

FEB 2025

## OOPJ ASSIGNMENT NO – 2

Ashwini Vadkar

### 1. Arithmetic & Assignment Operators

Q1: Write a program to swap two numbers without using a third variable and without using arithmetic operators like + or - .

Hint : Use bitwise XOR ^ operator.

Ans :-

Input :

```
public class Swap {  
    public static void main(String args[]) {  
        int a = 20;  
        int b = 30;  
  
        System.out.println("Before swap: a = " + a + ", b = " + b);  
  
        a = a ^ b;  
        b = a ^ b;  
        a = a ^ b;  
  
        System.out.println("After swap: a = " + a + ", b = " + b);  
    }  
}
```

Output :

```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac Swap.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Swap
Before swap: a = 20, b = 30
After swap: a = 30, b = 20
```

---

Q2: Write a program to check whether a given number is even or odd using only bitwise operators .

Hint : Use  $n \& 1$  to check.

```
import java.util.Scanner;
```

```
public class Check {
    public static void main(String args[]) {
        Scanner input = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int n = input.nextInt();
        input.close();

        String result = ((n & 1) == 0) ? n + " is even." : n + " is odd.";
        System.out.println(result);
    }
}
```

Output :

```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac Check.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Check
Enter a number: 25
25 is odd.
```

---

Q3: Implement a program that calculates the sum of digits of an integer using modulus ( % ) and division ( / ) operators .

Ans :-

Input :

```
import java.util.Scanner;
```

```
public class Sum {

    public static void main(String args[]) {

        Scanner input = new Scanner(System.in);

        System.out.print("Enter a number: ");

        int n = input.nextInt();

        int sum = 0;

        while (n != 0) {

            int temp = n % 10;

            sum = sum + temp;

            n = n / 10;

        }

    }

}
```

```
        System.out.println("Sum of intiger is: " + sum);
    }
}
```

Output :

```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac Sum.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Sum
Enter a number: 12345
Sum of intiger is: 15
```

---

Q4: Write a program to find whether a given number is divisible by 3 without using the modulus ( % ) or division ( / ) operators.

Hint : Use subtraction and bitwise shifts .

Ans :-

Input :

```
import java.util.Scanner;
```

```
public class Divisible3 {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.println("Enter the number:");
        int num = input.nextInt();
        input.close();

        int temp = Math.abs(num);

        while (temp > 0) {
```

```

        temp = temp - 3;
    }

    if (temp == 0) {
        System.out.println("The number " + num + " is divisible by 3.");
    } else {
        System.out.println("The number " + num + " is not divisible by 3.");
    }
}
}
}

```

Output :

```

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac Divisible3.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Divisible3
Enter the number:
39
The number 39 is divisible by 3.

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Divisible3
Enter the number:
-15
The number -15 is divisible by 3.

```

---

Q5: Write a Java program to swap two numbers using the += and -= operators only.

Ans :-

Input :

```

public class Swap1 {
    public static void main(String[] args) {
        int a = 10;
        int b = 20;
    }
}

```

```
System.out.println("Before swapping, a = " + a + " and b = " + b);
```

```
a += b;
```

```
b -= a;
```

```
b = b < 0 ? -b : b;
```

```
a -= b;
```

```
System.out.println("After swapping, a = " + a + " and b = " + b);
```

```
}
```

```
}
```

Output :

```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac Swap1.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Swap1
Before swapping, a = 10 and b = 20
After swapping, a = 20 and b = 10
```

---

## 2. Relational & Logical Operators

Q6: Write a program to find the largest of three numbers using only the ternary operator

(?:).

Ans :-

Input :

```
class Largest {
    public static void main(String args[]) {
        int a = 20;
```

```
int b = 30;
```

```
int c = 40;
```

```
String result = (a > b && a > c) ? a + " is largest" :
```

```
((b > a && b > c) ? b + " is largest" : c + " is largest");
```

```
System.out.println(result);
```

```
}
```

```
}
```

Output :

```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT  
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac Largest.java
```

```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT  
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Largest  
40 is largest
```

---

Q7: Implement a Java program that checks whether a given year is a leap year or not using logical ( && , || ) operators .

