unit1

April 25, 2019

1 GE8161 - PYTHON PROGRAMMING LAB.

```
In [1]: print ("Hello world")
```

```
Hello world
```

```
In [2]: print ("D.Muthukumar")
```

```
D.Muthukumar
```

```
In [8]: #Ex.1 Swapping two numbers using temporary variables
        num1=input('Enter the First Nmber:')
        num2=input('Enter the Second Number:')
        print('Before Swapping ')
        print('Number1=',num1,'  Number2=',num2)
        temp=num1
        num1=num2
        num2=temp
        print('After  Swapping ')
        print('Number1=',num1,'  Number2=',num2)
```

```
Enter the First Nmber:12
Enter the Second Number:10
Before Swapping
Number1= 12   Number2= 10
After  Swapping
Number1= 10   Number2= 12
```

```
In [1]: #Ex.1.2 Swapping two numbers without using temporary variables
        num1=input('Enter the First Nmber:')
        num2=input('Enter the Second Number:')
        print('Before Swapping ')
        print('Number1=',num1,'  Number2=',num2)
        num2,num1=num1,num2
        print('After  Swapping ')
        print('Number1=',num1,'  Number2=',num2)
```

```
Enter the First Nmber:15
Enter the Second Number:30
Before Swapping
Number1= 15   Number2= 30
After  Swapping
Number1= 30   Number2= 15
```

```
In [2]: # To convert celsius to fahrenheit and fahrenheit to celsius vice versa
        celsius=float(input('Enter the temperature in celsius:\n'))
        fahrenheit=(celsius * 1.8)+32
        print('Temperature in fahrenheit is : \t',fahrenheit)
        print('Fahrenheit to celsius conversion...')
        celsius1=(fahrenheit-32)/1.8
        print('Temperature in celsius is:\t',celsius1)
```

```
Enter the temperature in celsius:
32
Temperature in fahrenheit is :          89.6
Fahrenheit to celsius conversion...
Temperature in celsius is:         31.999999999999996
```

```
In [ ]: # To find the Area of Circumference of the circle
        pi=3.14
        radius=float(input('Enter the radius of circle:'))
        area=3.14* radius* radius
        circumference=2*3.14 *radius
        print('Area of the circle=',area)
        print('Circumference of the circle =',circumference)
```

```
In [1]: # 1.5 Binary, Octal, HexaDecimal Conversion
        num1=int(input('Enter the integer number:'))
        bin1=bin(num1)
        oct1=oct(num1)
        hexadec1=hex(num1)
        print('Input Integer value:',num1)
        print('Integer to Binary Equivalent:', bin1)
        print('Integer to Octal Equivalent:',oct1)
        print('Integer to HexaDecimal Equivalent=',hexadec1)
        binnum=int(bin1,2)
        octnum=int(oct1,8)
        hexadecnum=int(hexadec1,16)
        print('Binary to Integer Equivalent=', binnum)
        print('Octal to Integer Equivalent=',octnum)
        print('Hexa Decimal to Integer Equivalent=',hexadecnum)
```

```
Enter the integer number:15
Input Integer value: 15
```

```
Integer to Binary Equivalent: 0b1111
Integer to Octal Equivalent: 0o17
Integer to HexaDecimal Equivalent= 0xf
Binary to Integer Equivalent= 15
Octal to Integer Equivalent= 15
Hexa Decimal to Integer Equivalent= 15
```

```
In [11]: # 1.6 To find Distance between two points
         import math
         x1=float(input('Enter the First value of Starting point X1:'))
         y1=float(input('Enter the Second value of Starting point Y1:'))
         x2=float(input('Enter the First value of Ending point X2:'))
         y2=float(input('Enter the Second value of Ending point Y2:'))
         dist = math.sqrt((x2 - x1)**2 + (y2 - y1)**2)
         print ('The distance between the points is:', dist)
         # formatted output
         print ('The distance between the points is:%.2f'% dist)
```

```
Enter the First value of Starting point X1:14
Enter the Second value of Starting point Y1:25
Enter the First value of Ending point X2:16
Enter the Second value of Ending point Y2:29
The distance between the points is: 4.47213595499958
The distance between the points is:4.47
```

```
In [1]: # Write a python code to perform Arithmetic operation
        num1=int(input('Enter the First number:'))
        num2=int(input('Enter the Second number:'))
        add1=num1+num2
        sub1=num1-num2
        mul1=num1*num2
        div1=num1*num2
        mod1=num1%num2
        expo1=num1**num2
        floor_division1=num1//num2
        print('Addition=',add1)
        print('Subtraction=',sub1)
        print('Multiplication=',mul1)
        print('Division=',div1)
        print('Modulus=',mod1)
        print('Exponent=',expo1)
        print('Floor Division=',floor_division1)
```

```
Enter the First number:50
Enter the Second number:10
Addition= 60
Subtraction= 40
```

```
Multiplication= 500
Division= 500
Modulus= 0
Exponent= 97656250000000000
Floor Division= 5
```

```
In [8]: # 2.2 Calcuate Square, Cube, Exponent of a Number and Squareroot.
        import math
        number1=int(input('Enter the First Number:'))
        number2=int(input('Enter the Second Number:'))
        square1=number1**2
        cube1=number1**3
        exponent1=number1**number2
        squareroot1=math.sqrt(number1)
        print(num1)
        print('Square of ',number1,'is',square1)
        print('Cube of ',number1,'is',cube1)
        print('Exponent of ',number1,'and',num2,'is',exponent1)
        print('Squareroot of ',number1,'is',squareroot1)
```

```
Enter the First Number:10
Enter the Second Number:2
50
Square of  10 is 100
Cube of  10 is 1000
Exponent of  10 and 2 is 100
Squareroot of  10 is 3.1622776601683795
```

