

## 2. Question 2

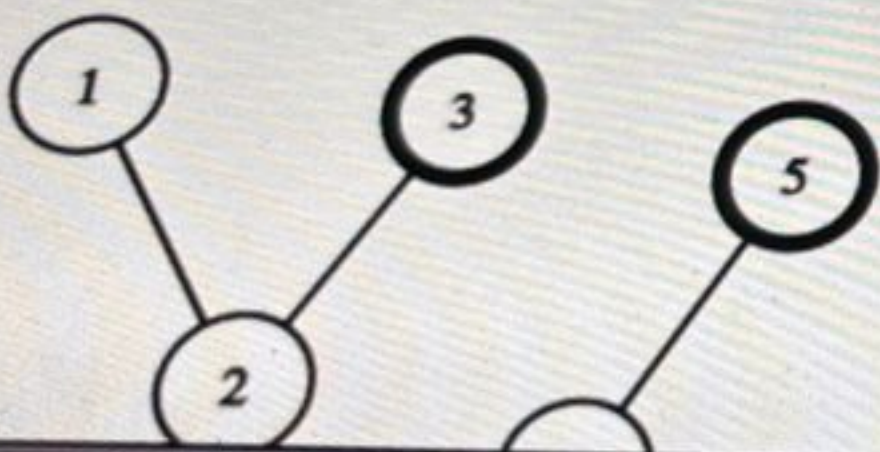
Implement a prototype service for malware spread control in a network.

There are  $g\_nodes$  servers in a network and  $g\_edges$  connections between its nodes. The  $i^{th}$  bidirectional connection connects  $g\_from[i]$  and  $g\_to[i]$ . Some of the nodes are infected with malware. They are listed in the array  $malware$ , where if  $malware[i] = 1$  node  $i$  is infected, and if  $malware[i] = 0$ , node  $i$  is not infected.

Any infected node infects other non-infected nodes, which are directly connected. This process goes on until no new infected nodes are possible. Exactly 1 node can be removed from the network. Return the index of the node to remove such that the total infected nodes in the remaining network are minimized. If multiple nodes lead to the same minimum result, then return the one with the lowest index.

### Example

Suppose  $g\_nodes = 9$ ,  $g\_edges = 5$ ,  $g\_from[] = [1, 2, 4, 6, 7]$ ,  $g\_to[] = [2, 3, 5, 7, 8]$ ,  $malware[] = [0, 0, 1, 0, 1, 0, 0, 0, 0]$



Language `java 15`

Environment

```
18
19
20
21
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23
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27
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29
30
31
32
33
34
35
36
37
38
39
40
41
```

`Complete the 'getNodeToRemove' function below.`

`The function is expected to return an INTEGER.`

`The function accepts following parameters:`

- `1. UNWEIGHTED_INTEGER_GRAPH g`
- `2. INTEGER_ARRAY malware`

`For the unweighted graph, <name>:`

- `1. The number of nodes is <name>Nodes.`
- `2. The number of edges is <name>Edges.`
- `3. An edge exists between <name>From[i] and <name>To[i].`

```
public static int getNodeToRemove(int gNodes, List<Integer>
List<Integer> gTo, List<Integer> malware) {
}

> public class Solution {
```

Test Results

Custom Input

Run Code

Run

MacBook Air



## 1. Question 1

The manager oversees a set of  $n$  servers, each with a designated upgrade capacity represented by the array element  $capacity[i]$ . The goal is to create precisely  $k$  upgrade batches, where the number of servers in the  $i^{th}$  batch is represented by the array element  $numServers[i]$  where  $0 \leq i < n$ .

The *efficiency* of an upgrade batch is determined by the difference between the maximum and minimum upgrade capacities of the servers within that batch. The manager's objective is to allocate servers to the upgrade batches in a way that maximizes the sum of efficiencies across all  $k$  batches. The task is to find the maximum sum of efficiency.

Note: Each server must be assigned to exactly one upgrade batch.

### Example

$n = 4$

$k = 2$

$capacity = [3, 6, 1, 2]$

$numServers = [1, 3]$

One of the optimal ways is:

- Batch 1 takes the first server. Therefore, the efficiency of the batch =  $3 - 3 = 0$
- Batch 2 takes the servers at indices 1, 2, and 3. The efficiency of the batch =  $6 - 1 = 5$

Hence, the sum of efficiencies is  $0 + 5 = 5$ .

