Lab 1
--OS Review Programming—
CS690
20 pts

Introduction:
Most OS code is written in C. Having a good understanding and practice in C will help you better understand code in our readings. In this homework you are to write in C your own static library for dynamic allocation using ***freelists***
(Reference for Memory API: https://pages.cs.wisc.edu/~remzi/OSTEP/vm-api.pdf ,
Reference for FreeList: https://pages.cs.wisc.edu/~remzi/OSTEP/vm-freespace.pdf).
You should write this library in standard C99 on a Linux/Unix system using ***mmap***.
The library should allocate (i.e., malloc) and deallocate (i.e., free). It does not have support growing the "***heap***" if out of memory (make the default ***mmap*** large enough to do a few mallocs). The ***first Fit strategy*** for selection is fine to use. Freeing memory should only combine segments if they are right next to each other. No need to recursively combine segments as this is just a toy library.
This is a reference on using ***ar*** to build a static library that can be linked against (https://tldp.org/HOWTO/Program-Library-HOWTO/static-libraries.html).

Point Breakdown:
I do not provide a point breakdown for this. The reason for this is that it will really depend on the submissions as this lab varies so much from year to year. However, the points will be mainly based on the percentage of correctness of the code.

Turn in:
The turn in should include a zip containing:
1. The library code (mymalloc.c and mymalloc.h).
2. The library (mymalloc.a)
3. A driver / tester program (main.c)
4. A Makefile that can both make the library and make the driver that is linked to the library (GNU Make, not CMAKE, etc).
5. A README that examples how to build and use.
   It can be very tiny, e.g., %make lib; make main; ./main.exe

Linux Resources.
The department offers a number of Linux resources for students that do not have access. With you CS department login and VPN you can access:

Servers listed at this link (http://www.cs.uah.edu/intranet/content/kb/ssh.html) are:
catalina.cs.uah.edu
conquest.cs.uah.edu
crusader.cs.uah.edu
dakota.cs.uah.edu
duchess.cs.uah.edu
havoc.cs.uah.edu
hawker.cs.uah.edu
invader.cs.uah.edu
lightning.cs.uah.edu
marauder.cs.uah.edu
shrike.cs.uah.edu
whirlwind.cs.uah.edu