11) Write a Python function to find the roots of a quadratic equation.

```
a,b,c=map(int,input('enter a, b & c :').split(' '))
def roots(a,b,c):
   d = (b**2) - (4*a*c)
   sol1 = (-b-(d**0.5))/(2*a)
   sol2 = (-b+(d**0.5))/(2*a)
   print('solutions are')
   print('sol1 = ',sol1)
   print('sol2 = ',sol2)
roots(a,b,c)
```

Output:

```
enter a, b & c :1 2 1
solutions are
sol1 =  -1.0
sol2 =  -1.0
```

12) Write a Python function to evaluate factorial function using while loop.

```
a=int(input('Enter the number : '))
def facti(a):
   res=1
   while a>=1:
      res*=a
      a=a-1
   return res
if a==0:
   print('Factorial of 0 is 1')
elif a<0:
   print("FActorial of negative values isn't possible")
else:
   print('Factorial value of ',a,' is : ',facti(a))
```

Output: Enter the number : 9

Factorial value of 9 is : 362880

13) Write a Python function to test whether a given number is prime or not.

```
a=int(input('Enter a : '))
def prime(a):
  if a>1:
    for i in range(2,a//2):
      if a%i==0:
        print(a,' is not prime')
        break
    else:
      print(a,'is prime')
  elif a==1:
    print('1 is unit number')
  else:
    print('Please Enter positive number which is greater than 1 ')

prime(a)
```

Output:

```
Enter a : 821
821 is prime
```

14) Write a Python function to generate Fibonacci series till given number.

```
n=int(input('how many numbers you want : '))
def fibo(n):
    a=0
    b=1
    if n ==1:
        print(0)
    elif n==0 or n<0:
        print('please enter right number')
    else :
        print(a);
        print(b);
        for i in range(2,n):
           c=a+b
           a=b
           b=c
           print(c)
fibo(n)
```

Output:

```
how many numbers you want : 9
0
1
1
2
3
5
8
13
21
```

15) A python program that helps to know the effects of slicing operations on array.

```
ash = input("Enter the list: ").split()
print(ash[::3])
print(ash[::-1])
print(ash[0:4:-1])
print(ash[:-7])
print(ash[:2])
print(ash[2:])
```

Output:

```
Enter the list: ash ish go pal bhai cho vat iya
['ash', 'pal', 'vat']
['iya', 'vat', 'cho', 'bhai', 'pal', 'go', 'ish', 'ash']
[]
['ash']
['ash', 'ish']
['go', 'pal', 'bhai', 'cho', 'vat', 'iya']

Process finished with exit code 0
```

16) A python program to sort the array elements using bubble sort technique.

```
n=int(input('enter the total value'))
arr=[]
for i in range(0,n) :
   print('enter arr[',i+1,']' )
   k=int(input())
   arr.append(k)

print('array before sorting',arr)
for i in range(0,n):
   for j in range(i,n):
      if arr[i]>arr[j]:
         temp=arr[i]
         arr[i]=arr[j]
         arr[j]=temp
print('array after sorting',arr)
```

Output:

enter the total value: 5

enter arr[1]

5

enter arr[2]

4

enter arr[3]

3

enter arr[4]

2

enter arr[5]

1

array before sorting [5, 4, 3, 2, 1]

array after sorting [1, 2, 3, 4, 5]

17) A python program to search for the position of an element in an array using index( ) method.

```
n=int(input('enter the total value : '))
arr=[]
for i in range(0,n) :
   print('enter arr[',i+1,']' )
   k=int(input())
   arr.append(k)

a=int(input('Enter the number of which you want to know the position :'))
print('Index of ',a,'is :',arr.index(a))
```

Output:

```
enter the total value : 6
enter arr[ 1 ]
5
enter arr[ 2 ]
8
enter arr[ 3 ]
1
enter arr[ 4 ]
6
enter arr[ 5 ]
3
enter arr[ 6 ]
99
Enter the number of which you want to know the position :6
Index of 6 is: 3
```

18) A python program to accept two matrices and find their product.

```
def matrix(row, column):
    p = []
    print('Enter elements row wise')
    for i in range(row):
        q = []
        for j in range(column):
            k = int(input())
            q.append(k)
        p.append(q.copy())
        q.clear()
    return p
print("1st matrix:")
i, j = map(int, input("enter row and column=").split(" "))
a = matrix(i, j)
print("2st matrix:")
i, j = map(int, input("enter row and column=").split(" "))
b = matrix(i, j)

def product(m, n):
    r = []
    if len(m[0]) == len(n):
        for i in range(len(m)):
            t = []
            for j in range(len(n[i])):
                sum = 0
                for k in range(len(m[i])):
                    sum += m[i][k] * n[k][j]
                t.append(sum)
            r.append(t.copy())
            t.clear()
        return r
    else:
        print("Can't Multiply !!!!")
        print('Column of 1st Matrix and Row od 2nd Martix should be same')
c = product(a, b)
print(c)
```

Output:

1st matrix:

enter row and column=2 3

Enter elements row wise: 5 6 4 0 2 1

2st matrix:

enter row and column=3 2

Enter elements row wise: 1 2 3 4 5 6

[[43, 58], [11, 14]]

19) A python program to find the number of words in a string.

```
ash=input('Enter the String : ')

print ("The original string is : " +ash)
total = str(len(ash.split(' ')))
print ("The number of words in string are : " +total)
```

Output:

```
Enter the String : We love the Earth .. It is Our Planet
The original string is : We love the Earth .. It is Our Planet
The number of words in string are : 9
```

20) A python program to insert a sub string in a string in a particular position.

```
mainstr=input('Enter main string : ')
sub=input('Enter sub string : ')
N=int(input('Enter the position where you want to insert : '))
print("The original string : " +mainstr)
print("The add string : " +sub)

finalstr = list(mainstr)
finalstr.insert(N,sub)
finalstr = ''.join(finalstr)
print("The final string : " + str(finalstr))
```

Output:

```
Enter main string : Ash Chovatiya
Enter sub string : ish
Enter the position where you want to insert : 3
The original string : Ash Chovatiya
The add string : ish
The final string : Ashish Chovatiya
```