1.1

```
In [1]: # Write a python program to display the current Python version, Keywords and Calendar
        import sys
        import keyword
        import calendar
        print('Current System Version=',sys.version)
        print('Keywords List=',keyword.kwlist)
        month1=int(input('Enter the Month in Two Digits:'))
        year1=int(input('Enter theYear in Four Digits:'))
        print('\n Calendar of Month',month1,'and Year', year1)
        print(calendar.month(year1,month1))
        print('-----------------------------')
        print('\n Calendar of Year',year1)
        print(calendar.calendar(year1))
```

```
Current System Version= 3.6.6 |Anaconda, Inc.| (default, Jun 28 2018, 17:14:51)
[GCC 7.2.0]
Keywords List= ['False', 'None', 'True', 'and', 'as', 'assert', 'break', 'class', 'continue', 'd
```

```
Enter the Month in Two Digits:05
Enter theYear in Four Digits:2019

 Calendar of Month 5 and Year 2019
      May 2019
Mo Tu We Th Fr Sa Su
       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 29 30 31

------------------------------

 Calendar of Year 2019
                                  2019

      January                 February                March
Mo Tu We Th Fr Sa Su    Mo Tu We Th Fr Sa Su    Mo Tu We Th Fr Sa Su
    1  2  3  4  5  6                 1  2  3                 1  2  3
 7  8  9 10 11 12 13     4  5  6  7  8  9 10     4  5  6  7  8  9 10
14 15 16 17 18 19 20    11 12 13 14 15 16 17    11 12 13 14 15 16 17
21 22 23 24 25 26 27    18 19 20 21 22 23 24    18 19 20 21 22 23 24
28 29 30 31             25 26 27 28             25 26 27 28 29 30 31

       April                   May                     June
Mo Tu We Th Fr Sa Su    Mo Tu We Th Fr Sa Su    Mo Tu We Th Fr Sa Su
 1  2  3  4  5  6  7              1  2  3  4  5                 1  2
 8  9 10 11 12 13 14     6  7  8  9 10 11 12     3  4  5  6  7  8  9
15 16 17 18 19 20 21    13 14 15 16 17 18 19    10 11 12 13 14 15 16
22 23 24 25 26 27 28    20 21 22 23 24 25 26    17 18 19 20 21 22 23
29 30                   27 28 29 30 31          24 25 26 27 28 29 30

        July                   August                September
Mo Tu We Th Fr Sa Su    Mo Tu We Th Fr Sa Su    Mo Tu We Th Fr Sa Su
 1  2  3  4  5  6  7              1  2  3  4                    1
 8  9 10 11 12 13 14     5  6  7  8  9 10 11     2  3  4  5  6  7  8
15 16 17 18 19 20 21    12 13 14 15 16 17 18     9 10 11 12 13 14 15
22 23 24 25 26 27 28    19 20 21 22 23 24 25    16 17 18 19 20 21 22
29 30 31                26 27 28 29 30 31       23 24 25 26 27 28 29
                                                30

      October                 November                December
Mo Tu We Th Fr Sa Su    Mo Tu We Th Fr Sa Su    Mo Tu We Th Fr Sa Su
    1  2  3  4  5  6                 1  2  3                    1
 7  8  9 10 11 12 13     4  5  6  7  8  9 10     2  3  4  5  6  7  8
14 15 16 17 18 19 20    11 12 13 14 15 16 17     9 10 11 12 13 14 15
21 22 23 24 25 26 27    18 19 20 21 22 23 24    16 17 18 19 20 21 22
```

```
28 29 30 31                25 26 27 28 29 30          23 24 25 26 27 28 29
                                                      30 31
```

```
In [7]: # Write a python program to check the person is elgible to cast the vote or not..
        age=int(input('Enter your age:'))
        if(age>=18):
            print('Congrats! You are Eligible to cast the Vote')
        else:
            print('Sorry! You are not Eligible to vote')
```

```
Enter your age:16
Sorry! You are not Elgible to vote
```

```
In [9]: # 2.5 Write a python code to check the given number is odd or even..
        num1=int(input('Enter a number:'))
        if(num1%2 ==0):
            print('Num1 is EVEN')
        else:
            print('Num1 is ODD')
```

```
Enter a number:90
Num1 is EVEN
```

```
In [10]: # 3.1 Write a python code to find the biggest among two numbers
         num1=float(input('Enter the first number:'))
         num2=float(input('Enter the second number:'))
         if(num1>num2):
             print('Number1 is the biggest number',num1)
         else:
             print('Number2 is the biggest number',num2)
```

```
Enter the first number:45
Enter the second number:25
Number1 is the biggest number 45.0
```

```
In [11]: # 3.2 Write a python code to find the biggest number among three numbers..
         num1=int(input('Enter the first number'))
         num2=int(input('Enter the Second number'))
         num3=int(input('Enter the Third number'))
         if(num1>num2)and (num1>num3):
             print(num1,' is greater than ',num2 ,' and ', num3)
         elif(num2>num3):
```

```
            print(num2,' is greater than ',num1 ,' and ', num3)
        else:
            print(num3,' is greater than ',num2 ,' and ', num1)
```

```
Enter the first number15
Enter the Second number46
Enter the Third number89
89  is greater than  46  and  15
```