Language

Java 15

Autocomplete Disabled

Environment

```
1 > import java.io.*;
14 class Result {
15
16     /*
17      * Complete the 'getMaximumEfficiency' function below.
18      *
19      * The function is expected to return a LONG_INTEGER.
20      * The function accepts following parameters:
21      * 1. INTEGER_ARRAY capacity
22      * 2. INTEGER_ARRAY numServers
23      */
24
25     public static long getMaximumEfficiency(List<Integer>
capacity, List<Integer> numServers) {
26         // Write your code here
27
28     }
29
30 }
31 > public class Solution {...
```

Test

Custom

Run Code

Run Tests

Function Description

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ALL

# 1. Question 1

The manager oversees a set of  $n$  servers, each with a designated upgrade capacity represented by the array element  $capacity[i]$ . The goal is to create precisely  $k$  upgrade batches, where the number of servers in the  $i^{th}$  batch is represented by the array element  $numServers[i]$  where  $0 \leq i < n$ .

The *efficiency* of an upgrade batch is determined by the difference between the maximum and minimum upgrade capacities of the servers within that batch. The manager's objective is to allocate servers to the upgrade batches in a way that maximizes the sum of efficiencies across all  $k$  batches. The task is to find the maximum sum of efficiency.

Note: Each server must be assigned to exactly one upgrade batch.

## Example

$n = 4$   
 $k = 2$   
 $capacity = [3, 6, 1, 2]$   
 $numServers = [1, 3]$

One of the optimal ways is:

- Batch 1 takes the first server. Therefore, the efficiency of the batch =  $3 - 3 = 0$
- Batch 2 takes the servers at indices 1, 2, and 3. The efficiency of the batch =  $6 - 1 = 5$

Hence, the sum of efficiencies is  $0 + 5 = 5$ .

## Function Description

Language Autocomplete Disabled

Java 15

Environment

```
capacity, List<Integer> numServers) {  
    // Write your code here  
    Collections.sort(capacity);  
    long maxEfficiencySum = 0;  
    int index = 0;  
    for(int i=0; i<numServers.size(); i++){  
        int num = numServers.get(i);  
        int minCapacity = capacity.get(index);  
        int maxCapacity = capacity.get(index+num-1);  
    }  
}
```

Test Results

Custom Input

Run Code

Run Tests

Compiled successfully. 6/15 test cases passed

Use print or log statements to debug why your hidden test cases are failing. Hidden test cases are used to evaluate if your code can handle different scenarios, including corner cases.

✗ Test case 2

✗ Test case 4

✗ Test case 6

✗ Test case 7

Input (stdin)

1	7
2	2
3	5
4	6
-	-

Run as Custom Input



MacBook Air



50m left

## ▼ Sample Case 0

## Sample Input For Custom Testing

STDIN	FUNCTION
4	→ capacity[] size n = 4
1	→ capacity = [1, 2, 3, 4]
2	
3	
4	
1	→ numServers[] size k = 1
4	→ numServers = [4]

## Sample Output

3

## Explanation

Since there is only one batch to upgrade all the servers, the efficiency of the batch is  $4 - 1 = 3$ .

Hence, the sum of efficiencies of all the batches (which is 1) is 3.

## ▼ Sample Case 1

## Sample Input For Custom Testing

STDIN	FUNCTION
3	→ capacity[] size n = 3
4	→ capacity = [4, 2, 1]
2	
1	
3	→ numServers[] size k = 3
1	→ numServers = [1, 1, 1]
1	
1	

Language

Java 15

Autocomplete Disabled

Environment

```
23 */
24
25 public static long getMaximumEfficiency(List<Integer>
capacity, List<Integer> numServers) {
26     // Write your code here
27     long maxEfficiencySum = 0;
28     int index = 0;
29     for(int i=0;i<numServers.size();i++){
30         int num = numServers.get(i);
31         int minCapacity = Integer.MAX_VALUE;
32         int maxCapacity = Integer.MIN_VALUE;
33         for(int j=0;j<num;j++){
34             int currentCapacity = capacity.get(index);
35             minCapacity = Math.min(minCapacity, currentCapacity);
36             maxCapacity = Math.max(maxCapacity, currentCapacity);
37             index++;
38         }
39         maxEfficiencySum += (maxCapacity-minCapacity);
40
41     }
42     return maxEfficiencySum;
43 }
44 > public class Solution {
```

Test

Custom

Run Code

Run Tests



## 1. Question 1

The manager oversees a set of  $n$  servers, each with a designated upgrade capacity represented by the array element  $capacity[i]$ . The goal is to create precisely  $k$  upgrade batches, where the number of servers in the  $i^{th}$  batch is represented by the array element  $numServers[i]$  where  $0 \leq i < n$ .

The *efficiency* of an upgrade batch is determined by the difference between the maximum and minimum upgrade capacities of the servers within that batch. The manager's objective is to allocate servers to the upgrade batches in a way that maximizes the sum of efficiencies across all  $k$  batches. The task is to find the maximum sum of efficiency.

Note: Each server must be assigned to exactly one upgrade batch.

