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//DSL Lab 06 Quick Sort




def in_percentage():
    n =int(input("How many students attended for exam: "))
    while(n<5):
        print("Enter minimum 5 percentages!")
        n =int(input("How many students attended for exam: "))

    percentage_lis =[]
    i=0
    per = 100

    if(n>=5):
        while(i<n):
            per = float(input("Enter percentage for "+str(i+1)+"/"+str(n)+":
"))
            if(0<=per<=100):
                percentage_lis.append(per)
                i = i + 1
            else:
                print("Enter valid value for percentage!")
    else:
          print("Enter minimum 5 percentages!")
    #print(percentage_lis)
    return percentage_lis


def partition(percentage_lis,low,high):

    pivot_index = low
    pivot = percentage_lis[pivot_index]

    while low < high:
        while low < len(percentage_lis) and percentage_lis[low] <= pivot:
            low += 1
        while percentage_lis[high] > pivot:
            high -= 1
        if(low < high):
            percentage_lis[low], percentage_lis[high] = percentage_lis[high],
percentage_lis[low]
    percentage_lis[high], percentage_lis[pivot_index] =
percentage_lis[pivot_index], percentage_lis[high]

    print(percentage_lis)
    return high


def quick_sort(percentage_lis,low,high):
    #iteration = 0
    if(low<high):
        #iteration += 1
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        pivot_index = partition(percentage_lis,low,high)
        quick_sort(percentage_lis,low,pivot_index-1)
        quick_sort(percentage_lis,pivot_index+1,high)
        #print("Iteration",iteration,".", percentage_lis)



percentage_lis = in_percentage()
pre_list = percentage_lis.copy()

quick_sort(percentage_lis,0,len(percentage_lis) - 1)

print("\nBefore: ",pre_list)
print("After: ",percentage_lis)

print("\nTop 5 percentages: ")
for i in range(1,6):
    print(i,".",percentage_lis[-i])
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