PA2 - Part A

Due Sep 19 by 11:59pm **Points** 50 **Submitting** a file upload **File Types** c
Available until Sep 20 at 11:59pm

This assignment was locked Sep 20 at 11:59pm.

Programming Assignment Two

Introduction

In this assignment we will explore file I/O and how to implement a basic device driver inside a Loadable Kernel Module (LKM). First, you will write a user-space C program that takes commands from the user to read, write and seek on a file. You will use this program to test the functionality of a custom device driver that you'll create in Part B.

Part A - User-Space Test Program

Write an interactive test program that will allow you to read from, write to and seek in a file. Your program should accept the name of the file on the command line:

./pa2test filename

If the filename doesn't exist, or isn't readable/writeable, your program should print an error message, and terminate with a non-zero exit status.

Once successfully invoked, your interactive program should open ***filename*** for reading/writing, prompt the user with the string ***Option (r for read, w for write, s for seek):*** and then accept the following input, followed each time by the carriage return/enter key:

r - Your test program should immediately ask for the number of bytes to read using the prompt:

Enter the number of bytes you want to read:

Making sure you create a large enough buffer using **malloc()**, read the file starting from it's current position. Then, print the returned data out to the console (stdout), followed by a newline ("\n").

w - Your program should ask for the data to be written to the file, using the prompt:

Enter the string you want to write:

The user then enters the desired data terminated by a carriage return. Your program should then write this data to the file.
s - Your program should prompt for values for offset and whence: ***Enter an offset value:*** ***Enter a value for whence (0 for SEEK_SET, 1 for SEEK_CUR, 2 for SEEK_END):*** Your program should then set it's position in the file according to the offset and whence. See the **lseek manpage (https://man7.org/linux/man-pages/man2/lseek.2.html)** for more info.
control+d - Terminate the program, and return the success exit status.
Other - If the user enters something other than listed above, ignore it and prompt the user again.

We've included a precompiled pa2test for you to use as an example. Download it from **here**, and then `chmod +x ~/Downloads/pa2test` to make it executable.

Submission

You are required to submit the following to Canvas:

- pa2test.c