### Example

$n = 4$

$k = 2$

$capacity = [3, 6, 1, 2]$

$numServers = [1, 3]$

One of the optimal ways is:

- Batch 1 takes the first server. Therefore, the efficiency of the batch =  $3 - 3 = 0$
- Batch 2 takes the servers at indices 1, 2, and 3. The efficiency of the batch =  $6 - 1 = 5$

Hence, the sum of efficiencies is  $0 + 5 = 5$ .

### Function Description

Java 15

Environment

```
23  */
24
25  public static long getMaximumEfficiency(List<Integer>
    capacity, List<Integer> numServers) {
26      // Write your code here
27      long maxEfficiencySum = 0;
28      int index = 0;
29      for(int i=0;i<numServers.size();i++){
30          int num = numServers.get(i);
31          int minCapacity = Integer.MAX_VALUE;
32          int maxCapacity = Integer.MIN_VALUE;
33          for(int j=0;j<num;j++){
34              int currentCapacity = capacity.get(index);
35              minCapacity = Math.min(minCapacity, currentC
36              maxCapacity = Math.max(maxCapacity, currentC
37              index++;
38          }
39
40          maxEfficiencySum += (maxCapacity-minCapacity)
41      }
42      return maxEfficiencySum;
43  }
44  > public class Solution {...
```

Test

Custom

Run Code

Run T



49m left

capacity = [3, 6, 1, 2]

numServers = [1, 3]

One of the optimal ways is:

- Batch 1 takes the first server. Therefore, the efficiency of the batch =  $3 - 3 = 0$
- Batch 2 takes the servers at indices 1, 2, and 3. The efficiency of the batch =  $6 - 1 = 5$

Hence, the sum of efficiencies is  $0 + 5 = 5$ .

### Function Description

Complete the function `getMaximumEfficiency` in the editor below.

`getMaximumEfficiency` takes the following parameter(s):

`int capacity[n]`: the upgrade capacity of each server

`int numServers[k]`: the number of servers in each upgrade batch

### Returns

`long`: the maximum possible sum of efficiency of  $k$  upgrade batches

### Constraints

- $1 \leq n \leq 2 * 10^5$
- $1 \leq k \leq n$
- $1 \leq capacity[i] \leq 10^9$
- $1 \leq numServers[i] \leq n$
- $\sum numServers[i] = n$

Language

Java 15

Autocomplete Disabled

Environment

```
23  */
24
25  public static long getMaximumEfficiency(List<Integer>
capacity, List<Integer> numServers) {
26  // Write your code here
27  long maxEfficiencySum = 0;
28  int index = 0;
29  for(int i=0;i<numServers.size();i++){
30      int num = numServers.get(i);
31      int minCapacity = Integer.MAX_VALUE;
32      int maxCapacity = Integer.MIN_VALUE;
33      for(int j=0;j<num;j++){
34          int currentCapacity = capacity.get(index);
35          minCapacity = Math.min(minCapacity, currentCa
36          maxCapacity = Math.max(maxCapacity, currentC
37          index++;
38      }
39
40      maxEfficiencySum += (maxCapacity-minCapacity);
41  }
42  return maxEfficiencySum;
43
44  > public class Solution {...
```

► Input Format For Custom Testing

Test

Custom

Run Code

Run T



## 1. Question 1

The manager oversees a set of  $n$  servers, each with a designated upgrade capacity represented by the array element  $capacity[i]$ . The goal is to create precisely  $k$  upgrade batches, where the number of servers in the  $i^{th}$  batch is represented by the array element  $numServers[i]$  where  $0 \leq i < n$ .

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Note: Each server must be assigned to exactly one upgrade batch.

### Example

$n = 4$

$k = 2$

$capacity = [3, 6, 1, 2]$

$numServers = [1, 3]$

One of the optimal ways is:

- Batch 1 takes the first server. Therefore, the efficiency of the batch =  $3 - 3 = 0$

- Batch 2 takes the servers at indices 1, 2, and 3. The efficiency of the batch =  $6 - 1 = 5$

Hence, the sum of efficiencies is  $0 + 5 = 5$ .

### Action Description

Language

Java 15

Autocomplete Disabled

Environment

```
26 public static long getMaximumEfficiency(List<Integer>
capacity, List<Integer> numServers) {
27     // Write your code here
28     long maxi = 0;
29     int index = 0;
30     for(int i=0;i<numServers.size();i++){
31         int num = numServers.get(i);
32         int min = Integer.MAX_VALUE;
33         int max = Integer.MIN_VALUE;
34
35         for(int j=0;j<num;j++){
36             int current = capacity.get(index);
37             min = Math.min(min, current);
38             max = Math.max(max, current);
39             index++;
40         }
41         maxi += (max - min);
42     }
43     return maxi;
44 }
45
46
47 > public class Solution {...
```

Test

Results

Custom

Input

Run Code

Run Tests

Line:

