Operating Systems II

Fall 2017

Homework 3

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Group 17

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Below are notes about the project...

1) Write a RAM disk device driver that registers it as block device
2) Using the crypto API, add encryption to the block device such that the device driver encrypts and decrypts data when it is written and read
3) This will be developed in the drivers/block directory
4) This will need to be a module, in order to use a module parameter.
5) The module must then be moved in to the running VM. Kevin recommends scp.
6) This is a block cypher, there may be more data than fits in one block of the cypher.
7) The key must be set as a module parameter
8) An incorrect key must produce gibberish
9) Create an ext2 file system on the block device (mkfs.ext2).

Author	Date	Message
fischjer4	2017-10-31	First Commit for Encypted Block Device
blazerzero	2017-10-31	Added writeup files
fischjer4	2017-11-02	changed name. There was a typo
fischjer4	2017-11-02	Merge branch 'master' of https://github.com/fischjer4/Kernel
fischjer	2017-11-02	removed not needed files
fischjer	2017-11-02	Merge branch 'master' of https://github.com/fischjer4/Kernel
fischjer	2017-11-02	adding empty crypto-block-driver.c file
fischjer	2017-11-02	added cypto-block-device file
fischjer	2017-11-02	renamed file
fischjer	2017-11-02	added sbd skeleton to the block_device_crypto file
fischjer4	2017-11-05	added crypto handle init and printk statements to __init function
blazerzero	2017-11-05	Added #include <linux.crypto.h> to block_dev_crypto.c
fischjer4	2017-11-05	writing encrypted data to block is completed
fischjer4	2017-11-05	Merge branch 'master' of https://github.com/fischjer4/Kernel
fischjer4	2017-11-05	added decryption section
fischjer4	2017-11-05	added printk statements to print memory prior to enc/dec and after enc/dec
fischjer4	2017-11-05	added a print_mem function which prints the elements of the buffer and memory of the block device

blazerzero	2017-11-05	Included <linux/random.h> to initialize the key randomly. Also created new static const u8 variable for the key.
fischjer4	2017-11-05	added comments to code
fischjer4	2017-11-05	Merge branch 'master' of https://github.com/fischjer4/Kernel
fischjer4	2017-11-05	set key as module_param
fischjer4	2017-11-05	added printk statement for key so we know it was loaded properly
fischjer4	2017-11-06	added comments
fischjer	2017-11-06	added Makefile, Kconfig and added them along with the module C file to a neededFiles directory
fischjer4	2017-11-06	fixed syntax error in Kconfig file
fischjer	2017-11-06	fixed Kconfig line endings error
fischjer	2017-11-06	changed req->buffer to bio_data(req->bio) in sbd_transfer(). req->buffer is no longer a thing in this version of linux, and thus errors were produced with it
fischjer	2017-11-06	fixed print_mem to print hex, printing chars wouldn't work obviosuly
fischjer	2017-11-06	fixed print –> printk syntax error
fischjer	2017-11-06	changed print_mem size to only 100 bytes. Printing all bytes CLUTTERED the screen
fischjer	2017-11-06	fixed printk error