

OS2 Assignment 2 : Report

System Call Implementation: As the name mydate is entered in shell the mydate.c user program launches and starts executing. The mydate() function is called and the user interface usys.S is launched and the interrupt `$T_SYSCALL` with number 64 is generated. The control goes to traps.c which generates a trap and sets its priority to kernel level. Then the actual SYSCALL number i.e., 22 is obtained from syscall.h file. Then the control shifts to the syscall.c file where the system calls are called, and their data is stored on the registers and the system call is called on stack. Then the file sysproc.c is executed and this file contains the code execution for system calls. This file then finds the time using `cmostime()` and saves it in the argument and returns. The control returns to syscall and then back to the user mode and user program prints the date and time on shell.

Part 1: In this part we are supposed to print the names of the syscalls along with their return values.

When the xv6 OS boots it issues various syscalls for its functioning like exec, init, fork, write. By editing the syscall() function we print the name of the syscall by using a char* array and print its return value. The return value is present in the register eax.

Part 2: In this part we add a system call into the xv6 to report date and time of the system. For this a user program(mydate.c)

is created which makes the function call(mydate). Some files are changed following a system call (ex. uptime) using the greb command.

The following files were edited in order to include system call:

1. syscall.h: This file holds all the preprocessor directives for syscall. The number 22 syscall is used for mydate.
2. defs.h : This file has the definitions of the functions and structures. So, we include the mydate() function.
3. syscalls.c: This file is executed whenever there are system calls in the system. So, we include the mydate syscall functions here.
4. sysproc.c : This file contains the main code for any system call to work. We add the mydate function in this file.
5. usys.S: This file has the assembly code and the names of all the syscalls. So mydate is added here.
6. user.h : This file along with the previous file provides the user interface for the syscalls. The mydate syscall is added here under the system calls list.
7. mydate.c: This is the user program to execute.
8. Makefile: This file is used to build and run the entire OS. The mydate.c is included in it.