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## 2. Question 2

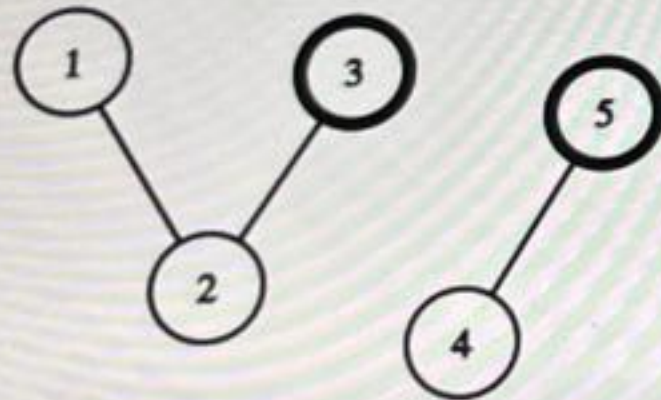
Implement a prototype service for malware spread control in a network.

There are  $g\_nodes$  servers in a network and  $g\_edges$  connections between its nodes. The  $i^{th}$  bidirectional connection connects  $g\_from[i]$  and  $g\_to[i]$ . Some of the nodes are infected with malware. They are listed in the array  $malware$ , where if  $malware[i] = 1$  node  $i$  is infected, and if  $malware[i] = 0$ , node  $i$  is not infected.

Any infected node infects other non-infected nodes, which are directly connected. This process goes on until no new infected nodes are possible. Exactly 1 node can be removed from the network. Return the index of the node to remove such that the total infected nodes in the remaining network are minimized. If multiple nodes lead to the same minimum result, then return the one with the lowest index.

### Example

Suppose  $g\_nodes = 9$ ,  $g\_edges = 5$ ,  $g\_from[] = [1, 2, 4, 6, 7]$ ,  $g\_to[] = [2, 3, 5, 7, 8]$ ,  $malware[] = [0, 0, 1, 0, 1, 0, 0, 0, 0]$



Language

Java 15

Autocomplete Disabled

Environment

```
16  /*
17  * Complete the 'getNodeToRemove' function below.
18  *
19  * The function is expected to return an INTEGER.
20  * The function accepts following parameters:
21  * 1. UNWEIGHTED_INTEGER_GRAPH g
22  * 2. INTEGER_ARRAY malware
23  */
24
25  /*
26  * For the unweighted graph, <name>:
27  *
28  * 1. The number of nodes is <name>Nodes.
29  * 2. The number of edges is <name>Edges.
30  * 3. An edge exists between <name>From[i] and <name>To[i].
31  *
32  */
33
34  public static int getNodeToRemove(int gNodes, List<Integer>
gFrom, List<Integer> gTo, List<Integer> malware) {
35
36  }
37
38 }
```

