1) Write a program to print first 10 natural number, using for and while loop.

```
In [1]:    1  for i in range (11):
           2      print(i)
           3  i=0
           4  # while(i<11):
           5  #     print(i)
           6  #     i=i+1
```

```
0
1
2
3
4
5
6
7
8
9
10
```

2) WAP to print number upto 20 at the step of 4.

```
In [2]:    1  # for i in range (1,21,4):
           2  #     print(i)
           3
           4  i=1
           5  while(i<21):
           6      print(i)
           7      i=i+4
```

```
1
5
9
13
17
```

3) WAP to print table of 5 using step in loop.

```
In [3]:   1  for i in range(5,51,5):
          2      print(i)
          3
          4  i=5
          5  # while(i<51):
          6  #      print(i)
          7  #      i=i+5
```

```
5
10
15
20
25
30
35
40
45
50
```

4) WAP to print reverse number 20 to 10.

```
In [4]:   1  # for i in range(20,9,-1):
          2  #      print(i)
          3  a=20
          4  while(a>9):
          5      print(a)
          6      a=a-1
```

```
20
19
18
17
16
15
14
13
12
11
10
```

5) WAP to print table of number given by user and format of, 5*1=5.
Note:- Without using step

```
In [5]:   1  a=int(input("Enter your number "))
          2  # for i in range(1,11):
          3  #      print(f"{a} * {i} = {a*i}")
          4
          5  i=1
          6  while(i<11):
          7      print(f"{a} * {i} = {a*i}")
          8      i=i+1
```

```
Enter your number 5
5 * 1 = 5
5 * 2 = 10
5 * 3 = 15
5 * 4 = 20
5 * 5 = 25
5 * 6 = 30
5 * 7 = 35
5 * 8 = 40
5 * 9 = 45
5 * 10 = 50
```

6) WAP to print table of 5 to 13 and format of, 5*1=5.
Note:- Without using step

```
In [6]:   1  num=5
          2  # for j in range(5,14):
          3  #      num=num+1
          4  #      for  i in range(1,11):
          5  #          print(f"{j} * {i} = {j*i}")
          6
          7  while(num<14):
          8      i=1
          9      while(i<11):
         10          print(f"{num} * {i} = {num*i}")
         11          i=i+1
         12      print(" ")
         13      num=num+1
```

7) Reverse the given number like 123-->321

```
In [7]:    1  # 123   = 321
           2  # num=123
           3  num=int(input("Enter a number "))
           4  rev = 0
           5  while num!=0:
           6      a=num%10
           7      rev=rev*10+a
           8      num=num//10
           9  print(rev)
          10
```

```
Enter a number 3324
4233
```

8) Add the given number like 123 ---> 1+2+3=6

```
In [8]:    1  # 123   =   1+2+3
           2  # num=123
           3  num=int(input("Enter a number: "))
           4  rev = 0
           5  while num!=0:
           6      a=num%10
           7      rev=rev+a
           8      num=num//10
           9
          10
          11  print(rev)
```

```
Enter a number: 231
6
```

9) Print a pattern using loops

@@@@@
@@@@@
@@@@@
@@@@@
@@@@@

```
In [9]:   1  for i in range(1,6):
          2      for j in range(1,6):
          3          print("@",end=' ')
          4      print("")
```

```
@ @ @ @ @
@ @ @ @ @
@ @ @ @ @
@ @ @ @ @
@ @ @ @ @
```

10) Print a pattern using loops

1 1 1 1 1
2 2 2 2 2
3 3 3 3 3
4 4 4 4 4
5 5 5 5 5

```
In [10]:   1  for i in range(1,6):
           2      for j in range(1,6):
           3          print(i,end=' ')
           4      print("")
           5
```

```
1 1 1 1 1
2 2 2 2 2
3 3 3 3 3
4 4 4 4 4
5 5 5 5 5
```

11) Print pattern like this

1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
1 2 3 4 5

```
In [11]:   1  for i in range(1,6):
           2      for j in range(1,6):
           3          print(j,end=' ')
           4      print("")
```

```
1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
1 2 3 4 5
```

12) Print a pattern like this

1 1 1 1 1
2 2 2 2
3 3 3
4 4
5

```
In [12]:   1  a=5
           2  for i in range(1,6):
           3      for j in range(0,a):
           4          print(i,end=' ')
           5      a=a-1
           6      print("")
           7
```

```
1 1 1 1 1
2 2 2 2
3 3 3
4 4
5
```

13) Print pattern like Pyramid of dollor sign $

```
In [13]:   1  for i in range(5):
           2      for s in range(-6, -i):
           3          print(" ", end="")
           4      for j in range(i+1):.
           5          print("$" , end=" ")
           6      print(" ")
           7
           8
           9
```

```
         $
        $ $
       $ $ $
      $ $ $ $
     $ $ $ $ $
```

