



In [2]:

```
1  # Largest number in a List
2  # Second largest number in a List
3  # Kth Largest number in a List
4
5  # Element with highest frequency
6  # Second highest frequency
7  # Kth highest frequency
8
9  # Function to find the second largest number in a List
10 def secondLargest(li):
11     # Convert the list into a unique list
12     unique = []
13     for n in li:
14         if n not in unique:
15             unique.append(n)
16     # unique.sort()
17     # unique = unique[-1::-1]
18     if len(unique) == 1:
19         print("There is only one element in the given list")
20     else:
21         unique = sorted(unique, reverse=True)
22         return unique[1]
23
24 # Function to find the fifth smallest number in a List
25 def fifthLeast(li):
26     unique = []
27     for i in li:
28         unique.append(i)
29     unique.sort()
30     if len(unique) < 5:
31         return -1
32     else:
33         return li[4]
34
35 # Function to find the Kth Largest number in a List
36 def kLargest(li,k):
37     unique = []
38     for i in li:
39         if i not in unique:
40             unique.append(i)
41     unique = sorted(unique,reverse=True)
42     if len(unique) < k:
43         return -1
44     else:
45         return unique[k-1]
46
47 # Function to find the Kth smallest number in a List
48 def kSmallest(li,k):
49     unique = []
50     for i in li:
51         if i not in unique:
52             unique.append(i)
53     unique.sort()
54     if k == 0:
55         return -1
56     if len(unique) < k:
```

```
57         return -1
58     else:
59         return unique[k-1]
60
61
62 li=[1,6,4,3,5,9,6,1,1,5,8,9,2,3,4,6]
63 k=int(input("enter k : "))
64 secondLargest(li)
65 fifthLeast(li)
66 kLargest(li,k)
67 kSmallest(li,k)
```

enter k : 3

Out[2]: 3

In [9]:

```

1  # Function to identify the element with highest frequency
2  # highestFrequency([1,2,3,9,8,7,3,4,2,1]) -> if two elements have same high
3
4  def highestFrequencyElement(li,k):
5      unique = []
6      for i in li:
7          if i not in unique:
8              unique.append(i)
9      freq = []
10     for i in unique:
11         freq.append(li.count(i))
12     freq = sorted(freq,reverse=True)
13     unique2 = []
14     for i in freq:
15         if i not in unique2:
16             unique2.append(i)
17     elements = []
18     for i in unique:
19         if unique2[0]==li.count(i):
20             elements.append(i)
21     elements = sorted(elements,reverse=True)
22     if k>len(elements):
23         return -1
24     return elements[k-1]
25
26 def highestFrequencyElement2(li,k):
27     unique = {}
28     for n in li:
29         if n not in unique:
30             unique[n] = 1
31         else:
32             unique[n] += 1
33     # Getting all frequencies into a list
34     freq = unique.values()
35     maxfreq = max(freq)
36     maxfreqKeys = []
37     # Identify the keys maximum frequency
38     for item in unique.items():
39         if item[1] == maxfreq:
40             maxfreqKeys.append(item[0])
41     # Select the minimum from the keys with maximum frequency
42     maxfreqKeys = sorted(maxfreqKeys,reverse=True)
43     if k>len(maxfreqKeys):
44         return -1
45     return maxfreqKeys[k-1]
46
47
48
49 li = [1,2,3,9,8,7,3,4,2,1]
50 k=int(input())
51 highestFrequencyElement(li,k)
52 highestFrequencyElement2(li,k)

```

4

Out[9]: -1

```
In [10]: 1
2 # Function to identify second largest frequency element
3 # If there are many such elements, return the smallest
4 # li = [1,2,3,2,1,4,4,9]
5 def secondLargestFrequency(li):
6     unique = {}
7     for i in li:
8         if i not in unique:
9             unique[i] = 1
10        else:
11            unique[i] += 1
12    freq = unique.values()
13    uniquefreq = []
14    for i in freq:
15        if i not in uniquefreq:
16            uniquefreq.append(i)
17    uniquefreq = sorted(uniquefreq,reverse=True)
18    elements = []
19    for item in unique.items():
20        if item[1] == uniquefreq[1]:
21            elements.append(item[0])
22    elements = sorted(elements,reverse=False)
23    return elements[0]
24
25 li = [1,2,3,2,1,4,4,9]
26 secondLargestFrequency(li)
```

