

EE 3233 Systems Programming for Engineers (Fall 2024)

Programming Assignment 6

Name: _____ Score _____/50

Submit your solutions on canvas.

1. Write a C or Python program that makes use of Popen. You will use Popen to **echo "Hello World"** into a file and Popen to read (25 points):
 - a. Use Popen to execute an echo command to write to a file.
 - a. Print "Using popen to echo 'Hello World' to a file"
 - b. The file should be called **test.txt**
 - b. Use Popen to read the contents of a file of the file using cat
 - a. Print "Using popen to cat test.txt"
 - b. Read contents of **test.txt** using cat
 - c. Print the contents to screen
- (BONUS) 10 pts**
- c. Use command line args in place of the "Hello World" and "test.txt"

Expected response if using python:

```
$ python3 hw6_1.py
"Using popen to echo 'Hello World' to a file"
"Using popen to cat test.txt"
"text.txt contains 'Hello World'"
```

Expected bonus response if using python:

```
$ python3 hw6_1.py "abc123" mytestfile.txt
"Using popen to echo 'abc123' to a file"
"Using popen to cat mytestfile.txt"
"mytestfile.txt contains 'abc123'"
```

Expected response if using C:

```
$ ./a.out
"Using popen to echo 'Hello World' to a file"
"Using popen to cat test.txt"
"text.txt contains 'Hello World'"
```

Expected bonus response if using C:

```
$ ./a.out "abc123" mytestfile.txt
"Using popen to echo 'abc123' to a file"
"Using popen to cat mytestfile.txt"
"mytestfile.txt contains 'abc123'"
```

2. Write a C or Python program that makes use threading (10 threads) to increment a counter from 0 to 1000000000, print the result. It should then decrement back to zero. (You'll need to use a mutex). (25 points)

Expected response:

\$./a.out or python equivalent

"Incrementing counter from 0 to 1000000000 using 10 threads"

"Final value is 1000000000"

"Decrementing counter from 1000000000 to 0 using 10 threads"

"Final value is 0"

(BONUS) 10 pts

Provide command line arg to set the counter value and number of threads so they can be specified by the user.