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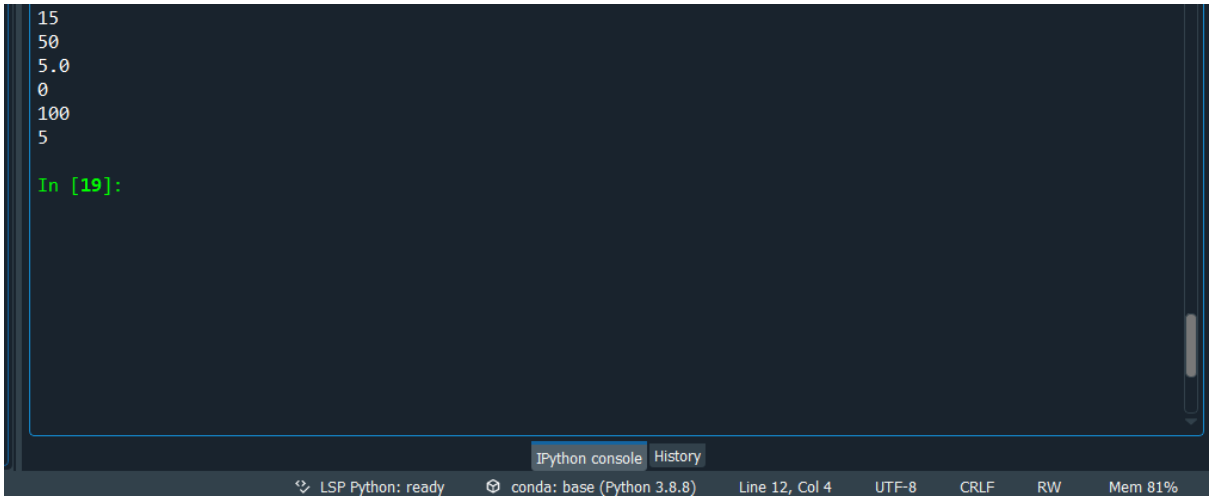
COURSE-MCA
SEC-B
SUBJECT-MACHINE LEARNING USING PYTHON

1. Programs on Basics of Python

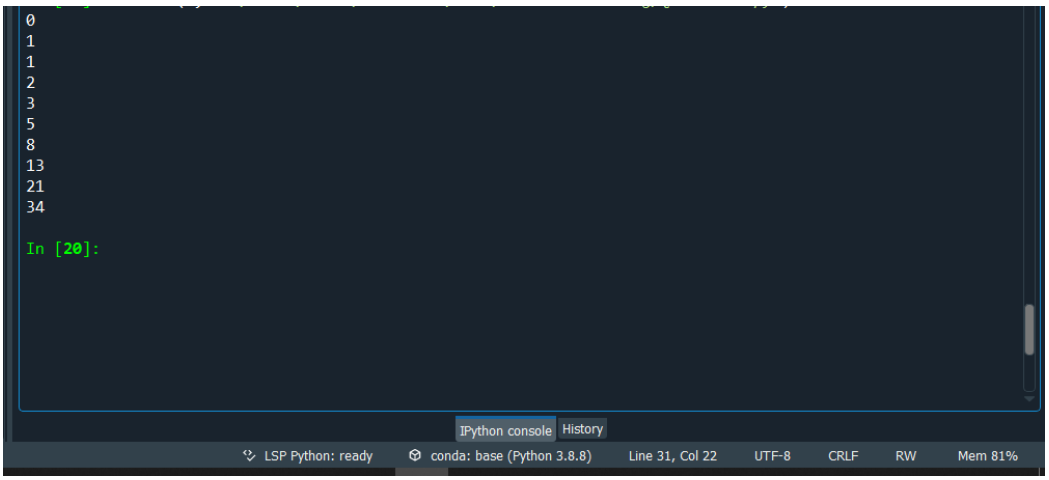
1. Write a program to use the mathematical operators.

```
print(10+5)
print(10*5)
print(10/2)
print(10%2)
print(10**2)
print(10//2)
```



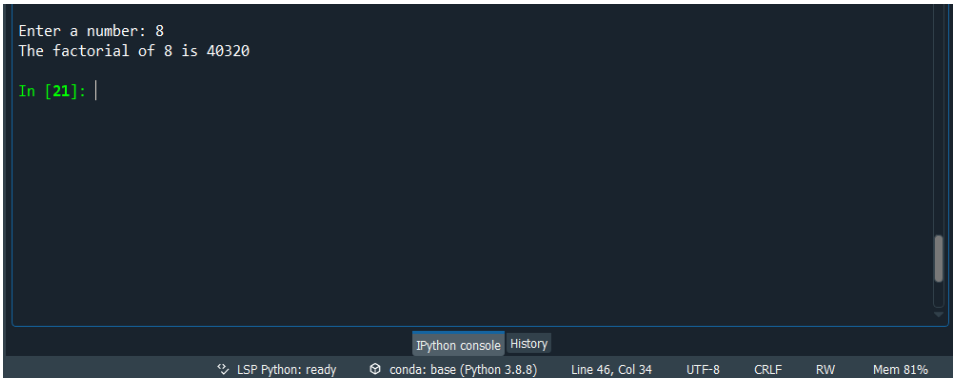
2.write a program to take an input of numbers from the user and print the Fibonacci series to the terminal number.

```
def fib(n):
    a = 0
    b = 1
    if n == 1:
        print(a)
    else:
        print(a)
        print(b)
        for i in range(2,n):
            c = a + b
            a = b
            b = c
            print(c)
fib(10)
```