Test

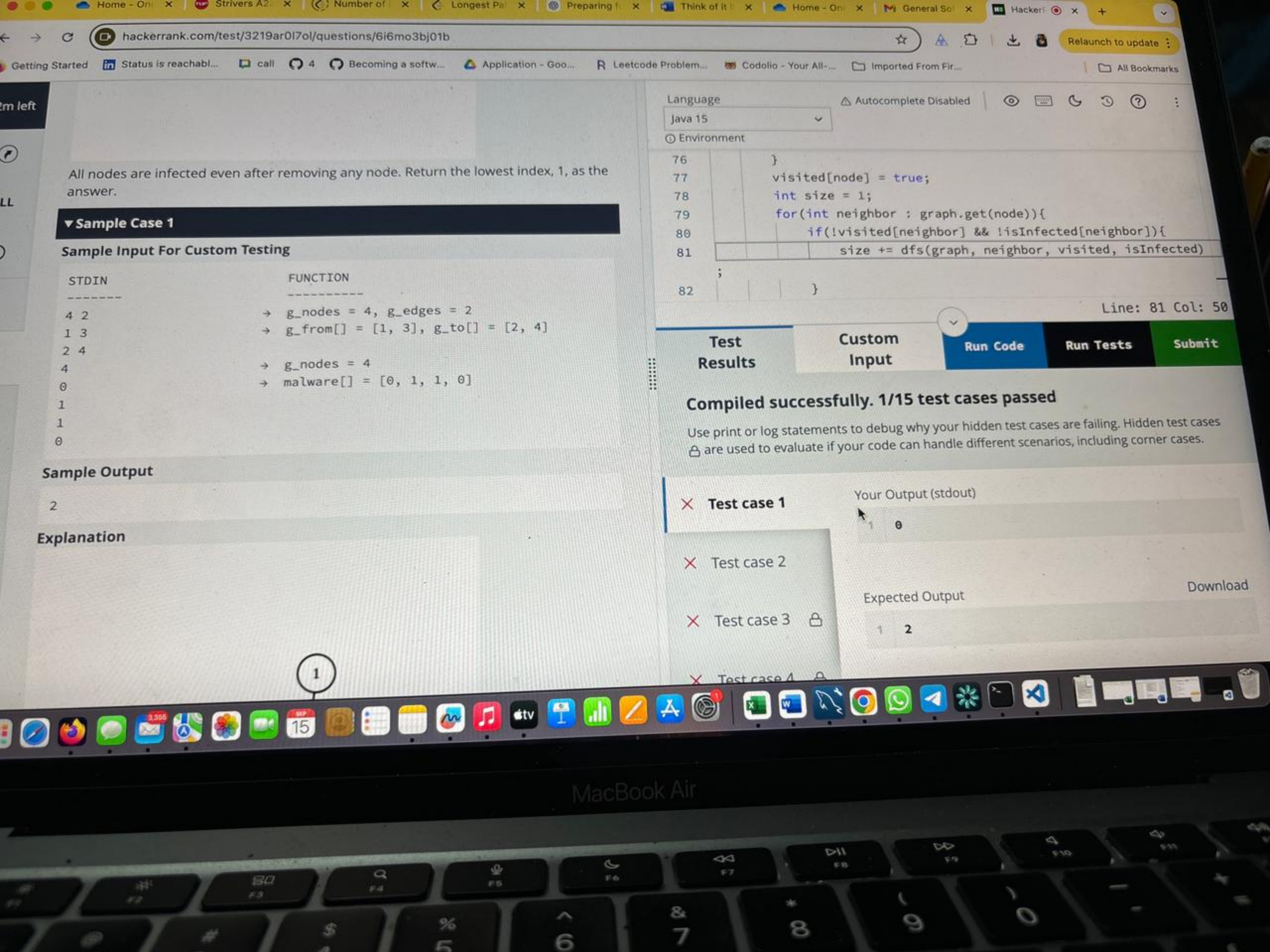
Custom

Run Code

Run Tests

MacBook Air





All nodes are infected even after removing any node. Return the lowest index, 1, as the answer.

▼ Sample Case 1

Sample Input For Custom Testing

STDIN	FUNCTION
4 2	→ g_nodes = 4, g_edges = 2
1 3	→ g_from[] = [1, 3], g_to[] = [2, 4]
2 4	
4	→ g_nodes = 4
0	→ malware[] = [0, 1, 1, 0]
1	
1	
0	

Sample Output

2

Explanation

Language  
Java 15

Autocomplete Disabled

Environment

```
76 }
77     visited[node] = true;
78     int size = 1;
79     for(int neighbor : graph.get(node)){
80         if(!visited[neighbor] && !isInfected[neighbor]){
81             size += dfs(graph, neighbor, visited, isInfected)
82         }
83     }
```

Line: 81 Col: 50

Test Results

Custom Input

Run Code

Run Tests

Submit

Compiled successfully. 1/15 test cases passed

Use print or log statements to debug why your hidden test cases are failing. Hidden test cases are used to evaluate if your code can handle different scenarios, including corner cases.

✖ Test case 1

Your Output (stdout)

0

✖ Test case 2

✖ Test case 3

Expected Output

1 2

Download

✖ Test case 4



27m left



All nodes are infected even after removing any node. Return the lowest index, 1, as the answer.

ALL



### ▼ Sample Case 1

#### Sample Input For Custom Testing

STDIN	FUNCTION
-----	-----
4 2	→ g_nodes = 4, g_edges = 2
1 3	→ g_from[] = [1, 3], g_to[] = [2, 4]
2 4	
4	→ g_nodes = 4
0	→ malware[] = [0, 1, 1, 0]
1	
1	
0	

#### Sample Output

2

#### Explanation



Language Autocomplete Disabled

Java 15

Environment

```
68
69         if(savedNodes > maxSavedNodes || ( savedNodes ==
           maxSavedNodes && malNode < bestNode)){
70             maxSavedNodes = savedNodes;
71             bestNode = malNode;
72         }
73     }
74     return bestNode;
75
```

Line: 64 Col: 7

Test Results

Custom Input

Run Code

Run Tests

Submit

Compiled successfully. 1/15 test cases passed

Use print or log statements to debug why your hidden test cases are failing. Hidden test cases are used to evaluate if your code can handle different scenarios, including corner cases.

- ✗ Test case 12
- ✗ Test case 13
- ✗ Test case 14
- ✓ Test case 0

Your Output (stdout)

1 0

Expected Output

1 2



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## 2. Question 2

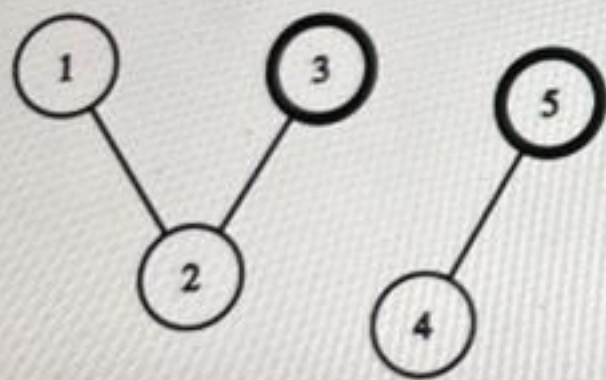
Implement a prototype service for malware spread control in a network.