Ans :-

Input :

```
import java.util.Scanner;
```

```
class LeapYear {
```

```
    public static void main(String args[]) {
```

```
        Scanner input = new Scanner(System.in);
```

```
        System.out.println("Enter the year");
```

```
        int year = input.nextInt();
```

```

        if ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0)) {
            System.out.println(year + " is a leap year.");
        } else {
            System.out.println(year + " is not a leap year.");
        }
    }
}

```

Output :

```

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac LeapYear.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java LeapYear
Enter the year
2025
2025 is not a leap year.

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java LeapYear
Enter the year
2024
2024 is a leap year.

```

---

Q8: Write a program that takes three boolean inputs and prints true if at least two of them are true .

Hint : Use logical operators ( && , || ).

Ans :-

Input :

```

class Logic {
    public static void main(String args[]) {
        boolean a = true;
        boolean b = false;
        boolean c = true;
    }
}

```



```
boolean result = ((a && b) || (b && c) || (c && a)) ? true : false;
```

```
System.out.println(result);
```

```
}
```

```
}
```

Output :

```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac Logic.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Logic
true
```

Q9: Implement a Java program that checks if a number is within a specific range (20 to 50) without using if-else .

Hint : Use logical AND ( && ) in a print statement .

Ans :-

Input :

```
import java.util.Scanner;
```

```
class Range {
```

```
    public static void main(String args[]) {
```

```
        Scanner input = new Scanner(System.in);
```

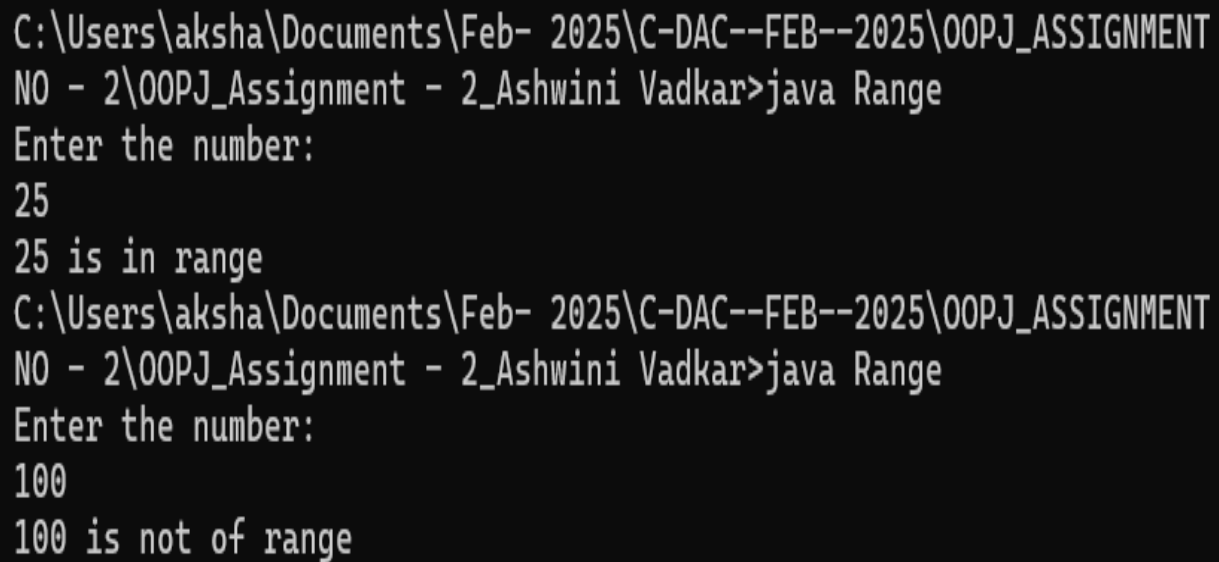
```
        System.out.println("Enter the number: ");
```

```
        int num = input.nextInt();
```

```
        String result = (num >= 20 && num <= 50) ? num + " is in range" : num + " is not of
range";
```

```
        System.out.print(result);  
    }  
}
```

Output :



```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT  
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Range  
Enter the number:  
25  
25 is in range  
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT  
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Range  
Enter the number:  
100  
100 is not of range
```

---

Q10: Write a program to determine if a character is a vowel or a consonant using the ternary operator.