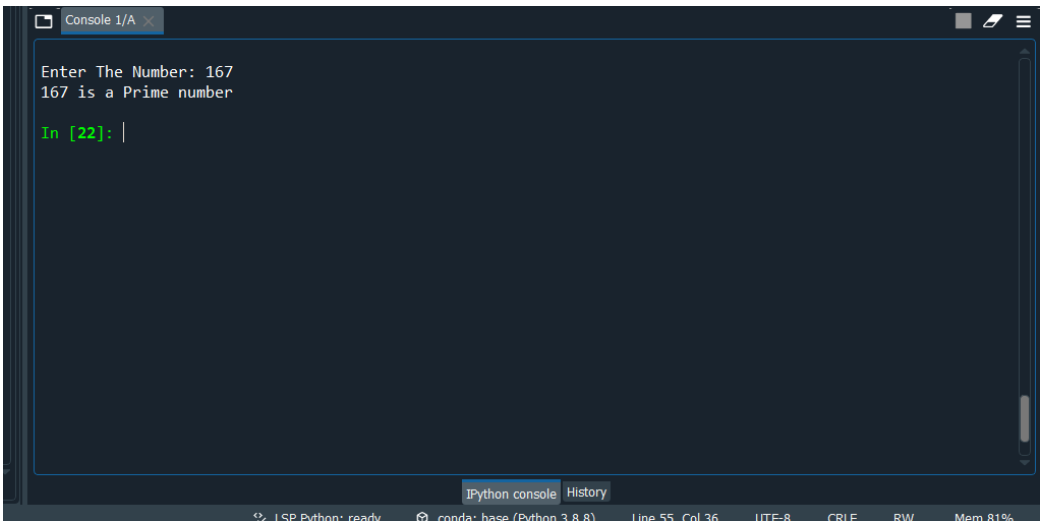
3.Write a program to print the factorial of the number input by the user.

```
num = int(input("Enter a number: "))
factorial = 1
if num < 0:
   print(" Factorial does not exist for negative numbers")
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)
```



4.Write a program to check whether a given number is a prime number or not using loops.

```
number = int(input("Enter The Number: "))

if number > 1:
    for i in range(2,int(number/2)+1):
        if (number % i == 0):
            print(number, "is not a Prime Number")
            break
    else:
        print(number,"is a Prime number")
```



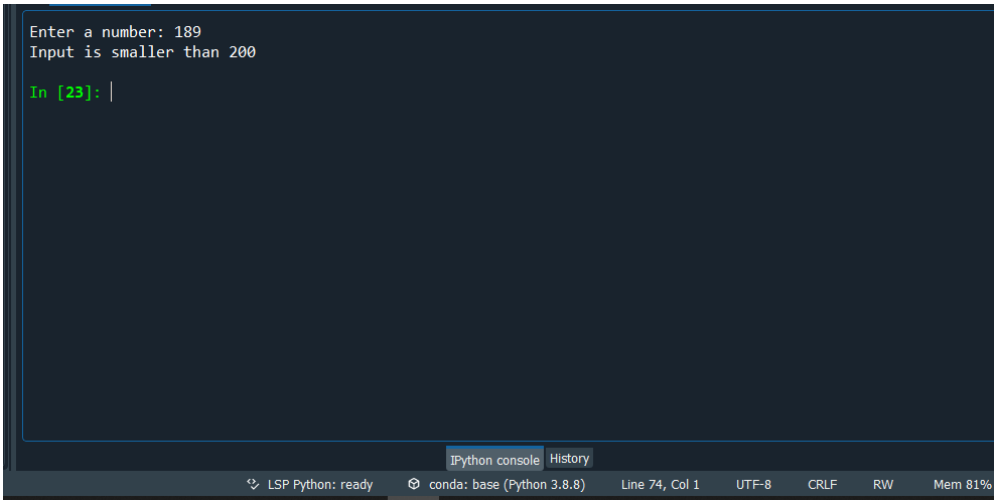
5. Write a program to demonstrate the importing of modules of python.

```
def display_message():
return "HELLO EVERYONE!"
```

```
import test
print(test.display_message())
```