In [12]:
```
# 3.3 Write a python code to check the given number is Positive or Negative or Zero..
num1=int(input('Enter the number:'))
if(num1==0):
    print('The given number ',num1,' is Zero')
elif(num1>0):
    print('The given number ',num1,' is Positive')
else:
    print('The given number ',num1,' is Negative')
```

```
Enter the number:5
The given number  5  is Positive
```

In [3]:
```
# 3.4 Write a python code to find the grade for a given mark
mark1=int(input('Enter the mark1:'))
if(mark1>90 and mark1<=100):
    print('S Grade')
elif(mark1>80 and mark1<=90):
    print('A+ Grade')
elif(mark1>70 and mark1<=80):
    print('A Grade')
elif(mark1>60 and mark1<=70):
    print('B+ Grade')
elif(mark1>=50 and mark1<=60):
    print('B Grade')
else:
    print('RA')
```

```
Enter the mark1:75
A Grade
```

In [6]:
```
# 3.5 Write a python code to find the given year is Leap or NOT..
year1=int(input('Enter the year:'))
if((year1%4 ==0) and (year1%100 !=0)):
    print('Leap Year')
else:
    print('Not a Leap Year')
```

```
Enter the year:2004
Leap Year
```

```
In [8]: # 4.1 Write a python code to print the first 10 numbers
        num1=int(input('Enter the range value 10:'))
        i=1
        print('The first 10 Natural Number:')
        while(i<=num1):
            print(i)
            i=i+1
        print('End of the program..')
```

```
Enter the range value 10:10
The first 10 Natural Number:
1
2
3
4
5
6
7
8
9
10
End of the program..
```

```
In [3]: # 4.2 Write a python code to find the sum and average of first n numbers.
        num1=int(input('Enter the value for n:'))
        sum1=0
        average1=0.0
        for i in range(1,num1+1,1):
            sum1=sum1+i
        average1=sum1/num1
        print('Sum of first n numbers=',sum1)
        print('Average of first n numbers=',average1)
```

```
Enter the value for n:10
Sum of first n numbers= 55
Average of first n numbers= 5.5
```

```
In [5]: # 4.3 Write a python code to checka given number is PRIME or NOT
        num1=int(input('Enter the number greater than or equal to 2:'))
        i=2
        prime=0
        while(i<= num1//2):
            if(num1%i == 0):
```

```
            prime=1
            break
        i=i+1
    if(prime==0):
        print(num1,' is Prime Number')
    else:
        print(num1,' is NOT a Prime Number')
```

```
Enter the number greater than or equal to 2:7
7  is Prime Number
```

In [2]:
```
# 4.4 Write a python code to find the GCD of two numbes using eucledian algorithm
num1=int(input('Enter the First Number:'))
num2=int(input('Enter the Second Number:'))
temp1=num1
temp2=num2
if(num2>num1):
    num1,num2=num2,num1
while(num2>0):
    num1,num2=num2,num1%num2
print('GCD of ',temp1,' and ',temp2,' is ',num1)
```

```
Enter the First Number:116
Enter the Second Number:72
GCD of  116  and  72  is  4
```

In [9]:
```
# 4.5 Write a python code to find the squareoot of a given number using NEWTONs method.
a=int(input('Enter the First number:'))
b=int(input('Enter the Second number:'))
guess=0.5*a
for i in range(b+1):
    guess=(guess+a/guess)/2
print('Squre root of ',a,'= ',guess)
```

```
Enter the First number:4
Enter the Second number:5
Squre root of  4 =  2.0
```

