CMIS 102 Hands-On Lab

Week 2

Overview

This hands-on lab allows you to follow and experiment with the critical steps of developing a program including the program description, analysis, test plan, design, and implementation with C code.

Program Description

This program will sum two integer numbers to yield a third integer number. Once the calculations are made the results of all the numbers will be printed to the output screen.

Analysis

We will use sequential programming statements.
We will define 3 integer numbers: a, b, c.
c will store the sum of a and b.

Test Plan

To understand this program the following input numbers could be used for testing:

a = 10
b = 20
c = a + b = 10 + 20 = 30

In table format the following results are expected:

Run #	Input a	Input b	Expected Output
1	10	20	30
2	0	0	0
3	124	356	480
4	-30	-90	-120

Design using Pseudocode

```
// This program will sum two integer numbers to yield a third integer number.
// It will also divide two float numbers to yield a third float number.

 // Declare variables
Declare a,b,c as Integer

// Set values of Integers
Set a=10
Set b=20
Set c= a + b

// Print a, b, c
Print a,b,c
```

C Code

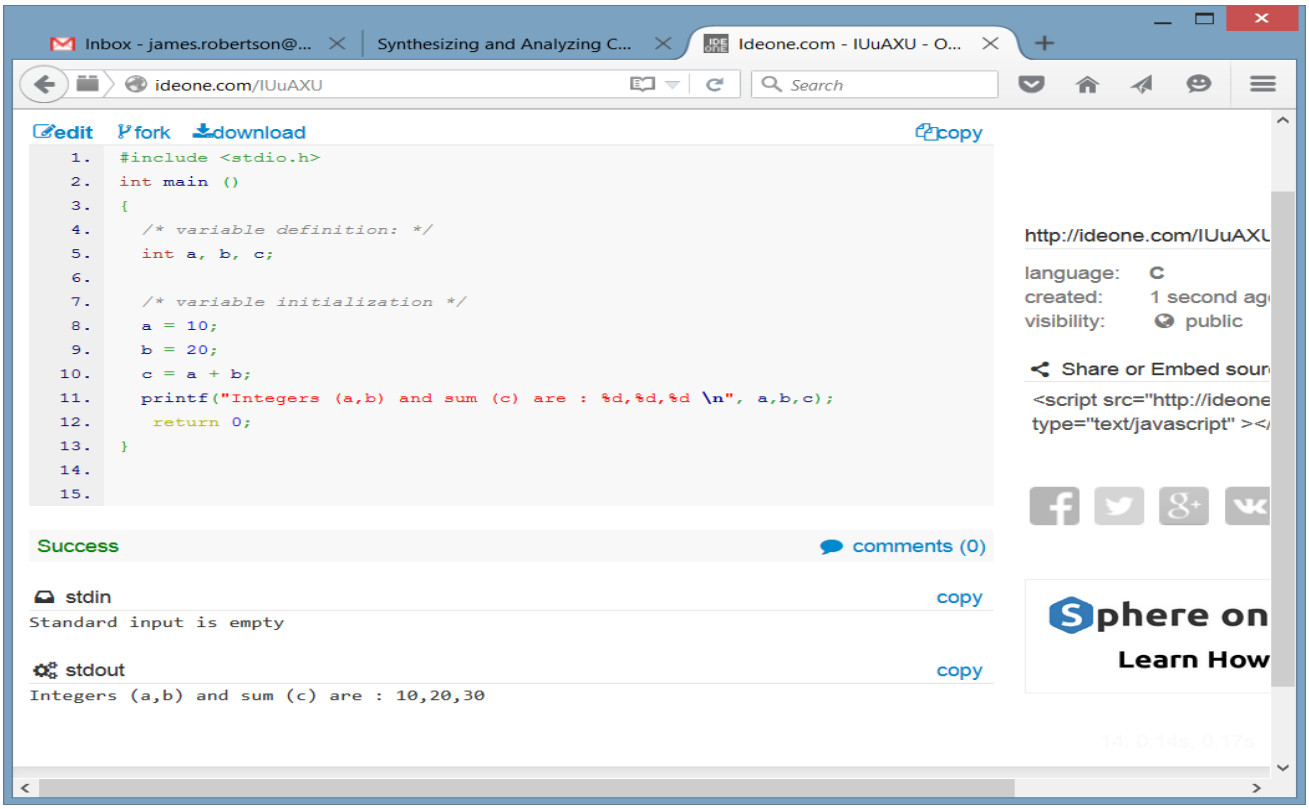
The following is the C Code that will compile in execute in the online compilers.

```
// C code
// This program will sum two integer numbers to yield a third integer number.
// Developer: Faculty CMIS102
// Date: Jan 31, XXXX

#include <stdio.h>
int main ()
{
  /* variable definition: */
  int a, b, c;

  /* variable initialization */
  a = 10;
  b = 20;
  c = a + b;
  printf("Integers (a,b) and sum (c) are : %d,%d,%d \n", a,b,c);
   return 0;
}
```

Results from running the programming at ideone.com:



Learning Exercises for you to complete

1. Change the C code to calculate the product of two integers as opposed to the sum of two integers. Then run the new code. Support your experimentation with a screen capture of the code and a screen capture of the successful execution of the new code.

2. Prepare a new test table with at least 3 distinct test cases listing input and expected output for the product of two integers. Include screen shots of the executions of all text table values working properly.

3. Change the C code to calculate the quotient (e.g. a/b) of two floats (e.g. 2.3/1.5).Hint: Use float variable types as opposed to integers. What happens if the denominator is 0.0? Support your experimentation with screen captures of executing the new code

4. Prepare a new test table with at least 3 distinct test cases listing input and expected output for the quotient of two floats.

Submission

Submit a neatly organized word (or PDF) document that demonstrates you successfully executed this lab on your machine using an online compiler. You should provide a screen capture of the resulting output.

Also, provide the answers, associated screen captures, C Code and descriptions of your successful completion of learning exercises 1, 2, 3 and 4.

The answers to the learning exercises, screen captures, C code and descriptions can be included in the same neatly organized document you prepared as you ran this lab. Note the code can be embedded in the word document. However; be sure all code compiles and runs perfectly before submitting the document.

Submit your document no later than the due date listed in the syllabus or calendar.

Grading guidelines

Submission	**Points**
Successfully demonstrates execution of this lab with online compiler. Includes a screen capture of the code and the output from successful runs.	3
Successfully modifies the code to calculate the product of two integers.	2
Provides a new test table with at least 3 distinct test cases listing input and expected output for the product of two integers.	1
Modifies the code to calculate the quotient of two floats. Describes what happens if the denominator is 0.0? Support your experimentation with screen captures of executing the new code.	2
Provides a new test table with at least 3 distinct test cases listing input and expected output for the quotient of two floats.	1
Document is well-organized, and contains minimal spelling and grammatical errors.	1
Total	**10**