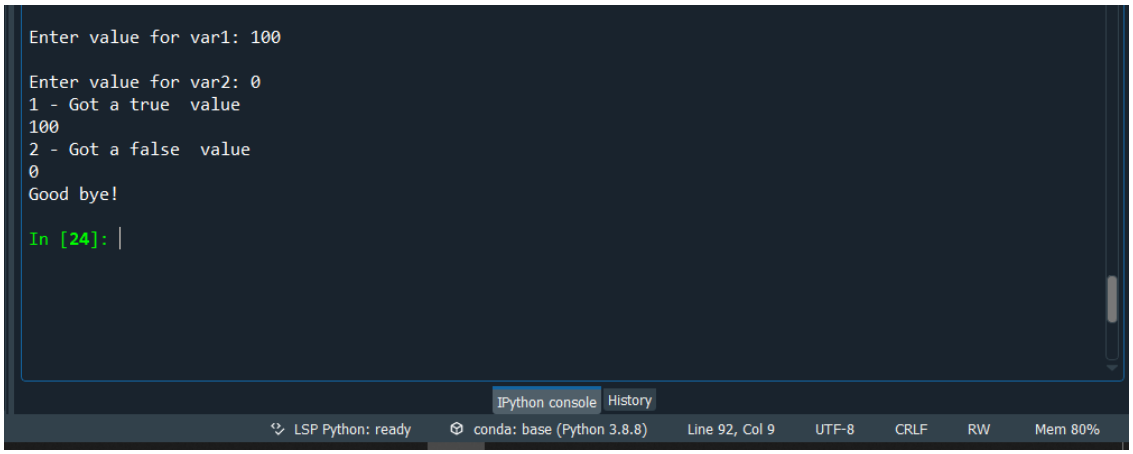
6. Write a program to demonstrate the use of nested if statements.

```
var = int(input("Enter a number: "))
if var < 200:
    print("Input is smaller than 200 ")
    if (var==150):
        print("Input is  150 ")
    elif (var==100):
        print("Input is 100 ")
    elif (var==50):
        print("Input is  50 ")

else:
    print("Input is greater than 200 ")
```



7. Write a program to demonstrate the use of the else clause.

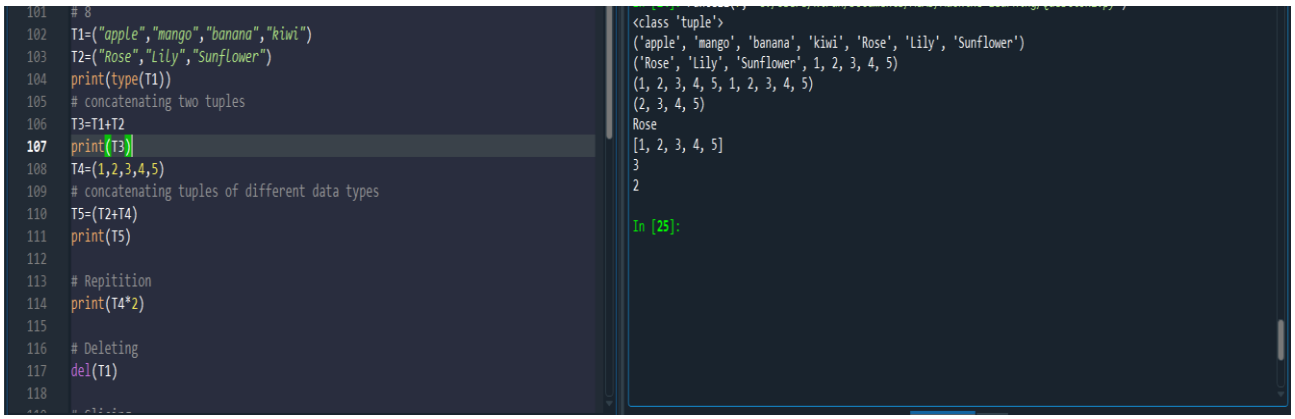
```
var1 = int(input("Enter value for var1: "))
var2 = int(input("Enter value for var2: "))
if var1:
    print("1 - Got a true  value")
    print(var1)
else:
    print ("1 - Got a false value")
    print (var1)

if var2:
    print ("2 - Got a true  value")
    print (var2)
else:
    print ("2 - Got a false  value")
    print (var2)

print ("Good bye!")
```



8. Write a program to illustrate the usage of Tuples.

```
T1=("apple","mango","banana","kiwi")
T2=("Rose","Lily","Sunflower")
```

