Program 4.1: To demonstrate use of list in python -Put even and odd elements in two different list , Merge and sort two list , Update the first element ,Print middle element of list

Code:

```
size=int(input("Enter the size of the list"))
lst=[]
lst_even=[]
lst_odd=[]
print("Enter the list elements: ")
for i in range(0,size):
   element=int(input())
   lst.append(element)
   if(element%2==0):
      lst_even.append(element)
   else:
      lst_odd.append(lst[i])

print("The list elements: ")
print(lst)
i=1
print("Enter 1 to separate odd and even no.s in 2 lists \nEnter 2 to merge and sort the list")
print("Enter 3 to update first element with X \nEnter 4 to print middle element")
while i<=5:
        choice=int(input("Enter your choice: "))

        if choice==1:
                print(f"The list of even numbers :{lst_even}")
                print(f"The list of odd numbers :{lst_odd}")
        elif choice==2:
                lst_new=[]
                lst_new=lst_odd+lst_even
                print(f"Merged  odd list with even list {lst_new}")
```

```
            lst_new.sort()
            print(f"A sorted list{lst_new}")
        elif choice==3:
            x=int(input("Enter any number: "))
            lst.pop(0)
            lst.insert(0,x)
            print(lst)
        elif choice==4:
            middle_elem=int(size/2)
            print(f"The middle element is {lst[middle_elem]}")
        else:
            print("Wrong Choice")
```

Output:

```
Enter the size of the list 5
Enter the list elements:
11
30
5
70
27
The list elements:
[11, 30, 5, 70, 27]
Enter 1 to separate odd/even no.s in 2 lists
Enter 2 to merge and sort the list
Enter 3 to update first element with X
Enter 4 to print middle element
Enter your choice: 1
The list of even numbers :[30, 70]
The list of odd numbers :[11, 5, 27]
Enter your choice: 2
Merged  odd list with even list [11, 5, 27, 30, 70]
```

A sorted list[5, 11, 27, 30, 70]

Enter your choice: 3

Enter any number: 23

[23, 30, 5, 70, 27]

Enter your choice: 4

The middle element is 5

Program 4.2: To use Tuple. Add and show details(name,roll_no,marks of 3 subjects) of N students in list of tuple. Display details of student X

Code:

```
def putDetails(roll,name,marks):
    return(roll,name,marks)


def appendDetails(detail,detaillist):
    detaillist.append(detail)


details=[] #list
i=1
print("Enter 1 to enter student details \nEnter 2 to display student details \nEnter 3 to display details of a particular student")
while i<=3:
    choice=int(input("Enter choice"))


  if choice==1:
        n=int(input("Enter number of students:"))
        for x in range(1,n+1):
            rollNo=int(input(f"Enter roll no. of student{x}: "))
            name=input(f"Enter name of student{x}: ")
            python=int(input(f"Enter python marks of student{x}: "))
            os=int(input(f"Enter os. marks of student{x}: "))
            dbms=int(input(f"Enter dbms marks of student{x}: "))
            appendDetails((rollNo,name,python,os,dbms),details)
```

```
elif choice==2:
    for k in range(len(details)):
        print("Roll no",details[k][0])
        print("Name",details[k][1])
        print("PYTHON marks",details[k][2])
        print("OS marks",details[k][3])
        print("DBMS marks",details[k][4])
        print()

elif choice==3:
    Xname=input("enter name: ")
    for k in range(len(details)):
        if(details[k][1]==Xname):
            print("Roll no",details[k][0])
            print("Name",details[k][1])
            print("PYTHON marks",details[k][2])
            print("OS marks",details[k][3])
            print("DBMS marks",details[k][4])
            print()
        else:
            break
```

Output:

```
Enter 1 to enter student details
Enter 2 to display student details
Enter 3 to display details of a particular student
Enter choice 1
Enter number of students: 3
Enter roll no. of student1: 22
Enter name of student1: Niyati
Enter python marks of student: 71
```

