Lab 2

LAB 2

SECTION C

Akash Patel

SUBMISSION DATE: 2/13/19

2/13/19

Problem

The purpose is to solve problems using simple arithmetic, and work with C integer and floating-point math.

Analysis

I learned more about integer and floating-point math used in C. I had trouble getting the outputs but in the end I learned that all I had to do was use %d or %lf.

Design

For 2_2_1 I had to compile and debug a code for getting an area of a rectangle. For 2_2_2 I had to get the volume of an x by z rectangular prism. I modified it by adding one side input and using the volume formula. For 2_3 I had to describe the reason and correct the problem. For 2_4 I had to perform arithmetic operations, so I just wrote each equation on new lines and got the output and printed it. For 2_5 I wrote a program that would use the Pythagorean theorem to compute one side length of a triangle when given two sides.

Testing

This lab was fairly simple so I just compiled and ran the programs until they worked. I had a few compiling issues due to syntax but that's about it.

Comments

This was a simple lab but I shouldn't have procrastinated on it. I should have got it done much sooner.

Source Code

```
/*-------------------------------------------------------------------------
-                                       SE 185 Lab 02
-             Developed for 185-Rursch by T.Tran and K.Wang
-      Name: Akash Patel
-      Section: SE 185 C
-      NetID: apatel1@iastate.edu
-      Date: 02/07/2019
-------------------------------------------------------------------------*/

/*-------------------------------------------------------------------------
-                                  Includes
-------------------------------------------------------------------------*/
#include <stdio.h>
#include <math.h>

/*-------------------------------------------------------------------------
-                                  Defines
-------------------------------------------------------------------------*/

/*-------------------------------------------------------------------------
-                                  Prototypes
-------------------------------------------------------------------------*/

/*-------------------------------------------------------------------------
-                                          Implementation
-------------------------------------------------------------------------*/
int main()
{

    /* Put your code after this line */
       printf("Akash Patel\n");
       printf("SE 185 section C\n");
       printf("02/07/2019\n");



    return 0;

}


/*-------------------------------------------------------------------------
-                                       SE 185 Lab 02
-             Developed for 185-Rursch by T.Tran and K.Wang
-      Name: Akash Patel
-      Section: SE 185 C
-      NetID:145968622
```

```
-      Date: 02/07/2019
------------------------------------------------------------------------------*/

/*------------------------------------------------------------------------------
-                                  Includes
------------------------------------------------------------------------------*/
#include <stdio.h>
#include <math.h>

/*------------------------------------------------------------------------------
-                                  Defines
------------------------------------------------------------------------------*/

/*------------------------------------------------------------------------------
-                                  Prototypes
------------------------------------------------------------------------------*/

/*------------------------------------------------------------------------------
-                                            Implementation
------------------------------------------------------------------------------*/
int main()
{

    /* Put your code after this line */
int x, y;
printf("enter a width: ");
scanf("%d", &x);
printf("Enter a Height: ");
scanf("%d",&y);
printf("A %d by %d rectangle's area is %d\n", x, y, x*y);


    return 0;

}


/*------------------------------------------------------------------------------
-                                        SE 185 Lab 02
-            Developed for 185-Rursch by T.Tran and K.Wang
-      Name: Akash Patel
-      Section: SE 185 C
-      NetID:145968622
-      Date: 02/07/2019
------------------------------------------------------------------------------*/

/*------------------------------------------------------------------------------
-                                  Includes
------------------------------------------------------------------------------*/
#include <stdio.h>
```

```c
#include <math.h>

/*-------------------------------------------------------------------------
-                                Defines
