Question: Write a C++ program to implement the greedy algorithm for ...

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Please assist

Write a C++ program to implement the greedy algorithm for making change. Your program should accept a list of coin denominations, the amount of change to make, and outputs the minimum number of coins needed to make that amount of change.

Input

The first line of input is N, the number of coin denominations. N denominations follow, each separated by a space. You may assume that the denominations are sorted in ascending order. The next line begins with the integer M, the number of test cases to follow. M integers $K_1, \ldots K_M$ follow, each separated by a space.

Output

For each test case i, output the minimum number of coins needed to make change for amount K_i. For each test case, output the answer on its own line.

Example Input-Output Pairs

Sample Input #1	Sample Input #2
7 1 2 5 10 20 50 100 3 21 83 60	3 1 2 5 2 25 1001
Sample Output #1	**Sample Output #2**
2 5 2	5 201

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Expert Answer

Anonymous answered this
203 answers

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C++ CODE-

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

int main(){
   // n will store the number of denominations
   int n;
   cin >> n;

   // array of size n for storing denominations
   int deno[n];
   for(int i = 0 ; i < n ; i++){
      cin >> deno[i];
   }

   // number of test cases
   int t;
   cin >> t;

   // for each test case find min number of coins
   while(t--){
      // total amount we have
      int amount;
      cin >> amount;

      // variable for storing the number of coins
      int coins = 0;

      // since the array is already sorted in ascending order
      // traverse the denominations array in reverse direction
```

```
            // subtract deno[i] from amount
            amount = amount - deno[i];
            // increment the coins by 1
            coins++;
        }
    }

    // print the number of coins
    cout << coins << endl;
  }
  return 0;
}
```

Please refer to the image of code for proper indentation-

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

int main(){
    // n will store the number of denominations
    int n;
    cin >> n;

    // array of size n for storing denominations
    int deno[n];
    for(int i = 0 ; i < n ; i++){
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    // for each test case find min number of coins
    while(t--){
        // total amount we have
        int amount;
        cin >> amount;

        // variable for storing the number of coins
        int coins = 0;
```
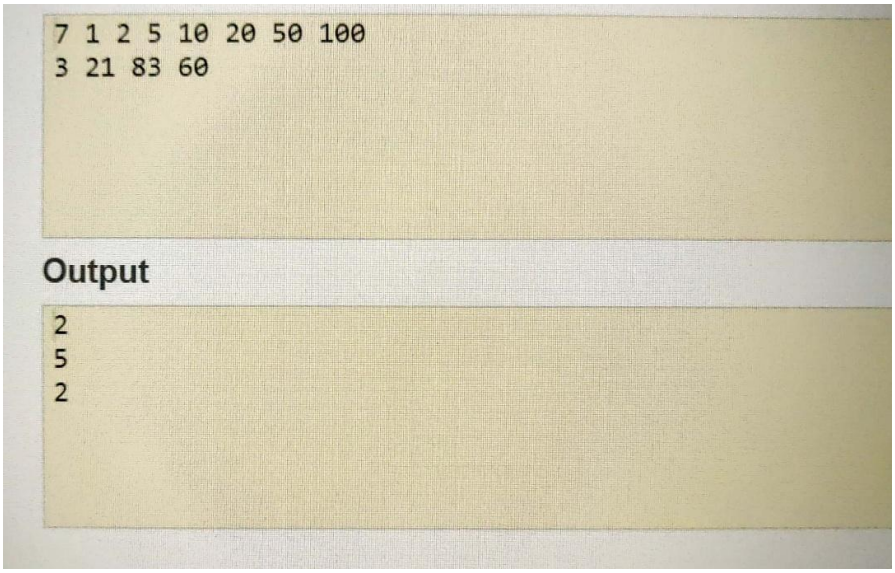
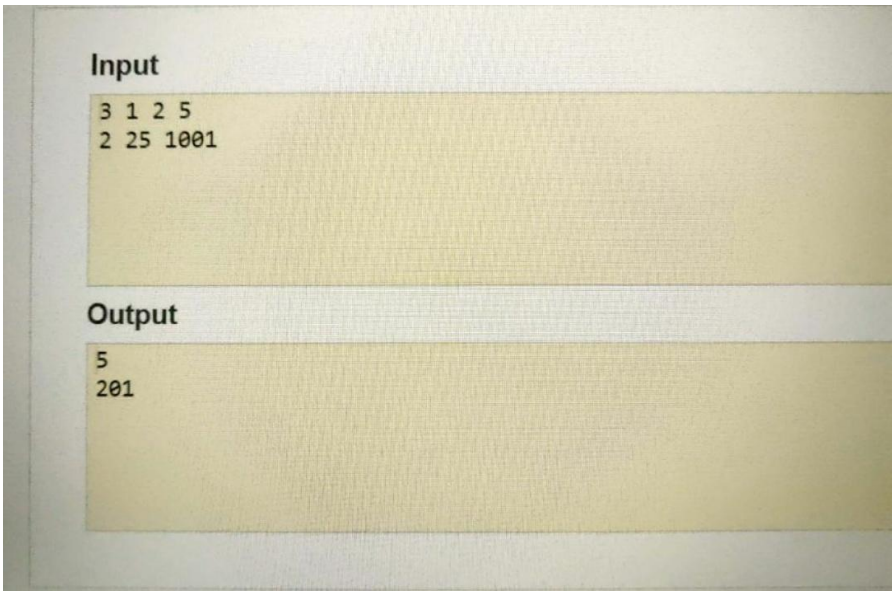

```cpp
    // for each test case find min number of coins
    while(t--){
        // total amount we have
        int amount;
        cin >> amount;

        // variable for storing the number of coins
        int coins = 0;

        // since the array is already sorted in ascending order
        // traverse the denominations array in reverse direction
        for(int i = n - 1 ; i >= 0 ; i--){
            // while amount left is greater than or equal to deno[i]
            while (amount >= deno[i]) {
                // subtract deno[i] from amount
                amount = amount - deno[i];
                // increment the coins by 1
                coins++;
            }
        }

        // print the number of coins
        cout << coins << endl;
    }
    return 0;
}
```

Screenshot of sample input and output-





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