

Assignment 1

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Description of your code and how you implemented the function – the logical and implementation details.

- We take pid and file name as arguments for the function `sh_task_info()` of system call `sh_task`.
- We browse through all the running processes and print the details of the process whose pid is the same as the argument to the kernel logs and stdout and save it to the file taken as the argument.
- We made a `tostring` function to convert the details of a process from long to string.
- We concat the data of the process to a string and pass it into the `write_file` function.
- We created a directory called `sh_task` to the kernel folder and added the `sh_task.c` file to it with implements the above-mentioned functions. We also added a `makefile` to it.
- We edited the `makefile` of the kernel folder to make it aware of our new system call.
- We then edited the `syscall_64.tbl` to add the new system call to it.
- We edited the header file `include/linux/syscalls.h` and added the function and also added a header file in `erex.h` for our function
- We created the config file for the kernel folder, added debian files to it and compiled the kernel.
- We created a header file in the `include/linux/erex.h` to specify the arguments of the syscall.

Input

The user inputs

1. The pid of the process of which the details are to be displayed.
2. The Filename and path to which the details are saved.

Output

The details of the process are displayed in the kernel logs and saved to the file specified by the user.

The details include :

1. Process
2. PID_Number
3. Process State
4. Priority
5. RT_Priority
6. Static Priority
7. Normal Priority

Errors

-We are checking for two errors:

1. If the file doesn't exist or is not in the specified directory.
ENOENT 2 No such file or directory
2. If the user enters a pid number that isn't of a currently running process, an error is thrown.
ESRCH 3 : No such process

3. Due to the header file `erer.h`, we make sure that the user cannot enter Invalid arguments.. This header file checks that the correct number of arguments, each with the correct data-type is entered as input.