-------------------------------------------------------------------------*/

/*-------------------------------------------------------------------------
-                                Prototypes
-------------------------------------------------------------------------*/

/*-------------------------------------------------------------------------
-                                          Implementation
-------------------------------------------------------------------------*/
int main()
{

    /* Put your code after this line */
int x, y, z;
printf("enter a width: ");
scanf("%d", &x);
printf("Enter a Height: ");
scanf("%d",&y);
printf("Enter a Length: ");
scanf("%d", &z);
printf("A %d by %d by %d rectangular prism's volume is %d\n", x, y, z, x*y*z);

    return 0;

}




/*-------------------------------------------------------------------------
-                                      SE 185 Lab 02
-             Developed for 185-Rursch by T.Tran and K.Wang
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-      NetID:145968622
-      Date: 02/07/2019
-------------------------------------------------------------------------*/

/*-------------------------------------------------------------------------
-                                Includes
-------------------------------------------------------------------------*/
#include <stdio.h>

/*-------------------------------------------------------------------------
-                                Defines
```

```
-------------------------------------------------------------------------------*/

/*-------------------------------------------------------------------------------
-                                 Prototypes
-------------------------------------------------------------------------------*/

/*-------------------------------------------------------------------------------
-                                          Implementation
-------------------------------------------------------------------------------*/
int main()
{
    int integerResult;
    double decimalResult;

    integerResult = 77 / 5;
    printf("The value of 77/5 is %d, using integer math\n", integerResult);
      // I changed %lf to %d to make sure an integer value comes out instead of
decimal.
    integerResult = 2 + 3;
    printf("The value of 2+3 is %d\n", integerResult);
      // I inserted integerResult after the printed statement to make sure i get an
integer result.

    decimalResult = 1.0 / 22.0;
    printf("The value 1.0/22.0 is %lf\n", decimalResult);
      // i chnaged the %d to %lf to get a decimal answer.

    return 0;
}



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-      Date: 02/07/2019
-------------------------------------------------------------------------------*/

/*-------------------------------------------------------------------------------
-                                 Includes
-------------------------------------------------------------------------------*/
#include <stdio.h>
#include <math.h>

/*-------------------------------------------------------------------------------
-                                 Defines
```

```
------------------------------------------------------------------------------*/

/*------------------------------------------------------------------------------
-                                Prototypes
------------------------------------------------------------------------------*/

/*------------------------------------------------------------------------------
-                                          Implementation
------------------------------------------------------------------------------*/
int main()
{

    /* Put your code after this line */
      int A = 6427 + 1725;
      printf("6427 + 1725 = %d\n ", A);

      int B = (6971 * 3925) -95;
      printf("6971 * 3925 = %d\n", B);

      double C = 79 + (12 / 5);
      printf("79 + 12 / 5 = %.2lf\n", C);

      double D = (3640.0 / 107.9);
      printf("3640.0 / 107.9 = %.2lf\n", D);

      int E = (22 / 3) * 3;
      printf("22 / 3) * 3 = %d\n", E);

      int F = 22 / (3 * 3);
      printf("22 / (3 * 3) = %d\n", F);

      double G = 22 / (3 * 3);
      printf("22 / (3 * 3) = %.2lf\n", G);

      double H = (22 / 3) * 3;
      printf("(22 / 3) * 3 = %.2lf\n", H);

      double I = (22.0 / 3) * 3;
      printf("(22.0 / 3) * 3 = %.2lf\n", I);

      int J = 22.0 / (3 * 3.30);
      printf("22.0 / (3 * 3.30) = %d\n", J);

      double K = (22.0 / 3.0) * 3.0;
      printf("(22.0/3.0) * 3.0 = %.2lf\n", K);

      //Creating formulas

      double areaOfCircle= 3.14159 * pow(11.7835,2);
      printf("The area of the circle is %.2lf\n", areaOfCircle);
      //The area of a circle is pi * r^2, so i divided the circumference to get the
radius and plugged it into the formula.
```

