Lab 6: PROGRAMMING FUNDAMENTAL

1. Take a sample list `[2, 1, 3, 5, 4, 3, 8]`
Apply del(), remove(), sort(), insert(), pop(), extend().

```
1
2   Samp_list=[2,4,5,7,90,0,66,78,91,56]
3   Samp_list.sort() #sorting the list
4   print(Samp_list)
5   Samp_list.insert(1,"cricket") #inserting an element
6   print(Samp_list)
7   Samp_list.extend(["karachi","lahore","peshawar"]) #extend more than one element
8   print(Samp_list)
9   Samp_list.remove(5) #remove takes index
10  print(Samp_list)
11  del Samp_list[3] #delete take index
12  print(Samp_list)
13  Samp_list.pop() #pop delete last element
14  print(Samp_list)
15
```

OUTPUT:

```
"C:\Users\admin\PycharmProjects\Programming Labs\venv\Scripts\python.exe" "C:\Us
[0, 2, 4, 5, 7, 56, 66, 78, 90, 91]
[0, 'cricket', 2, 4, 5, 7, 56, 66, 78, 90, 91]
[0, 'cricket', 2, 4, 5, 7, 56, 66, 78, 90, 91, 'karachi', 'lahore', 'peshawar']
[0, 'cricket', 2, 4, 7, 56, 66, 78, 90, 91, 'karachi', 'lahore', 'peshawar']
[0, 'cricket', 2, 7, 56, 66, 78, 90, 91, 'karachi', 'lahore', 'peshawar']
[0, 'cricket', 2, 7, 56, 66, 78, 90, 91, 'karachi', 'lahore']

Process finished with exit code 0
```

2. A ladder put up right against a wall will fall over unless put up at a certain angle less than 90 degrees. Given variables length and angle storing the length of the ladder and the angle that it forms with the ground as it leans against the wall, write a Python expression involving length and angle that computes the height reached by the ladder.

```
1   from math import*
2   length=16
3   angle=75
4   height=length*sin((pi/180)*angle)
5   print("FOR LENGTH=16 FT, ANGLE=75 DEGREE")
6   print(height)
7   #-------------------------------------------------------
8   length1=20
9   angle1=0
10  height1=length1*sin((pi/180)*angle1)
11  print("FOR LENGTH=20 FT, ANGLE=0 DEGREE")
12  print(height1)
13  #-------------------------------------------------------
14  length2=24
15  angle2=45
16  height2=length2*sin((pi/180)*angle2)
17  print("FOR LENGTH=24 FT, ANGLE=45 DEGREE")
18  print(height2)
19  #-------------------------------------------------------
20  length3=24
21  angle3=80
22  height3=length3*sin((pi/180)*angle3)
23  print("FOR LENGTH=24 FT, ANGLE=80 DEGREE")
24  print(height3)
```

OUTPUT:

```
FOR LENGTH=16 FT, ANGLE=75 DEGREE
15.454813220625093
FOR LENGTH=20 FT, ANGLE=0 DEGREE
0.0
FOR LENGTH=24 FT, ANGLE=45 DEGREE
16.970562748477143
FOR LENGTH=24 FT, ANGLE=80 DEGREE
23.63538607229299

Process finished with exit code 0
```

3. Write the relevant Python expression or statement, involving a list of numbers list and using list operators and methods for these specifications:

(a)An expression that evaluates to the index of the middle element of list

(b)An expression that evaluates to the middle element of list

(c)A statement that sorts the list list in descending order

(d)A statement that removes the first number of list list and puts it at the end

```
1  list=[1,9,80,5,67,55]
2  #Index of middle element
3  print(int(len(list)//2))
4  #Middle element
5  print(list[len(list)//2])
6  #sorts the list in descending
7  list.sort(reverse=True)
8  print(list)
9  #Remove the first element and  put in end
10 list.append(list.pop(0))
11 print(list)
```

OUTPUT:

```
"C:\Users\admin\PycharmProjects\Proj
3
5
[80, 67, 55, 9, 5, 1]
[67, 55, 9, 5, 1, 80]

Process finished with exit code 0
```

4-- Start by assigning to variables monthsL and monthsT a list and a tuple, respectively, both containing strings 'Jan', 'Feb', 'Mar', and 'May', in that order. Then attempt the following with both containers:

(a)Insert string 'Apr' between 'Mar' and 'May'. (b)Append string ' JUN".(c)Pop the container. (d)Remove the second item in the container. (e)Reverse the order of items in the container.

FOR LIST:

```
MonthL=['jan','feb','march','may']
MonthL.insert(3,"april")
print(MonthL)
MonthL.append("june")
print(MonthL)
MonthL.pop()
print(MonthL)
MonthL.remove('feb')
print(MonthL)
print(MonthL[::-1])
```

OUTPUT:

```
"C:\Users\admin\PycharmProjects\Programming Labs
['jan', 'feb', 'march', 'april', 'may']
['jan', 'feb', 'march', 'april', 'may', 'june']
['jan', 'feb', 'march', 'april', 'may']
['jan', 'march', 'april', 'may']
['may', 'april', 'march', 'jan']

Process finished with exit code 0
```

FOR TUPLES:

```
MonthT=('jan','feb','march','may')
MonthT.insert(3,"april")
print(MonthT)
MonthT.append("june")
print(MonthT)
MonthT.pop()
print(MonthT)
MonthT.remove('feb')
print(MonthT)
print(MonthT[::-1])
```

OUTPUT:

```
"C:\Users\admin\PycharmProjects\Programming Labs\venv\Scripts\python.exe" "C:\Users\admin\PycharmI
Traceback (most recent call last):
  File "C:\Users\admin\PycharmProjects\Programming Labs\Miss Asma labs.py", line 2, in <module>
    MonthT.insert(3,"april")
AttributeError: 'tuple' object has no attribute 'insert'

Process finished with exit code 1
```

6. Write the corresponding Python assignment statements: (a)Assign 6 to variable a and 7 to variable b. (b)Assign to variable c the average of variables a and b. (c)Assign to variable inventory the list containing strings 'paper', 'staples', and 'pencils'. (d)Assign to variables first, middle and last the strings 'John', 'Fitzgerald', and 'Kennedy'. (e)Assign to variable full name the concatenation of string variables first, middle, and last. Make sure you incorporate blank spaces appropriately.

```
1
2   a=6
3   b=7
4   c=(a+b)/2
5   inventory=["paper",'staples','pencils']
6
7   first="john"
8   middle="Fitzgarland"
9   last="Kennedy"
10  Full_Name= first+" "+ middle+" " +last
11  print(Full_Name)
```

OUTPUT:

```
john Fitzgarland Kennedy

Process finished with exit code 0
```