Steele Muchemore-Allen ECE 331 Homework #10

1) This homework was written in Vim.

2) This cron jobs runs at the 45th minute of noon and midnight of every first day of the month and every Monday (1st day) and Friday (5th day).

3) scp -P 666 simulation wizard@summit.ornl.gov: destination

4) # man thd

thd is the triggerhappy daemon. It watches all input devices for key/button presses that could launch commands specified by sys admin. It is similar to hotkeys but better for hardware switches.

5)

a) Given: IP = 68.34.29.55 NM = /18
NA = IP & NM (looking at last 16 bits) = 00011101.00110111 & 11000000.000000
= 0.0 --> NA = 68.34.0.0

BC = IP | ~NM (looking at last 16 bits) = 00011101.00110111 | 00111111.11111111
= 00111111.11111111 --> BA = 68.34.63.255

b) Given: NA = 24.32.0.0 BC = 24.63.255.255
IP = An IP in the given range between the NA and BC is 24.40.150.100
NM = Because the last 21 bits vary between NA and BC, NM = 32-21 = /11.

6)

a) No.

b) The code won't work because the lock is initialized every time the write function is called. It creates a lock, then immediately checks if it is locked. For every call made to write, there is a race condition to initialize the mutex lock. This causes concurrency issues. It will then be difficult to tell what state the lock is in if it's constantly being initialized.

c) The initialize code for the lock (both the definition and the initialization) shoudl be moved outside of the function and declared as a global variable. A single global mutex struct can then be checked by the code, and will behave appropriately. the lock can be part of the struct with data to be passed between all functions.

7) Host Elessar routing table

Destination	Gateway	Genmask	Flags	Metric	Ref	Use	Iface
1.2.0.0	0.0.0.0	255.255.128.0	U	1	0	0	ETH1
10.0.0.0	0.0.0.0	255.254.0.0	U	1	0	0	ETH0
141.141.3.0	0.0.0.0	255.255.255.192	U	1	0	0	ETH2
0.0.0.0	1.2.3.101	0.0.0.0	UG	0	0	0	ETH1

8) Legolas to Gandalf ethernet frame

MAC Destination	MAC Source	IP Source	IP Destination
66:00:00:00:00:00	00:00:00:00:00:22	141.114.3.3	1.2.3.101
FF:00:00:00:00:00	00:00:00:00:00:77	141.114.3.3	1.2.3.101

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9)

a) CREATE TABLE data(Date TEXT, Time TEXT, Latitude REAL, Longitude REAL, Altitude INTEGER, Location TEXT);

b) INSERT INTO data(Date, Time, Latitude, Longitude, Altitude, Location) VALUES('04-25-2019','08:01:45',44.90234,-68.667147, 117, 'TI Lab');

c) SELECT * FROM data WHERE "Altitude" > 5000;

10) This homework was printed with 'enscript'.