EXPERIMENT NO. - 06

AIM: Edit/compile/run a program to display the Floyd Triangle.

THEORY:

Floyd's triangle

A Floyd's triangle is a consecutive series of natural numbers in a right-angled triangle. This is what Floyd's triangle looks like-

```
1
2 3
4 5 6
7 8 9 10
```

Approach

The way we can approach to this problem could be-

1. Input n (number of rows).
2. Initialize count as 1 which will be incremented later.
3. Use a for loop initialize i from 1 to n+1
4. Use a nested for loop initialize j from 1 to i+1.
5. Print count with end=" ".
6. Increment the value of count by 1.
7. print() will change the line.

Implementation in Python

As we have discussed approach, now we can implement it using a for loop in Python as shown below-

Program A)

```
n = int(input("Enter the total Number of Rows : "))
count= 1
for i in range(1, n + 1):
for j in range(1, i + 1):
print(count, end = ' ')
count = count + 1
print()
```

```
Enter the total Number of Rows : 5
1
2 3
```

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

So we have printed our expected output. We can also use a similar approach using a while loop. The approach is quite similar with a different syntax as-

Program B)

```
n = int(input("Enter the total Number of Rows : "))
count= 1
i = 1
while(i <= n):
j = 1
while(j <= i):
print(count, end = ' ')
count = count + 1
j = j + 1
i = i + 1
print()
```

```
Enter the total Number of Rows : 7
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
16 17 18 19 20 21
22 23 24 25 26 27 28
```

A Floyd's triangle is a right-angled triangle formed with natural numbers.

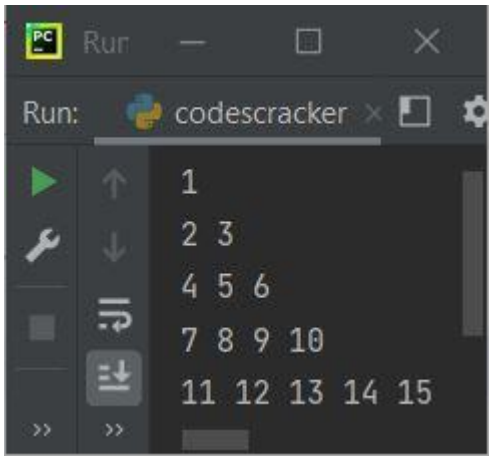
Print Floyd's Triangle in Python

The question is, *write a Python program to print Floyd's triangle.* The program given below is its answer:

```
num = 1
for i in range(5):
    for j in range(i+1):
        print(num, end=" ")
        num = num+1
```

```
    print()
```

The snapshot given below shows the sample output produced by above Python program, that prints Floyd's triangle of 5 rows:



Print Floyd's Triangle of n Rows in Python

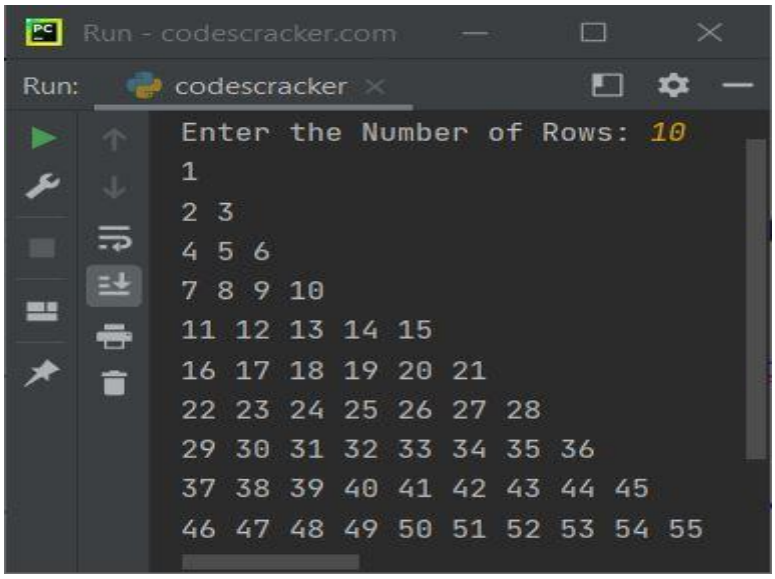
To print Floyd's triangle of **n** rows in Python, you need to ask from user to enter the number of rows or lines up to which, he/she wants to print the desired Floyd's triangle as shown in the program given below.

Program C)

```
print("Enter the Number of Rows: ", end="")
row = int(input())

num = 1
for i in range(row):
    for j in range(i+1):
        print(num, end=" ")
        num = num+1
    print()
```

Sample run of above program, with user input **10** as number of rows, is shown in the snapshot given below:



Print Floyd's Triangle using while Loop in Python

Let me create the same program as of previous, using **while** loop, instead of **for** loop.

Program D)

```
print("Enter the Number of Rows: ", end="")
row = int(input())

num = 1
i = 0
while i < row:
    j = 0
    while j < i+1:
        print(num, end=" ")
        num = num+1
        j = j+1
    print()
    i = i+1
```

Conclusion: Hence, we have successfully studied about program to display the Floyd Triangle.