

Experiment Title-2

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Semester: 5th

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Subject Name: CC Lab

Question 1:

- 1. Aim/Overview of the practical:** Game of Two Stack
- 2. Task to be done/ Which logistics used:**

Alexa has two stacks of non-negative integers, stack $a[n]$ and stack $b[m]$ where index 0 denotes the top of the stack. Alexa challenges Nick to play the following game:

- In each move, Nick can remove one integer from the top of either stack a or stack b .
- Nick keeps a running sum of the integers he removes from the two stacks.
- Nick is disqualified from the game if, at any point, his running sum becomes greater than some integer maxSum given at the beginning of the game.
- Nick's *final score* is the total number of integers he has removed from the two stacks.

Given a , b , and maxSum for g games, find the maximum possible score Nick can achieve.

3. Steps for experiment/practical/Code:

```
#include <bits/stdc++.h>
using namespace std;

int main(){
```

```
int g;
cin >> g;
for(int a0 = 0; a0 < g; a0++){
    int n;
    int m;
    int x;
    cin >> n >> m >> x;

    vector<int> a(n);
    for(int a_i = 0; a_i < n; a_i++){
        cin >> a[a_i];
    }

    vector<int> b(m);
    for(int b_i = 0; b_i < m; b_i++){
        cin >> b[b_i];
    }

    int sum=0,count=0,temp=0,i=0,j=0;

    while(i<n && sum+a[i]<=x){
        sum+=a[i];
        i++;
    }
    count=i;

    while(j<m && i>=0){
        sum+=b[j];
        j++;
        while(sum>x && i>0){
            i--;
            sum-=a[i];
        }
        if(sum<=x && i+j>count)
            count=i+j;
    }
    cout<<count<<endl;
}
return 0;}
```

Result/Output/Writing Summary:

Congratulations

You solved this challenge. Would you like to challenge your friends? [f](#) [t](#) [in](#)

[Next Challenge](#)

✓ Test case 7

✓ Test case 8

✓ Test case 9

✓ Test case 10

✓ Test case 11

✓ Test case 12

✓ Test case 13

Compiler Message

Success

Input (stdin) [Download](#)

1	1
2	5 4 10
3	4 2 4 6 1
4	2 1 8 5

Expected Output [Download](#)

1	4
---	---

Question 2:

1. Aim/Overview of the practical: Down to Zero II

2. Task to be done/ Which logistics used: You are given Q queries. Each query consists of a single number N. You can perform any of the 2 operations on N in each move:

1: If we take 2 integers a and b where $N = a \times b$ ($a=1$, $b=1$), then we can change $N = \max(a, b)$

2: Decrease the value of N by 1.

Determine the minimum number of moves required to reduce the value of N to 0.

3. Steps for experiment/practical/Code:

```
#include <bits/stdc++.h>
```

```
using namespace std;
```

```
int main() {
```

```
    int test;
```

```
    cin >> test;
```

```
    while (test--){
```

```
        int n ;
```

```
        cin >> n ;
```

```
        int steps = 0;
```

```
        if (n==0){
```

```
            cout << 0 << endl;
```

```
            continue;
```

```
        }
```

```
        if (n==1){
```

```
            cout << 1 << endl;
```

```
            continue;
```

```
        }vector<int> dist(n+1,0);
```

```
queue<int> q;
q.push(n) ;
dist[n] = 1 ;
while (1){
    int element = q.front();
    q.pop();
    if(element == 2){
        cout << dist[2] + 1 << endl;
        break ;
    }
    if (dist[element-1] == 0 ){
        dist [element-1] = dist[element]+1;
        q.push(element-1);
    }
    for (int i=2; i*i<=element; i++){
        if (element%i == 0){
            int maxfrac = element/i;
            if (dist[maxfrac] == 0) dist [maxfrac] = dist[element] + 1, q.push(maxfrac);
        }
    }
}
return 0;
}
```

4. Result/Output/Writing Summary:

Congratulations

You solved this challenge. Would you like to challenge your friends?

[Next Challenge](#)

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- Test case 7
- Test case 8
- Test case 9
- Test case 10
- Test case 11
- Test case 12
- Test case 13

Compiler Message

Success

Input (stdin)

1	2
2	3
3	4

[Download](#)

Expected Output

1	3
2	3

[Download](#)