

1. Arithmetic operators  $\rightarrow$  perform basic math

i) Addition  $\rightarrow +$

ii) Subtraction  $\rightarrow -$

iii) Multiplication  $\rightarrow *$

iv) Division  $\rightarrow /$

v) Modulus  $\rightarrow \%$

2. Relational (Comparison) operators  $\rightarrow$  Return true or false

i) Equal to  $\rightarrow ==$

ii) Not equal to  $\rightarrow !=$

iii) Greater than  $\rightarrow >$

iv) Lesser than  $\rightarrow <$

v) Greater or equal  $\rightarrow a \geq b$

\* Lesser or equal  $\rightarrow a \leq b$

3) Logical operators  $\rightarrow$  combine condition

i) AND  $\rightarrow \&$

ii) OR  $\rightarrow \mid \mid$

iii) NOT  $\rightarrow !$

4) Bitwise operators  $\rightarrow$  work on bits (0 and 1)

i) & AND  $\rightarrow \&$

ii) | OR  $\rightarrow \mid$

iii) ^ XOR  $\rightarrow \wedge$

iv) ~ NOT  $\rightarrow \sim$

v) Left shift  $\rightarrow \ll$

vi) Right shift  $\rightarrow \gg$

5) Assignment operators

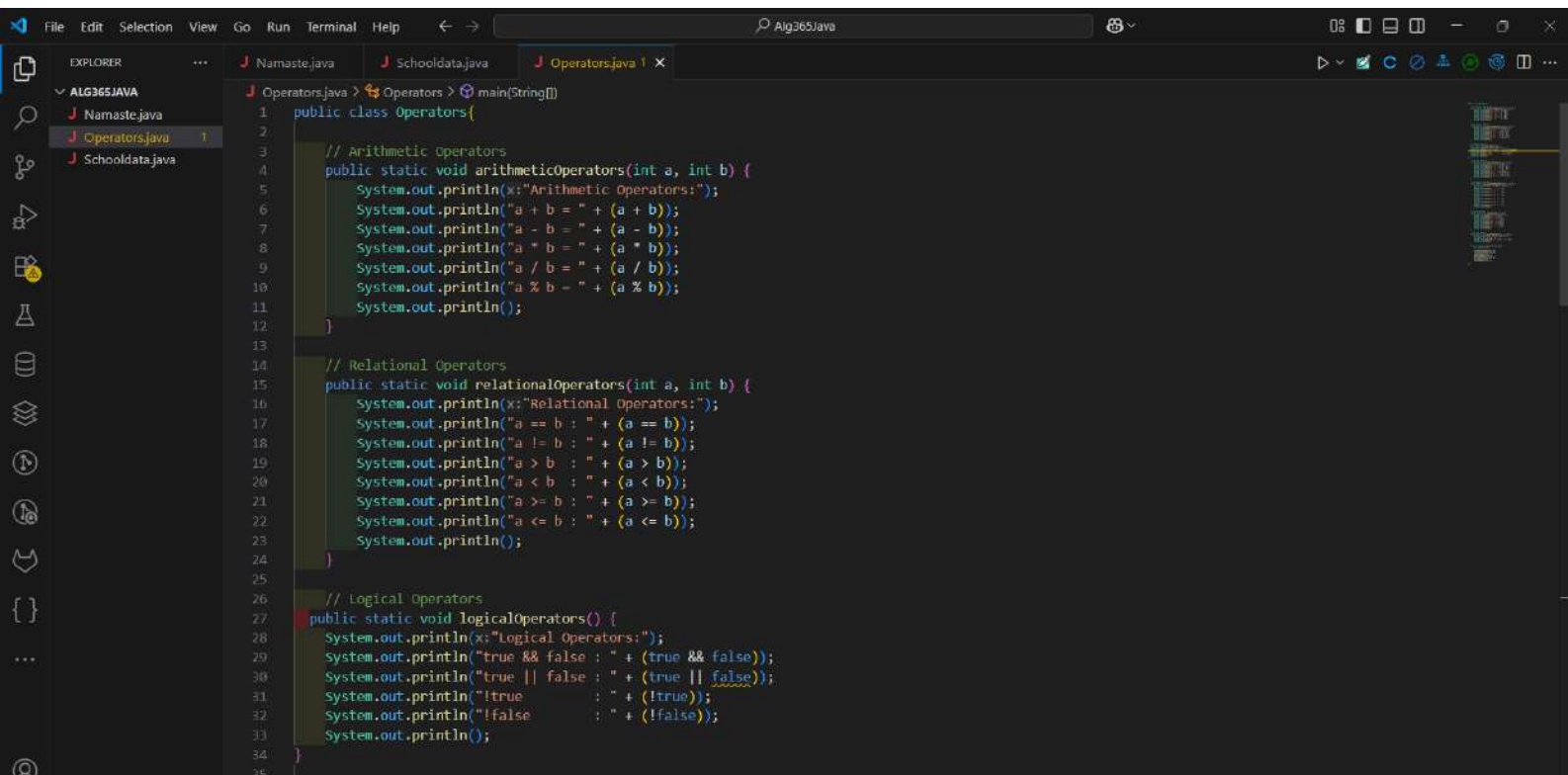
$\rightarrow =, +=, -=, *=, /=, \%, \&\&$

