```python
'''
 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
    quick sort and display top five scores.
'''


# Function for accepting the percentage of the Students

def input_percentage():
    perc = []
    number_of_students = int(input("Enter the number of Students : "))
    for i in range(number_of_students):
        perc.append(float(input("Enter the percentage of Student {0} : ".format(i
+1))))
    return perc

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# Function for printing the percentage of the Students

def print_percentage(perc):
    for i in range(len(perc)):
        print(perc[i],sep = "\n")

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# Function for performing partition of the Data

def percentage_partition(perc,start,end):
    pivot = perc[start]
    lower_bound = start + 1
    upper_bound = end

    while True:
        while lower_bound ≤ upper_bound and perc[lower_bound] ≤ pivot:
            lower_bound += 1

        while lower_bound ≤ upper_bound and perc[upper_bound] ≥ pivot:
            upper_bound -= 1

        if lower_bound ≤ upper_bound:
            perc[lower_bound],perc[upper_bound] =
perc[upper_bound],perc[lower_bound]

        else:
            break


    perc[start],perc[upper_bound] = perc[upper_bound],perc[start]

    return upper_bound

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Function for performing Quick Sort on the Data

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def Quick_Sort(perc,start,end):
    while start < end:
        partition = percentage_partition(perc,start,end)
        Quick_Sort(perc,start,partition-1)
        Quick_Sort(perc,partition+1,end)
        return perc
```

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Function for Displaying Top Five Percentages of Students

```
def display_top_five(perc):
    print("Top Five Percentages are : ")
    if len(perc) < 5:
        start, stop = len(perc) - 1, -1
    else:
        start, stop = len(perc) - 1, len(perc) - 6

    for i in range(start, stop, -1):
        print(perc[i],sep = "\n")
```

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Main

```
unsorted_percentage = []
sorted_percentage = []
flag = 1

while flag == 1:
    print("\n————————————————MENU————————————————")
    print("1. Accept the Percentage of Students")
    print("2. Display the Percentages of Students")
    print("3. Perform Quick Sort on the Data")
    print("4. Exit")

    ch = int(input("Enter your choice (from 1 to 4) : "))

    if ch == 1:
        unsorted_percentage = input_percentage()

    elif ch == 2:
        print_percentage(unsorted_percentage)

    elif ch == 3:
        print("Percentages of Students after performing Quick Sort : ")
        sorted_percentage =
Quick_Sort(unsorted_percentage,0,len(unsorted_percentage)-1)
        print_percentage(sorted_percentage)
        a = input("Do you want to display the Top 5 Percentages of Students (yes/
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no) : ")
            if a == 'yes':
                display_top_five(sorted_percentage)

        elif ch == 4:
            print("Thanks for using this program!!")
            flag = 0

        else:
            print("Invalid Choice!!")


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PROGRAM━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━→

"""*********OUTPUT*********

*** Remote Interpreter Reinitialized ***

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1. Accept the Percentage of Students
2. Display the Percentages of Students
3. Perform Quick Sort on the Data
4. Exit
Enter your choice (from 1 to 4) : 1
Enter the number of Students : 5
Enter the percentage of Student 1 : 96
Enter the percentage of Student 2 : 82
Enter the percentage of Student 3 : 91
Enter the percentage of Student 4 : 65
Enter the percentage of Student 5 : 47


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1. Accept the Percentage of Students
2. Display the Percentages of Students
3. Perform Quick Sort on the Data
4. Exit
Enter your choice (from 1 to 4) : 2
96.0
82.0
91.0
65.0
47.0


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1. Accept the Percentage of Students
2. Display the Percentages of Students
3. Perform Quick Sort on the Data
4. Exit
Enter your choice (from 1 to 4) : 3
Percentages of Students after performing Quick Sort :
47.0
65.0
82.0
91.0
96.0
Do you want to display the Top 5 Percentages of Students (yes/no) : yes
```

```
Top Five Percentages are :
96.0
91.0
82.0
65.0
47.0

—————————————————MENU————————————————
1. Accept the Percentage of Students
2. Display the Percentages of Students
3. Perform Quick Sort on the Data
4. Exit
Enter your choice (from 1 to 4) : 4
Thanks for using this program!!
>>>
```