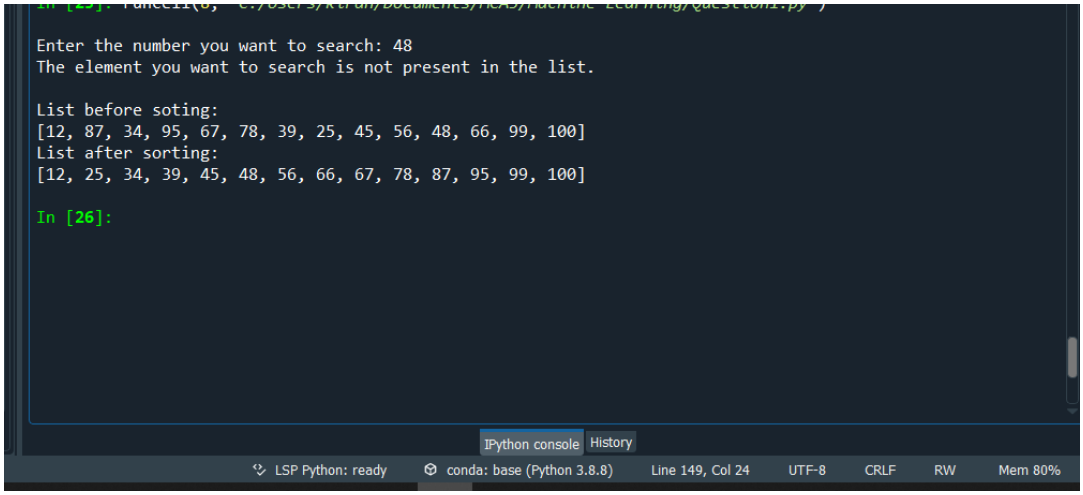
```
print(type(T1))
# concatenating two tuples
T3=T1+T2
print(T3)
T4=(1,2,3,4,5)
# concatenating tuples of different data types
T5=(T2+T4)
print(T5)
# Repitition
print(T4*2)
# Deleting
del(T1)
# Slicing
print(T4[1:])
print(T2[0])
# converting tuple to list
T6=list(T4)
print(T6)
# counting the occurence of a particular element in the tuple
T7=(1,4,2,5,2,3,4,5,6,7,7,8,9,2)
print(T7.count(2))
print(T7.count(7))
```



9. Write a program for searching an element and sorting a List.

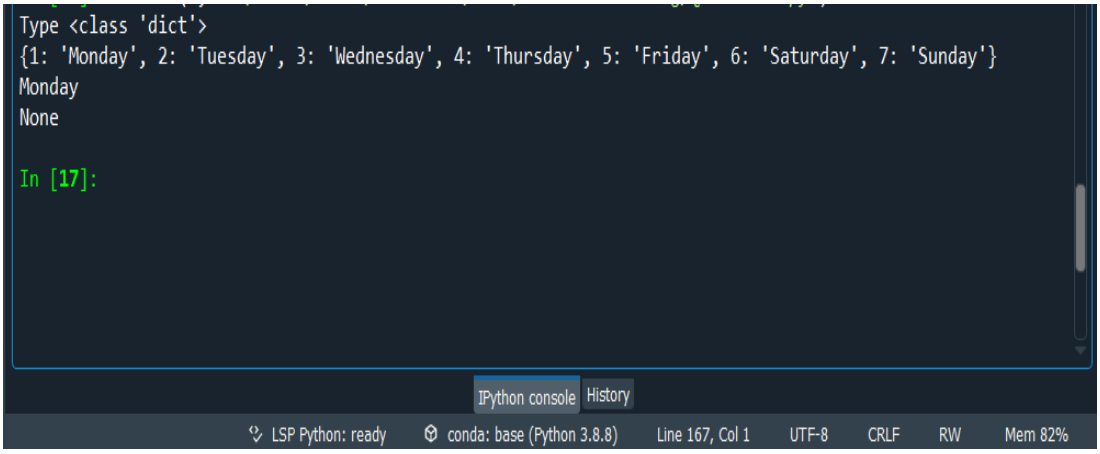
```
def search(Li, x):

    for i in range(len(Li)):

        if Li[i] == x:
            return i

    return -1

Li=[12,87,34 ,95,67 ,78,39,25,45,56,48,66,99,100]
num = int(input("Enter the number you want to search: "))
result = search(Li,num)
```

```
if (result==1):
    print(num ,"is at ", result,"th index")
else:
    print("The element you want to search is not present in the list.")
print(" ")
print("List before soting: ")
print(Li)
Li.sort()
print("List after sorting: ")
print(Li)
```



