

CSCI 135 Software Design and Analysis, C++

Homework 3

Solution

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Problem 1

Do lab 5 on the course website.

Problem 2

Write a program to do the following:

- Input a number n . Then declare dynamically an array of characters of size n .
- Set the elements of this array by reading each one from the input. Assume that you will input either '(' or ')' for each.
- Define a function to decide whether an array containing only '(' and ')' characters is a legal parenthesized expression. For example $((()))()$ is legal but $((())$ and $)()$ are not. Make sure to provide the correct type and number of parameters for this function.
- Call the above function from the main function on the array you constructed. Experiment with different arrays by running the program a number of times with different input.

ANSWER:

```
#include <iostream>
using std::cout;
using std::cin;

bool valid(char * s, int n) {
    int balance=0;
    for (int i=0; i<n; i=i+1) {
        if (s[i]=='(')
            balance=balance+1;
        else
            balance=balance-1;
        if (balance<0)
            return false;
    }
    return balance==0;
}
```

