### **Ex. No. : 10.1** Bubble Sort

def bubbleSort(arr):

n = len(arr)

for i in range(n-1):

swapped = False

for j in range(0, n-i-1):

if arr[j] > arr[j + 1]:

swapped = True

arr[j], arr[j + 1] = arr[j + 1], arr[j]

if not swapped:

return

arr = [64, 34, 25, 12, 22, 11, 90]

bubbleSort(arr)

print("Sorted array is:")

for i in range(len(arr)):

print("% d" % arr[i], end=" ")

### **Ex. No. : 10.2** Peak Element

**Program:**

a=int(input()) lst1=[str(x) for x in input().split(" ")] lst2=[] lst=[]

g=0

for i in lst1: if i.isdigit(): g=int(i) lst.append(g) for i in range(0,a): if(i==0): if(lst[i]>=lst[i+1]): lst2.append(lst[i]) elif(i>0 and i<a-2): if(lst[i]>=lst[i-1] and lst[i]>=lst[i+1]):

lst2.append(lst[i]) elif(i==a-1):

if(lst[i]>=lst[i-1]): lst2.append(lst[i]) for i in lst2: print(i,end=" ")

### **Ex. No. : 10.3** Merge Sort

**Program:**

def merge\_sort(arr): if len(arr) > 1:

mid = len(arr) // 2 left\_half = arr[:mid] right\_half = arr[mid:] merge\_sort(left\_half) merge\_sort(right\_half) i = j = k = 0 while i < len(left\_half) and j < len(right\_half): if left\_half[i] < right\_half[j]:

arr[k] = left\_half[i] i += 1

else: arr[k] = right\_half[j] j += 1 k += 1 while i < len(left\_half): arr[k] = left\_half[i] i += 1 k += 1 while j < len(right\_half): arr[k] = right\_half[j] j += 1 k += 1

def main(): n = int(input()) arr = list(map(int, input().split())) merge\_sort(arr) for num in arr: print(num, end=" ") if \_\_name\_\_ == "\_\_main\_\_":

main()

**Ex. No. : 10.4** Sum of Two numbers

**Program:**

n=int(input()) a=[int(x) for x in input().split()] k=int(input()) flag=0 if len(a)!=n: print("No") flag=1 for i in a: for j in a:

if i+j==k and flag==0: flag=1 print("Yes") break if flag==0: print("No")

#### **Ex. No. : 10.5** Frequency of Elements

**Program:**

lst5=[int(x) for x in input().split(" ")] lst=sorted(list(set(lst5))) c=0 for i in lst:

c=0 for j in lst5: if(i==j): c=c+1 print("%d %d"%(i,c))