10. Write a program to illustrate the usage of Dictionaries.

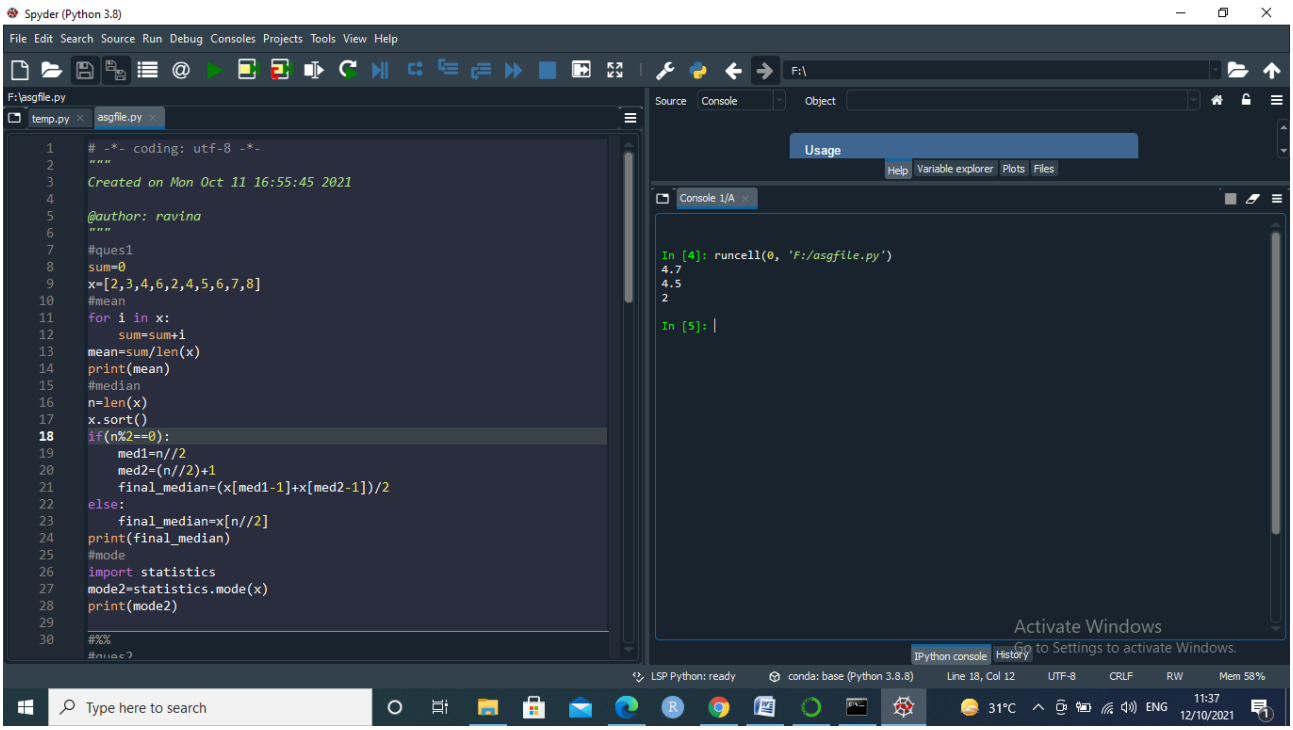
```
dict={}
dict={1:'Monday',2:'Tuesday',3:'Wednesday',4:'Thursday',5:'Friday',6:'Saturday',7:'Sunday'}
print("Type",type(dict))
print(dict)
print(dict[1])
res=dict.get("2")
print(res)
```



2. Programs on Statistical Concepts and introduction to Linear Algebra using Python

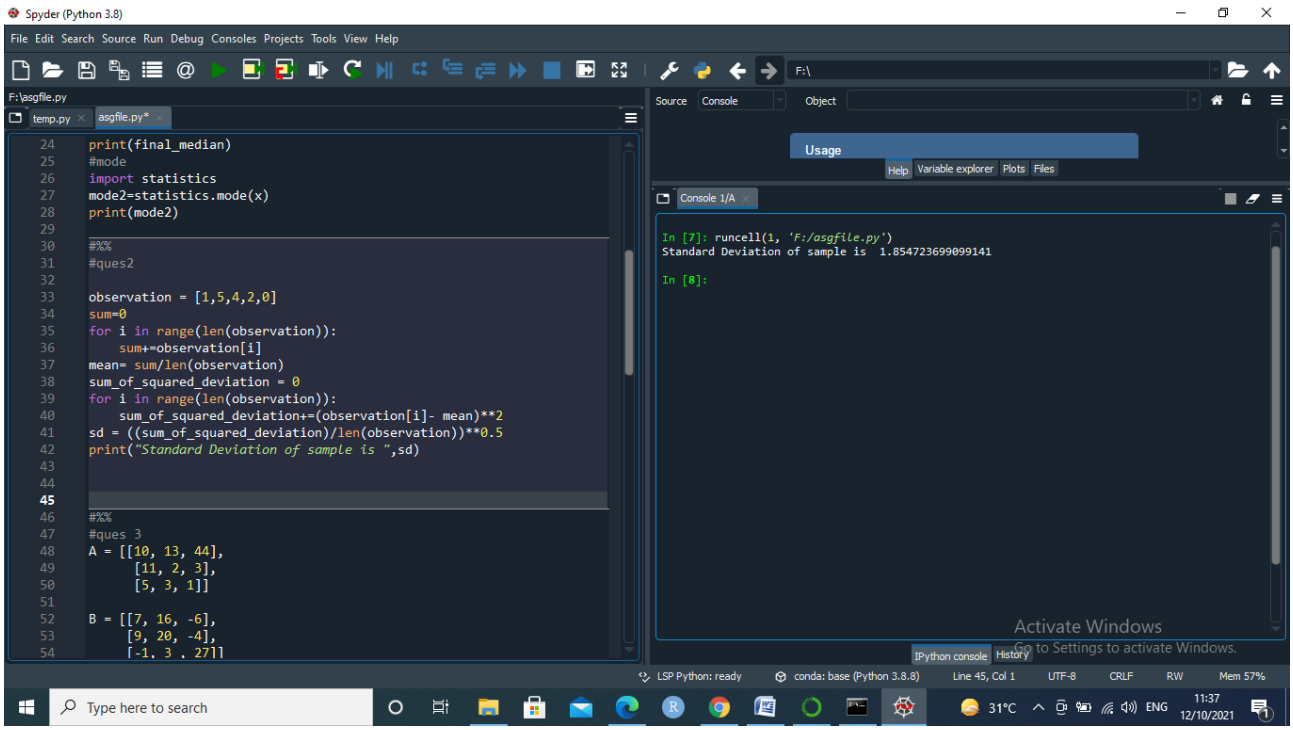
1.Write a program to find the mean. mode and median of the given range of numbers.

```
#ques1
sum=0
x=[2,3,4,6,2,4,5,6,7,8]
#mean
for i in x:
    sum=sum+i
mean=sum/len(x)
print(mean)
#median
n=len(x)
x.sort()
if(n%2==0):
    med1=n//2
    med2=(n//2)+1
    final_median=(x[med1-1]+x[med2-1])/2
else:
    final_median=x[n//2]
print(final_median)
#mode
import statistics
mode2=statistics.mode(x)
print(mode2)
```