In [12]:
```
# 4.6 Write a python code to Circulate the value of N Numbers
list1=[]
num=int(input('Enter the Total Number of Elements:'))
for i in range(num):
    num1=int(input())
    list1.append(num1)
print('Entered Elements =',list1)
print('\n Circulating the Elements in the list:\n')
```

```
        for i in range(num):
            temp=list1.pop(0)
            list1.append(temp)
            print(list1)
```

```
Enter the Total Number of Elements:5
45
56
82
14
60
Entered Elements = [45, 56, 82, 14, 60]

 Circulating the Elements in the list:

[56, 82, 14, 60, 45]
[82, 14, 60, 45, 56]
[14, 60, 45, 56, 82]
[60, 45, 56, 82, 14]
[45, 56, 82, 14, 60]
```

```
In [2]: # 5.1 Write a python code to check whether a given number is palindrome or NOT.
        num1=int(input('Enter a Number:'))
        palind=num1
        rev=0
        while num1>0:
            rem=num1%10
            num1=num1//10
            rev=rev*10 + rem
        if(palind==rev):
            print('The given number is palindrome..')
        else:
            print('The given number is not a palindrome..')
```

```
Enter a Number:2546
The given number is not a palindrome..
```

```
In [4]: # 5.2 Write a python code to find the given number is amstrong or Not.
        n=int(input('Enter the number:'))
        s=0
        num=n
        while(n>0):
            r=n%10
            s=s+(r**3)
            n=n//10
```

```
        if(s==num):
            print('The number is Amstrong')
        else:
            print('The number is not Amstrong')
```

```
Enter the number:153
The number is Amstrong
```

```
In [8]: # 5.3 Write a python code to print first n prime number
        limit=int(input('Enter a number:'))
        for i in range(2,limit+1):
            k=0
            for j in range(2,i//2+1):
                if(i%j==0):
                    k=k+1
                    break
            if(k==0):
                print(i)
```

```
Enter a number:27
2
3
5
7
11
13
17
19
23
```

```
In [10]: # 5.4 Write a python code to print the numbers in Triangle Pattern.
         num1=int(input('Enter the limit for pattern:'))
         for i in range(1,num1+1):
             print()
             for j in range(1,i+1):
                 print(j,end=" ")
```

```
Enter the limit for pattern:6

1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
1 2 3 4 5 6
```

In [11]:
```
# 6.1 Write a python code to calculate factorial of a number using looping.
num=int(input('Enter a number:'))
factorial=1
if(num<0):
    print('Sorry.. Factorial does not exists for negative value')
elif (num==0):
    print('The factorial of 0 is 1')
else:
    for i in range(1,num+1):
        factorial=factorial*i
print('The factorial of ',num, ' is ',factorial )
```

```
Enter a number:5
The factorial of  5  is  120
```

In [12]:
```
# 6.1 Write a python code to calculate the factorial of a given number sing recursion
def factorial(n):
    if(n==1) or (n==0):
        return 1
    else:
        return(n*factorial(n-1))

n=int(input('Enter the number:'))
print('Factorial of ',n,' is',factorial(n))
```

```
Enter the number:5
Factorial of  5  is 120
```