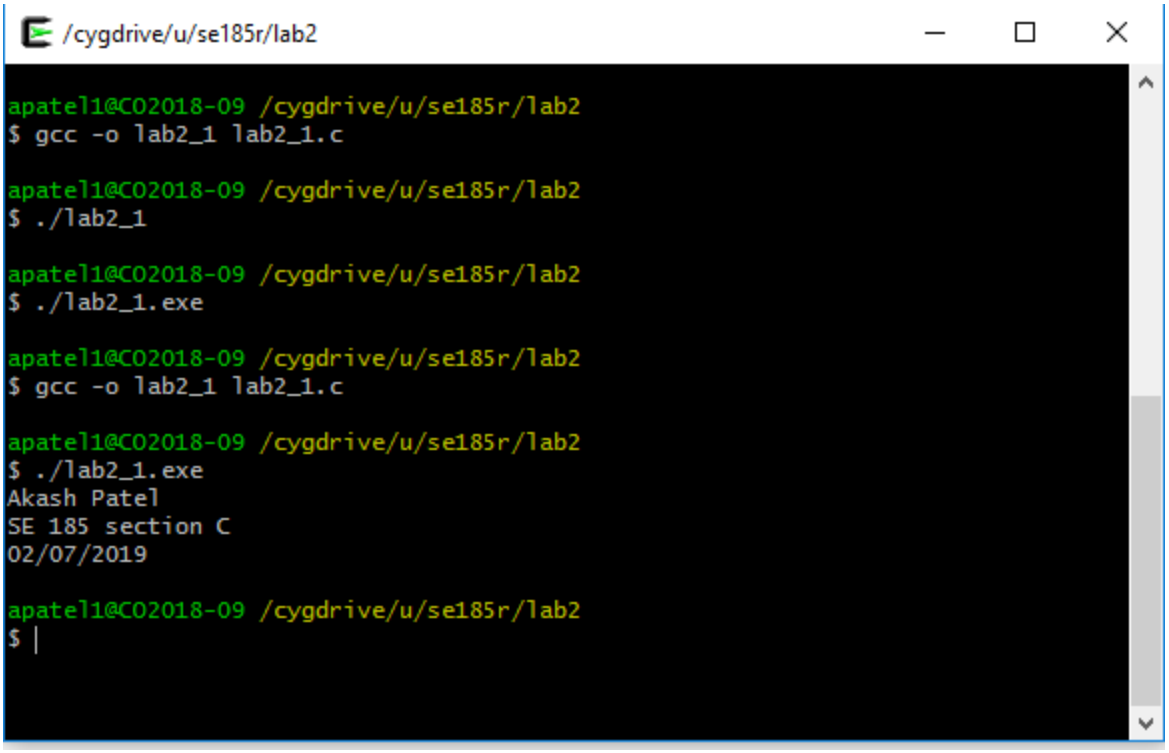
```
        double feetToMeters= 14 * .3048;
        printf("14 feet converted to meters is %.2f\n", feetToMeters);
        // There are 3.28 feet in a meter so I multiplied 14 feet by .3048 meters

        double fToC = (76-32)/1.8;
        printf("76 degrees Fahrenheit to centrigrade is %.2lf\n", fToC);
        // the equation was given so i plugged in 76 for Tf
```

```
    return 0;

}
```

