Game of Two Stacks

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.

Example
$a = [1, 2, 3, 4, 5]$
$b = [6, 7, 8, 9]$

The maximum number of values Nick can remove is 4. There are two sets of choices with this result.

1. Remove $1, 2, 3, 4$ from a with a sum of 10.
2. Remove $1, 2, 3$ from a and 6 from b with a sum of 12.

Function Description
Complete the *twoStacks* function in the editor below.

twoStacks has the following parameters: - *int maxSum:* the maximum allowed sum
- *int a[n]:* the first stack
- *int b[m]:* the second stack

Returns
- *int:* the maximum number of selections Nick can make

Input Format

The first line contains an integer, g (the number of games). The $3 \cdot g$ subsequent lines describe each game in the following format:

1. The first line contains three space-separated integers describing the respective values of n (the number of integers in stack a), m (the number of integers in stack b), and $maxSum$ (the number that the sum of the integers removed from the two stacks cannot exceed).
2. The second line contains n space-separated integers, the respective values of $a[i]$.
3. The third line contains m space-separated integers, the respective values of $b[i]$.

Constraints

- $1 \leq g \leq 50$
- $1 \leq n, m \leq 10^5$
- $0 \leq a[i], b[i] \leq 10^6$
- $1 \leq maxSum \leq 10^9$

Subtasks

- $1 \leq n, m, \leq 100$ for 50% of the maximum score.

Sample Input 0

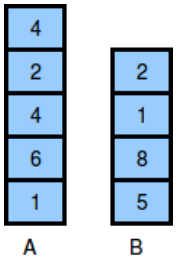
```
1
5 4 10
4 2 4 6 1
2 1 8 5
```

Sample Output 0

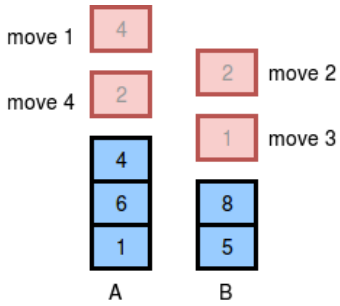
```
4
```

Explanation 0

The two stacks initially look like this:



The image below depicts the integers Nick should choose to remove from the stacks. We print 4 as our answer, because that is the maximum number of integers that can be removed from the two stacks without the sum exceeding $x = 10$.



(There can be multiple ways to remove the integers from the stack, the image shows just one of them.)

Contest ends in 3 hours

Submissions: 156
Max Score: 60
Difficulty: Medium

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C++

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

using namespace std;

string ltrim(const string &);
string rtrim(const string &);
vector<string> split(const string &);

/*
 * Complete the 'twoStacks' function below.
 *
 * The function is expected to return an INTEGER.
 * The function accepts following parameters:
 *  1. INTEGER maxSum
 *  2. INTEGER_ARRAY a
 *  3. INTEGER_ARRAY b
 */

int twoStacks(int maxSum, vector<int> a, vector<int> b) {

}

int main()
{
    ofstream fout(getenv("OUTPUT_PATH"));

    string g_temp;
    getline(cin, g_temp);

    int g = stoi(ltrim(rtrim(g_temp)));

    for (int g_itr = 0; g_itr < g; g_itr++) {
        string first_multiple_input_temp;
        getline(cin, first_multiple_input_temp);

        vector<string> first_multiple_input = split(rtrim(first_multiple_input_temp));

        int n = stoi(first_multiple_input[0]);

        int m = stoi(first_multiple_input[1]);

        int maxSum = stoi(first_multiple_input[2]);

        string a_temp_temp;
        getline(cin, a_temp_temp);

        vector<string> a_temp = split(rtrim(a_temp_temp));

        vector<int> a(n);

        for (int i = 0; i < n; i++) {
            int a_item = stoi(a_temp[i]);

            a[i] = a_item;
        }

        string b_temp_temp;
        getline(cin, b_temp_temp);

        vector<string> b_temp = split(rtrim(b_temp_temp));

        vector<int> b(m);
```

```
        for (int i = 0; i < m; i++) {
            int b_item = stoi(b_temp[i]);

            b[i] = b_item;
        }

        int result = twoStacks(maxSum, a, b);

        fout << result << "\n";
    }

    fout.close();

    return 0;
}

string ltrim(const string &str) {
    string s(str);

    s.erase(
        s.begin(),
        find_if(s.begin(), s.end(), not1(ptr_fun<int, int>(isspace)))
    );

    return s;
}

string rtrim(const string &str) {
    string s(str);

    s.erase(
        find_if(s.rbegin(), s.rend(), not1(ptr_fun<int, int>(isspace))).base(),
        s.end()
    );

    return s;
}

vector<string> split(const string &str) {
    vector<string> tokens;

    string::size_type start = 0;
    string::size_type end = 0;

    while ((end = str.find(" ", start)) != string::npos) {
        tokens.push_back(str.substr(start, end - start));

        start = end + 1;
    }

    tokens.push_back(str.substr(start));

    return tokens;
}

```

Line: 1 Col: 1

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