UNIT 1

ASSIGMENT 1

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Assignment Title: A java program to demonstrate the concept of operators.

Aim: Write a Java program that accepts four integers from the user and prints equal if all four are equal, and not equal otherwise.

Pre-Requisites: C/C++

Objective: The objective is to impart fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.

Outcomes: After learning this concept students will be able to,

1. Analyze the necessity for Object Oriented Programming paradigm over structured programming and become familiar with the fundamental concepts in OOP like encapsulation, Inheritance and Polymorphism

2. Design and develop java programs, analyse, and interpret object oriented data and report results.

Theory:

OPERATORS IN JAVA

Operator in Java is a symbol that is used to perform operations. For example: +, -, *, / etc.

There are many types of operators in Java which are given below:

- Unary Operator,
- Arithmetic Operator,
- Shift Operator,
- Relational Operator,
- Bitwise Operator,
- Logical Operator,
- Ternary Operator and

- Assignment Operator.

Java Operator Precedence

Operator Type	Category	Precedence
Unary	postfix	*expr*++ *expr*--
	prefix	++*expr* --*expr* +*expr* -*expr* ~ !
Arithmetic	multiplicative	* / %
	additive	+ -
Shift	shift	<< >> >>>
Relational	comparison	< > <= >= instance of
	equality	== !=
Bitwise	bitwise AND	&
	bitwise exclusive OR	^
	bitwise inclusive OR	|
Logical	logical AND	&&
	logical OR	||
Ternary	ternary	? :
Assignment	assignment	= += -= *= /= %= &= ^= |= <<= >>= >>>=

Java Arithmetic Operators

Java arithmetic operators are used to perform addition, subtraction, multiplication, and division. They act as basic mathematical operations.

Java User Input

The Scanner class is used to get user input, and it is found in the java.util package.

To use the Scanner class, create an object of the class and use any of the available methods found in the Scanner class documentation. In our example, we will use the nextLine() method, which is used to read Strings

Example

```
import java.util.Scanner; // Import the Scanner class


class Main {
  public static void main(String[] args) {
    Scanner myObj = new Scanner(System.in); // Create a Scanner object
    System.out.println("Enter username");
    String userName = myObj.nextLine(); // Read user input
    System.out.println("Username is: " + userName); // Output user input
  }
}
```

INPUT TYPES

In the example above, we used the nextLine() method, which is used to read Strings. To read other types, look at the table below:

Method	Description
nextBoolean()	Reads a boolean value from the user
nextByte()	Reads a byte value from the user

nextDouble()	Reads a double value from the user
nextFloat()	Reads a float value from the user
nextInt()	Reads a int value from the user
nextLine()	Reads a String value from the user
nextLong()	Reads a long value from the user
nextShort()	Reads a short value from the user

Java Arithmetic Operator Example

```
1. public class OperatorExample{
2. public static void main(String args[]){
3. int a=10;
4. int b=5;
5. System.out.println(a+b);//15
6. System.out.println(a-b);//5
7. System.out.println(a*b);//50
8. System.out.println(a/b);//2
9. System.out.println(a%b);//0
10. }}
```

Output:

```
15
5
50
2
0
```

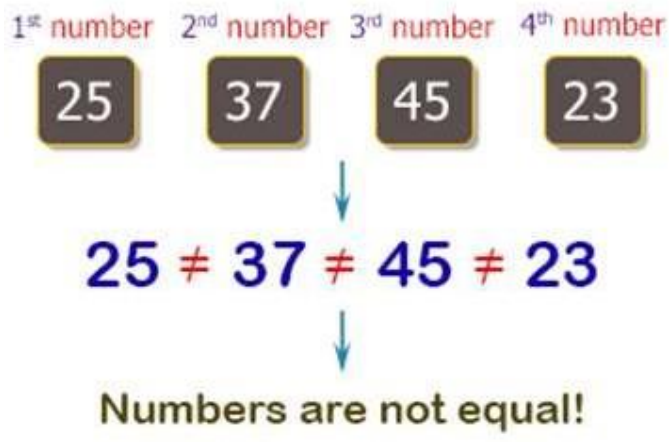


Fig. Acceptance of four integers from user and checking there equality

Algorithm/Steps:

Step 1: Start

Step 2: Accept four integer numbers from user.

