

Due: - Written Exercises due Wednesday, April 13<sup>th</sup>, 4pm in homework box in 2131 Kemper;  
- Programs due electronically Wednesday, April 13<sup>th</sup>, at 11:59pm.

Written Exercises (20 pts): The written exercises should be typed and each page should have at the top your name and ID#, section #, and hw#. Handwritten answers will not be graded.

J&K, 3.3.10, 3.7.6, 4.1.4, 4.2.2, 4.5.1, 4.10.2, 4.11.6, 5.1.13.

Programs (60 pts):

For each program, you must provide a source code file with the name specified. The third line in the source code files must contain the author of the file, ID, and section #.

Use the *handin* program for electronic submission, described in the UNIX tutorial. For this homework use:

```
handin cs30 hw2 wclike.c threemax.c ex4_2.c
```

The date and time your files are created in the **cs30** directory will be counted as your submit times. If those times are later than 11:50 pm on the due date your submissions will be considered late.

- (1) Write a program that will count and print out the number of lines, words, and characters in standard input until **EOF** is reached. Recall that lines end with a newline '**\n**' and words end with newlines or blanks (space, '**'** or tab, '**\t**'). Note that this program will have the basic functionality of the **wc** utility in UNIX. For example, if **in.txt** is the text file

```
Hello,  
this is 1 of  
your input files.
```

Then **wclike < in.txt** would give the output

```
3 8 38
```

Name the source file **wclike.c**. An example executable file **wclike** and input file **in.txt** are located at **/home/cs30/public/hw2/** on the csif machines.

- (2) Write a program that will read from standard input non-negative integers until EOF is reached and print out the three largest ones. Do not use arrays in this program! You should make sure the input numbers are non-negative and that there are at least three of them.

Name the source file **threemax.c**. An example executable is located at **/home/cs30/public/hw2/threemax** on the csif machines.

- (3) J&K, p. 151, Ex. 4.2.

Twin primes are two primes that differ by 2 (e.g., 3 and 5, 101 and 103). Write a program that prints all twin primes less than 1,000. (The problem of whether there are infinitely many twin primes is still unsolved).

Name the source file **ex4\_2.c**. An example executable is located at **/home/cs30/public/hw2/ex4\_2** on the csif machines.