

Basic Level

1. Operator Precedence

Write a program to evaluate the expression `int result = 5 + 3 * 2 - 8 / 4;` and explain the order of operations in comments.

2. Switch Case Statements

Create a program that takes an integer (1 to 7) as input and prints the name of the day (e.g., 1 for Monday, 2 for Tuesday, etc.) using a `switch` statement.

3. For Loop

Write a program using a `for` loop to print the first 10 natural numbers.

4. While Loop

Write a program to print all even numbers between 1 and 10 using a `while` loop.

5. Do-While Loop

Write a program using a `do-while` loop to calculate the sum of integers from 1 to 5.

Medium Level

1. Operator Precedence

Modify the given program:

```
int a = 10, b = 5, c = 20;
int result = a * b + c / 5 - b;
System.out.println(result);
```

Explain the precedence of operators and predict the output before running the program.

2. Switch Case Statements

Write a program to create a basic calculator using a `switch` statement. It should accept two numbers and an operator (+, -, *, /) as input and print the result.

3. For Loop

Write a program to print the multiplication table of a number entered by the user using a `for` loop.

4. While Loop

Create a program using a `while` loop to reverse the digits of an integer entered by the user. For example, input 1234 should output 4321.

5. Do-While Loop

Write a program using a `do-while` loop to repeatedly ask the user to enter a number until they enter a negative number. Print the sum of all entered positive numbers.

Hard Level

1. Switch Case Statements

Create a program using a `switch` statement that displays the season name when the user enters a month number (1 for January, 2 for February, etc.). Ensure to group months logically (e.g., 12, 1, 2 as Winter).

2. Nested Loops with For

Write a program using nested `for` loops to print the following pattern for `n` rows (input by the user):

```
1
1 2
1 2 3
1 2 3 4
```

3. While Loop with a Condition

Write a program using a `while` loop to check whether a given number is a palindrome (e.g., 121 is a palindrome, but 123 is not).

4. Do-While Loop

Create a program using a `do-while` loop to implement a simple menu-driven program. The menu should have options to:

- Calculate the factorial of a number
- Find if a number is prime
- Exit the program

Submission Instructions

1. For each question, write a **Java program**.
2. Add **comments** in your code explaining your approach.