K.E.CARMEL GROUP OF SCHOOLS
CLASS : IX
INTERNAL ASSESSMENT
PART : II

Assignment 6: Write a menu driven program in Java to print the sum of the series as per the user's choice. The user is given the following options:

(i) Sum (S) = 1 + (1+2) / (1*2) + (1+2+3) / (1* 2*3) + ... to nth term

(ii) Sum (S) = $(1/a) + (2/a^2) + (3/a^3)$ + ... to nth term

(iii) Sum (S) = 1 + (1+3) + (1+3+5) + ... to nth term

For an incorrect option, an appropriate error message should be displayed.

Input :
Enter 1 for 1st Series
Enter 2 for 2nd Series
Enter 3 for 3rd Series
Enter your choice : 1
Enter the value of 'n' : 3
Output :
Sum = 3.5

Input :
Enter 1 for 1st Series
Enter 2 for 2nd Series
Enter 3 for 3rd Series
Enter your choice : 2
Enter the value of 'a' : 2
Enter the value of 'n' : 4
Output :
Sum = 1.625

Input :
Enter 1 for 1st Series
Enter 2 for 2nd Series
Enter 3 for 3rd Series
Enter your choice : 3
Enter the value of 'n' : 3
Output :
Sum = 14

Assignment 7: Write a menu driven program in Java to accept a number from the user and check whether the number is an **Special Number** or a **Harshad Number** according to the user's choice.

(a) **Special Number** – A number is said to be Special Number when the sum of factorial of its digits is equal to the number itself.

Input : 145

Output : 145 is a Special Number

(Since 1! + 4! + 5! = 1 + 24 + 120 = 145)

(b) **Harshad Number** – A number is said to be a Harshad Number if the number is completely divisible by the sum of its digits.

Input : 110

Output : 110 is a Harshad Number

(Since 110 = 1 + 1 + 0 = 2 and 110 % 2 = 0)

For an incorrect option, an appropriate error message should be displayed.

Assignment 8: Write a menu driven program to accept the number of terms from the user and print the series according to user choice. The user is given the following options:

(i) **Fibonacci Series** –A series which starts from 0 and 1, the subsequent numbers are sum of the previous two numbers. 0,1,1,2,3,5,8,13,…n terms

(ii) **Pell Series** –A series which starts from 1 and 2, the subsequent number are the sum of twice the previous number and the number previous to the previous number.
1 ,2,5,12,29,70,169,408,985,2378,5741,13860...n terms
For an incorrect option, an appropriate error message should be displayed.

Input :
Enter 1 for Fibonacci Series
Enter 2 for Pell Series
Enter your choice : 1
Enter the value of n:7
Output:
Fibonacci Series upto term no 7 :
0,1,1,2,3,5,8
Input :
Enter 1 for Fibonacci Series
Enter 2 for Pell Series
Enter your choice : 2
Enter the value of n:5
Output:
Pell Series upto term no 5 :
1,2,5,12,29

Assignment 9 : Write a menu driven program to generate a pattern of **Floyd's triangle** or **Binary triangle** depending upon user's choice

Input :
Enter 1 for Floyd's triangle
Enter 2 for Binary triangle
Enter your choice : 1
Enter the height of the triangle: 5
Output:
Floyd's Triangle :

```
1
2    3
4    5    6
7    8    9    10
11   12   13   14   15
```

Input :
Enter 1 for Floyd's triangle
Enter 2 for Binary triangle

Enter your choice : 2
Enter the height of the triangle: 5
Output:
Binary Triangle :

```
    1
    0 1
    1 0 1
    0 1 0 1
    1 0 1 0 1
```

For an incorrect option, an appropriate error message should be displayed.

Assignment 10:

An **Evil number** is a positive whole number which has even number of 1's in its binary equivalent.

Example: Binary equivalent of 9 is 1001, which contains even number of 1's. Thus, 9 is an Evil Number.

A few Evil numbers are 3, 5, 6, 9....

Design a program to accept a positive whole number 'N' where N>2 and N<100. Find the binary equivalent of the number and count the number of 1s in it and display whether it is an Evil number or not with an appropriate message.

INPUT: N = 15
BINARY EQUIVALENT: 1111
NUMBER OF 1's: 4
OUTPUT: EVIL NUMBER

INPUT: N = 26
BINARY EQUIVALENT: 11010
NUMBER OF 1's: 3
OUTPUT: NOT AN EVIL NUMBER
OUTPUT: NUMBER OUT OF RANGE