In [17]:
```
# 6.2 Write a python code to list the numbers between 0 to 100 divisible by 2 and not b
num1=int(input('\n Enter the Maximum range as 100='))
count=0
for i in range(1,num1+1):
    if (i%2==0 and (i%3!=0 and i%5 !=0)):
        print(i,' is divisible by 2 not by 3 and 5')
        count=count+1
print('Total numbers between 1 to 100 divisible by 2 and not by 3 and 5',count)
```

```
 Enter the Maximum range as 100=55
2  is divisible by 2 not by 3 and 5
4  is divisible by 2 not by 3 and 5
8  is divisible by 2 not by 3 and 5
14  is divisible by 2 not by 3 and 5
16  is divisible by 2 not by 3 and 5
22  is divisible by 2 not by 3 and 5
26  is divisible by 2 not by 3 and 5
28  is divisible by 2 not by 3 and 5
```

```
32  is divisible by 2 not by 3 and 5
34  is divisible by 2 not by 3 and 5
38  is divisible by 2 not by 3 and 5
44  is divisible by 2 not by 3 and 5
46  is divisible by 2 not by 3 and 5
52  is divisible by 2 not by 3 and 5
Total numbers between 1 to 100 divisible by 2 and not by 3 and 5 14
```

```
In [18]: # 6.3 Write a python code to find square and cube of a number using function.
         def square_func(num1):
             square1=num1**2
             return(square1)
         def cube_func(num1):
             cube1=num1**3
             return(cube1)

         num1=int(input('Enter any Number:'))
         square1=square_func(num1)
         cube1=cube_func(num1)
         print('\nThe square root of given number ', num1,' is ', square1)
         print('\n The cube of given number ',num1,' is ',cube1)
```

```
Enter any Number:5

The square root of given number  5  is  25

 The cube of given number  5  is  125
```

```
In [21]: # 7.1 Write a python code to perform various built in string methods and function
         str1=input('Enter the String:')
         print('\nMaximum =',max(str1))
         print('\nMinimum =',min(str1))
         print('\nLength =',len(str1))
         print('\nUpper = ',str1.upper())
         print('\nLower = ',str1.lower())
         print('\n isupper=',str1.isupper())
         print('\n islower=',str1.islower())
         print('\n capitalize=',str1.capitalize())
```

```
Enter the string:Kamaraj

Maximum = r

Minimum = K

Length = 7
```

```
Upper =  KAMARAJ

Lower =  kamaraj

 isupper= False

 islower= False

 capitalize= Kamaraj
```

```
In [3]: # 7.2 Write a python code to reverse the string without using built-in function
        def rev_str(str1):
            str2=" "
            i=len(str1)-1
            while(i>=0):
                str2=str2+str1[i]
                i=i-1
            print('The reverse string:',str2)
        str1=input("Enter the string:")
        rev_str(str1)
```

```
Enter the string:KAMARAJ
The reverse string:  JARAMAK
```

```
In [10]: # 7.3 Write a python code to print first n terms of fibonacci series
         # Functon declaration
         def fibo1(limit1):
             num1=0
             num2=1
             print('The fibonacci series')
             if(limit1==1):
                 prit(num1)
             else:
                 print(num1)
                 print(num2)
                 count=2
             while(count<limit1):
                 num3=num1+num2
                 print(num3)
                 num1=num2
                 num2=num3
                 count=count+1
         # Main program
         limit1=int(input('Enter the limit value:'))
         if(limit1==0):
             print('Enter the positive value:')
```

```
        else:
            fibo1(limit1)
```

```
Enter the limit value:10
The fibonacci series
0
1
1
2
3
5
8
13
21
34
```

```
In [11]: # 7.3 Write a python code to add and multiply two Numbers using Lambda function.
         sum1=lambda num1,num2:num1+num2
         mult1=lambda num1,num2:num1*num2
         num1=int(input('Enter the First number:'))
         num2=int(input('Enter the Second number'))
         print('Addition of two numbers using lamda function:',sum1(num1,num2))
         print('Multiplication of two numbers using lambda function:',mult1(num1,num2))
```

```
Enter the First number:10
Enter the Second number20
Addition of two numbers using lamda function: 30
Multiplication of two numbers using lambda function: 200
```

```
In [12]: # 8.1 Write a python code to find the maximum and the minimum number in the list
         list1=[]
         num1=int(input('Enter the total number of elements:'))
         for i in range(0,num1):
             a=int(input())
             list1.append(a)
         max1=list1[0]
         min1=list1[0]
         for i in range(1,num1):
             if (list1[i]>max1):
                 max1=list1[i]
             if (list1[i]<min1):
                 min1=list1[i]

         print('Maxmimum Number of the list:',max1)
         print('Minimum Number of the list:',min1)
```

```
Enter the total number of elements:5
10
```

```
50
48097
2
5
Maxmimum Number of the list: 48097
Minimum Number of the list: 2
```

```
In [19]: # 8.2 Write a python code to perform the linear serach
         def linear_search(list1,search):
             flag=0
             for i in range(len(list1)):
                 if(list1[i]==search):
                     print('The Element ',search,' is found in ',i,' Location.')
                     flag=1
                     break
             if(flag==0):
                 print('The Element ', search,' is not found..')

          # main program starting here..
         list1=[]
         num1=int(input('\nEnter the total number of elements:'))
         print('\n Enter the elements one by one.')
         for i in range(0,num1):
             num2=int(input())
             list1.append(num2)
         search=int(input('Enter the number to search:'))
         linear_search(list1,search)
```

```
Enter the total number of elements:6

 Enter the elements one by one.
87
98
54
65
21
12
Enter the number to search:54
The Element  54  is found in  2  Location.
```

```
In [21]: # 8.3 Write a python code to perform binary search..
         list1=[]
         flag=0
         num1=int(input('Enter the total input elements='))
         print('Enter the element one by one')
```

```
