Computer Science 253 Midterm

Spring 2020

Test Parameters:

- You can use a computer, like isoptera or whatnot.
- Open manual, Internet, etc.
- Feel free to print this out if you don't want to waste screen space on it.
- Do your own work.
- I'll have discord open for questions, but can't give away the answers.
- Put your answers in a text file, and make sure your name is in the filename
- If you turn in your source code to the last question separately, again make sure your name is on it.
- Use the turnin command like this: turnin filename 253
- After you turn it in, ask me to confirm that I've got it on discord.

Question 1: *(15 points)* Print out the links on isoptera's main page which go to my webpages (URLs will have seth in them). Just print out the sebsite description, not the html. You can solve this using multiple passes with grep, or a combination of grep and sed.

```
seth@isoptera:~ $ cat /var/www/index.html  | grep href | grep seth  | grep -o -e '>.*<' | sed
Frozen Fractals
Seth Long's website
CS253 Systems Programming
CS435 Networks
```

Question 2: *(15 points)* Using the manual pages for ifconfig and route, print out only the explanation of how to use each of the short options (-a, -s, and -v for ifconfig). So your command should print out:

```
seth@isoptera:~ $ man ifconfig | grep -e '^ *-[a-Z]'
       -a     display all interfaces which are currently available, even if down
       -s     display a short list (like netstat -i)
       -v     be more verbose for some error conditions

seth@isoptera:~ $ man route | grep -e '^ *-[a-Z]'
       -A family
       -F     operate on the kernel's FIB (Forwarding Information Base) routing table.  This i
       -C     operate on the kernel's routing cache.
       -v     select verbose operation.
       -n     show  numerical addresses instead of trying to determine symbolic host names. Th
       -e     use netstat(8)-format for displaying the routing table.  -ee will generate a ver
       -net   the target is a network.
       -host  the target is a host.
```

Question 3: *(15 points)* Starting with the output of "last", determine how many unique users logged into isoptera during the current period from the ip address 74.118.22.224 Note that this is the campus wifi gateway, so this is a count of how many people have logged into isoptera since March 12 using the campus wifi. The similar address 74.118.22.223 is for the campus wired network, you're just after 75.118.22.224.

Correct answer is probably about 12, but will vary depending on the day. At some point in the future, it'll drop a lot since people won't be using the campus wifi much.

Question 4: *(15 points)* Starting with the contents of /var/log/apache2/access.log, write a number to print out the IP addresses of each person who has downloaded this test (S20midterm.pdf). The output will vary, but should be a list of IP addresses, probably about 10 or so.

Question 5: *(10 points)* Suppose a file has permissions set to 704. What can each type of user (user, group, and other) do with the file?

Question 6: *(10 points)* Suppose in the course of administering a Linux system, you need to enable empty passwords for login over SSH. Generally this is not recommended for security reasons, but it is possible. Since there isn't a GUI, what program would you use to change this setting? Note that the ssh server is referred to as "sshd", and remember what /etc is used for.

Question 7: *(20 points)* Write a brief program that will have the user guess the value of the variable MAGIC_WORD. The user should be allowed to include multiple guesses on the command line. Here is an example of how your program should work:

```
seth@nimrod:~/cs253/tests $ export MAGIC_WORD=tulip
seth@nimrod:~/cs253/tests $ ./a.out aspen willow dafodill
Sorry, do try again
seth@nimrod:~/cs253/tests $ ./a.out cherry crocus tulip
Got it!
```

If you get a segmentation fault, make sure that you've exported MAGIC_WORD correctly.