Enter os. marks of student1: 72

Enter dbms marks of student1: 73

Enter roll no. of student2: 66

Enter name of student2: Kaveri

Enter python marks of student: 22

Enter os. marks of student2: 34

Enter dbms marks of student2: 56

Enter roll no. of student3: 88

Enter name of student3:Soweda

Enter python marks of student: 32

Enter os. marks of student3: 23

Enter dbms marks of student3: 44

Enter choice2

Roll no 22

Name Niyati

PYTHON marks 71

OS marks 72

DBMS marks 73

Roll no 66

Name Kaveri

PYTHON marks 22

OS marks 34

DBMS marks 56

Roll no 88

Name Soweda

PYTHON marks 32

OS marks 23

DBMS marks 44

```
Enter choice3
enter name: Soweda
Roll no 88
Name Soweda
PYTHON marks 32
OS marks 23
DBMS marks 44
```

Program 4.3: To learn about sets, taking user input in sets, finding intersection, union, set difference and symmetric difference

Code:

```
set1={}
set2={}
set1=set(input("Enter first set: "))
print(set1)
set2=set(input("Enter second set: "))
print(set2)
i=1
print("1. Intersection of Sets \n2. Union of Sets")
print("3. Set difference of Sets \n4. Symmetric difference of Sets")
while i<=4:
    choice=int(input("Enter choice: "))
    if choice==1:
        print(f"set1 U set2 :{set1 & set2}")
        print()
    elif choice==2:
        print(f"set1 ∩ set2 {set1 | set2}")
        print()
    elif choice==3:
        print(f"set1 - set2 {set1 - set2}")
        print()
```

```
    elif choice==4:
        print(f"set1 Δ set2 {set1 ^ set2}")
        print()
    else:
        print("Invalid option. Taking exit")
        break
```

Output:

```
Enter first set: 12345
{'2', '5', '1', '4', '3'}
Enter second set: 5678
{'5', '8', '7', '6'}
1. Intersection of Sets
2. Union of Sets
3. Set difference of Sets
4. Symmetric difference of Sets
Enter choice: 1
set1 U set2 :{'5'}
Enter choice: 2
set1 ∩ set2 {'2', '5', '1', '6', '4', '8', '3', '7'}
Enter choice: 3
set1 - set2 {'2', '3', '4', '1'}
Enter choice: 4
set1 Δ set2 {'2', '6', '1', '4', '8', '3', '7'}
Enter choice: 5
Invalid option. Taking exit
```

Program 4.4: To use Dictionary. Read a Dictionary from user and display, sort the dictionary by key, Concatenate two dictionaries into new one

Code:

```
a={}
b={}
num_a=int(input("Enter total number of elements for a: "))
for i in range(num_a):
    k_a=input("Enter key: ")
    val_a=input("Enter value: ")
    a.update({k_a:val_a})
print(f"Dictionary a is {a}")


num_b=int(input("Enter total number of elements for b: "))
for i in range(num_b):
    k_b=input("Enter key: ")
    val_b=input("Enter value: ")
    b.update({k_b:val_b})
print(f"Dictionaryb is {b}")


print(f"Sorting first Dictionary as per key:",sorted(a.items()))
print(f"Sorting second Dictionary as per key:",sorted(b.items()))


a.update(b)
print("Concatinationg both Dictionaries: ",a)
```

Output:

```
Enter total number of elements for a: 5
Enter key: 5
Enter value: 55
Enter key: 3
Enter value: 33
Enter key: 1
Enter value: 11
Enter key: 4
Enter value: 44
Enter key: 2
Enter value: 22
Dictionary a is {'5': '55', '3': '33', '1': '11', '4': '44', '2': '22'}
Enter total number of elements for b: 3
Enter key: 9
Enter value: 99
Enter key: 8
Enter value: 88
Enter key: 11
Enter value: 110
Dictionaryb is {'9': '99', '8': '88', '11': '110'}
Sorting first Dictionary as per key: [('1', '11'), ('2', '22'), ('3', '33'), ('4', '44'), ('5', '55')]
Sorting second Dictionary as per key: [('11', '110'), ('8', '88'), ('9', '99')]
Concatinationg both Dictionaries:  {'5': '55', '3': '33', '1': '11', '4': '44', '2': '22', '9': '99', '8': '88', '11': '110'}
```