        for i in range(num1):
            num2=int(input())
            list1.append(num2)
        low=0
        high=len(list1)-1
        search=int(input('Enter the element to search:'))
        while(low<=high):
            mid=(low+high)//2
            if(list1[mid]==search):
                flag=1
                print('The search Element ',search,' is found in ',mid,' position')
                break
            elif(search<list1[mid]):
                high=mid-1
            else:
                low=mid+1
        if(flag==0):
                print('The search element ',search,' is not found')
```

```
Enter the total input elements=6
Enter the element one by one
5
4
7
8
9
3
Enter the element to search:7
The search Element  7  is found in  2  position
```

```
In [22]: # 8.4 Write a python code to perform matrix addition.
        print('Enter the value for first matrix:')
        mat1=[]
        for i in range(3):
            row=[]
            for j in range(3):
                num1=int(input())
                row.append(num1)
            mat1.append(row)
            print('Input matrix1 ',mat1)
        print('Enter the value for Second matrix:')
        mat2=[]
        for i in range(3):
            row=[]
            for j in range(3):
                num2=int(input())
```

```
                row.append(num2)
            mat2.append(row)
            print('\nInput matrix2 ',mat2)
            result=[]
        for i in range(3):
            row=[]
            for j in range(3):
                col=mat1[i][j]+mat[i][j]
                row.append(col)
            result.append(row)
        print('After matrix addition..\n ',mat1)
        for i in range(3):
            print()
            for j in range(3):
                print(result[i][j], end='\t')

Enter the value for first matrix:
1
2
```

```
---------------------------------------------------------------------------

ValueError                                Traceback (most recent call last)

<ipython-input-22-70ce0c830625> in <module>
  5     row=[]
  6     for j in range(3):
----> 7         num1=int(input())
  8         row.append(num1)
  9     mat1.append(row)


ValueError: invalid literal for int() with base 10: ''
```

```
In [ ]: m=int(input('ENTER MARTIX ROW SIZE m : '))
        n=int(input('ENTER MARTIX COLUMN SIZE n : '))

        #initializing matrix elements as 0
        X = [[0]*n for j in range(m)]
        Y = [[0]*n for j in range(m)]
        result = [[0]*n for j in range(m)]

        print ('INPUT-FIRST MATRIX : ')
        #getting input to matrix X
```

```
        for i in range (m):
            for j in range (n):
                print ('entry in row: ',i+1,' column: ',j+1)
                X[i][j] = int(input())

        print ('INPUT-SECOND MATRIX : ')
        #getting input to matrix X
        for i in range (m):
            for j in range (n):
                print ('entry in row: ',i+1,' column: ',j+1)
                Y[i][j] = int(input())

        #printing first matrix X
        print ('PRINT-FIRST MATRIX : ')
        for i in range (m):
            for j in range (n):
                print (X[i][j],end='\t')
            print('\n')

        print ('PRINT-SECOND MATRIX : ')
        #printing second matrix Y
        for i in range (m):
            for j in range (n):
                print (Y[i][j],end='\t')
            print ('\n')

        #adding X and Y to result
        for i in range(len(X)):
            for j in range(len(X[0])):
                result[i][j] = X[i][j] + Y[i][j]
        #displaying result
        print ('SUM OF MATRICES IS : ')
        for i in range (m):
            for j in range (n):
                print (result[i][j],end='\t')
            print ('\n')
```

```
In [1]: # Ex.No. 8.5 MATRIX MULTIPLICATION

        m=int(input('ENTER MARTIX ROW SIZE m : '))
        n=int(input('ENTER MARTIX COLUMN SIZE n : '))

        #initializing matrix elements as 0
        X = [[0]*n for j in range(m)]
        Y = [[0]*n for j in range(m)]
        result = [[0]*n for j in range(m)]

        print ('INPUT-FIRST MATRIX : ')
```

```
        #getting input to matrix X
        for i in range (m):
            for j in range (n):
                print ('entry in row: ',i+1,' column: ',j+1)
                X[i][j] = int(input())

        print ('INPUT-SECOND MATRIX : ')
        #getting input to matrix X
        for i in range (m):
            for j in range (n):
                print ('entry in row: ',i+1,' column: ',j+1)
                Y[i][j] = int(input())

        #printing first matrix X
        print ('PRINT-FIRST MATRIX : ')
        for i in range (m):
            for j in range (n):
                print (X[i][j],end='\t')
            print('\n')

        print ('PRINT-SECOND MATRIX : ')
        #printing second matrix Y
        for i in range (m):
            for j in range (n):
                print (Y[i][j],end='\t')
            print ('\n')

        #Multiply X with Y to result
        for i in range(m):
            for j in range(n):
                result[i][j]=0
                for k in range(m):
                    result[i][j] = result[i][j]+X[i][k] + Y[k][j]
        #displaying result
        print ('MULTIPLY - MATRICES IS : ')
        for i in range (m):
            for j in range (n):
                print (result[i][j],end='\t')
            print ('\n')
```

```
ENTER MARTIX ROW SIZE m : 3
ENTER MARTIX COLUMN SIZE n : 3
INPUT-FIRST MATRIX :
entry in row:  1  column:  1
1
entry in row:  1  column:  2
0
entry in row:  1  column:  3
```

```
1
entry in row:  2  column:  1
2
entry in row:  2  column:  2
0
entry in row:  2  column:  3
2
entry in row:  3  column:  1
3
entry in row:  3  column:  2
1
entry in row:  3  column:  3
1
INPUT-SECOND MATRIX :
entry in row:  1  column:  1
2
entry in row:  1  column:  2
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)

<ipython-input-1-7816cefb2dd3> in <module>
 21     for j in range (n):
 22         print ('entry in row: ',i+1,' column: ',j+1)
---> 23         Y[i][j] = int(input())
 24
 25 #printing first matrix X


ValueError: invalid literal for int() with base 10: ''
```

