hroac2Hw1

by Hannah Roach

Submission date: 08-Sep-2018 05:29PM (UTC-0500)
Submission ID: 998732741
File name: hroac2Hw1.pdf (1.42M)
Word count: 561
Character count: 2899

Problem 1:

Algorithm: (5 points) Write a C++ program that inputs three numbers and multiplies them. The output should appear as shown below. Your name should replace mine.

Source Code:

```
CSC376 - Assignment 1 - Problem 1
Author: Hannah Roach
Date: 9/2/2018

#include <iostream>
 using namespace std;
int main() {
    cout << "Input your height(cm):" << endl;
    int height;
    cin >> height;

    cout << "Input your width(cm):" << endl;
    int width;
    cin >> width;

    cout << "Input your depth(cm):" << endl;
    int depth;
    cin >> depth;

    int volume;
    volume = height*width*depth;
    std::cout << "Hello, Hannah Roach!" << std::endl;
    std::cout << "You require " << volume << " cubic centimeters on this earth!" <<
std::endl;
    return 0;
}
```

Output:

```
/Users/hannahroach/Desktop/Computer_Organization/HomeWork/hroac2Hw1/cmake-build-debug/hroac2Hw1
Input your height(cm):
142
Input your width(cm):
46
Input your depth(cm):
30
Hello, Hannah Roach!
You require 195960 cubic centimeters on this earth!

Process finished with exit code 0
```

Problem 2a:

Algorithm: (8 points) A C++ program that inputs the length and width of two rectangles (in integers) representing a house and a garage. A function that uses Call-by-Value

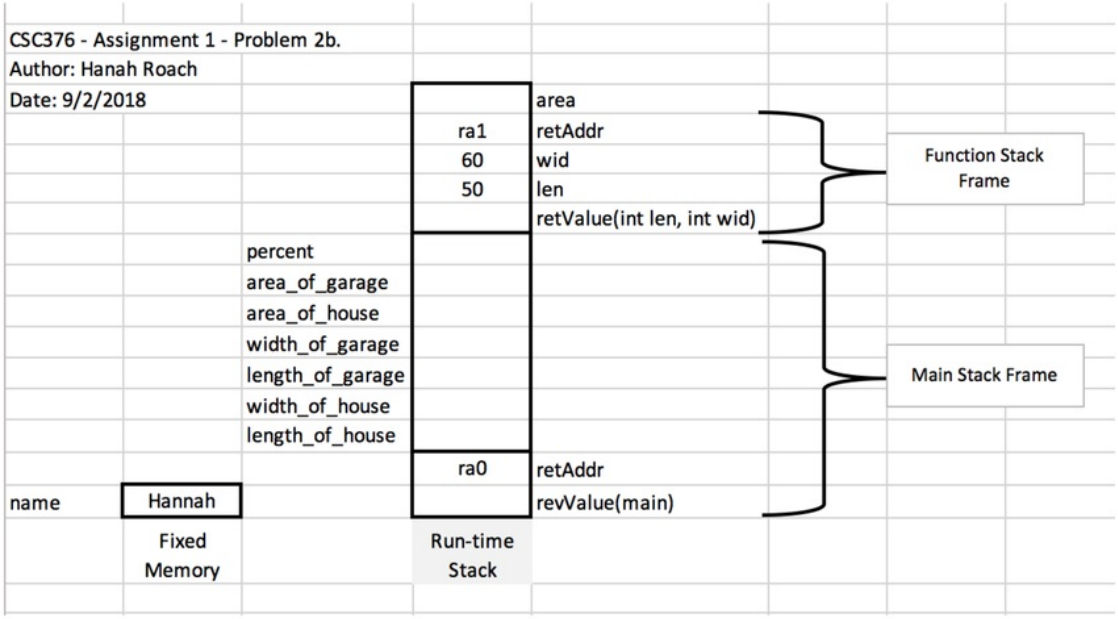
Source Code:

```
CSC376 - Assignment 1 - Problem 2a
Author: Hannah Roach
Date: 9/2/2018

#include <iostream>
using namespace std;
string name = "Hannah Roach";

int rectArea(int len, int wid)
{
    int area;
    area = len*wid;
    return area;
}

int main() {

    int length_of_house, width_of_house;
    int length_of_garage, width_of_garage;
    int area_of_house, area_of_garage;
    int percent;

    cout << "Length of House (ft):" << endl;
    cin >> length_of_house;

    cout << "Width of House (ft):" << endl;
    cin >> width_of_house;

    cout << "Length of Garage (ft):" << endl;
    cin >> length_of_garage;

    cout << "Width of Garage (ft):" << endl;
    cin >> width_of_garage;


    area_of_house = rectArea(length_of_house, width_of_house);
    std::cout << "The house is " << area_of_house<< " square feet" << std::endl;

    area_of_garage = rectArea(length_of_garage, width_of_garage);
    std::cout << "The garage is " << area_of_garage<< " square feet" << std::endl;

    percent = 100*area_of_garage/area_of_house;
    std::cout << name <<"'s garage is " << percent << " percent of her house" <<
std::endl;

    return 0;
```

