1. **Information Gathering**
2. **Look at the man page for the "open()" system call, found in section two of the manpages.**
   1. **List the BUGS when using the system call.**

According from the bugs section of the open(2) manpage up to now is not possible to enable signal-driven I/O by specifying O\_ASYNC in the case of calling open (); To enable the flag use fcntl(2). Is important to check for two different error codes (EISDIR and ENOENT) when trying to determine whether the kernel supports O\_TMPFILE functionality. When both O\_CREAT and O\_DIRECTORY are specified in flags and the file specified by the pathname does not exist open() will create a regular file therefore O\_DIRECTORY is ignored as a result.

* 1. **What files need to be included to use this function?**

#include <fcntl.h>#include <sys/types.h>  
#include <sys/stat.h>

* 1. **List the first three related system calls to open().**

The three system calls are chmod(2), chown(2), close(2)

* 1. **Choose one of the system calls from above and list its bugs (also list what system call you chose) and files needing to be included to use the system call.**.

The chmod(), chown(), and close() system calls do not have a bugs sections.

The close() system call needs the unistd.h header file to be included.

1. **Use http://lxr.free-electrons.com to search for the following:**

**A. Search for "usb\_device". In what file is the structure defined, and what are the first five members of the struct?**

int devnum;

char devpath[16];

u32 route;

enum usb\_device\_state state;

enum usb\_device\_speed speed;

**B. In what header file is the type declared for the 5th member of the struct? (hint: don't look in test tools or staging directories).**

kernel v4.16.1.

**C. Include the entire enumeration declaration from above.**

enum usb\_device\_speed {

USB\_SPEED\_UNKNOWN = 0, /\* enumerating \*/

USB\_SPEED\_LOW, USB\_SPEED\_FULL, /\* usb 1.1 \*/

USB\_SPEED\_HIGH, /\* usb 2.0 \*/

USB\_SPEED\_WIRELESS, /\* wireless (usb 2.5) \*/

USB\_SPEED\_SUPER, /\* usb 3.0 \*/

USB\_SPEED\_SUPER\_PLUS, /\* usb 3.1 \*/

};

**B. Basic Linux Use:**

Typescript2.txt contains an example of a basic Linux use

**C. Basic C Programming in Linux:**

cProg.c contains a very basic C programming example

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The file “typescript1.txt” contains the command line execution of the program.

**D. Hello, Kernel:**

The submitted file “HelloKernel.c” contains the requested module code.

typescript3.txt contains the script of the dmesg command

HelloKernel.ko - added and then removed with the use of insmod and rmmod.