**Operating Systems**

**File I/O with system calls**

In this lab, you will experiment with some of the system calls introduced last week, in particular: open, close, read, write and lseek. Each person should submit individually, at the end of the lab, regardless of whether the task is finished or not.

You may not be able to finish this work in one hour, so approach the problem by writing the steps of your planned solution in comments before beginning coding them. Do not concern yourself with error handling until after you have the primary functionality working.

The program, call it insert, must take 3 arguments: a file name, a file offset, and a string. It should open the named file and insert the string at the given offset in the file, without changing or deleting any of the other data in the file.

insert filename offset string

Your program must contain the following function to perform the insert, calling it with n being the full length of the string parameter:

int insert\_at( int fd, off\_t offset, char \*s, int n );

This function will insert n chars from the buffer s into the file fd at the given offset. It should return the new offset (just past the inserted chars), or -1 if there is an error.

You may need to plan for some time about how you will solve this problem, so write your plans (into your C file in comment blocks) even if you don’t get to write all the code.

Use the functions listed above, not stdio functions. You may use printf for printing messages. Do not make any assumptions about the contents of the file or its size.