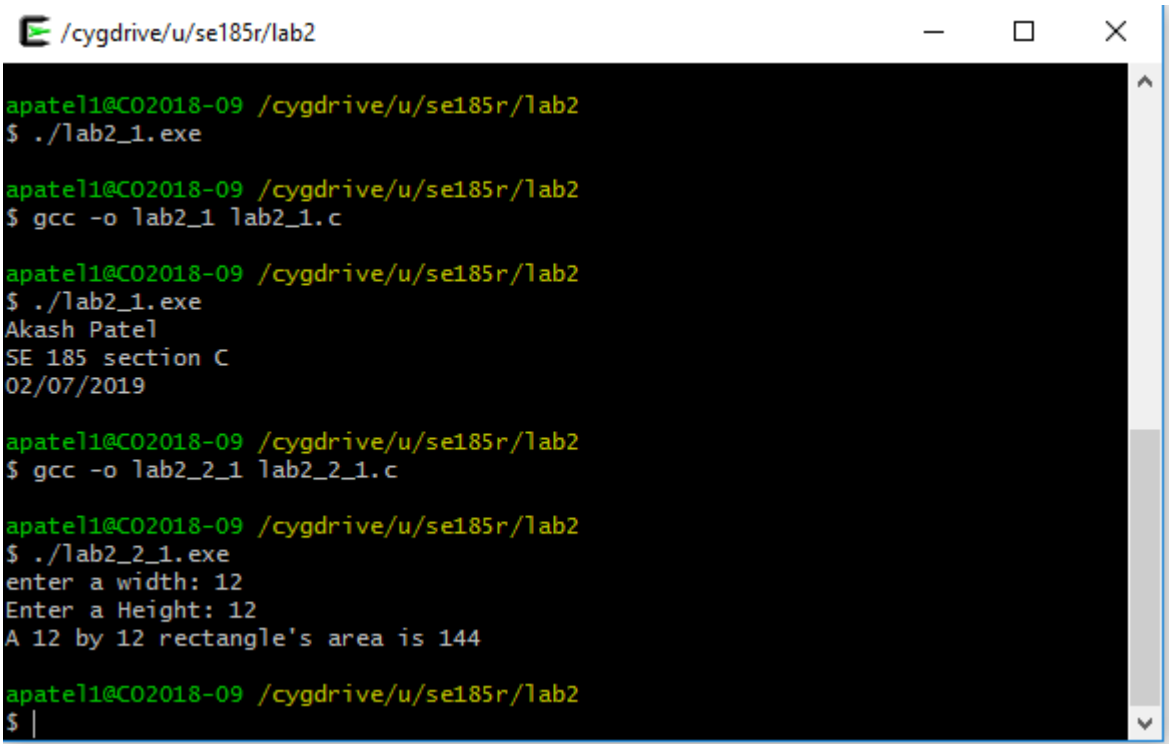
```
/*-----------------------------------------------------------------------------
-                                        SE 185 Lab 02
-              Developed for 185-Rursch by T.Tran and K.Wang
-      Name: Akash Patel
-      Section: SE 185 C
-      NetID: aptel1@iastate.edu
-      Date: 02/07/2019
-----------------------------------------------------------------------------*/

/*-----------------------------------------------------------------------------
-                                  Includes
-----------------------------------------------------------------------------*/
#include <stdio.h>
#include <math.h>

/*-----------------------------------------------------------------------------
-                                  Defines
-----------------------------------------------------------------------------*/

/*-----------------------------------------------------------------------------
-                                  Prototypes
-----------------------------------------------------------------------------*/

/*-----------------------------------------------------------------------------
-                                              Implementation
-----------------------------------------------------------------------------*/
int main()
```

```c
{
    double a, b, c;
    double filler;
    /* Put your code after this line */
       printf("Enter a value for A:");
       scanf("%lf", &a);
       printf("Enter a value for B: ");
       scanf("%lf", &b);


    /*  This next line will calculate the square root of whatever value is
        inside the parenthesis and assigns it to the variable filler. */
    filler = sqrt((pow(a,2) + pow(b,2)));
       printf("value of c is: %lf",filler);


    return 0;

}
```