6) Unary operators

$+, -, ++, --, \dots$

7) Ternary operator

condition ? value1 : value2  
True

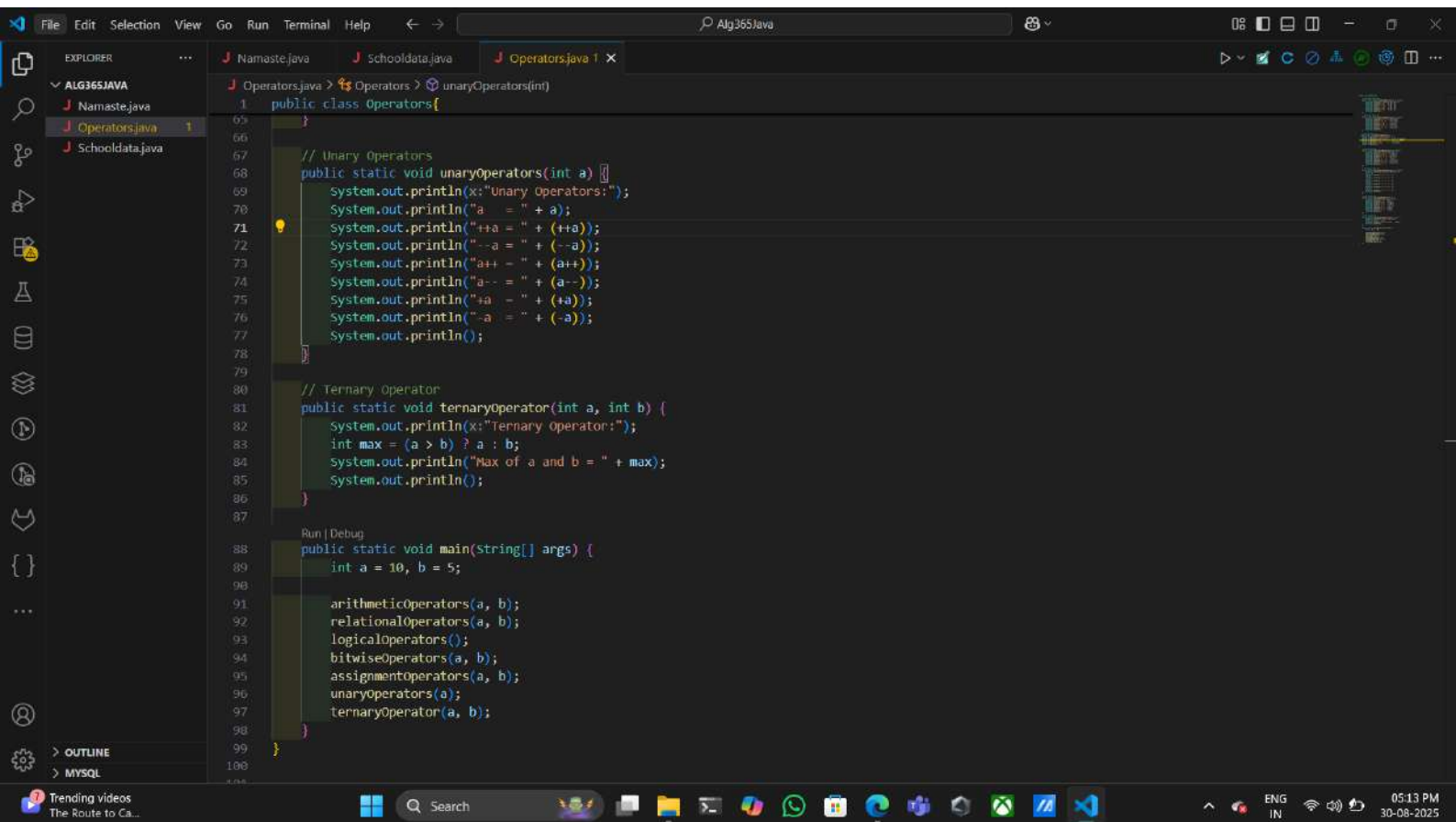


The screenshot shows an IDE window with the file `Operators.java` open. The code defines a class `Operators` with three static methods: `arithmeticOperators`, `relationalOperators`, and `logicalOperators`. Each method prints the results of various operator expressions.

```
1 public class Operators{
2
3     // Arithmetic Operators
4     public static void arithmeticOperators(int a, int b) {
5         System.out.println(x:"Arithmetic Operators:");
6         System.out.println("a + b = " + (a + b));
7         System.out.println("a - b = " + (a - b));
8         System.out.println("a * b = " + (a * b));
9         System.out.println("a / b = " + (a / b));
10        System.out.println("a % b = " + (a % b));
11        System.out.println();
12    }
13
14    // Relational Operators
15    public static void relationalOperators(int a, int b) {
16        System.out.println(x:"Relational Operators:");
17        System.out.println("a == b : " + (a == b));
18        System.out.println("a != b : " + (a != b));
19        System.out.println("a > b : " + (a > b));
20        System.out.println("a < b : " + (a < b));
21        System.out.println("a >= b : " + (a >= b));
22        System.out.println("a <= b : " + (a <= b));
23        System.out.println();
24    }
25
26    // Logical Operators
27    public static void logicalOperators() {
28        System.out.println(x:"Logical Operators:");
29        System.out.println("true && false : " + (true && false));
30        System.out.println("true || false : " + (true || false));
31        System.out.println("!true : " + (!true));
32        System.out.println("!false : " + (!false));
33        System.out.println();
34    }
35 }
```