There are  $g\_nodes$  servers in a network and  $g\_edges$  connections between its nodes. The  $i^{th}$  bidirectional connection connects  $g\_from[i]$  and  $g\_to[i]$ . Some of the nodes are infected with malware. They are listed in the array  $malware$ , where if  $malware[i] = 1$  node  $i$  is infected, and if  $malware[i] = 0$ , node  $i$  is not infected.

Any infected node infects other non-infected nodes, which are directly connected. This process goes on until no new infected nodes are possible. Exactly 1 node can be removed from the network. Return the index of the node to remove such that the total infected nodes in the remaining network are minimized. If multiple nodes lead to the same minimum result, then return the one with the lowest index.

### Example

Suppose  $g\_nodes = 9$ ,  $g\_edges = 5$ ,  $g\_from[] = [1, 2, 4, 6, 7]$ ,  $g\_to[] = [2, 3, 5, 7, 8]$ ,  $malware[] = [0, 0, 1, 0, 1, 0, 0, 0, 0]$



Language

Java 15

Autocomplete Disabled

Environment

```
56 //
57
58 boolean[] tempInfected = Arrays.copyOf(isInfected,
    nNodes);
59 tempInfected[malNode] = false;
60 boolean[] visited = new boolean[nNodes];
61 int savedNodes = 0;
62 for(int i=0; i<nNodes; i++){
63     if(!visited[i] && !tempInfected[i]){
64         int componentSize = dfs(graph, i, visited,
            tempInfected);
65         savedNodes += componentSize;
66     }
67 }
68
69 if(savedNodes > maxSavedNodes || (savedNodes ==
    maxSavedNodes && malNode < bestNode)){
70     maxSavedNodes = savedNodes;
71     bestNode = malNode;
72 }
73 }
74 return bestNode;
75 }
76
```

Line: 64 Col

Test

Custom

Run Code

Run Tests

Sub

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## 2. Question 2

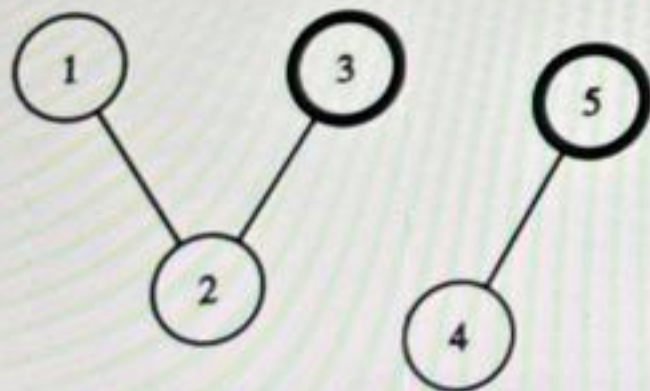
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There are  $g\_nodes$  servers in a network and  $g\_edges$  connections between its nodes. The  $i^{th}$  bidirectional connection connects  $g\_from[i]$  and  $g\_to[i]$ . Some of the nodes are infected with malware. They are listed in the array  $malware$ , where if  $malware[i] = 1$  node  $i$  is infected, and if  $malware[i] = 0$ , node  $i$  is not infected.

Any infected node infects other non-infected nodes, which are directly connected. This process goes on until no new infected nodes are possible. Exactly 1 node can be removed from the network. Return the index of the node to remove such that the total infected nodes in the remaining network are minimized. If multiple nodes lead to the same minimum result, then return the one with the lowest index.

### Example

Suppose  $g\_nodes = 9$ ,  $g\_edges = 5$ ,  $g\_from[] = [1, 2, 4, 6, 7]$ ,  $g\_to[] = [2, 3, 5, 7, 8]$ ,  $malware[] = [0, 0, 1, 0, 1, 0, 0, 0, 0]$



Language

Java 15

Autocomplete Disabled

Environment

```
34 public static int getNodeToRemove(int nNodes, List<Integer>
    gFrom, List<Integer> gTo, List<Integer> malware) {
35     List<List<Integer>> graph = new ArrayList<>();
36     for(int i=0;i<nNodes;i++){
37         graph.add(new ArrayList<>());
38     }
39
40     for(int i=0;i<gFrom.size();i++){
41         int u = gFrom.get(i) - 1;
42         int v = gTo.get(i) - 1;
43         graph.get(u).add(v);
44         graph.get(v).add(u);
45     }
46
47     boolean[] isInfected = new boolean[nNodes];
48     for(int malNode : malware){
49         isInfected[malNode] = true;
50     }
51
52     int bestNode = -1;
53     int maxSavedNodes = -1;
54
55     for(int malNode : malware){
```

Line: 64

Test

Custom

Run Code

Run Tests

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Initially, nodes [3, 5] are infected. At the end, nodes [1, 2, 3, 4, 5] will be infected. If node 3 is removed, only nodes 4 and 5 are infected, which is the minimum possible. Return 3, the node to remove.