14) Write a program to print first 10 even number

```
In [14]:   1  for i in range(1,11):
           2      if i%2==0:
           3          print (i)
```

```
2
4
6
8
10
```

15) Write a program to find the factorial of a number.

```
In [15]:   1  num=int(input("Enter any number"))
           2  f=1
           3  for i in range(1,num+1):
           4      f=f*i
           5  print("Factorial is",f)
```

```
Enter any number5
Factorial is 120
```

16) Write a program to check whether a number is prime or not.

```
In [16]:    1  num=int(input("Enter any number"))
            2  f=0
            3  if num==1 or num==0:
            4       f=1
            5  for i in range(2,num):
            6      if num%i==0:
            7          f=1
            8  if f==1:
            9      print("Number is not prime")
           10  else:
           11      print("Number is prime")
```

```
Enter any number111
Number is not prime
```

17) Write a program to display all the numbers which are divisible by 11 but not by 2 between 100 and 500.

```
In [17]:    1  for i in range(100,500):
            2     if i%11==0 and i%2!=0:
            3
            4        print(i)
```

```
121
143
165
187
209
231
253
275
297
319
341
363
385
407
429
451
473
495
```

18) Write a program to print numbers from 1 to 20 except multiple of 2 & 3.

```
In [18]:   1  for i in range(1,21):
           2      if i%2!=0 and i%3!=0:
           3          print(i)
```

```
1
5
7
11
13
17
19
```

19) Accept a number and check whether it is palindrome or not.

```
In [19]:   1  num=int(input("Enter any number"))
           2  ornum=num
           3  rn=0
           4
           5  while(num):
           6      r=num%10
           7      rn=rn*10+r
           8      num=num//10
           9  if ornum==rn:
          10      print("Number is Palindrome")
          11
          12  else:
          13      print("Number is not a Palindrome")
```

```
Enter any number12
Number is not a Palindrome

Enter any number121
Number is Palindrome
```

20) Fibonacci sequence:

0 1 1 2 3 5 8 13 21 34

```
In [20]:    1  terms = 5
            2
            3  # first two terms
            4  num1, num2 = 0, 1
            5  count = 0
            6
            7  print("Fibonacci sequence:")
            8  while count < terms:
            9      print(num1, end="  ")
           10      temp = num1 + num2
           11      # update values
           12      num1 = num2
           13      num2 = temp
           14      count += 1
```

```
Fibonacci sequence:
0  1  1  2  3
```

21) Write a Python program to check the validity of password input by users. Go to the editor

Validation :

> At least 1 letter between [a-z] and 1 letter between [A-Z].
> At least 1 number between [0-9].
> At least 1 character from [$#@].
> Minimum length 6 characters.
> Maximum length 16 characters.

```
In [21]:    1  a=input("""At least 1 letter between [a-z] and 1 letter between [A-Z].
            2
            3  At least 1 number between [0-9].
            4
            5  At least 1 character from [$#@].
            6
            7  Minimum length 6 characters.
            8
            9  Maximum length 16 characters.
           10  Enter your password: """)
           11
           12  # a='Shivam@123'
           13
           14  le=len(a)
           15  upp=0
           16  low=0
           17  num=0
           18  sp=0
           19  if le>=6 and le<=16:
           20      for i in a:
           21          if i.isupper():
           22              upp=1
           23          elif i.islower():
           24              low=1
           25          elif i.isdigit():
           26              num=1
           27          elif i=='$' or i=='@' or i=='#':
           28              sp=1
           29
           30  if (upp+low+sp+num)==4:
           31      print("\nPassword is Valid")
           32  else:
           33      print("\nPassword is not Valid")
           34
```

```
At least 1 letter between [a-z] and 1 letter between [A-Z].

At least 1 number between [0-9].

At least 1 character from [$#@].

Minimum length 6 characters.

Maximum length 16 characters.
Enter your password: Shiva@321

Password is Valid
```

22). Write a program that keeps on accepting numbers from the user until the user enters Zero. Display the sum and average of all the numbers

```
In [22]:    1  a=int(input("Enter your 1 number"))
            2  sum=0
            3  average=0
            4  while(a!=0):
            5      sum=a+sum
            6      average=1+average
            7      a=int(input(f"Enter your {average+1} number :"))
            8  print("sum:",sum)
            9  print("Average",sum/average)
```

```
Enter your 1 number2
Enter your 2 number :4
Enter your 3 number :3
Enter your 4 number :6
Enter your 5 number :0
sum: 15
Average 3.75
```