

Exercise 3.a

1. Logical Operators:

- a. Write a Java program that checks whether a given number is both even and divisible by 5. Use logical AND operator.
- b. Create a program that determines whether a year is a leap year. A leap year is divisible by 4, but not by 100 unless it is divisible by 400. Use logical AND, OR operators.
- c. Write a Java program that checks if a student is eligible for a scholarship. To be eligible, the student must have a GPA greater than 3.5 and must not have any failing grades. Use logical AND and NOT operators.

2. Ternary Operator:

- a. Implement a program to find the maximum of two numbers using the ternary operator.
- b. Write a Java program to determine if a given number is positive, negative, or zero using the ternary operator.
- c. Create a program that compares three numbers and prints the largest one using the ternary operator.

3. Combining Logical and Ternary Operators:

- a. Develop a program that checks whether a person is eligible to vote. The eligibility age is 18. Use the ternary operator to display "Eligible" or "Not Eligible."
- b. Write a Java program that determines whether a given character is a vowel or a consonant. Use the ternary operator to print "Vowel" or "Consonant."
- c. Create a program that checks if a given year is a leap year and prints the result using the ternary operator.

Expected input and output for each exercise:

Logical Operators:

a. Check if a number is both even and divisible by 5:

- Input: 10
- Output: `True`

b. Determine if a year is a leap year:

- Input: 2000
- Output: `True`

c. Check eligibility for a scholarship:

- Input: GPA = 3.8, No failing grades
- Output: `True`

Ternary Operator:

a. Find the maximum of two numbers:

- Input: `a = 7, b = 12`
- Output: 12

b. Determine if a number is positive, negative, or zero:

- Input: `num = -5`
- Output: `Negative`

c. Compare three numbers and print the largest:

- Input: `x = 25, y = 18, z = 30`
- Output: 30

Combining Logical and Ternary Operators:

a. Check eligibility to vote:

- Input: `age = 20`
- Output: `Eligible`

b. Determine if a character is a vowel or consonant:

- Input: `ch = 'A'`
- Output: `Vowel`

c. Check if a year is a leap year and print the result:

- Input: `year = 2024`
- Output: `True`