In [8]:
```
# Ex.No. 9.1 Built-In function with list
list1=[10,30,70,80,66,90]
list2=[10,500,400,300,300,700]
print('Maximum in the list1=',max(list1),' list2=',max(list2))
print('Minimum in the list1=',min(list1),' list2=', min(list2))
print('Length of the list=', len(list1), 'and list2=',len(list2))
print('Sum of list1=', sum(list1),' and list2=',sum(list2))
print('Concatenation of the list1 and list2=',list1+list2)
#print('Repetition of the list1=',list1**2)
print('Membership 30 in list1=',30 in list1)
print('Membership 30 not in list=', 30 not in list1)
print('Membership 400 in list2=',400 in list2)
```

```
print('Membership 400 not in list2=',400 not in list2)
print('Counting the input number in the list2=', list2.count(300))
print('Sorted of list1=',sorted(list1))
print('Sorted of list2=', sorted(list2))
list1.sort()
print('Sorting of list1=', list1)
list1.append(978)
print('After Append of list1=',list1)
list1.reverse()
print('Reversing of list1=',list1)
#list1.extend(70,30,80)
#print('Extending of list1=',list1)
cnt=list2.count(700)
print('Count 700 in list2=',cnt)
```

```
Maximum in the list1= 90  list2= 700
Minimum in the list1= 10  list2= 10
Length of the list= 6 and list2= 6
Sum of list1= 346  and list2= 2210
Concatenation of the list1 and list2= [10, 30, 70, 80, 66, 90, 10, 500, 400, 300, 300, 700]
Membership 30 in list1= True
Membership 30 not in list= False
Membership 400 in list2= True
Membership 400 not in list2= False
Counting the input number in the list2= 2
Sorted of list1= [10, 30, 66, 70, 80, 90]
Sorted of list2= [10, 300, 300, 400, 500, 700]
Sorting of list1= [10, 30, 66, 70, 80, 90]
After Append of list1= [10, 30, 66, 70, 80, 90, 978]
Reversing of list1= [978, 90, 80, 70, 66, 30, 10]
Count 700 in list2= 1
```

```
In [10]: # Ex.No. 9.2 To search theelement in the dictionary
         students={'19uit01':'XXXXX','19uit02':'YYYYY','19uite03':'ZZZZZ'}
         flag=0
         print('Roll Number =',students.keys())
         print('Name=',students.values())
         search=input('Enter the Roll number to search:')
         for i in students:
             students[i]
             if(i==search):
                 flag=1
                 print('The search element ', search,' Name :',students[i],' is found')
                 break
         if(flag==0):
             print('The search element ', search,' is not found')
```

```
Roll Number = dict_keys(['19uit01', '19uit02', '19uite03'])
```

```
Name= dict_values(['XXXXX', 'YYYYY', 'ZZZZZ'])
Enter the Roll number to search:19uit06
The search element  19uit06  is not found
```

```
In [11]: # Ex.No. 9.3 To perform command line argument for word count
         import sys
         program_name=sys.argv[0]
         arguments=sys.argv[1:]
         count=len(arguments)
         print('File name:',program_name)
         print('Number of words in command line ',count)
         for i in sys.argv:
             print('Argument:',i)
```

```
File name: /home/nbuser/anaconda3_501/lib/python3.6/site-packages/ipykernel/__main__.py
Number of words in command line  2
Argument: /home/nbuser/anaconda3_501/lib/python3.6/site-packages/ipykernel/__main__.py
Argument: -f
Argument: /home/nbuser/.local/share/jupyter/runtime/kernel-f15f9060-b30d-420c-984f-b26b63d72186.
```

```
In [15]: # Ex.No. 9.4 To Implement Histogram to count the Frequency of character using DICTIONAR
         str1='Welcome to Python Programming'
         dict1={}
         for i in str1:
             if i not in dict1:
                 dict1[i]=1
             else:
                 dict1[i]=dict1[i]+1
         print('\n\n KEYS\t VALUES \t FREQUENCY COUNT')
         for i in dict1:
             print(i,'\t',dict1[i],'\t\t','*'*dict1[i])
```

```
 KEYS         VALUES          FREQUENCY COUNT
W          1                 *
e          2                 **
l          1                 *
c          1                 *
o          4                 ****
m          3                 ***
           3                 ***
t          2                 **
P          2                 **
y          1                 *
h          1                 *
```

```
n          2                    **
r          2                    **
g          2                    **
a          1                    *
i          1                    *
```

```
In [17]: # Ex.No. 10.1 To do selection sort using function.
         def selection_sort(list1):
             print('The input elements before sorting\n',list1)
             for i in range(num1-1):
                 min1=i
                 for j in range(i+1,num1):
                     if(list1[min1]>list1[j]):
                         min1=j
                 list1[i],list1[min1]=list1[min1],list1[i]
                 print('The input element after sorting list..',list1)

         # Main program starting here..
         list1=[]
         num1=int(input('Enter the total input elements='))
         print('Enter the elements one by one=')
         for i in range(num1):
             num2=int(input())
             list1.append(num2)
         selection_sort(list1)
```

```
Enter the total input elements=5
Enter the elements one by one=
12
98
56
34
75
The input elements before sorting
 [12, 98, 56, 34, 75]
The input element after sorting list.. [12, 98, 56, 34, 75]
The input element after sorting list.. [12, 34, 56, 98, 75]
The input element after sorting list.. [12, 34, 56, 98, 75]
The input element after sorting list.. [12, 34, 56, 75, 98]
```

```
In [19]: # Ex.No. 10.2 To do Insertion sort using function.
         def insertion_sort(list1):
             print('The input elements before sorting\n',list1)
             for i in range(1,num1):
                 j=i
