'''

Experiment No. 7 : 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.

'''

```
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


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


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
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        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

def quick_sort(perc, start, end):
    if start < end:
        partition = percentage_partition(perc, start, end)
        quick_sort(perc, start, partition - 1)
        quick_sort(perc, partition + 1, end)
    return perc

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

def 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/no): ")
            if a == 'yes':
                display_top_five(sorted_percentage)

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

        else:
            print("Invalid Choice!!")

if __name__ == "__main__":
    main()
```