

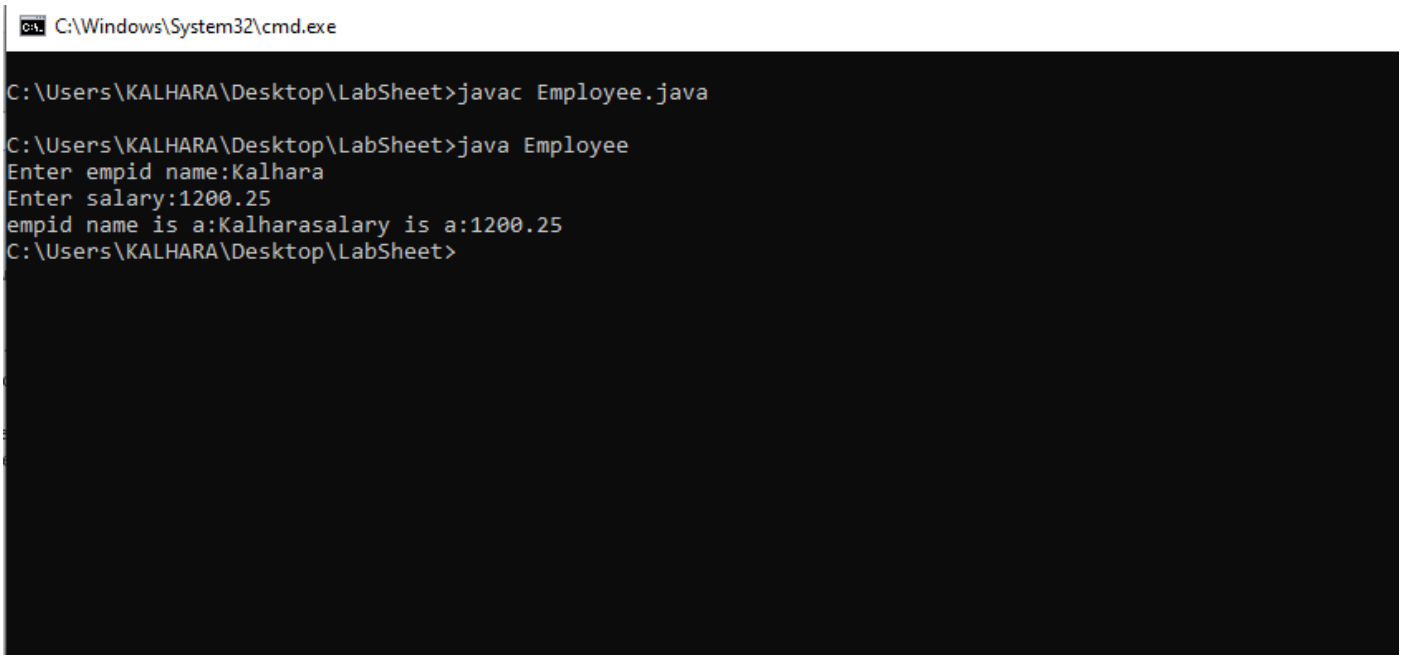
    a. Create the variables **empid**, **name** and **salary** (salary is a float value).

    b. Assign the Value for those variable and display all.

    c. Change the Value after display those value with the same method.

```
import java.util.Scanner;

public class Employee{
        public static void main(String []args){
                String empid_name;
                float salary;
                Scanner scanner = new Scanner(System.in);

                System.out.print("Enter empid name:");
                empid_name =scanner.nextLine();

                System.out.print("Enter salary:");
                salary=scanner.nextFloat();

                System.out.print("empid name is a:"+empid_name);
                System.out.print("salary is a:"+salary);
        }
}
```

Output:

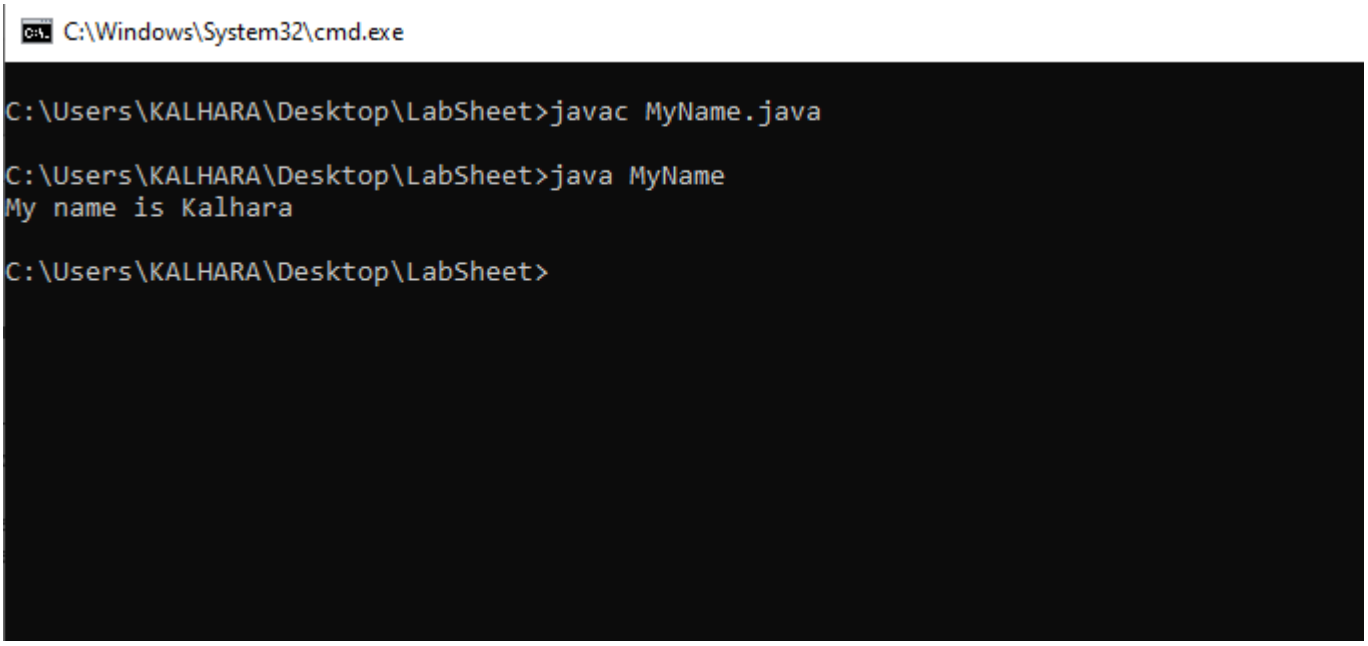


Exercise 04:

1. Create a class called MyName to print your name.

```
public class MyName{
	public static void main(String []args){
		System.out.println("My name is Kalhara");
	}
}
```

Output:

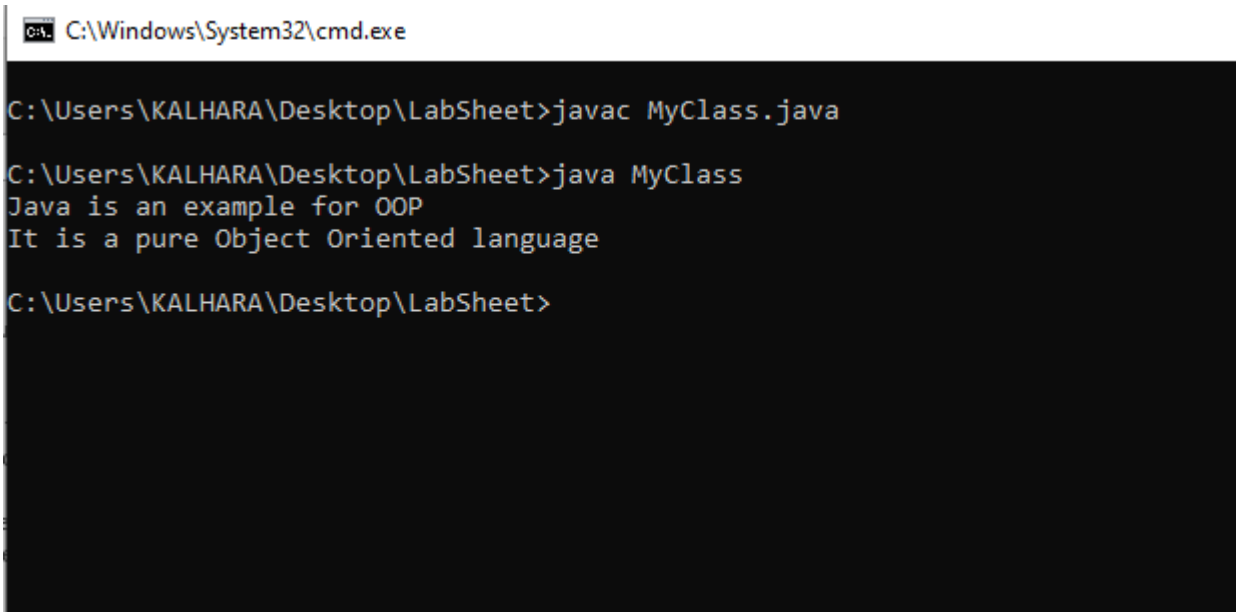


2. Create a class to display the following

Java is an example for OOP
It is a pure Object Oriented language

```
public class MyClass{
	public static void main(String[] args){
		System.out.println("Java is an example for OOP ");
		System.out.println("It is a pure Object Oriented language");
	}
}
```

Output:



3.

• Create a class called **Rectangle.** Within the class,

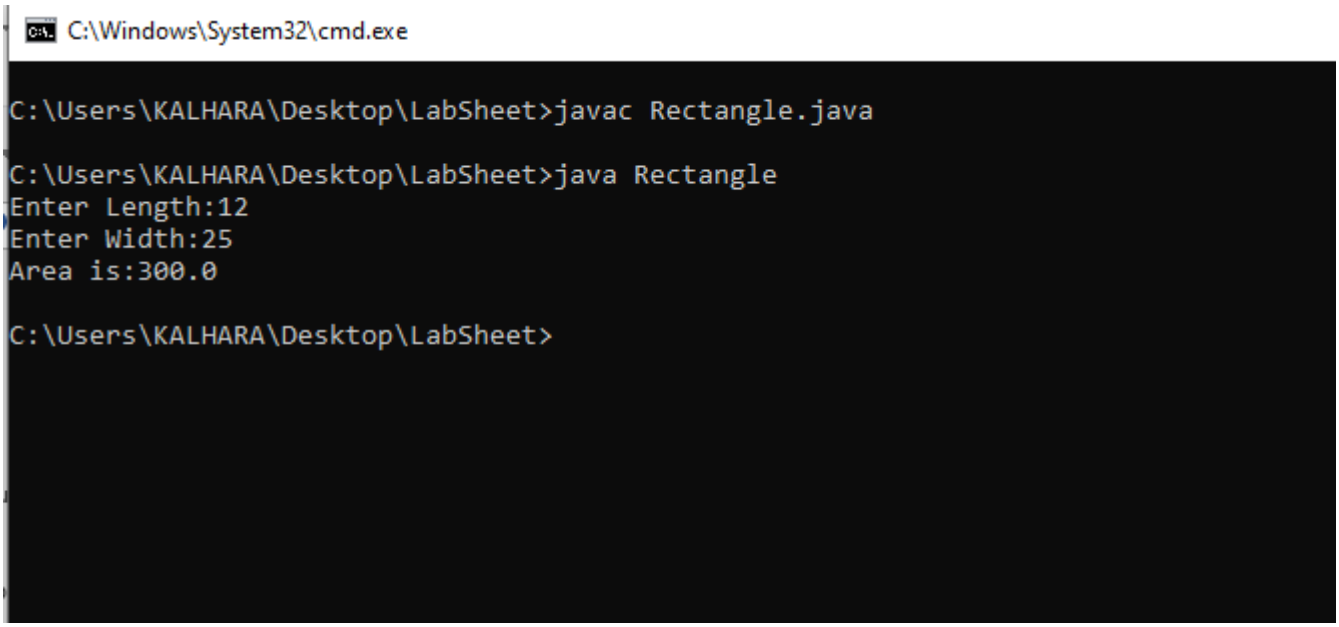
I. Create the variables **length** and **width**.

II. Assign the Value for those variable (float data type).

III. Next, creae another method **calculateArea()** to calculate the area of the given rectangle.

```
import java.util.Scanner;
public class Rectangle{
        public static void main (String []args){

                Scanner sc =new Scanner(System.in);

                float length;
                float width;
                System.out.print("Enter Length:");
                length = sc.nextFloat();
                System.out.print("Enter Width:");
                width = sc.nextFloat();
                float Area;
                Area =length*width;
                System.out.println("Area is:"+Area);
        }
}
```

Output:



Discussion :

- User Input
- Output
- Comments
- Operators
- Conditional Statement
- Loops
- Array