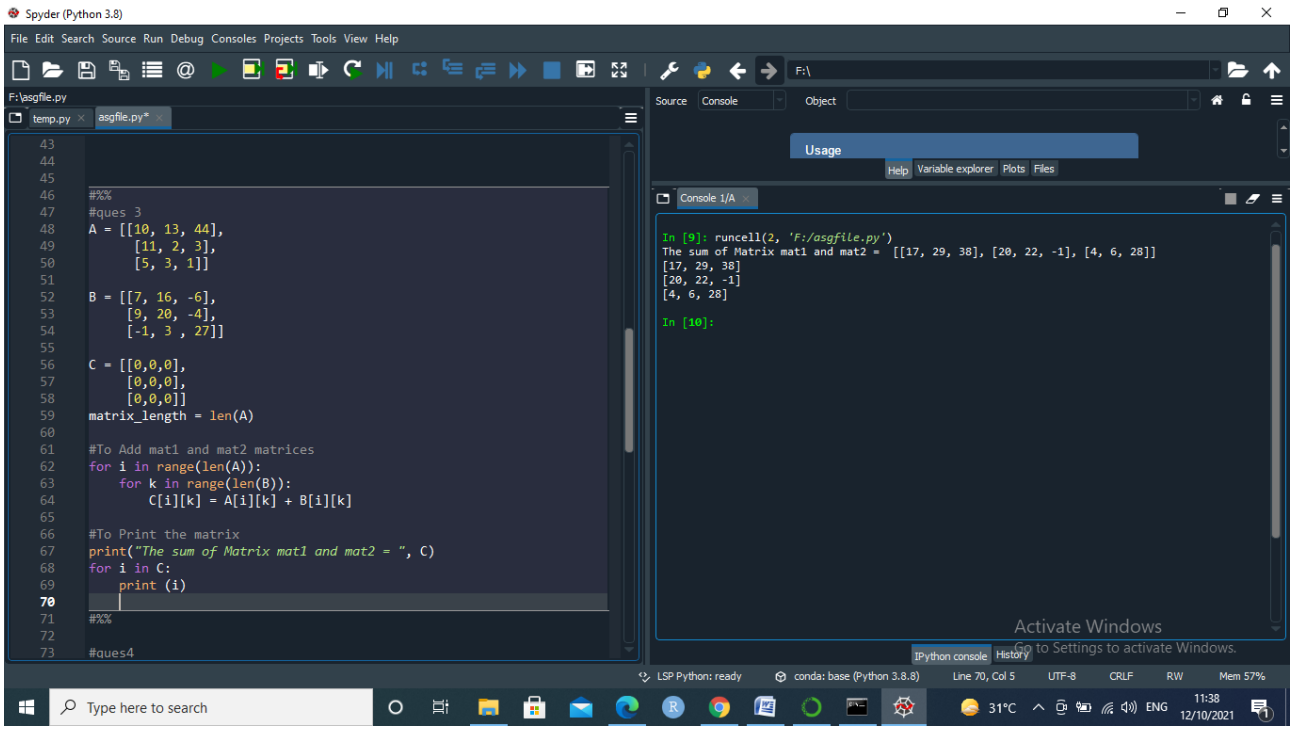
2 Write a program to calculate the standard deviation of a given set of numbers.

```
observation = [1,5,4,2,0]
sum=0
for i in range(len(observation)):
    sum+=observation[i]
mean= sum/len(observation)
sum_of_squared_deviation = 0
for i in range(len(observation)):
    sum_of_squared_deviation+=(observation[i]- mean)**2
sd = ((sum_of_squared_deviation)/len(observation))**0.5
print("Standard Deviation of sample is ",sd)
```



