OS-344 Assignment-0B

Instructions

- **This assignment is prerequisite for all the other assignments that follow.**
- **Assignment has to be done individually and a report, with relevant screenshots/ necessary observations has to be submitted.**
- **We expect a sincere and fair effort from your side. All submissions will be checked for plagiarism through a software and plagiarized submissions will be penalized heavily, irrespective of the source and copy.**
- **There will be a viva associated with assignment. Attendance of all group members is mandatory.**
- **Assignment code, report and viva all will be considered for grading.**
- **Early start is recommended, any extension to complete the assignment will not be given.**

Task : Adding a system call

Now that we know how the kernel is compiled and loaded and gained basic familiarity with QEMU and GDB, it's time to get our hands dirty with some kernel coding. Your task is to add a new system call to xv6. It will help to start by reading syscall.c (the kernel side of the system call table), user.h(the user-level header for the system calls), and usys.S (the user-level system call definitions). You may add additional files to xv6 to implement this call.

Exercise 1.

Create a system call int sys_draw(void *buf, uint size), which copies an ASCII art image (Use a buffer of any picture, google it for more information) of a picture to a user-supplied buffer, provided that the buffer is large enough. You are welcome to use an ASCII art generator, or draw your own by hand. (One such example is given with the assignment)

If the buffer is too small, or not valid, return a negative value. If the call succeeds, return the number of bytes copied.

You may find it helpful to review how other system calls are implemented and compiled into the kernel, such as read.

Exercise 2.

Write a user-level application, called Drawtest.c, that gets the image from the kernel, and prints it to the console.

When the OS runs, your program's binary should be included in fs.img and listed if someone runs **ls** at the xv6 shell's command prompt. Study Makefile to figure out how to compile a user-mode program and add it to fs.img.

Submission instructions

- Place the code files and report file into a zip folder and name it with your Roll-No, say [**19088920.zip**]
- Also create a patch file for the all the edited code, which we can directly apply on the xv6 directory and it will be able to update the code files with new ones.
- Report.pdf should contain a detailed description of all of your understanding about the given set of questions including screenshots while performing different given tasks.

--End of Assignment--