The screenshot shows an IDE with a dark theme. The Explorer sidebar on the left shows a project named 'ALG365JAVA' containing three files: 'Namaste.java', 'Operators.java' (which is selected and highlighted in yellow), and 'Schooldata.java'. The main editor area displays the code for 'Operators.java'. The code defines a public class 'Operators' with a 'main' method. It contains two static methods: 'bitwiseOperators' and 'assignmentOperators'. The 'bitwiseOperators' method prints the results of various bitwise operations on variables 'a' and 'b'. The 'assignmentOperators' method prints the results of various assignment operations on variable 'x' using variable 'b'. The code is as follows:

```
1 public class Operators{
2     public static void main(String[] args) {
3         // Bitwise Operators
4         public static void bitwiseOperators(int a, int b) {
5             System.out.println(x:"Bitwise Operators:");
6             System.out.println("a & b = " + (a & b));
7             System.out.println("a | b = " + (a | b));
8             System.out.println("a ^ b = " + (a ^ b));
9             System.out.println("~a = " + (~a));
10            System.out.println("a << 1 = " + (a << 1));
11            System.out.println("a >> 1 = " + (a >> 1));
12            System.out.println("a >>> 1 = " + (a >>> 1));
13            System.out.println();
14        }
15
16        // Assignment Operators
17        public static void assignmentOperators(int a, int b) {
18            System.out.println(x:"Assignment Operators:");
19            int x = a;
20            System.out.println("x = a -> " + x);
21            x += b;
22            System.out.println("x += b -> " + x);
23            x -= b;
24            System.out.println("x -= b -> " + x);
25            x *= b;
26            System.out.println("x *= b -> " + x);
27            x /= b;
28            System.out.println("x /= b -> " + x);
29            x %= b;
30            System.out.println("x %= b -> " + x);
31            System.out.println();
32        }
33    }
34 }
```



Arithmetic Operators:  
a + b = 15  
a - b = 5  
a \* b = 50  
a / b = 2  
a % b = 0

Relational Operators:  
a == b : false  
a != b : true  
a > b : true  
a < b : false  
a >= b : true  
a <= b : false

Logical Operators:  
true && false : false  
true || false : true  
!true : false  
!false : true

Bitwise Operators:  
a & b = 0  
a | b = 15  
a ^ b = 15  
~a = -11  
a << 1 = 20  
a >> 1 = 5  
a >>> 1 = 5

