CS 375 - UNIX System Programming
Fall 2018 - Project 2

1. (5 points) There is a limit to the size of the per-process file table, i.e., there is a maximum number of files that any single process may have open. Determine this limit by writing a C/C++ program **`count-opens`** (note that the name of the program has a hyphen, not an underscore) that repeatedly calls the **`open`** routine, without accompanying calls to **`close`**, until a call to **`open`** fails. It is suggest having the program repeatedly open itself (**`argv[0]`**), since that file should always exist. **Answer the following question in a comment at the beginning of the program file:** How many file descriptors may a process have open? (Don't forget the three that are opened automatically for the process by the OS.)

2. (10 points) Write a C/C++ program **`lsl`** that outputs the same information (and in the same format) as the "**`ls -l`**" command. It should take either zero or one directory names as arguments. If no argument is given the program should do a long directory listing on the current directory.

3. (10 points) Write a C/C++ program **`kitten`** that is a replacement for the **`cat`** program. Only the **`-E`**, **`-n`**, and **`-s`** options are to be supported. Any other command arguments should be treated as input file names. The program **must** use **`getopt()`** to process the command line options. If no input file names are supplied as arguments on the command line, then the program should read from standard input.

4. (5 points) Provide a makefile named **`Makefile`** that will make all three programs for this assignment as the default target (typically called **`all`**). Each program must be a separate target.

What to submit

Create a tarfile or zipfile containing your three program source files and makefile.

Submit your archive using the submission system (http://submission.evansville.edu). The grading script will only make the project and check that executables named **`count-opens`**, **`lsl`**, and **`kitten`** are produced. It will not run anything.