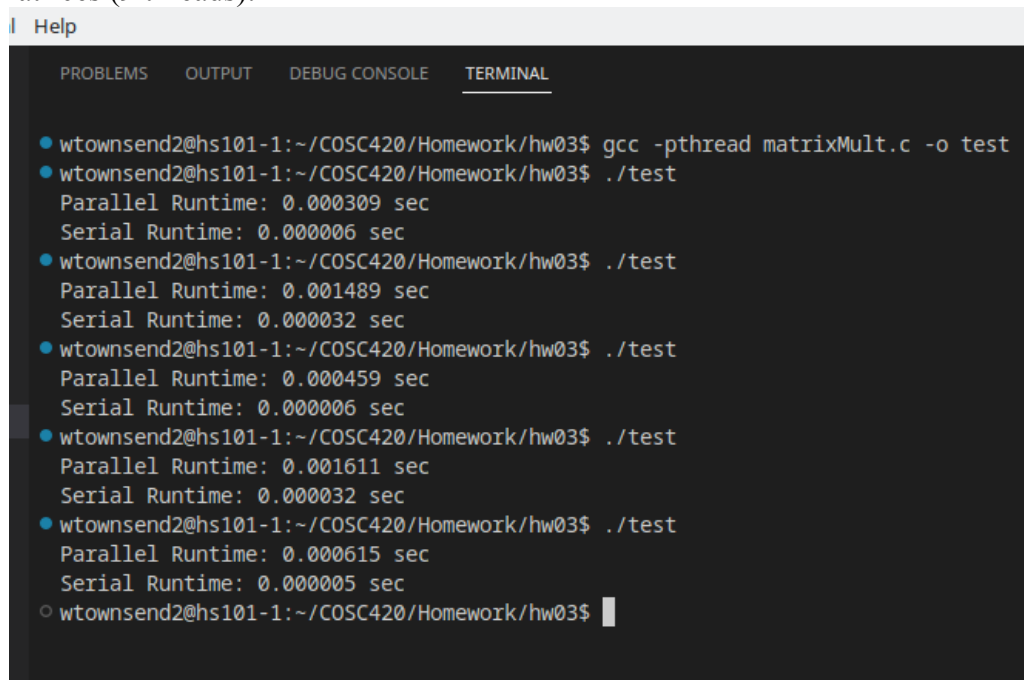


Will Townsend
COSC 420
HW 03

The homework assignment given wasn't too troublesome however I am noticing that with my implementation that the performance of the parallel program versus the serial program is inconsistent at best. This may be due to my an error in thinking of how to best approach this assignment. Below is sample output with the specified parameters inputted in the program each run 5 times.