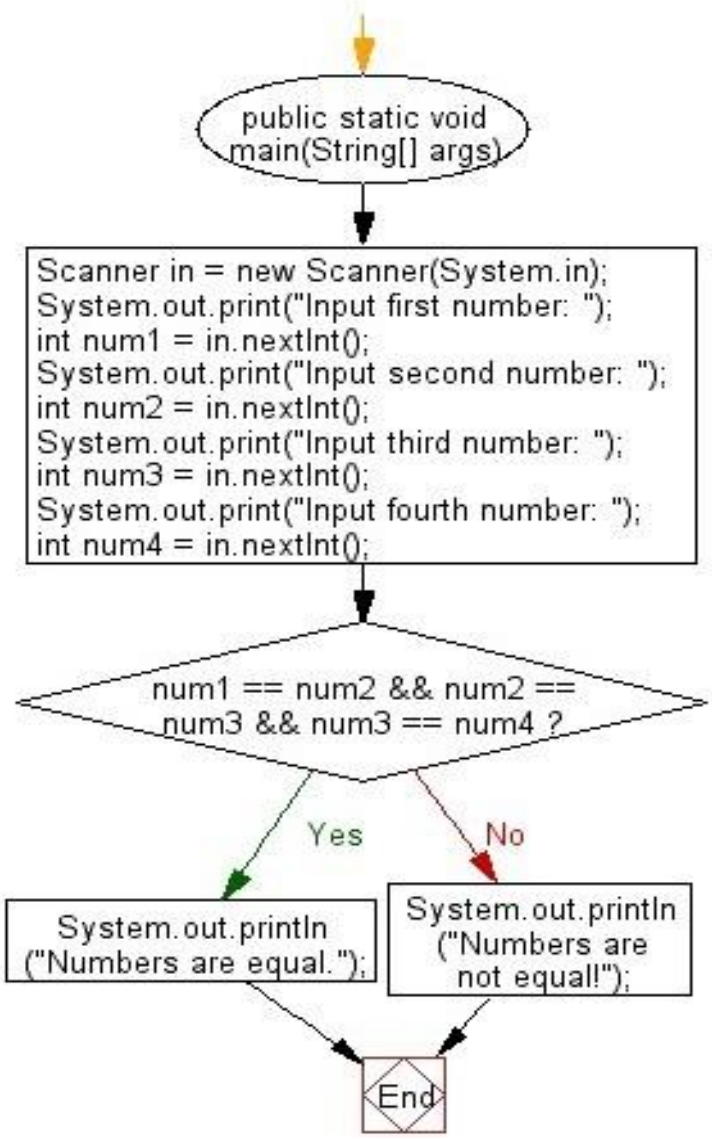
Step 3: Check the equality of numbers using assignment and AND operator.

Step 4: If all numbers are equal Print output ”All four integers are equal”

Step 5: Else Print output ”All four integers are not equal”

Step 6: Stop

Flowchart:



Conclusion: Thus we implemented a Java program that accepts four integers from the user and prints equal if all four are equal, and not equal otherwise.

Frequently Asked Questions:

1. What is Class?
2. What is object-oriented programming?
3. How to invoke methods in Java?
4. Which operators are supported by Java? List and Breif it.
5. Write syntax for Scanner class in java.
6. What is Operator Precedence?

CODE: -

```
package unit1;

import java.util.Scanner;

public class pc1
{
    public static void main(String[] args) {
        Scanner input=new Scanner(System.in);
        System.out.println("Enter Number 1:- ");
        int num1=input.nextInt();
        System.out.println("Enter Number 2:- ");
        int num2=input.nextInt();
        System.out.println("Enter Number 3:- ");
        int num3=input.nextInt();
        System.out.println("Enter Number 4:- ");
        int num4=input.nextInt();


        if ((num1==num2)&&((num2==num3)&&(num3==num4))) {


            System.out.println("ALL NUMBERS ARE EQUAL");

        }
        else{
            System.out.println("NUMBERS ARE UNEQUAL");
        }
    }

}
```

OUTPUT: -

```
C:\Users\LENOVO\.jdks\openjdk-19.0.1\bin\java.exe "-javaagent
Enter Number 1:-
45
Enter Number 2:-
35
Enter Number 3:-
45
Enter Number 4:-
45
NUMBERS ARE UNEQUAL

Process finished with exit code 0
```