

Assignment 4

Task 1 — While Loop: Factorial

Write a program that:

1. Prompts the user for a single integer n .
2. If n is negative or not an integer, asks again until a valid non-negative integer is entered.
3. Uses a while loop to compute $n!$ (factorial).
4. Prints the result in the form: $n! = \text{value}$.

Sample run

Enter a non-negative integer: -3

Invalid input. Try again.

Enter a non-negative integer: 5

5! = 120 = 5 * 4 * 3 * 2 * 1

Task 2 — For Loop with continue

Write a program that prints the numbers from 1 to 20 inclusive, **skipping** numbers divisible by 5.

Use a for loop and continue.

Expected output

1 2 3 4 6 7 8 9 11 12 13 14 16 17 18 19

Task 3 — Nested Loops: Triangle Pattern

File: triangle_pattern.py

Write a program that prints the following numeric triangle using **nested** for loops.

For a user input rows, print:

Example for rows = 3:

1

22

333

Input rules:

- rows must be an integer in the range [1, 20]. Keep asking until valid.

Try This code

```
rows = int(input("Enter Number of rows"))
for i in range(1,rows):
    for j in range (1,i+1):
        print(i, end="")

    print()
```

Task 4:

Write then run this Program to compute the grade of students

```
Answer = input("Enter Y to Compute Grade or other letter to exist: ")
while Answer == "Y":

    print("Computing Grade for Student: ")
    d1 = float(input("Enter First degree out of 10: "))
    d2 = float(input("Enter Second degree out of 10 : "))
    d3 = float(input("Enter Third degree out of 10: "))

    sum = d1 + d2 + d3
    print("total degree = " , sum)
    percent = sum / 30 * 100
    print("Percentage %=" , percent)

    if (percent >= 0 and percent<=100):

        if(percent>=85 and percent <= 100):
            print("Excellent")
        elif(percent>=75 and percent <85):
            print("Very Good")
        elif(percent>=65 and percent <75):
            print(" Good")
        elif(percent>=50 and percent <65):
            print("Pass")
        else:
            print("Fail")

    else:
        print("You Must Enter all your degrees between 0 and 10")

    Answer = input("Enter Y to continue or N to exist: ")

print("--- END --- ")
```