Day 4 – Java Basics: Variables, Data Types, and Operators

Objective:

To understand the concept of variables, data types, and operators in Java and learn how they are used to store, manipulate, and process data in a program.

Content:

Today, I learned about the fundamental components of Java programming, including variables, different data types, and operators. These are the essential building blocks for writing any Java program.

1. Variables:
A variable is a name assigned to a memory location that stores data during program execution.
Example:

```
int age = 20;
String name = "Husanpreet";
double marks = 85.5;
```

2. Data Types in Java:
Java data types define the type and size of values that can be stored in variables.

• Primitive Data Types:

- byte – 1 byte, stores small integers
- short – 2 bytes, stores short integers
- int – 4 bytes, used for whole numbers
- long – 8 bytes, used for large numbers
- float – 4 bytes, decimal numbers (less precision)

- double – 8 bytes, decimal numbers (more precision)
- char – 2 bytes, stores single characters
- boolean – 1 bit, stores true/false values

• Non-Primitive Data Types:

- String, Arrays, Classes, Interfaces, etc.
  Example:

```
String college = "GNDEC";
```

3. Operators in Java:
Operators are used to perform operations on variables and values.
Types of operators include:

- Arithmetic Operators (+, -, *, /, %)
- Relational Operators (==, !=, >, <, >=, <=)
- Logical Operators (&&, ||, !)
- Assignment Operators (=, +=, -=)
- Increment/Decrement Operators (++, --)

Example Program:

```
class OperatorsDemo {
    public static void main(String[] args) {
        int a = 10, b = 5;
        System.out.println("Addition: " + (a + b));
        System.out.println("Is a greater than b? " + (a > b));
        a++;
        System.out.println("After increment, a = " + a);
    }
}
```

Output:

```
Addition: 15
Is a greater than b? true
After increment, a = 11
```

Learning Outcome:

Understood the role of variables and different data types in storing information. Learned how to use arithmetic, relational, and logical operators to perform computations and comparisons in Java programs. Gained practical experience in writing and executing simple programs using these concepts.