CS590 Homework #1
Due: Thursday, June 10, 2010

1.   Write a utility like **ls**(1) that list the files in the current directory.

This program will take optional command line arguments indicating which files or directories to print. If this argument is omitted, then print files from the current directory.

Your program can print one filename per line, and does not need to print filenames in columns like ls(1).

This program will support an optional "-s" option that should make your program include the file size in blocks to the file name.

This program will also support an optional "-l" option that will change the output of your program to mimick that of the "–l" option to ls(1).

Pick at least one additional option of ls(1), and implement this functionality as well.

Hint: see stat(2), getpwuid(3), getgrgid(3).

Note: This program should use of getopts to provide flexibility in option processing.
Note: This program should sort filenames in the same manner as ls (1).

Usage: myls [-sl] [files or directories ...]

Examples: myls   Print files in current dir
             myls -s   Print files in current dir including size
             myls -s /tmp   Print files in /tmp dir including size
             myls file1 file2 dir3   Print files file1, file2, and files in dir3
             myls –ls   Print long listing and size of files
             myls –l –s   Same as previous command

2.   Write a program that demonstrates the functionality of the O_APPEND flag.

This program will open a file for writing using the **O_APPEND** flag, and then write a line of text to the file. Run several concurrent processes executing this program to convince yourself that the text lines won't get intermixed in the output file.

Recode the program without the **O_APPEND**, and use lseek to move the file pointer to the end of the file before each write. Rerun concurrent processes to see if the text gets intermixed now.

Document your results, and explain why you believe the system exhibits the behavior demonstrated.