### Function Description

Complete the function `getNodeToRemove` in the editor below.

`getNodeToRemove` has the following parameter(s):

- `int g_nodes`: the number of nodes
- `int g_from[m]`: one end of the connections
- `int g_to[m]`: another end of the connections
- `int malware[n]`: the affected nodes

### Returns:

`int`: the optimal node to remove

### Constraints

- $1 \leq g\_nodes \leq 10^3$
- $0 \leq g\_edges \leq \min(g\_nodes * (g\_nodes - 1) / 2, 10^3)$
- $1 \leq g\_from[i], g\_to[i] \leq n$
- $malware[i] = 0$  or  $1$ .

### ► Input Format For Custom Testing

### ▼ Sample Case 0

Sample Input For Custom Testing

STDIN

FUNCTION

Language

Java 15

Autocomplete Disabled

Environment

```
54
55     for(int malNode : malware){
56         //
57
58         boolean[] tempInfected = Arrays.copyOf(isInfected,
59             nNodes);
60         tempInfected[malNode] = false;
61         boolean[] visited = new boolean[nNodes];
62         int savedNodes = 0;
63         for(int i=0;i<nNodes;i++){
64             if(!visited[i] && !tempInfected[i]){
65                 int componentSize = dfs(graph, i, visited,
66                     tempInfected);
67                 savedNodes += componentSize;
68             }
69             if(savedNodes > maxSavedNodes || (savedNodes ==
70                 maxSavedNodes && malNode < bestNode)){
71                 maxSavedNodes = savedNodes;
72                 bestNode = malNode;
73             }
74         }
75     }
```

Line: 64 Co

Test

Custom

Run Code

Run Tests

MacBook Air



hackerrank.com/test/3219ar0l7ol/questions/6i6mo3bj01b

ing Started

Status is reachabl...

call

4

Becoming a softw...

Application - Goo...

Leetcode Problem...

Codolio - Your All...

Imported From Fir...

Relaunch to update

All Bookmarks

Input Format For Custom Testing

Sample Case 0

Sample Input For Custom Testing

STDIN

-----

5 4

1 2

4, 5]

2 3

3 4

4 5

5

1

1

1

1

1

FUNCTION

-----

→ g\_nodes = 5, g\_edges = 4

→ g\_from[] = [1, 2, 3, 4], g\_to[] = [2, 3,

→ malware[] size g\_nodes = 5

→ malware[] = [1, 1, 1, 1, 1]

Sample Output

1

Explanation

```
graph LR; 1 --- 3; 1 --- 5; 3 --- 5; 2 --- 3; 4 --- 5;
```

Language

Java 15

Autocomplete Disabled

Environment

54

55 for(int malNode : malware){

56 //

57

58 boolean[] tempInfected = Arrays.copyOf(isInfected,

nNodes);

59 tempInfected[malNode] = false;

60 boolean[] visited = new boolean[nNodes];

61 int savedNodes = 0;

62 for(int i=0;i<nNodes;i++){

63 if(!visited[i] && !tempInfected[i]){

64 int componentSize = dfs(graph, i, visited,

tempInfected);

65 savedNodes += componentSize;

66 }

67 }

68

69 if(savedNodes > maxSavedNodes || ( savedNodes ==

maxSavedNodes && malNode < bestNode)){

70 maxSavedNodes = savedNodes;

71 bestNode = malNode;

72 }

73 }

Line: 64

Test

Custom

Run Code

Run Tests

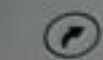
MacBook Air



49m left

capacity = [3, 6, 1, 2]

numServers = [1, 3]



One of the optimal ways is:

ALL

- Batch 1 takes the first server. Therefore, the efficiency of the batch =  $3 - 3 = 0$
- Batch 2 takes the servers at indices 1, 2, and 3. The efficiency of the batch =  $6 - 1 = 5$

Hence, the sum of efficiencies is  $0 + 5 = 5$ .



### Function Description

Complete the function `getMaximumEfficiency` in the editor below.

