Operating Systems
Assignment 5

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System bootup and switching to protected mode

- First we enter the 16 bit mode and set the address of the boot sector at 0x7C00.
- Initializing our various pointers and registers.
- Adding the standard global descriptor which sets the memory segments.
- Switching to protected mode and setting the last bit of the cr0 register to 1 to indicate the hardware about the switch.
- Then we initialise registers of 32 bit mode and set the pointers.
- After all this print hello world is called with the contents of the 32 bit CR0 register.
- QEMU is used as the CPU emulator, and it is printing the text from the 32 bit mode.
- To compile the asm file used the command: **nasm -f bin *try*.asm -o *<filename>***
- For running in QEMU , command used: **qemu-system-x86_64 *<filename>***
- Online resources/references from which help is taken : *Stack Overflow*. *https://medium.com/@g33konaut/writing-an-x86-hello-world-boot-loader-with-assembly-3e4c5bdd96cf*

Advisory File Locks

- The program basically asks for the user to input one option- exit or edit file- append data or overwrite data.
- fopen() function used to open the file and the file is read character by character. A new file is created in case a file with the given input file name is not found.
- Used flock on the file descriptor with the LOCK_NB flag (making it non-blocking).
- If flock returns -1 it signifies race condition and gives us a warning that the file has been opened at more than one place.