Output:

```
/Users/hannahroach/Desktop/Computer_Organization/HomeWork/hroac2Hw1/cmake-build-debug/hroac2Hw1
Length of House (ft):
50
Width of House (ft):
60
Length of Garage (ft):
10
Width of Garage (ft):
20
The house is 3000 square feet
The garage is 200 square feet
Hannah Roach's garage is 6 percent of her house

Process finished with exit code 0
```

Problem 2b:



Problem 3a:

Algorithm: (8 points) A C++ program that inputs the length, width, & height (in integers) of a house. A function that uses Call-By-Reference

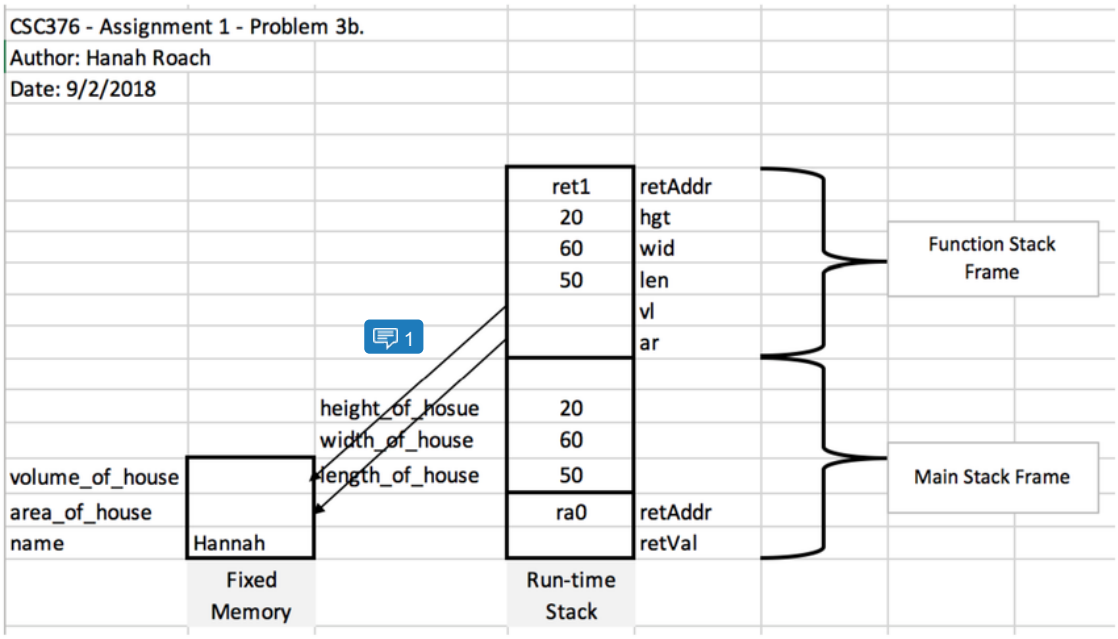
Source Code:

```
CSC376 - Assignment 1 - Problem 3a
Author: Hannah Roach
Date: 9/2/2018

#include <iostream>
using namespace std;
string name = "Hannah Roach";

int area_of_house;
int volume_of_house;

void rect(int& ar, int& vl, int len, int wid, int hgt)
{
    volume_of_house = len*wid*hgt;
    area_of_house = len*wid;
    std::cout <<name<<" has a house with " << area_of_house << " square feet that
contains " << volume_of_house << " cubic feet" << std::endl;
}

int main() {

    int length_of_house,  width_of_house, height_of_house;

    cout << "Length of House (ft):" << endl;
    cin >> length_of_house;

    cout << "Width of House (ft):" << endl;
    cin >> width_of_house;

    cout << "Width of House (ft):" << endl;
    cin >> height_of_house;

    rect(area_of_house, volume_of_house, length_of_house, width_of_house,
height_of_house);

    return 0;
}
```

