Lab 3 Report: CprE 308

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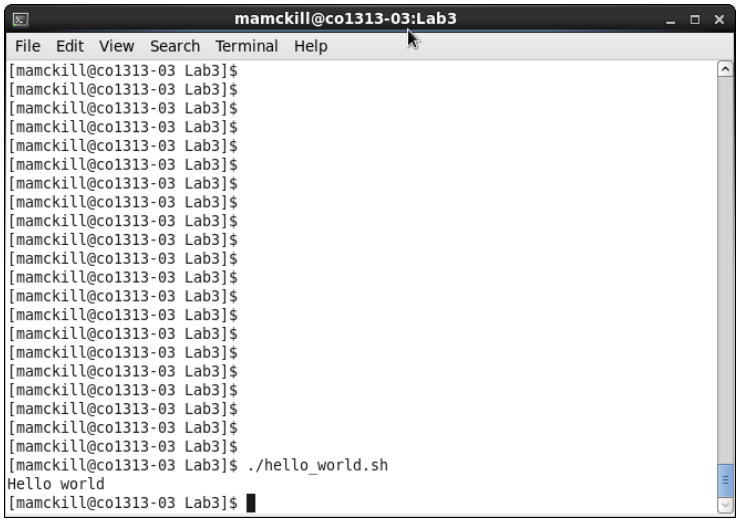
1. Introduction

The task of this lab was to create a script interpreter similar to bash. The skills needed to do this are creating processes, executing programs in processes, and parsing a file. The lab gave a good introduction to using bash, something I have limited experience using.

2. Questions

2.1 Output of hello_world.sh



The output was as expected, echoing “Hello world” to the command prompt.

2.2 Shellshock Bug

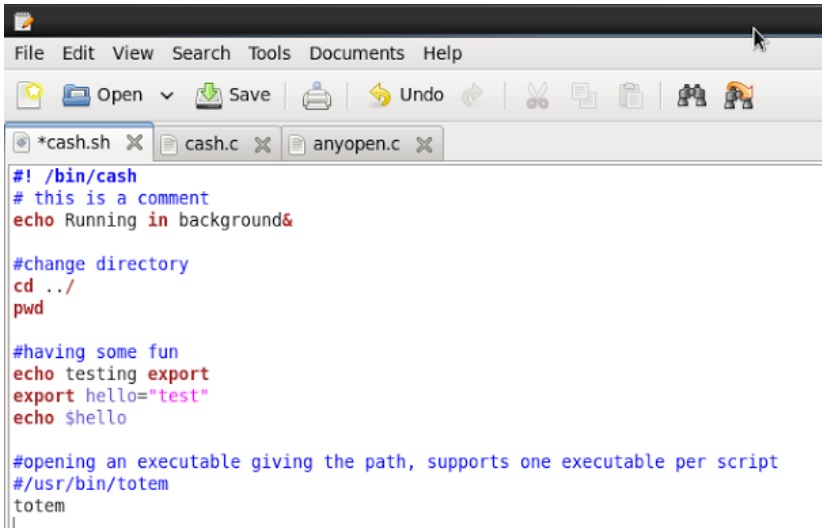
The shellshock bug uses environment variables to save a function that contains malicious code. It is done by a command like

```
env x='() { :;}; echo OOPS' bash -c :
```

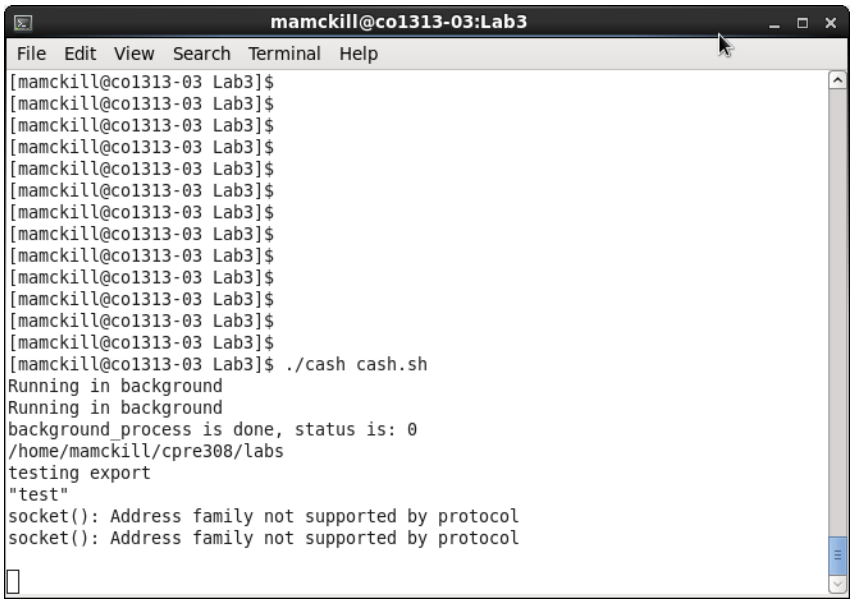
The variable x is a function reference to the function “:” which does nothing. But after that is executed the echo will be executed which is where the malicious code would be placed. This is a very serious bug that has now been fixed.

3. Results/Output

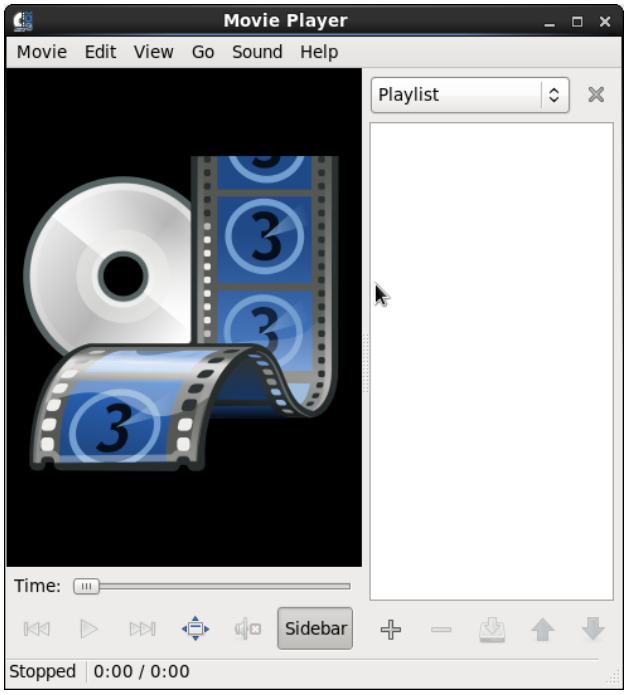
Given the input script:



My cash.c program outputs the following to the command line



and opens the totem executable



4. Design Decision

I ran into trouble coding this lab. My design first validates the file to check for a script, then runs through each line executing the correct command. I ran into issues because I added support for background processes last. Handling the background process last caused me to add messy code with a lot of if statements and flags. If I were to redesign this lab, I would design a program with the process handling first.

5. Issues

Along with the above mentioned design issues, I had a few issues with my C programming knowledge. I had to research how to compare, split, and concatenate strings. Using the C documentation and stackoverflow questions I was able to figure out a solution, but It may not be the most efficient.

6. Conclusion

I struggled during this lab, but in the end I learned some valuable lessons about handling processes. I can take my mistakes made in the designing of my program, learn from them, and be able to start correctly in the coming labs.

7. Suggestions

I would suggest that the example_input file include all of the required commands. This would help guide development and testing for the lab. In addition, this lab is very lengthy and difficult compared to the last few labs.