Ans:

Input:

```
import java.util.Scanner;
```

```
class Vowel {
```

```
    public static void main(String args[]) {
```

```
        Scanner input = new Scanner(System.in);
```

```
        System.out.println("Enter the Charecter: ");
```

```
        char a = input.next().charAt(0);
```

```
        String result = (a == 'a' || a == 'e' || a == 'i' || a == 'o' || a == 'u' ||
```

```
a == 'A' || a == 'E' || a == 'I' || a == 'O' || a == 'U') ?  
a + " is in vowel" : a + " is consonant ";
```

```
System.out.print(result);  
}  
}
```

Output :

```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT  
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac Vowel.java  
  
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT  
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Vowel  
Enter the Charecter:  
a  
a is in vowel  
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT  
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Vowel  
Enter the Charecter:  
z  
z is consonant
```

---

### 3. Bitwise Operators

Q11: Write a program to check if a given number is a power of 2 using bitwise operators.

Hint :  $n \& (n - 1) == 0$  for positive numbers.

Ans :-

Input :

```
import java.util.Scanner;  
  
class Power {  
  
    public static void main(String args[]) {  
        Scanner input = new Scanner(System.in);  
        System.out.println("Enter the number: ");
```

```

int n = input.nextInt();

if ((n & (n - 1)) == 0 && n > 0) {
    System.out.print(n + " is power of 2");
} else {
    System.out.print(n + " is not power of 2");
}
}
}

```

Output :

```

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac Power.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Power
Enter the number:
256
256 is power of 2

```

---

Q12: Write a Java program to multiply a number by 8 without using \* or / operators.

Hint : Use bitwise left shift ( << ).

Ans :-

Input :

```

import java.util.Scanner;

class Multiply {
    public static void main(String args[]) {
        Scanner input = new Scanner(System.in);
        System.out.println("Enter the number: ");
    }
}

```

```

        int n = input.nextInt();

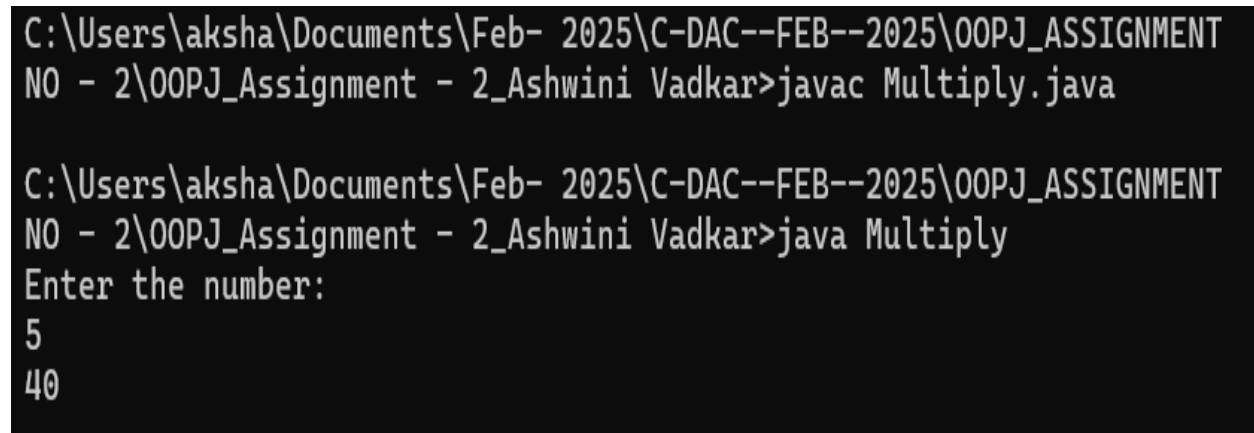
        int result = n << 3;

        System.out.println(result);

    }
}

```

Output :



```

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac Multiply.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Multiply
Enter the number:
5
40

```

-----

Q13: Implement a Java program to find the absolute value of an integer using bitwise operators.