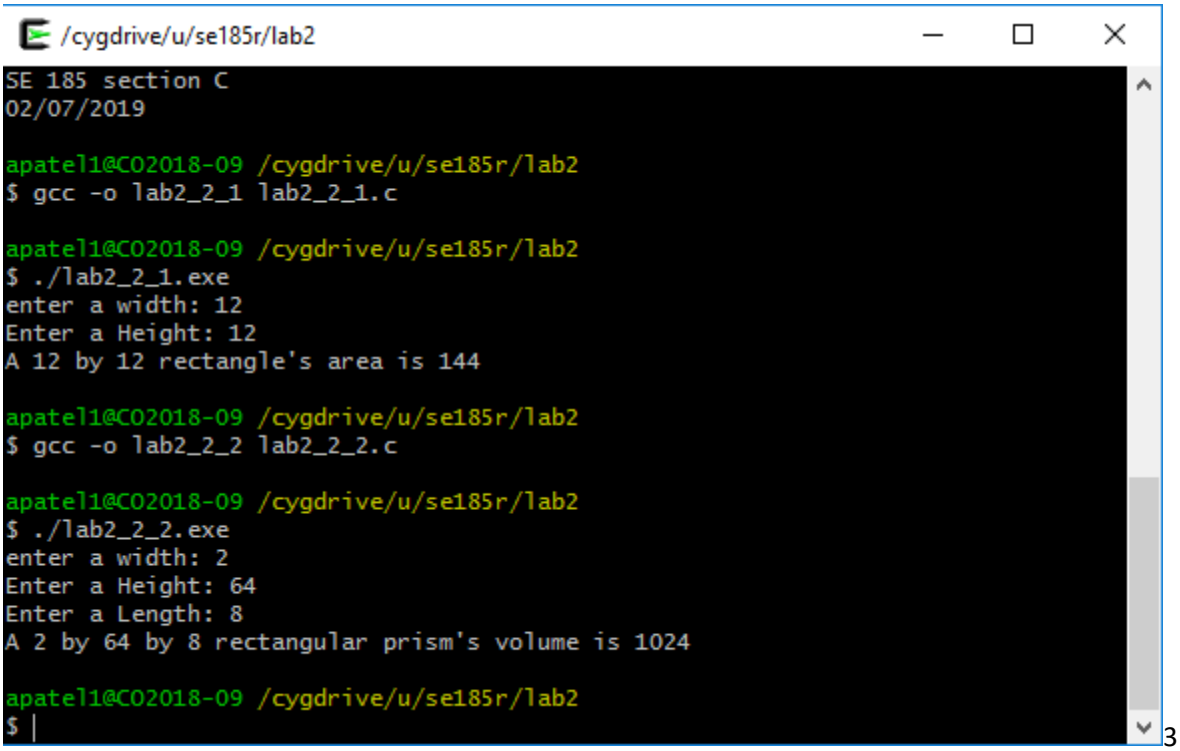
Screen Shots

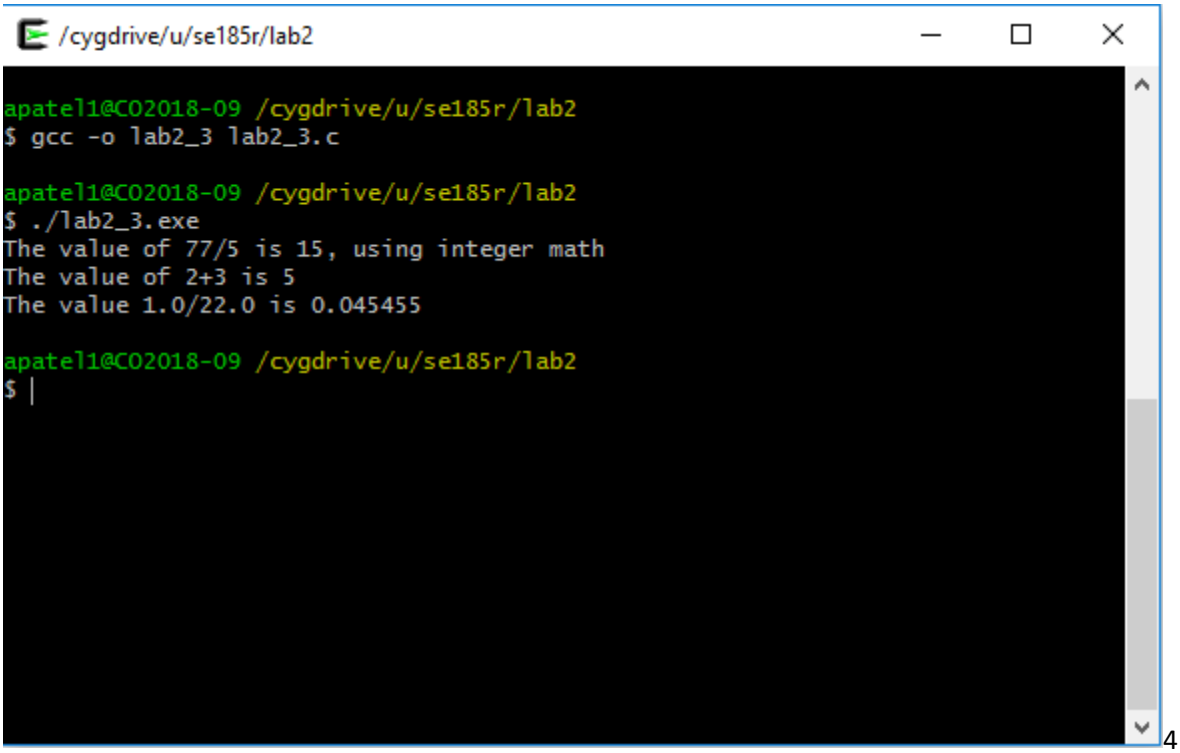


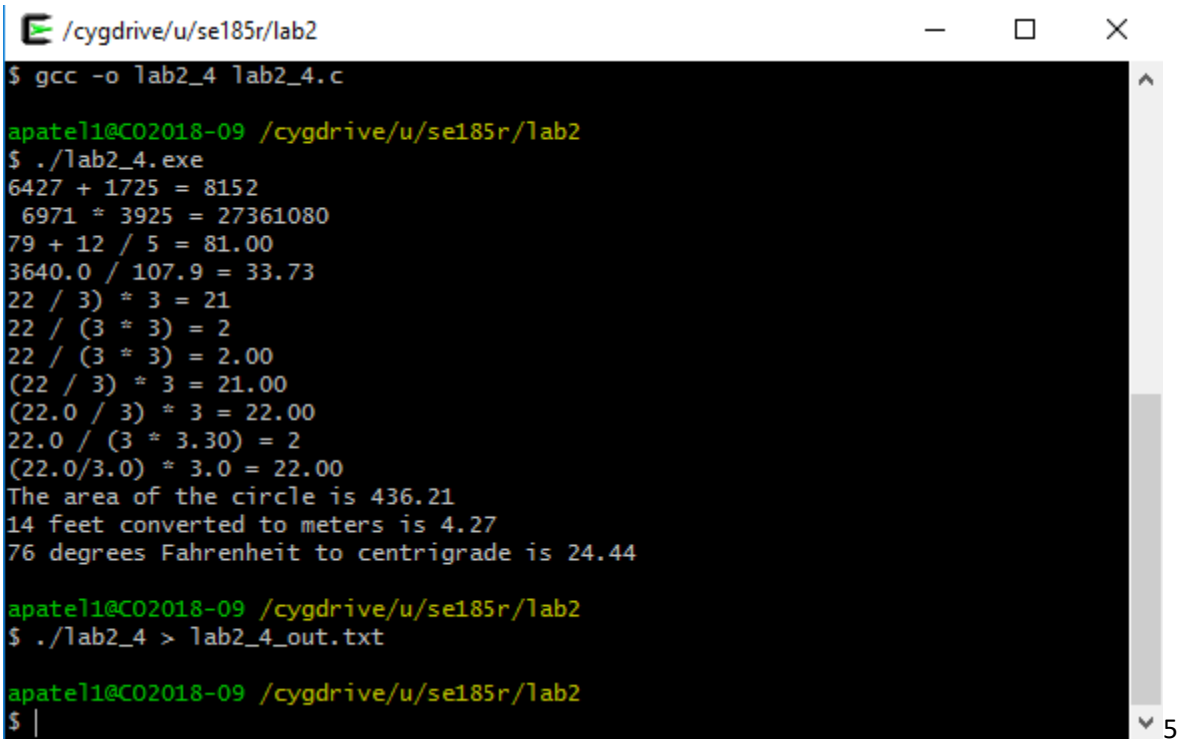
1

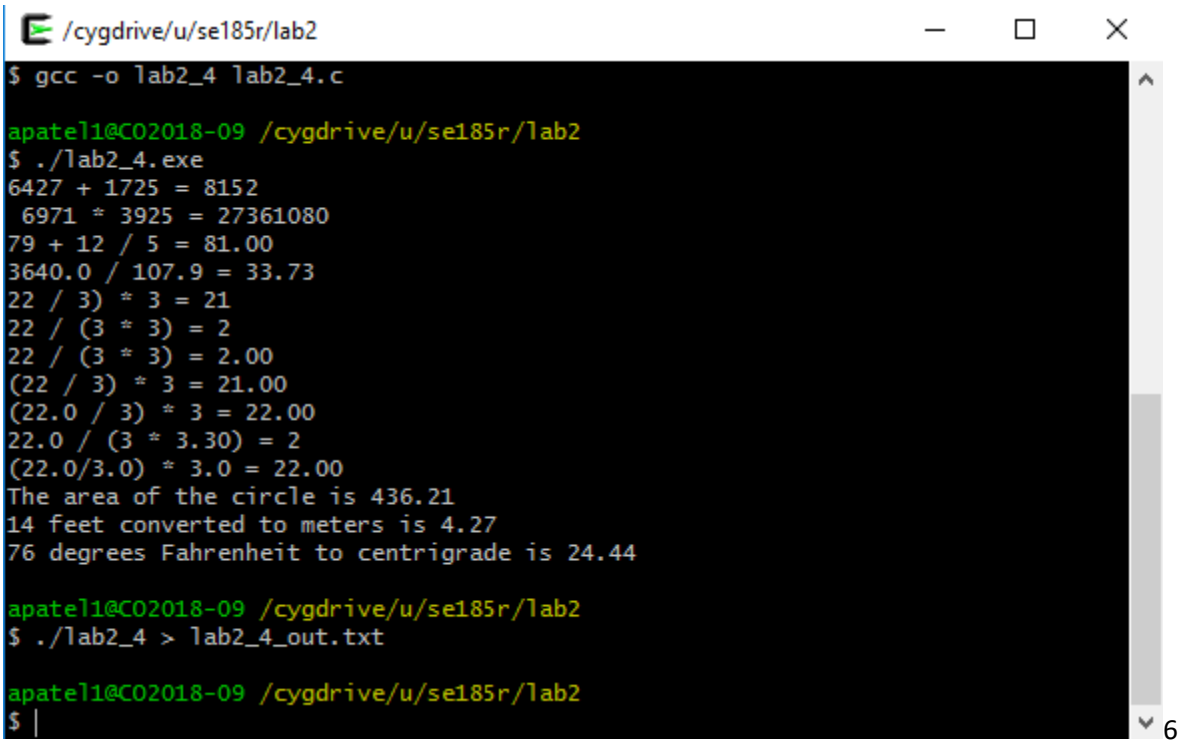


2


/cygdrive/u/se185r/lab2
SE 185 section C
02/07/2019
apatel1@CO2018-09 /cygdrive/u/se185r/lab2
$ gcc -o lab2_2_1 lab2_2_1.c
apatel1@CO2018-09 /cygdrive/u/se185r/lab2
$ ./lab2_2_1.exe
enter a width: 12
Enter a Height: 12
A 12 by 12 rectangle's area is 144
apatel1@CO2018-09 /cygdrive/u/se185r/lab2
$ gcc -o lab2_2_2 lab2_2_2.c
apatel1@CO2018-09 /cygdrive/u/se185r/lab2
$ ./lab2_2_2.exe
enter a width: 2
Enter a Height: 64
Enter a Length: 8
A 2 by 64 by 8 rectangular prism's volume is 1024
apatel1@CO2018-09 /cygdrive/u/se185r/lab2