Out[10]: 3

In [11]:

```
1  # Function to identify Kth Largest frequency element
2  # If there are many such elements, return the smallest
3  # li = [9,8,7,6,5,2,3,4,9,6,7,7,7,6,7,6], k=4 -> 2
4  def kLargestFrequency(li,k):
5      unique = {}
6      for i in li:
7          if i not in unique:
8              unique[i] = 1
9          else:
10             unique[i] += 1
11     freq = unique.values()
12     uniquefreq = []
13     for i in freq:
14         if i not in uniquefreq:
15             uniquefreq.append(i)
16     uniquefreq = sorted(uniquefreq,reverse=True)
17     elements = []
18     if len(uniquefreq)>=k:
19         for item in unique.items():
20             if item[1] == uniquefreq[k-1]:
21                 elements.append(item[0])
22         elements = sorted(elements,reverse=False)
23         return elements[0]
24     else:
25         return -1
26
27 li = [9,8,7,6,5,2,3,4,9,6,7,7,7,6,7,6]
28 k=int(input())
29 kLargestFrequency(li,k)
```

2

Out[11]: 6

```
In [12]: 1 # Function to identify Kth Lowest frequency element
2 # If there are many such elements, return the smallest
3 # li = [9,8,7,6,5,2,3,4,9,6,7,7,7,6,7,6], k=4 -> 2
4 def kLowestFrequency(li,k):
5     unique = {}
6     for i in li:
7         if i not in unique:
8             unique[i] = 1
9         else:
10            unique[i] += 1
11    freq = unique.values()
12    uniquefreq = []
13    for i in freq:
14        if i not in uniquefreq:
15            uniquefreq.append(i)
16    uniquefreq = sorted(uniquefreq,reverse=False)
17    print(uniquefreq)
18    elements = []
19    if len(uniquefreq)>=k:
20        for item in unique.items():
21            if item[1] == uniquefreq[k-1]:
22                elements.append(item[0])
23        elements = sorted(elements,reverse=False)
24        return elements[0]
25    else:
26        return -1
27
28 li = [9,8,7,6,5,2,3,4,9,6,7,7,7,6,7,6]
29 k=int(input())
30 kLowestFrequency(li,k)
```

```
2
[1, 2, 4, 5]
```

Out[12]: 9

```
In [14]: 1 def kLargestFrequencyString(s,k):
2         unique = {}
3         for i in s:
4             if i not in unique:
5                 unique[i] = 1
6             else:
7                 unique[i] += 1
8         freq = unique.values()
9         uniquefreq = []
10        for i in freq:
11            if i not in uniquefreq:
12                uniquefreq.append(i)
13        uniquefreq = sorted(uniquefreq,reverse=True)
14        elements = []
15        if k<len(uniquefreq):
16            for item in unique.items():
17                if item[1] == uniquefreq[k-1]:
18                    elements.append(item[0])
19            elements = sorted(elements,reverse=False)
20            return elements[0]
21        else:
22            return -1
23        filepath = 'DataFiles/k-largest-frequency-input.txt'
24        with open(filepath,'r') as f:
25            t=int(f.readline())
26            for i in range(t):
27                s=f.readline()
28                k=int(f.readline())
29                print(kLargestFrequencyString(s,k))
```

```
s
g
h
e
w
r
n
k
-1
-1
```



```
In [13]: 1 def kLargestFrequencyString(s,k):
2         unique = {}
3         for i in s:
4             if i not in unique:
5                 unique[i] = 1
6             else:
7                 unique[i] += 1
8         freq = unique.values()
9         uniquefreq = []
10        for i in freq:
11            if i not in uniquefreq:
12                uniquefreq.append(i)
13        uniquefreq = sorted(uniquefreq,reverse=True)
14        elements = []
15        if k<=len(uniquefreq):
16            for item in unique.items():
17                if item[1] == uniquefreq[k-1]:
18                    elements.append(item[0])
19            elements = sorted(elements,reverse=False)
20            return elements[0]
21        else:
22            return -1
23
24        s='abcdefbcdeab'
25        k=3
26        kLargestFrequencyString(s,k)
```

Out[13]: 'f'

```
In [ ]: 1
```