

## **Input and Output Statements in Java**

### **Aim:**

To understand and use input and output statements in Java using the Scanner class.

### **PRE LAB EXERCISE**

#### **QUESTIONS**

What is input in a program?

Input is the data given to a program by the user.

The program uses this data to perform operations.

#### **Example:**

Entering a number using the keyboard.

What is output in a program?

Output is the result produced by the program after processing the input.

It is shown to the user.

#### **Example:**

Displaying the result on the screen.

Which class is used to read input from the user in Java?

The Scanner class is used to read input from the user.

It is present in the java.util package.

### **IN LAB EXERCISE**

#### **Objective:**

To read input from the user and display the output using Java input and output statements.

#### **INPUT STATEMENT:**

#### **SCANNER CLASS**

- ✓ The Scanner class in Java is used to read input from the user through the keyboard.
- It is available in the package java.util.
- ✓ The Scanner object reads different types of input such as integer, float, double, and string and stores them in variables.
- ✓ To use the Scanner class, it must be imported before using it in the program.

## **SYNTAX:**

- ✓ `Scanner sc = new Scanner(System.in);`

## **Commonly Used Scanner Methods:**

- ✓ `nextInt()` – reads an integer value
- ✓ `nextFloat()` – reads a float value
- ✓ `nextDouble()` – reads a double value
- ✓ `next()` – reads a single word
- ✓ `nextLine()` – reads a complete line of text

## **PROGRAMS:**

### **Program 1: Read and Display Name**

#### **Source Code:**

```
import java.util.Scanner;

class ReadName {

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter your name: ");
        String name = sc.nextLine();
        System.out.println("Your name is: " + name);
    }
}
```

#### **Output:**

Enter your name: Anitha

Your name is: Anitha

The screenshot shows the Eclipse IDE interface. In the top tab bar, there are tabs for 'Employee.java', '\*Exercise.java', 'Exer.java', and 'Java1.java'. The 'Java1.java' tab is active, displaying the following Java code:

```
1 package Javaa;
2 import java.util.Scanner;
3 class Java1 {
4     public static void main(String[] args) {
5         Scanner sc = new Scanner(System.in);
6         System.out.print("Enter your name: ");
7         String name = sc.nextLine();
8         System.out.println("Your name is: " + name);
9     }
10 }
11
```

In the bottom right corner of the code editor, there is a small icon of a person with a blue border.

Below the code editor, the Eclipse toolbar has icons for 'Problems', 'Javadoc', 'Declaration', and 'Console'. The 'Console' tab is selected, showing the following output:

```
<terminated> Java1 [Java Application] C:\Users\visha\p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre
Enter your name: Anita
Your name is: Anita
```

## Program 2: Read Two Numbers and Print Sum

### Source Code:

```
import java.util.Scanner;

class SumInput {

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.print("Enter first number: ");

        int a = sc.nextInt();

        System.out.print("Enter second number: ");

        int b = sc.nextInt();

        int sum = a + b;

        System.out.println("Sum = " + sum);

    }
}
```

### Output:

Enter first number: 5

Enter second number: 3

Sum = 8

The screenshot shows the Eclipse IDE interface. In the top left, there are tabs for 'Employee.java', '\*Exercise.java', 'Exer.java', and '\*Java1.java'. The code editor displays the following Java program:

```
1 package Javaa;
2 import java.util.Scanner;
3 class Java1 {
4     public static void main(String[] args) {
5         Scanner sc = new Scanner(System.in);
6         System.out.print("Enter first number: ");
7         int a = sc.nextInt();
8         System.out.print("Enter second number: ");
9         int b = sc.nextInt();
10        int sum = a + b;
11        System.out.println("Sum = " + sum);
12    }
13}
14
```

In the bottom right corner of the code editor, there is a small icon of a person with a red outline.

Below the code editor, the Eclipse interface includes tabs for 'Problems', '@ Javadoc', 'Declaration', and 'Console'. The 'Console' tab is selected, showing the following output from the execution of 'Java1 [Java Application]':

```
<terminated> Java1 [Java Application] C:\Users\visha\p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.
Enter first number: 5
Enter second number: 3
Sum = 8
```

### Program 3: Read Length and Breadth and Find Area of Rectangle

#### Source Code:

```
import java.util.Scanner;
```

```
class AreaRectangleInput {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter length: ");
        int length = sc.nextInt();
        System.out.print("Enter breadth: ");
        int breadth = sc.nextInt();
        int area = length * breadth;
        System.out.println("Area of Rectangle = " + area);
    }
}
```

}

### Output:

Enter length: 10

Enter breadth: 5

Area of Rectangle = 50

The screenshot shows the Eclipse IDE interface. In the top left, there are tabs for Employee.java, \*Exercise.java, Exer.java, and Java1.java (which is currently selected). The Java1.java tab contains the following code:

```
1 package Javaa;
2 import java.util.Scanner;
3 class Java1 {
4
5     public static void main(String[] args) {
6         Scanner sc = new Scanner(System.in);
7         System.out.print("Enter length: ");
8         int length = sc.nextInt();
9         System.out.print("Enter breadth: ");
10        int breadth = sc.nextInt();
11        int area = length * breadth;
12        System.out.println("Area of Rectangle = " + area);
13    }
14 }
15
16
17
```

In the top right, the Outl... (Outline) view shows a project structure with Javaa and Java1. The Java1 node is expanded, showing files like Java1.java and mair.java.

At the bottom, the Console tab is active, displaying the execution output:

```
<terminated> Java1 [Java Application] C:\Users\visha\p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_2
Enter length: 10
Enter breadth: 5
Area of Rectangle = 50
```

### POST LAB EXERCISE

- ✓ What is the use of the Scanner class in Java?

The Scanner class is used to read input from the user.

It can read different types of data like int, float, double, String, etc.

- ✓ Which package contains the Scanner class?  
The Scanner class is present in the java.util package.
  
- ✓ What does System.in represent?  
System.in represents standard input.  
It is used to take input from the keyboard
  
- ✓ What does System.out represent?  
System.out represents standard output.  
It is used to display output on the screen.
  
- ✓ Name any two methods used to read input using Scanner.  
nextInt() – reads an integer  
nextLine() – reads a full line of text
  
- ✓ What is the difference between next() and nextLine()?

<b>Feature</b>	<b>next()</b>	<b>nextLine()</b>
Reads	One word	Full line
Stops at	Space	New line (Enter key)
Input example	Hello	Hello World

### **Result:**

Thus the input was successfully read from the user and the corresponding output was displayed using Java input and output statements.

### **ASSESSMENT**

<b>Description</b>	<b>Max Marks</b>	<b>Marks Awarded</b>
Pre Lab Exercise	<b>5</b>	
In Lab Exercise	<b>10</b>	
Post Lab Exercise	<b>5</b>	

Viva	<b>10</b>	
<b>Total</b>	<b>30</b>	
<b>Faculty Signature</b>		