Output:

```
/Users/hannahroach/Desktop/Computer_Organization/HomeWork/hroac2Hw1/cmake-build-debug/hroac2Hw1
Length of House (ft):
50
Width of House (ft):
60
Width of House (ft):
20
Hannah Roach has a house with 3000 square feet that contains 60000 cubic feet

Process finished with exit code 0
```

Problem 3b:



Problem 4a:

Algorithm:
(8 points) A recursive C++ program to solve the following problem :
P(1) = 3
P(2) = 4
P(n) =P(n-1)+P(n-2) for n>2

Source Code:

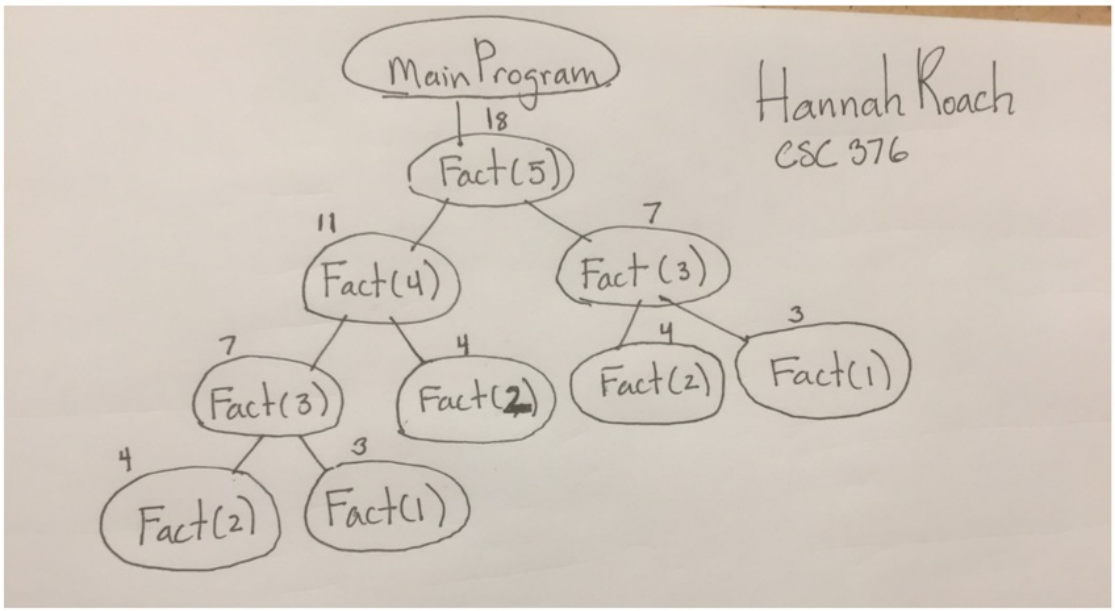
```
CSC376 - Assignment 1 - Problem 4a
Author: Hannah Roach
Date: 9/2/2018

#include <iostream>
 using namespace std;

int num = 5;

int fact(int n)
{
    if(n<=1)
    {
        return 3;
    }

    if(n<=2)
    {
```

```
        return 4;
    }

    else
    {
        n = fact(n-1) + fact(n-2) ;
        return n;
    }
}

int main ()
{
    cout << "Hannah Roach shows P(5) has " << fact(num) << " units"<< endl;
    return 0 ;
}
```

Output:

```
/Users/hannahroach/Desktop/Computer_Organization/HomeWork/hroac2Hw1/cmake-build-debug/hroac2Hw1
Hannah Roach shows P(5) has 18 units

Process finished with exit code 0
```

Problem 4b:



hroac2Hw1

GRADEMARK REPORT

FINAL GRADE

50/50

GENERAL COMMENTS

Instructor

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Comment 1

no comment

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RUBRIC: FA2013-HW1-POINTS 50 / 50

PROB 1 5 / 5

FULL CREDIT
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MINUS 1
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PROB 2A 8 / 8

FULL CREDIT
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PROB 2B 7 / 7

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PROB 3A 8 / 8

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PROB 3B 7 / 7

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PROB 4A 8 / 8

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PROB 4B 7 / 7

FULL CREDIT
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