$
3


/cygdrive/u/se185r/lab2
apatel1@CO2018-09 /cygdrive/u/se185r/lab2
$ gcc -o lab2_3 lab2_3.c
apatel1@CO2018-09 /cygdrive/u/se185r/lab2
$ ./lab2_3.exe
The value of 77/5 is 15, using integer math
The value of 2+3 is 5
The value 1.0/22.0 is 0.045455
apatel1@CO2018-09 /cygdrive/u/se185r/lab2
$
4


/cygdrive/u/se185r/lab2
$ gcc -o lab2_4 lab2_4.c
apatel1@CO2018-09 /cygdrive/u/se185r/lab2
$ ./lab2_4.exe
6427 + 1725 = 8152
6971 * 3925 = 27361080
79 + 12 / 5 = 81.00
3640.0 / 107.9 = 33.73
22 / 3) * 3 = 21
22 / (3 * 3) = 2
22 / (3 * 3) = 2.00
(22 / 3) * 3 = 21.00
(22.0 / 3) * 3 = 22.00
22.0 / (3 * 3.30) = 2
(22.0/3.0) * 3.0 = 22.00
The area of the circle is 436.21
14 feet converted to meters is 4.27
76 degrees Fahrenheit to centrigrade is 24.44
apatel1@CO2018-09 /cygdrive/u/se185r/lab2
$ ./lab2_4 > lab2_4_out.txt
apatel1@CO2018-09 /cygdrive/u/se185r/lab2
$


/cygdrive/u/se185r/lab2
$ gcc -o lab2_4 lab2_4.c
apatel1@CO2018-09 /cygdrive/u/se185r/lab2
$ ./lab2_4.exe
6427 + 1725 = 8152
6971 * 3925 = 27361080
79 + 12 / 5 = 81.00
3640.0 / 107.9 = 33.73
22 / 3) * 3 = 21
22 / (3 * 3) = 2
22 / (3 * 3) = 2.00
(22 / 3) * 3 = 21.00
(22.0 / 3) * 3 = 22.00
22.0 / (3 * 3.30) = 2
(22.0/3.0) * 3.0 = 22.00
The area of the circle is 436.21
14 feet converted to meters is 4.27
76 degrees Fahrenheit to centrigrade is 24.44
apatel1@CO2018-09 /cygdrive/u/se185r/lab2
$ ./lab2_4 > lab2_4_out.txt
apatel1@CO2018-09 /cygdrive/u/se185r/lab2
$