Hint : mask = num >> 31; abs = (num + mask) ^ mask;

Ans :-

Input :

```

import java.util.Scanner;

class Absolute {

    public static void main(String args[]) {

        Scanner input = new Scanner(System.in);

        System.out.println("Enter the number: ");

        int num = input.nextInt();

        int mask = num >> 31;

        int abs = (num + mask) ^ mask;
    }
}

```

```

        System.out.println("The absolute value of an integer " + num + " is: " + abs);
    }
}

```

Output :

```

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac Absolute.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Absolute
Enter the number:
-25
The absolute value of an integer -25 is: 25

```

---

Q14: Write a program to count the number of 1s (set bits) in a binary representation of a number using bitwise operations.

Hint : Use  $n \& (n - 1)$  .

Ans :-

Input :

```

import java.util.Scanner;

class Count {

    public static void main(String args[]) {

        Scanner input = new Scanner(System.in);

        System.out.println("Enter the number: ");

        int n = input.nextInt();

        int count = 0;

        while (n > 0) {

            n = n & (n - 1);

            count++;

        }

    }

}

```

```

        System.out.println("Count the number of 1's is: " + count);
    }
}

```

Output :

```

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac Count.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Count
Enter the number:
8
Count the number of 1's is: 1

```

-----

Q15: Implement a program to swap odd and even bits of a number using bitwise operators.

Hint : Use masks:  $(x \& 0xAAAAAAAA) \gg 1 \mid (x \& 0x55555555) \ll 1$  .

Ans :-

Input :

```

import java.util.Scanner;

class SwapOddEven {

    public static void main(String args[]) {

        Scanner input = new Scanner(System.in);

        System.out.println("Enter the number: ");

        int a = input.nextInt();

        int result = (a & 0xAAAAAAAA) >> 1 | (a & 0x55555555) << 1;

        System.out.println("After Swap: " + result);

    }

}

```

Output :

```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac SwapOddEven.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java SwapOddEven
Enter the number:
20
After Swap: 40
```

---

#### 4. Ternary Operator Challenges

Q16: Write a program that determines whether a given number is positive, negative, or zero using only the ternary operator .

Ans :-

Input :

```
import java.util.Scanner;
```

```
class Determine {
```

```
    public static void main(String args[]) {
```

```
        Scanner input = new Scanner(System.in);
```

```
        System.out.println("Enter the number: ");
```

```
        int a = input.nextInt();
```

```
        String result = a > 0 ? a + " is positive" : (a < 0 ? a + " is negative number" : a + " is zero");
```

```
        System.out.println(result);
```

```
    }
```

```
}
```

Output :



```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac Determine.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Determine
Enter the number:
35
35 is positive

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Determine
Enter the number:
0
0 is zero

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Determine
Enter the number:
-75
-75 is negative number
```

-----

Q17: Implement a Java program that finds the minimum of four numbers using nested ternary operators.

Ans :-

Input :

```
class Minimum {
    public static void main(String args[]) {
        int a = 10;
        int b = 20;
        int c = 30;
        int d = 40;

        System.out.println("Numbers are: " + a + "," + b + "," + c + "," + d);

        String min = (a < b && a < c && a < d) ? a + " is Smallest number" :
            (b < a && b < c && b < d) ? b + " is Smallest number" :
```

```

        (c < a && c < b && c < d) ? c + " is Smallest number" :
        d + " is Smallest number";

    System.out.println(min);
}
}

```

Output :

```

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac Minimum.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Minimum
Numbers are: 10,20,30,40
10 is Smallest number

```

---

Q18: Given a student's percentage, print "Pass" if the percentage is 40 or above; otherwise, print "Fail", using only the ternary operator.

