Assignment 7

# 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

#<--------------------------------------------------------------------------------------------------------------------->

# Function for printing the percentage of the Students

def print\_percentage(perc):

    for i in range(len(perc)):

        print(perc[i],sep = "\n")

#<--------------------------------------------------------------------------------------------------------------------->

# 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

#<--------------------------------------------------------------------------------------------------------------------->

# Function for performing Quick Sort on the Data

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

#<--------------------------------------------------------------------------------------------------------------------->

# 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")

#<--------------------------------------------------------------------------------------------------------------------->

# 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!!")

#<-----------------------------------------------END OF PROGRAM-------------------------------------------------------->

Output