                 while(j>0)and(list1[j-1]>list1[j]):
```

```
                    temp=list1[j]
                    list1[j]=list1[j-1]
                    list1[j-1]=temp
                    j=j-1
                print("The input elements after sorting\n",list1)

        # main program starting here..
        list1=[]
        num1=int(input('Enter the total input elements='))
        print('Enter the elements one by one..')
        for i in range(num1):
            num2=int(input())
            list1.append(num2)
        insertion_sort(list1)
```

```
Enter the total input elements=5
Enter the elements one by one..
12
16
89
64
13
The input elements before sorting
 [12, 16, 89, 64, 13]
The input elements after sorting
 [12, 16, 89, 64, 13]
The input elements after sorting
 [12, 16, 89, 64, 13]
The input elements after sorting
 [12, 16, 64, 89, 13]
The input elements after sorting
 [12, 13, 16, 64, 89]
```

```
In [1]: # 10.3 To perform merge sort
        def merge(left,right):
            result=[]
            i,j=0,0
            while len(result)<len(left)+len(right):
                if left[i]<right[j]:
                    result.append(left[i])
                    i+=1
                else:
                    result.append(right[j])
                    j+=1
                if i==len(left) or j==len(right):
                    result.extend(left[i:] or right[j:])
                    break
```

```
            return result
        def mergesort(list):
            if len(list)<2:
                return list
            mid=len(list)//2
            left=mergesort(list[:mid])
            right=mergesort(list[mid:])
            return merge(left,right)


        n=int(input('Enter the total element:'))
        list1=[]
        print('\nEnter the elements one by one..')
        for i in range(0,n):
            list1.append(int(input()))
        print("\nBefort sorting..")
        print(list1)
        print("\nAfter Sorting..")
        r=mergesort(list1)
        print(r)
```

```
Enter the total element:5

Enter the elements one by one..
15
2
8
47
90

Befort sorting..
[15, 2, 8, 47, 90]

After Sorting..
[2, 8, 15, 47, 90]
```

```
In [ ]: # 11.1 To copy file1 contentsinto file2
        fp1=open('mergesort.py','r')
        fp2=open('copiedfile.py','w')
        for i in fp1:
            fp2.write(i)
        print('\nFile1 is copied into file2')
        fp1.close()
        fp2.close()
```

```
In [2]: # 11.1 To find most frequent word in the given input file.
        file1=open('input.py','r')
```

```
        wordfreq={}
        for line in file1:
            words=line.split()
            for i in words:
                if i in wordfreq:
                    wordfreq[i]=wordfreq[i]+1
                else:
                    wordfreq[i]=1
            for i in wordfreq:
                print(i,'\t',wordfreq[i])
            wordfreq1=sorted(wordfreq.values())
            print(wordfreq)
            file1.close
        search=max(wordfreq)
        for i in wordfreq:
            if(wordfreq[i]==search):
                print('The most frequent words is:',i,search)
                break


        ---------------------------------------------------------------------------

        FileNotFoundError                         Traceback (most recent call last)

        <ipython-input-2-152ee3d942bd> in <module>
          1 # 11.1 To find most frequent word in the given input file.
    ----> 2 file1=open('input.py','r')
          3 wordfreq={}
          4 for line in file1:
          5     words=line.split()


        FileNotFoundError: [Errno 2] No such file or directory: 'input.py'


In [ ]: #12.1  Elliptical orbits

        import pygame
        import math
        import sys

        pygame.init()

        screen = pygame.display.set_mode((600, 300))
        pygame.display.set_caption("Elliptical orbit")

        clock = pygame.time.Clock()
```

```
        while(True):
            for event in pygame.event.get():
                if event.type == pygame.QUIT:
                    sys.exit()

            xRadius = 250
            yRadius = 100

            for degree in range(0,360,10):
                x1 = int(math.cos(degree * 2 * math.pi / 360) * xRadius) + 300
                y1 = int(math.sin(degree * 2 * math.pi / 360) * yRadius) + 150
                screen.fill((0, 0, 0))
                pygame.draw.circle(screen, (255, 0, 0), [300, 150], 35)
                pygame.draw.ellipse(screen, (255, 255, 255), [50, 50, 500, 200], 1)
                pygame.draw.circle(screen, (0, 0, 255), [x1, y1], 15)

                pygame.display.flip()
                clock.tick(5)
```

In [ ]:
```
        #12.2 Python program to simulate bouncing ball using pygame.
        import pygame
        import math
        import sys
        pygame.init()
        size=width, height=1500,750
        speed=[1,1]
        black=0,0,0
        screen=pygame.display.set_mode(size)
        ball=pygame.image.load('ball.jpg')
        ballrect=ball.get_rect()
        while 1:
            for event in pygame.event.get():
                if event.type==pygame.QUIT:
                    sys.exit()
            ballrect=ballrect.move(speed)
            if ballrect.left<0 or ballrect.right>width:
                speed[0]=speed[0]
            if ballrect.top<0 or ballrect.bottom>height:
                speed[1]=speed[1]
            screen.fill(black)
            screen.blit(ball,ballrect)
            pygame.display.flip()
```

In [ ]:
```
        # 13.1 To draw a square shpae using turtle
        import turtle
        turtle.forward(50)
        turtle.right(90)
```

```
turtle.forward(50)
turtle.right(90)
turtle.forward(50)
turtle.right(90)
turtle.forward(50)
turtle.right(90)
```