Ans :-

Input :

```

import java.util.Scanner;

class Result {

    public static void main(String args[]) {

        System.out.println("Enter the percentage of Student:");

        Scanner input = new Scanner(System.in);

        int percentage = input.nextInt();

        String remark = percentage >= 40 ? "Pass" : "Fail";

        System.out.println(remark);

    }
}

```

```
}
```

Output :

```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac Result.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Result
Enter the percentage of Student:
90
Pass

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Result
Enter the percentage of Student:
37
Fail
```

-----

Q19: Write a Java program that checks whether a character is uppercase, lowercase, or not a letter using only the ternary operator.

Ans :-

Input :

```
import java.util.Scanner;
```

```
class Case {
```

```
    public static void main(String args[]) {
```

```
        System.out.println("Enter the Charecter:");
```

```
        Scanner input = new Scanner(System.in);
```

```
        char c = input.next().charAt(0);
```

```
        String result = Character.isUpperCase(c) ? "UpperCase" : Character.isLowerCase(c) ?
"Lowercase" : "not a letter";
```

```
        System.out.println(result);
```

```
    }
```

```
}
```

Output :

```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac Case.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Case
Enter the Charecter:
A
UpperCase

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Case
Enter the Charecter:
z
Lowercase

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>Java Case
Enter the Charecter:
5
not a letter
```

---

Q20: Implement a Java program that returns the absolute value of a given number using the ternary operator (without using Math.abs() ).

Ans :-

Input :

```
import java.util.Scanner;
```

```
class Absolute1 {
```

```
    public static void main(String args[]) {
```

```
        Scanner input = new Scanner(System.in);
```

```
        System.out.println("Enter the number: ");
```

```
        int num = input.nextInt();
```

```
        int absValue = (num < 0) ? -num : num;
```

```
        System.out.println("The absolute value is " + absValue);
```

```
}  
}
```

Output :

```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT  
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac Absolute1.java  
  
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT  
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Absolute1  
Enter the number:  
-25  
The absolute value is 25  
  
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT  
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Absolute1  
Enter the number:  
10  
The absolute value is 10
```

---

### 5. Miscellaneous Operator Questions

Q21: Write a program that increments a number without using + or ++ operators.

Hint : Use bitwise - (~x) .

Ans :-

Input :

```
import java.util.Scanner;  
class Increments {  
    public static void main(String args[]) {  
        System.out.println("Enter the number:");  
        Scanner input = new Scanner(System.in);  
        int a = input.nextInt();  
        System.out.println("Number before increment: " + a);  
        a = -(~a);  
        System.out.println("Number after increment: " + a);  
    }  
}
```

```
}  
}
```

Output :

```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT  
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac Increments.java  
  
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT  
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Increments  
Enter the number:  
5  
Number before increment: 5  
Number after increment: 6  
  
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT  
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java Increments  
Enter the number:  
-2  
Number before increment: -2  
Number after increment: -1
```

-----  
Q22: Implement a calculator that takes two numbers and an operator ( + , - , \* , / ) as input and prints the result using only switch-case .

Ans :-

Input :

```
import java.util.Scanner;
```

```
class Calculator {
```

```
    public static void main(String args[]) {
```

```
        Scanner input = new Scanner(System.in);
```

```
        System.out.println("Enter two numbers: ");
```

```
        int a = input.nextInt();
```

```
        int b = input.nextInt();
```

```
        System.out.println("Enter the operator ( + , - , * , / ) : ");
```

```
        char o = input.next().charAt(0);
```

```
        switch(o) {
```

```
            case '+':
```

```

        int sum = a + b;
        System.out.println(a + " + " + b + " = " + sum);
        break;
    case '-':
        int sub = a - b;
        System.out.println(a + " - " + b + " = " + sub);
        break;
    case '*':
        int mul = a * b;
        System.out.println(a + " * " + b + " = " + mul);
        break;
    case '/':
        if (b != 0) {
            double div = (double) a / b;
            System.out.println(a + " / " + b + " = " + div);
        } else {
            System.out.println("Error! Division by zero is not allowed.");
        }
        break;
    default:
        System.out.println("Error! Enter a valid operator!!");
    }
}
}

