Group B-14:--- Kaustubh Shrikant Kabra SE COMP-1 20

Program:-

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"""
Write a python program to store first year percentage of students in array.
Write function for sorting array of floating point numbers in ascending
order using a) Selection Sort b) Bubble sort and display top five scores.
"""
import array as arr

def accept():
    a=arr.array('f',[])
    n=int(input("Enter number of students: "))
    for i in range(n):
        a.append(float(input("Enter first year percentage of student {}:
".format(i+1))))
    return a

def print_per(arr):
    for i in range(0, len(arr)):
        print("\t {0:.2f}".format(arr[i]), end=" ")
    print()

def bubble_sort(arr):
    flg=0
    for i in range(len(arr)):
        for j in range(0,(len(arr)-i-1)):
            if(arr[j]>=arr[j+1]):
                flg=1
                temp=arr[j]
                arr[j]=arr[j+1]
                arr[j+1]=temp
        if(flg==0):
            break
    print("\nElements after sorting are-\n")
    print_per(arr)
    top_five(arr)

def selection_sort(arr):
    for i in range(len(arr)):
        for j in range(i+1,len(arr)):
            if(arr[j]<=arr[i]):
                temp=arr[i]
                arr[i]=arr[j]
                arr[j]=temp
    print("\nElements after sorting are-\n")
    print_per(arr)
    top_five(arr)

def top_five(arr):
    j=0
    print("\nThe top scores are- ")
    for i in reversed(arr):
        print("\t {0:.2f}".format(i), end=" ")
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        j=j+1
        if(j==5):
            break
    print()

A=arr.array('f',[])
sort_A=arr.array('f',[])

while(True):
    print("\n**********MENU**********")
    print("Enter 1 to accept percentage")
    print("Enter 2 to display percentage")
    print("Enter 3 to sort using bubble sort technique")
    print("Enter 4 to sort using selection sort technique")
    print("Enter 5 to exit")
    c=int(input("Enter your choice: "))
    if(c==1):
        A=accept()
    elif(c==2):
        print_per(A)
    elif(c==3):
        bubble_sort(A)
    elif(c==4):
        selection_sort(A)
    elif(c==5):
        print("Thank you")
        break
    else:
        print("Enter correct choice")
```

Output:-

**********MENU**********

Enter 1 to accept percentage

Enter 2 to display percentage

Enter 3 to sort using bubble sort technique

Enter 4 to sort using selection sort technique

Enter 5 to exit

Enter your choice: 1

Enter number of students: 7

Enter first year percentage of student 1: 86

Enter first year percentage of student 2: 76

Enter first year percentage of student 3: 48

Enter first year percentage of student 4: 57

Enter first year percentage of student 5: 96

Enter first year percentage of student 6: 84

Enter first year percentage of student 7: 75

**********MENU**********

Enter 1 to accept percentage

Enter 2 to display percentage

Enter 3 to sort using bubble sort technique

Enter 4 to sort using selection sort technique

Enter 5 to exit

Enter your choice: 2

86.00 76.00 48.00 57.00 96.00 84.00 75.00

**********MENU**********

Enter 1 to accept percentage

Enter 2 to display percentage

Enter 3 to sort using bubble sort technique

Enter 4 to sort using selection sort technique

Enter 5 to exit

Enter your choice: 3

Elements after sorting are-

48.00 57.00 75.00 76.00 84.00 86.00 96.00

The top scores are-

96.00 86.00 84.00 76.00 75.00

**********MENU**********

Enter 1 to accept percentage

Enter 2 to display percentage

Enter 3 to sort using bubble sort technique

Enter 4 to sort using selection sort technique

Enter 5 to exit

Enter your choice: 4

Elements after sorting are-

48.00 57.00 75.00 76.00 84.00 86.00 96.00

The top scores are-

96.00 86.00 84.00 76.00 75.00

**********MENU**********

Enter 1 to accept percentage

Enter 2 to display percentage

Enter 3 to sort using bubble sort technique

Enter 4 to sort using selection sort technique

Enter 5 to exit

Enter your choice: 5

Thank you