

PROBLEM:

Write a program to compute the area of a parabola, with input data in one file, and output data in another file. A file, *lab5.c*, is provided with some of the print statements in it.

The formula we will use is:

$$\text{area} = \frac{2LD}{3}$$

Where: area = the area of a parabola

L = the length of the opening

D = the depth of the parabola

INPUT/OUTPUT DESCRIPTION:

The input will be a file called **lab5.dat**. Each line or record of the file will consist of two numbers: the length and depth of a parabola. Use an *fscanf* statement in a *while* loop to repeatedly get each set of values.

The output will be a file, **lab5.txt**, showing on each line, the length, depth, and area of a parabola.

ALGORITHM DEVELOPMENT:

Open the data file **lab5.dat** and do the appropriate error checking

Open the output file **lab5.txt** and do the appropriate error checking

Print your name and the column header lines needed

```
while ((fscanf(..., &length, &depth)) == 2)
```

```
|   Compute the area of the parabola
```

```
|   print the length, depth, and area.
```

```
|_
```

Print a final empty line.

Close the two files

DEFINED OUTPUT APPEARANCE: (showing only 2 of the expected 4 lines)

Ruthann Biel. Lab 5.

Data on Parabolas

Length	Depth	Area
-----	-----	-----
12.60	24.80	208.320
5.60	7.80	29.120

➔ More on next page

PRINTING EACH LINE IN THE LOOP:

I used %7.2lf for the first two variables, and %10.3lf for the final variable. I put space in between the conversion specifiers so the numbers would line up under the -----lines.

REMINDERS:

- Include your name and Lab 5 in your comment block, and in your output.
- All numeric variables are to be **double**.
- The formula has implied multiplication which in C means, we must use the ***** operator. Some printf and fprintf statements are included in lab5.c for you. **← Updated**

TO GET THE FILES YOU NEED:

First move to your class folder by typing: **cd csc60**

The following command will create a directory named **lab5** and put all the needed files into it below your csc60 directory.

cp -R /home/college/bielr/files_csc60/lab5 . **← Updated**

Spaces needed: (1) After the **cp** **^^** *Don't miss the space & dot.*
 (2) After the **-R**
 (3) After the directory name at the end & before the dot.

While still in **csc60**, you need to

Type: **chmod 755 lab5** // This will give permission to enter the new directory

Type: **cd lab5** // This will move you to the lab5 directory.

Type: **chmod 644 *.*** // This will give permissions for you to enter the files

When you are finished, your lab5 directory should list: **lab5.c, lab5.dat**

WARNING - VIEWING OUTPUT

When you run the program, it will seem like nothing is happening.

That is because the whole thing is going to **lab5.txt**.

To view that file, type: **cat lab5.txt**

PREPARE YOUR FILE FOR GRADING

When all is well and correct,

Type: **script StudentName_lab5.txt** *[Script will keep a log of your session.]*

Type: **gcc lab5.c** to compile the code

Type: **a.out** to run the program (or ./a.out if needed)

Type: **cat lab5.txt** to show contents of the output file

Type: **exit** to leave the script session

Turn in your completed session: (16 points)

Go to Canvas and turn in:

1. Lab5.c
2. your script session (StudentName_lab5.txt).

This assignment is **due** by the end of 3/16 for a chance at full points (16 points).

If turned in before the end of 3/23, you lose 2 points. (14 points)

This assignment will not be accepted for any points after 3/23.