COMP 2560 Fall 2020

Lab 3

Tip:

The complete documentation for any Unix/Linux system, known as man (manual) pages, is available to each user via the "man" command. Whenever you have doubts on how to use a C function, or any command, besides googling it online, you can get detailed documentation for that function or command using the man command.

The following link contains a very brief article to get you started.

https://www.geeksforgeeks.org/man-command-in-linux-with-examples/

Your lab instructor will show how to use man command to display some of the standard io function we studied last week, such as **fopen, fclose, fread, fwrite**, etc.

You need to know how to effectively use the "man" command yourself whenever you have a question for a C function or Linux command.

There are 4 small parts in this lab,

(P1) customize gdb a little bit so that it works smoothly **(no submission required)**,

(P2) demonstrate to you how to debug the "filesize1.c" program that we have discussed in class and learn a tip on using the "p" command in gdb **(no submission required)**.

(P3) ask you to demonstrate how to debug a variant of the "filesize1.c" program to find out its bug **(submission required)**, and

(P4) study the "filesize2.c" program and answer some questions (**submission required**).

Part 1 (P1)

1. Watch the video (“lab3p1.mp4”).
2. According to the instructions in the video, copy the attached file (.gdbinit) to your home directory on CS server. Then try to use gdb to see if it works.
3. No submission required for P1.

Part 2 (P2)

1. Watch the video (“lab3p2.mp4”).
2. *You will need what you learned in this video to do Part 3.*
3. No submission required for P2.

Part 3 (P3)

1. Watch the video for instructions (“lab3p3.mp4”).
2. **Submit** a brief text file to explain why the program “filesize1v.c” gets stuck in the “do/while” loop (i.e., explain why “ch != EOF” is always true).
3. Use the method to record your whole screen introduced in Lab 1 to record you using gdb to debug the file “filesize1v.c” with your audio explaining what you are doing in the video and how you reach the conclusion in your answer in 2. **Submit** the video file.

Part 4 (P4)

The file “filesize2.c” is essential the same as the original “filesize1.c” where the variable *ch* is declared as *char*.

a) Use the “ls -lt filesize2.c” command to see what the size is reported by OS for this file.

In the file “filesize2.c”, the following code segment was originally commented out. Uncomment this block of code.

```
/* fseek(fd, 10L, SEEK_SET);

        putc(-1, fd);

        rewind(fd); */          //try uncomment this block, to see what it does.
```

b) Think about what this code segment does.

c) Then compile and run the code with the code segment mentioned in a) uncommented. More specifically, run this program on the text file “filesize2.c” itself by typing (assuming the executable is named “filesize2”);

```
>./filesize2  filesize2.c
```

What is the size of “filesize2.c” that the program reports?

For this P4, please answer questions in a), b), and c) above in a text file.

For a), simply write down the size of the file.

For b), simply write down what you think.

For c), simply write down the reported size by the program.

Additionally, explain why the sizes reported in a) and c) are different.

Submit the text file.

The deadline for submission is Oct. 11, 11:59 PM.