1

`getMaximumEfficiency` takes the following parameter(s):

2

`int capacity[n]`: the upgrade capacity of each server

`int numServers[k]`: the number of servers in each upgrade batch

### Returns

`long`: the maximum possible sum of efficiency of  $k$  upgrade batches

### Constraints

- $1 \leq n \leq 2 * 10^5$
- $1 \leq k \leq n$
- $1 \leq capacity[i] \leq 10^9$
- $1 \leq numServers[i] \leq n$
- $\sum numServers[i] = n$

Language

Java 15

Autocomplete Disabled

Environment

```
23  */
24
25  public static long getMaximumEfficiency(List<Integer>
capacity, List<Integer> numServers) {
26  // Write your code here
27  long maxEfficiencySum = 0;
28  int index = 0;
29  for(int i=0;i<numServers.size();i++){
30      int num = numServers.get(i);
31      int minCapacity = Integer.MAX_VALUE;
32      int maxCapacity = Integer.MIN_VALUE;
33      for(int j=0;j<num;j++){
34          int currentCapacity = capacity.get(index);
35          minCapacity = Math.min(minCapacity, currentCa
36          maxCapacity = Math.max(maxCapacity, currentC
37          index++;
38      }
39
40      maxEfficiencySum += (maxCapacity-minCapacity);
41  }
42  return maxEfficiencySum;
43
44  > public class Solution {...
```

► Input Format For Custom Testing

Test

Custom

Run Code

Run T



## 1. Question 1

The manager oversees a set of  $n$  servers, each with a designated upgrade capacity represented by the array element  $capacity[i]$ . The goal is to create precisely  $k$  upgrade batches, where the number of servers in the  $i^{th}$  batch is represented by the array element  $numServers[i]$  where  $0 \leq i < n$ .

The *efficiency* of an upgrade batch is determined by the difference between the maximum and minimum upgrade capacities of the servers within that batch. The manager's objective is to allocate servers to the upgrade batches in a way that maximizes the sum of efficiencies across all  $k$  batches. The task is to find the maximum sum of efficiency.

Note: Each server must be assigned to exactly one upgrade batch.

### Example

$n = 4$

$k = 2$

$capacity = [3, 6, 1, 2]$

$numServers = [1, 3]$

One of the optimal ways is:

- Batch 1 takes the first server. Therefore, the efficiency of the batch =  $3 - 3 = 0$
- Batch 2 takes the servers at indices 1, 2, and 3. The efficiency of the batch =  $6 - 1 = 5$

Hence, the sum of efficiencies is  $0 + 5 = 5$ .

### Function Description

Java 15

Environment

```
23  */
24
25  public static long getMaximumEfficiency(List<Integer>
    capacity, List<Integer> numServers) {
26      // Write your code here
27      long maxEfficiencySum = 0;
28      int index = 0;
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30          int num = numServers.get(i);
31          int minCapacity = Integer.MAX_VALUE;
32          int maxCapacity = Integer.MIN_VALUE;
33          for(int j=0; j<num; j++){
34              int currentCapacity = capacity.get(index);
35              minCapacity = Math.min(minCapacity, currentCapacity);
36              maxCapacity = Math.max(maxCapacity, currentCapacity);
37              index++;
38          }
39
40          maxEfficiencySum += (maxCapacity - minCapacity);
41      }
42      return maxEfficiencySum;
43  }
44  > public class Solution { ...
```

Test

Custom

Run Code

Run T



50m left

## ▼ Sample Case 0

## Sample Input For Custom Testing

STDIN	FUNCTION
4	→ capacity[] size n = 4
1	→ capacity = [1, 2, 3, 4]
2	
3	
4	
1	→ numServers[] size k = 1
4	→ numServers = [4]

## Sample Output

3

## Explanation

Since there is only one batch to upgrade all the servers, the efficiency of the batch is  $4 - 1 = 3$ .

Hence, the sum of efficiencies of all the batches (which is 1) is 3.

## ▼ Sample Case 1

## Sample Input For Custom Testing

STDIN	FUNCTION
3	→ capacity[] size n = 3
4	→ capacity = [4, 2, 1]
2	
1	
3	→ numServers[] size k = 3
1	→ numServers = [1, 1, 1]
1	
1	

Language

Java 15

Autocomplete Disabled

Environment

```
23 */
24
25 public static long getMaximumEfficiency(List<Integer>
capacity, List<Integer> numServers) {
26     // Write your code here
27     long maxEfficiencySum = 0;
28     int index = 0;
29     for(int i=0;i<numServers.size();i++){
30         int num = numServers.get(i);
31         int minCapacity = Integer.MAX_VALUE;
32         int maxCapacity = Integer.MIN_VALUE;
33         for(int j=0;j<num;j++){
34             int currentCapacity = capacity.get(index);
35             minCapacity = Math.min(minCapacity, currentCapacity);
36             maxCapacity = Math.max(maxCapacity, currentCapacity);
37             index++;
38         }
39
40         maxEfficiencySum += (maxCapacity-minCapacity);
41     }
42     return maxEfficiencySum;
43 }
44 > public class Solution {...
```

Test

Custom

Run Code

Run Tests