**Homework #3: Due Oct 22 (Tues) 23:59.**

1. To write down kcov using Clang.
   1. kcov receives a file name of a *preprocessed* single C file <f>.c and generates the instrumented version <f>-cov.c to measure branch coverage of <f>.c through testing.
   2. When <f>-cov.c is compiled and excuted 1st time, <f>-cov.c generates a coverage measurement file <f>-cov-measure.txt. After then, <f>-cov.c updates <f>-cov-measure.txt through testing <f>-cov.c. The format of <f>-cov-measure.txt is as follows

1453 0 0 errnum

1474 0 1 size && !result

1484 0 0 ptr

1488 0 0 size && !result

…

6950 0 0 (end = memchr(beg + len, '\n', (buf + size) - (beg + len))) != 0

6955 0 0 beg > buf && beg[-1] != '\n'

Covered: 581 / Total: 3101 = 18.735892%

1. To print out the coverage measurement file of grep.pre.c with the following test case

./grep "if" ./grep/grep.c  
./grep "[0-9]+" ./grep/grep.c  
./grep "[[:alpha:]]?" ./grep/grep.c

1. To create a set of test cases to maximize the branch coverage using the category partitioning method (you can learn about options of grep by man grep). In addition, print out the final coverage measurement file to report the finally achieved branch coverage.