```

Output :

```
C:\Windows\System32\cmd.e  X  +  v  -  □  X

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_
ASSIGNMENT NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java
c Calculator.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_
ASSIGNMENT NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java
Calculator
Enter two numbers:
12
13
Enter the operator ( + , - , * , / ) :
+
12 + 13 = 25

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_
ASSIGNMENT NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java
Calculator
Enter two numbers:
10
5
Enter the operator ( + , - , * , / ) :
*
10 * 5 = 50

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_
ASSIGNMENT NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java
Calculator
Enter two numbers:
100
75
Enter the operator ( + , - , * , / ) :
-
100 - 75 = 25
```



```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\00PJ_
ASSIGNMENT NO - 2\00PJ_Assignment - 2_Ashwini Vadkar>java
Calculator
```

```
Enter two numbers:
```

```
60
```

```
6
```

```
Enter the operator ( + , - , * , / ) :
```

```
/
```

```
60 / 6 = 10.0
```

```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\00PJ_
ASSIGNMENT NO - 2\00PJ_Assignment - 2_Ashwini Vadkar>java
Calculator
```

```
Enter two numbers:
```

```
7
```

```
0
```

```
Enter the operator ( + , - , * , / ) :
```

```
/
```

```
Error! Division by zero is not allowed.
```

---

Q23: Given a number, find whether it is odd or even using the & bitwise operator and print the result without using if-else .

Ans :-

Input :

```
import java.util.Scanner;
```

```
class CheckEvenOdd {
```

```
    public static void main(String args[]) {
```

```
        Scanner input = new Scanner(System.in);
```

```
        System.out.print("Enter the number: ");
```

```
        int num = input.nextInt();
```

```
        String result = ((num & 1) == 0) ? num + " is Even" : num + " is Odd";
```

```
        System.out.println(result);
```

```
}  
}
```

Output :

```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT  
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>javac CheckEvenOdd.java  
  
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT  
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java CheckEvenOdd  
Enter the number: 10  
10 is Even  
  
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOPJ_ASSIGNMENT  
NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>java CheckEvenOdd  
Enter the number: 7  
7 is Odd
```

---

Q24: Write a program that prints all even numbers from 1 to 100 using only bitwise AND  
( & ) and for loop.

Ans :-

Input :

```
class Even {  
    public static void main(String args[]) {  
        System.out.print("Even numbers from 1 to 100 are: ");  
        for(int i = 1; i <= 100; i++) {  
            if((i & 1) == 0) {  
                System.out.print(i + ",");  
            }  
        }  
    }  
}
```

Output :

```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025
\OOPJ_ASSIGNMENT NO - 2\OOPJ_Assignment - 2_Ashwini
Vadkar>javac Even.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025
\OOPJ_ASSIGNMENT NO - 2\OOPJ_Assignment - 2_Ashwini
Vadkar>java Even
Even numbers from 1 to 100 are: 2,4,6,8,10,12,14,16
,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46,48,50
,52,54,56,58,60,62,64,66,68,70,72,74,76,78,80,82,84
,86,88,90,92,94,96,98,100,
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025
\OOPJ_ASSIGNMENT NO - 2\OOPJ_Assignment - 2_Ashwini
Vadkar>|
```

---

Q25: Implement a program that reverses an integer number without using string conversion ( StringBuilder or toCharArray ).

Hint : Use while(n!=0) { rev = rev \* 10 + n % 10; n /= 10; }

Ans :-

Input :

```
import java.util.Scanner;
```

```
public class Reverse {
```

```
    public static void main(String[] args) {
```

```
        Scanner scanner = new Scanner(System.in);
```

```
        System.out.println("Enter the number: ");
```

```
        int num = scanner.nextInt();
```

```
        int reverse = 0;
```

```
        while (num != 0) {
```

```
int digit = num % 10;

reverse = reverse * 10 + digit;

num /= 10;

}

System.out.println("The reverse of the number is " + reverse);

}

}
```

Output :

```
C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOP
J_ASSIGNMENT NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>
javac Reverse.java

C:\Users\aksha\Documents\Feb- 2025\C-DAC--FEB--2025\OOP
J_ASSIGNMENT NO - 2\OOPJ_Assignment - 2_Ashwini Vadkar>
java Reverse
Enter the number:
12345
The reverse of the number is 54321
```