PROJECT TITLE

Implementing block driver for the USB drive to perform READ (10) and WRITE (10) SCSI command functions in order to read and write sectors on the USB disk

Prerequisites

Linux operating system

Commands and steps to be used to compile the code

· Keep the code file and makefile in the same path

· In the code the vid and pid shall be modified according to the usb that’s being used.

· To know the vid and pid of the usb, use command ‘lsusb -v’ after plugging in the usb

· Open terminal in the same folder where the code file is kept

· Use command ‘Sudo make all’ to compile the code

· After compiling use command ‘Sudo insmod <module filename>’ to add file to directory

· To check if the file has been added or not use command ‘lsmod’

· Plug in the pendrive

· Use command ‘Sudo fdisk –l’ to view the disk and its partitions

· Use command ‘Sudo mkdir /media/<directory name>’ to create a new directory

· Use command ‘Sudo mount –t vfat /dev/USB\_BLOCK\_DEV1 /media/<directory name> to mount the usb and wait for the mounting to be completed

· Enter the folder using ‘Cd /media/<directory name>’

· To read any file inside the folder open it using Gedit <folder name>

· · Install vim operation to perform write operation on the usb

· To create a new folder in usb use command ‘sudo vim <folder name>’ and to write anything in the file press i, to stop writing press esc and to finish writing type:wq and press enter

· Use command ‘chmod 777 /media/<mount file name>’ to make the file readable, writable and executable by everyone

Code summary

* usbdev\_probe : Probe function for USB device in which we do the following operations:
  + Obtain endpoint addresses for the USB device , check if it is a device of Device of Mass storage class , SCSI subclass , Bulk-Only protocol
  + Call test\_device(dev) function that resets the device, obtains max LUN, reads capacity and also provides inquiry information
  + Register the block device and create disk of size equal to capacity of the USB device
  + Initialise the block request function : usb\_block\_request
* usb\_block\_request : Read requests from the kernel and pass them to workqueue for delayed handling of requests. The delayed request function is delayed\_request\_handler the work structure created to handle this block\_req\_work
* Delayed\_request\_handler: Obtain segments for block transfer from the requests and based on direction of request perform read and write operations using SCSI commands
* SCSI Read 10 and Write 10 commands are handled by these functions:read\_usb

write\_usb, which packages the SCSI commands into CBW ,receive/send buffer data,get back CSW.

* device\_exit : Performs cleanup and deregistering of the devices