

## 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

1. What is input in a program?

Answer:

Input is the data that is given to a program by the user or another source to be processed.

Example:

- Numbers entered using keyboard
- Values read from a file

2. What is output in a program?

Answer:

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

Example:

- Result displayed on the screen
- Data written to a file

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

Answer:

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

- It belongs to the package: java.util

- It reads input from keyboard using System.in

Example:

```
import java.util.Scanner;  
Scanner sc = new Scanner(System.in);
```

## 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:

---

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	ReadName.java				<b>Run</b>	Output	<input type="button" value="Clear"/>	
	1 ~ import java.util.Scanner;					Enter your name: PAVAN		
	2					Your name is: PAVAN		
	3 ~ class ReadName {					==== Code Execution Successful ===		
	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							
	12							
	13							

## 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:

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The screenshot shows the Programiz Online Java Compiler interface. On the left, there's a file navigation sidebar with icons for Java, Python, C/C++, C#, JavaScript, and TypeScript. The main area has tabs for 'SumInput.java' (selected), 'Run', and 'Output'. The code editor contains the provided Java code. The output window shows the program's execution: it asks for two numbers, receives them, calculates their sum, and prints the result. A success message is also displayed. A 'Clear' button is at the top right of the output window, and a 'Programiz PRO' button is on the far right.

```
1 - import java.util.Scanner;
2
3 - class SumInput {
4 -     public static void main(String[] args) {
5 -         Scanner sc = new Scanner(System.in);
6
7 -         System.out.print("Enter first number: ");
8 -         int a = sc.nextInt();
9
10 -        System.out.print("Enter second number: ");
11 -        int b = sc.nextInt();
12
13 -        int sum = a + b;
14 -        System.out.println("Sum = " + sum);
15 -    }
16 -}
17
18
19
20
```

Output

```
Enter first number: 2
Enter second number: 3
Sum = 5
==== Code Execution Successful ====

```

### 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:

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Online Java Compiler

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The screenshot shows the Programiz Online Java Compiler interface. On the left, there's a file browser icon and a list of available compilers (Python, C, C++, C#, VB, etc.). The code editor window contains the Java code for Program 3. The 'Run' button is highlighted in blue. To the right, the 'Output' window displays the program's execution results: it asks for length and breadth, calculates the area, and prints the result. A success message is also shown. Below the code editor, there are tabs for 'Output' and 'Clear'.

```
1 import java.util.Scanner;  
2  
3 class AreaRectangleInput {  
4     public static void main(String[] args) {  
5         Scanner sc = new Scanner(System.in);  
6  
7         System.out.print("Enter length: ");  
8         int length = sc.nextInt();  
9  
10        System.out.print("Enter breadth: ");  
11        int breadth = sc.nextInt();  
12  
13        int area = length * breadth;  
14        System.out.println("Area of Rectangle = " + area)  
15    }  
16 }  
17  
18  
19
```

Output

```
Enter length: 60  
Enter breadth: 40  
Area of Rectangle = 2400  
== Code Execution Successful ==
```

## POST LAB EXERCISE

1. What is the use of the Scanner class in Java?

Answer:

The Scanner class is used to read input from the user such as numbers, strings, and characters through the keyboard.

2. Which package contains the Scanner class?

Answer:

The Scanner class is present in the java.util package.

3. What does System.in represent?

Answer:

System.in represents the standard input stream, which is usually the keyboard.

4. What does System.out represent?

Answer:

System.out represents the standard output stream, which is usually the monitor (screen).

5. Name any two methods used to read input using Scanner.

Answer:

Any two Scanner input methods are:

- `nextInt()` → Reads an integer value
- `nextLine()` → Reads a full line of text

(Other methods: nextDouble(), next(), nextFloat())

6. What is the difference between next() and nextLine()?

<b>next()</b>	<b>nextLine()</b>
Reads a single word	Reads a complete line
Stops at space	Reads including spaces
Cannot read full names	Can read full sentences

Result:

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

## ASSESSMENT

Description	Max Marks	Marks Awarded
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>		