Solving Simple Problems in C

LAB 02

SECTION 3

Jack morrison

SUBMISSION DATE:

02/03/23

Problem 1

Really easy just added some printf statements. See image 1 (top left)

Problem 2

Part 1: Just manually copied the given code. See image 1 (top right)

Part 2: Added a new variable z and scanned it in then used it to calculate volume

See image 1 (bottom left)

Problem 3

Each of the print statements had some problems, the first formatted an int as a double, the second had the correct format but didn't add the result as an parameter to printf, and the third formatted a double as an int.

Correct statements:

printf("The value of 77/5 is %d, using integer math.\n", integer_result);

printf("The value of 2+3 is %d.\n", integer_result);

printf("The value of 1.0/22.0 is %lf.\n", decimal_result);

Problem 4

See image 1 (bottom right) for output.

A few of the statements did integer division and then assigned them to a double variable, which effectively truncates the value after the decimal point. Statements c, g, and h did that. For the rest the differences come down to the order of operations, and parenthesis.

For l the solution is to use the formula for the area of a circle with M_PI from the math library

double radius = v / M_PI / 2; where v is the circumference

double l = M_PI * pow(radius, 2);

For m the solution is to multiply the number of feet n by 0.3048 to get the number of meters

double m = v * 0.3048; where v is the distance in feet

For n the solution is similar to m translate the equation into code

double n = (v – 32.0) / 1.8; where v is the degrees in fahrenheit

Problem 5

The Pythagorean Theorem basically is c = $\sqrt{(a^2+b^2)}$ which can be directly translated into code as

double c = sqrt(pow(a, 2) + pow(b, 2));

OR

double c = sqrt((a * a) + (b * b));

From there it is trivial to print out c with %lf and you're done.

Analysis

Theses problems were trying to teach basic c coding concepts, and help you learn how to solve and analyze programming problems. They were pretty basic problems but given how early into the course we are that makes sense.

Design

Designing these solutions was very simple in fact there really wasn't much design to it. My favorite one was problem 4 because I had a good time fitting all the stuff into one print statement.

Testing

I ran problem 4 and 5 like 3 times each to get the working correctly, and the rest worked immediately.

Screen Shots

Image: 1


```
/home/jack/trunk/uni/cpre185/labs: just run lab02/lab02-1.c        02/03/2023 02:29:45 PM
Name: Jack Morrison
Course: CPRE185
Date: 02/03/2023
/home/jack/trunk/uni/cpre185/labs:                                 02/03/2023 02:29:51 PM
```

```
/home/jack/trunk/uni/cpre185/labs: just run lab02/lab02-2_1.c      02/03/2023 02:29:27 PM
Enter a width: 4
Enter a height: 6
A 4 by 6 rectangle's area is 24
/home/jack/trunk/uni/cpre185/labs:                                 02/03/2023 02:30:09 PM
```

```
/home/jack/trunk/uni/cpre185/labs: just run lab02/lab02-2_2.c      02/03/2023 02:29:40 PM
Enter a width: 2
Enter a height: 64
Enter a depth: 8
A 2 by 64 by 8 rectangular prism's volume is 1024
/home/jack/trunk/uni/cpre185/labs:                                 02/03/2023 02:30:24 PM
```

```
/home/jack/trunk/uni/cpre185/labs: just run lab02/lab02-4.c        02/03/2023 02:29:29 PM
a: 8152
b: 10801
c: 81.00
d: 33.73
e: 21
f: 2
g: 2.00
h: 21.00
i: 22.00
j: 2
k: 22.00
l: 44.01
m: 4.27
n: 24.44
/home/jack/trunk/uni/cpre185/labs: |                               02/03/2023 02:30:41 PM
```

Image: 2


```
/home/jack/trunk/uni/cpre185/labs: just run lab02/lab02-5.c
Enter a: 5
Enter b: 9
Value of c: 10.295630
/home/jack/trunk/uni/cpre185/labs: |                               02/03/2023 01:33:10 PM
```