

The following files are present in the folder:

1. kernel.config - system configuration file
2. Makefile
3. encrypt.c - user land program to submit a job and check result by polling.
4. encrypt_no_wait.c - user land program to submit a job with out polling
5. myargs.h - some structure definition.
6. QueueCtl.c - user program used to check, list, cancel jobs in the kernel.
7. sys_submitjob.c - system call implementation.
8. testScript.sh - test script contains some test cases.
9. testScript_manual.txt - contains some test cases should be executed manually in terminal.

Breif description of the work flow.

A netlink socket will be initiated when importing the module, we will free it when removing the module.

Users can submit a job by executing ./encrypt or ./encrypt_no_wait. When a new job is submitted. System call sys_submitjob will be called, adds the corresponding job to the tail of the work queue and checks if there is an running thread, otherwise it will create a new thread. There is only one running thread at a time.

User can check or cancel a job by passing the job's id and job ower's process id to kernel. I think we have to make sure that program cannot cancel jobs which are not belongs to it. The exception is cancel all jobs operation, it can cancel all jobs without providing pids and job ids.

When one tries to cancel a job, system call sys_submitjob will mark the job node as canceled instead of delete it directly. I want to make sure that only kthread can delete nodes in the work queue.

If a error occurs when executing a job, then an error node will be created and appended to the tail of the error queue which contains the job id, pid and error id.

Implemented features.

1. encrypt/decrypt a files.
2. execution with option -o will overwrite inpute file(do not need to specify output file).
3. execution with option -r will remove inpute file(need to specify output file).
4. error code will return to user program.
5. jobs can be canceled when executing.
6. temporary file will be removed if a job is canceled in executing.

A figure a attached in page 2 to clarify the design.