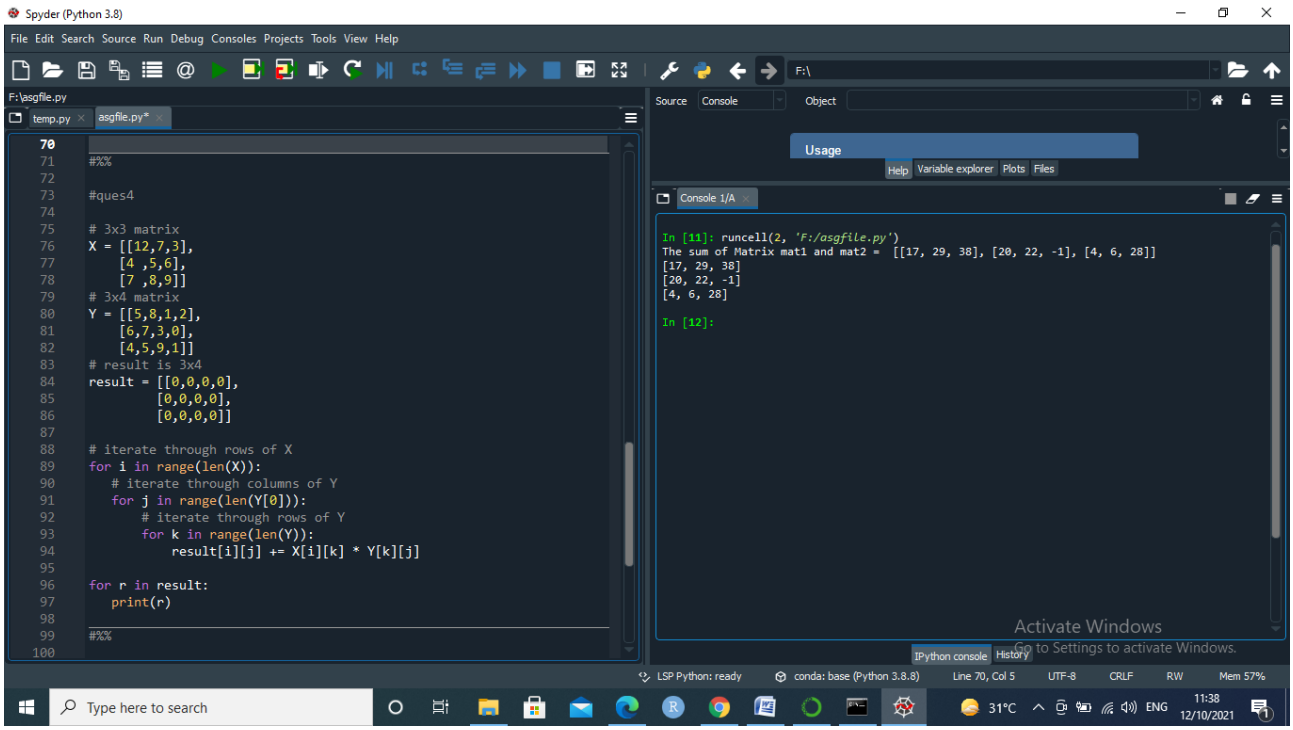
3. Write a program to calculate the addition of two 3x 3 matrices.

```
#ques 3
A = [[10, 13, 44],
     [11, 2, 3],
     [5, 3, 1]]

B = [[7, 16, -6],
    [9, 20, -4],
    [-1, 3 , 27]]

C = [[0,0,0],
    [0,0,0],
    [0,0,0]]
matrix_length = len(A)

#To Add mat1 and mat2 matrices
for i in range(len(A)):
   for k in range(len(B)):
       C[i][k] = A[i][k] + B[i][k]

#To Print the matrix
print("The sum of Matrix mat1 and mat2 = ", C)
for i in C:
   print (i)
```



