

## Making Change

Assume we have a set of  $N > 0$  tokens each of different value  $\{v_1, v_2, \dots, v_N\}$  with an unlimited supply of each token from which we have to give a customer some change.

What is the minimum number of tokens to return as change?

Write a function

```
int mintokens(int c, int a[], int len)
```

where

$c$  is the amount of change owed to the customer

$a[]$  is a 1-dimensional array of token values

$len$  is the number of elements (i.e., number of different token values) in  $a[]$

and returns the minimum number of tokens it takes to return change due  $c$

or -1 if change is not possible or if  $len, c < 1$

File you must submit: `soln_func.cc`

### Examples:

$c = 30$   $a[] = \{5, 10, 25\}$

Returns: 2

*Explanation:*  $1 \times 5 + 1 \times 25$

$c = 11$   $a[] = \{5, 9, 1, 6\}$

Returns: 2

*Explanation:*  $1 \times 5 + 1 \times 6$

$c = 15$   $a[] = \{3, 17, 1, 21, 4\}$

Returns: 4

*Explanation:*  $1 \times 3 + 3 \times 4$

$c = 7$   $a[] = \{5, 9, 3, 6\}$

Returns: -1

*Explanation:* Not possible to make change.

$c = 7$   $a[] = \{\}$

$c = 0$ ,  $a[] = \{1, 2\}$

Each returns: -1

*Explanation:* For each, at least one of the following is true;  $len, c < 1$