

CS 135 - Spring 2018

Dr. Williams

Assignment 5

Grade formula: $SCE * (CS + 2 * VS + 3 * PD + 1)$

Maximum raw score: $4 * (4 + 2 * 4 + 3 * 4 + 1) = 100$

Maximum scaled score: 50

A file contains 2 floating-point values on one line. You are to open the file, read in the data, and output some mathematical results to another file in a nicely formatted manner.

If we call the values x and y , you need to output the following

- 2^x and 2^y (2 to the x th power and 2 to the y th power)
- Log base 10 of x and log base 10 of y
- x^y and y^x
- \sqrt{x} and \sqrt{y}

Details about the program:

- Files:
 - The file that is opened to be read from is called `data` (not `data.txt` or anything else)
 - The file that you open to output to is your login name -- if your login name is `smithj1` then your program should output to the file called `smithj1` (not `smithj1.txt` or anything else)
 - Do not get input from the keyboard or output to the screen (you will not use `cin` or `cout` in this program!)
 - Be sure to close files and do so as soon as you are done using them
- Math functions:
 - All of the calculations need to use a function from `cmath` in some way
- Output:
 - You will need to use stream manipulators (those that you get from `ios` via `iostream` and those that you get by including `iomanip`) to produce exactly the same output as below
 - In my example output below there are exactly 60 horizontal dashes on the top and bottom lines of the "box", but note the top and bottom have slashes at the beginning and ending, making the entire width of the line 62 characters
 - Every value within the box should be printed to 10 decimal place accuracy but the values at the top of the output file should be printed without formatting
 - The data within the file will be small enough that any of the required calculations will not result in a number containing more than 15 characters (including the decimal point)

See an example compilation and execution on the next page, with my input in **bold**. You can view my data file and corresponding output in the `/home/williams/public/cs135/assignments/05` (you will not be able to view `a5.cpp` as that is my solution) directory on bobby. You should use `diff` to compare your output file to mine.

When submitting the assignment only submit your `.cpp` file electronically (assignment code 05) and printed out (with the cover sheet). You do not submit other files.

```
[williams@bobby 05]$ ls
a5.cpp data
[williams@bobby 05]$ cat data
1.1 10.2
[williams@bobby 05]$ g++ -std=c++11 -Wall -Werror -Wpedantic -Wextra a5.cpp
[williams@bobby 05]$ ls
a5.cpp a.out data
[williams@bobby 05]$ ./a.out
[williams@bobby 05]$ ls
a5.cpp a.out data williams
[williams@bobby 05]$ cat williams
x = 1.1
y = 10.2
/-----\
| 2^x          2.1435469251 |
| 2^y          1176.2671155170 |
| log_10 x     0.0413926852 |
| log_10 y     1.0086001718 |
| x^y          2.6436587134 |
| y^x          12.8664930260 |
| square root of x  1.0488088482 |
| square root of y  3.1937438845 |
\-----/
[williams@bobby 05]$
```