

## Java Assignment-2

1. Part-1 Arithmetic & Assignment operators

2. write a program to swap two numbers without using a third variable and without using arithmetic operators like + or -

Ans- Public class swap {

Public static void main (String [] args) {

int a = 5, b = 10;

a = a ^ b;

b = a ^ b;

a = a ^ b;

System.out.println("swap two No : a = " + a +  
" , b = " + b);

}

}

3. write a program to check wheather a given No is even or odd using only bitwise operators. ~~that user~~

Ans- Public class EvenOdd {

Public static void main (String [] args) {

int num = 7;

System.out.println(num & 1 == 0 ? "Even"  
: "odd");

}

}

4. Implement a program that calculate the sum of digit of an integer using modulus (%) and division (/) operators.

Ans- `Public class Sum of Digits {  
 Public Static void main (String [] args) {  
 int num = 1234, sum = 0;  
 while (num > 0) {  
 sum += num % 10;  
 num /= 10;  
 }  
 System.out.println("sum of digits: " + sum);  
 }  
}`

④ write a program to find whether a given number is divisible by 3 without using the modulus (%) or division (/) operators.

Ans- `Public class Divisible {  
 Public Static void main (String [] args) {  
 Public Static void main (boolean isDivisible,  
 int num) {  
 while (num > 3) {  
 num = num - 3;  
 }  
 return num == 3 || num == 0;  
 }  
 Public Static void main (String [] args) {  
 System.out.println (isDivisible (78) ?  
 "Divisible" : "Not Divisible");  
 }  
 }  
}`



⑤ write a java program to swap two numbers using  $+=$  and  $-=$  operators only

Ans- Public class SwapNumbers {  
    Public static void main (String [] args) {  
        int a=5, b=10;  
        a += b;  
        b = a-b;  
        a -= b;  
        System.out.println("After swapping : a=" +  
                                  a + ", b=" + b);  
    }  
}

⑥ Part-2 Relational & logical operators

⑥ write a program to find the largest of three numbers using only the ternary operator.

Ans- Public class Largest {  
    Public static void main (String [] args) {  
        int a=38, b=42, c=28;  
        int largest = (a>b) ? (a>c) ? a:c :  
                                  (b>c) ? b:c;  
        System.out.println("Largest number : "  
                                  + largest);  
    }

⑦ Implement a java program that checks whether a given year is leap year or not using logical (&, ||) operators.



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Ans- Public class LeapYear {  
 public static void main (String[] args) {  
 int year = 2000;  
 boolean isLeap = (year % 4 == 0 && year % 100 != 0) || (year % 400 == 0);  
 System.out.println (isLeap ? "Leap Year" :  
 "Not a Leap Year");  
 }  
}

⑧ Write a program that ~~checks~~ three boolean inputs and prints true if at least two of them are true.

Ans- Public class Boolean {  
 public static void main (String[] args) {  
 boolean a = true, b = false, c = true;  
 System.out.println ((a && b) || (b && c) ||  
 (a && c));  
 }  
}

⑨ Implement a java program that checks if a number is within a specific range (20 to 50) without using using if-else.

Ans- Public class InRange {  
 public static void main (String[] args) {  
 int num = 38;  
 System.out.println (num >= 20 && num <= 50);  
 }  
}



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

Ans - Public class VowelConsonant {  
    Public Static void main (String [] args) {  
        char ch = 'A';  
        System.out.println ("AEIOUaeiou", index of  
                                (ch) != -1 ? "Vowel" : "consonant");  
    }  
}

### Part-3 Bitwise operators

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

Ans - Public class Power {  
    Public Static void main (String [] args) {  
        int n = 8;  
        System.out.println ( (n & (n-1)) == 0 ? "Power of 2"  
                                : "Not a power of 2");  
    }  
}

Q12) write a program to multiply a number by 8 without using \* or / operators.

Ans - Public class Multiple {  
    Public Static void main (String [] args) {  
        int num = 6;  
        System.out.println (num << 3);  
    }  
}

14) Implement a java program to find the absolute value of an integer using bitwise operators.

```

Ans - Public class AbsoluteValue {
    Public Static void main (String [] args) {
        int num = -10;
        int mask = num > 0 ? 1 : -1;
        int abs = (num + mask) & mask;
        System.out.println (abs);
    }
}

```

14) write a program to count the number of 1s (set bits) in a binary representation of a number using bitwise operators.

```

Ans - Public class CountOnes {
    Public Static void main (String [] args) {
        int num = 15, count = 0;
        while (num > 0) {
            num &= (num - 1);
            count++;
        }
        System.out.println (count);
    }
}

```

15) Implement a program to swap odd and even bits of a number using bitwise operators.



Ano - Public class Swap {

Public Static void main(String [] args) {

int x = 23;

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

System.out.println(result);

}

}