

Output in Java

Java offers several output methods, each designed to fulfill specific requirements, such as simple text output or formatted data display.

Some output methods that Java provides are given below.

- Using `System.out.print()`
- Using `System.out.println()`
- Using `System.out.printf()` or `System.out.format()`

1. `System.out.print()`

The `System.out.print()` method is used to print data to the console without appending a newline at the end. This allows for multiple outputs to appear on the same line.

```
// Java program to demonstrate working of System.out.print()
class GfG {
    public static void main(String[] args) {
        String str = "GFG";
        System.out.print(str + " ");
        System.out.print("Courses");
    }
}
```

Output

GFG Courses

2. `System.out.println()`

The `System.out.println()` method behaves similarly to `System.out.print()` but appends a newline character at the end of the output, moving the cursor to the next line.

```
// Java program to demonstrate working of System.out.println()
class GfG {
    public static void main(String[] args) {
```

```

    int x = 10;
    int y = 20;
    System.out.println(x);          // Outputs x on a new line
    System.out.println(x + y);      // Outputs the sum of x and y on a new
line
}
}

```

Output

```

10
30

```

3. System.out.format()

The `System.out.format()` method provides advanced formatting capabilities. It enables precise control over how output is displayed using format specifiers.

Format Specifiers:

- `%d` - Integer
- `%f` - Floating-point number
- `%s` - String

```

// Java program to demonstrate working of System.out.format
class GfG {
    public static void main(String[] args) {
        int x = 100;
        float z = (float) Math.PI;

        // Displays PI up to 2 decimal places
        System.out.format("Value of PI = %.2f\n", z);

        // Displays PI with a width of 5
        System.out.format("Value of PI = %5.2f\n", z);

        // Pads with leading zeros
        System.out.format("Value of PI = %05.2f\n", z);
    }
}

```

Output

```
Value of PI = 3.14
Value of PI = 3.14
Value of PI = 03.14
```

4. System.out.printf()

The `System.out.printf()` method is functionally equivalent to `System.out.format()` and is widely used for formatted output.

```
// Java program to demonstrate working of System.out.printf
class GfG {
    public static void main(String[] args) {
        int x = 100, y = 200;
        System.out.printf("x = %d, y = %d", x, y);
    }
}
```

Output

```
x = 100, y = 200
```

Comparison of Output Methods

Method	Appends Newline?	Supports Formatting
System.out.print()	No	No
System.out.println()	Yes	No
System.out.format()	No	Yes
System.out.printf()	No	Yes