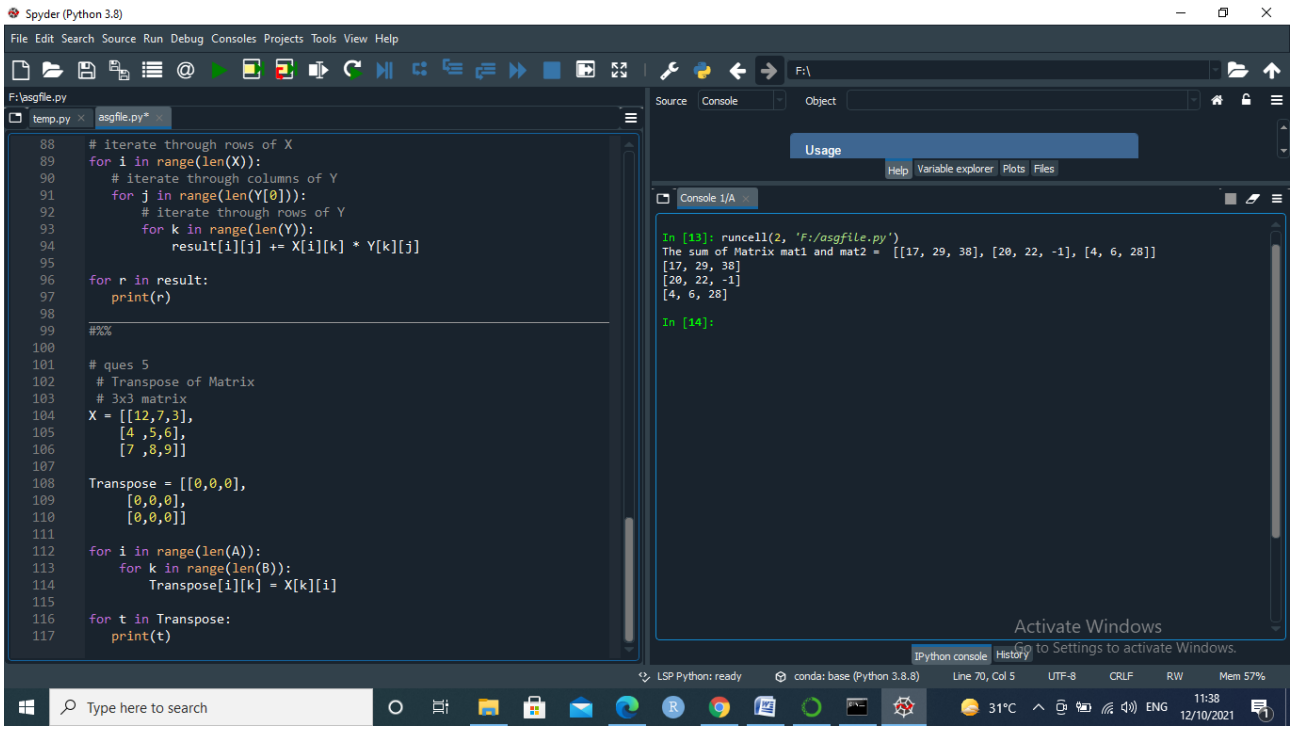
4. Write a program to calculate the multiplication of two 3x 3 matrices.
#ques4

```
# 3x3 matrix
X = [[12,7,3],
    [4 ,5,6],
    [7 ,8,9]]
# 3x4 matrix
Y = [[5,8,1,2],
    [6,7,3,0],
    [4,5,9,1]]
# result is 3x4
result = [[0,0,0,0],
          [0,0,0,0],
          [0,0,0,0]]

# iterate through rows of X
for i in range(len(X)):
   # iterate through columns of Y
   for j in range(len(Y[0])):
       # iterate through rows of Y
       for k in range(len(Y)):
           result[i][j] += X[i][k] * Y[k][j]

for r in result:
   print(r)
```



5. Write a program to calculate the transpose of the given matrix.

```
# ques 5
 # Transpose of Matrix
 # 3x3 matrix
X = [[12,7,3],
    [4 ,5,6],
    [7 ,8,9]]

Transpose = [[0,0,0],
     [0,0,0],
     [0,0,0]]

for i in range(len(A)):
    for k in range(len(B)):
        Transpose[i][k] = X[k][i]

for t in Transpose:
   print(t)
```


Spyder (Python 3.8)
File Edit Search Source Run Debug Consoles Projects Tools View Help
F:\asgfile.py
temp.py
asgfile.py*
# iterate through rows of X
for i in range(len(X)):
# iterate through columns of Y
for j in range(len(Y[0])):
# iterate through rows of Y
for k in range(len(Y)):
result[i][j] += X[i][k] * Y[k][j]
for r in result:
print(r)
#%%
# ques 5
# Transpose of Matrix
# 3x3 matrix
X = [[12,7,3],
[4 ,5,6],
[7 ,8,9]]
Transpose = [[0,0,0],
[0,0,0],
[0,0,0]]
for i in range(len(A)):
for k in range(len(B)):
Transpose[i][k] = X[k][i]
for t in Transpose:
print(t)
Source Console Object
Usage
Help Variable explorer Plots Files
Console 1/A
In [13]: runcell(2, 'F:/asgfile.py')
The sum of Matrix mat1 and mat2 = [[17, 29, 38], [20, 22, -1], [4, 6, 28]]
[17, 29, 38]
[20, 22, -1]
[4, 6, 28]
In [14]:
IPython console History
Activate Windows
Go to Settings to activate Windows.
LSP Python: ready
conda: base (Python 3.8.8)
Line 70, Col 5
UTF-8
CRLF
RW
Mem 57%
Type here to search
31°C
ENG
11:38
12/10/2021