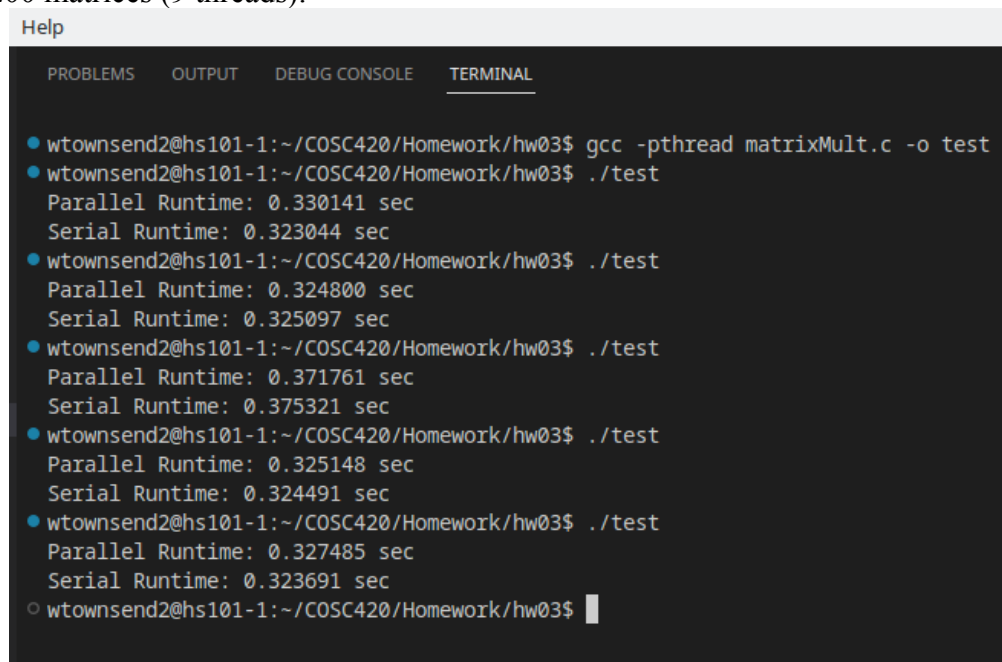
Ten 5x5 matrices (9 threads):



```
Help
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ gcc -pthread matrixMult.c -o test
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.000309 sec
Serial Runtime: 0.000006 sec
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.001489 sec
Serial Runtime: 0.000032 sec
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.000459 sec
Serial Runtime: 0.000006 sec
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.001611 sec
Serial Runtime: 0.000032 sec
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.000615 sec
Serial Runtime: 0.000005 sec
○ wtownsend2@hs101-1:~/COSC420/Homework/hw03$
```

Ten 200x200 matrices (9 threads):



```
Help
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ gcc -pthread matrixMult.c -o test
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.330141 sec
Serial Runtime: 0.323044 sec
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.324800 sec
Serial Runtime: 0.325097 sec
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.371761 sec
Serial Runtime: 0.375321 sec
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.325148 sec
Serial Runtime: 0.324491 sec
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.327485 sec
Serial Runtime: 0.323691 sec
○ wtownsend2@hs101-1:~/COSC420/Homework/hw03$
```

Ten 500x500 matrices (9 threads):

```
help
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ gcc -pthread matrixMult.c -o test
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 4.547956 sec
Serial Runtime: 4.607687 sec
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 4.511356 sec
Serial Runtime: 4.603360 sec
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 4.596320 sec
Serial Runtime: 4.560644 sec
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 4.526075 sec
Serial Runtime: 4.457896 sec
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 4.529590 sec
Serial Runtime: 4.455178 sec
○ wtownsend2@hs101-1:~/COSC420/Homework/hw03$ █
```

Ten 100x100 matrices (9 threads):

```
Help
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ gcc -pthread matrixMult.c -o test
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.040688 sec
Serial Runtime: 0.038216 sec
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.038938 sec
Serial Runtime: 0.038510 sec
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.039070 sec
Serial Runtime: 0.038482 sec
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.041307 sec
Serial Runtime: 0.039088 sec
• wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.040258 sec
Serial Runtime: 0.044445 sec
○ wtownsend2@hs101-1:~/COSC420/Homework/hw03$ █
```

Twenty 100x100 matrices (19 threads):

```
Help
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

● wtownsend2@hs101-1:~/COSC420/Homework/hw03$ gcc -pthread matrixMult.c -o test
● wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.080064 sec
Serial Runtime: 0.078928 sec
● wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.081089 sec
Serial Runtime: 0.078939 sec
● wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.079827 sec
Serial Runtime: 0.077889 sec
● wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.081268 sec
Serial Runtime: 0.078239 sec
● wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.079441 sec
Serial Runtime: 0.077740 sec
○ wtownsend2@hs101-1:~/COSC420/Homework/hw03$
```

Thirty 100x100 matrices (29 threads):

```
Help
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

● wtownsend2@hs101-1:~/COSC420/Homework/hw03$ gcc -pthread matrixMult.c -o test
● wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.080064 sec
Serial Runtime: 0.078928 sec
● wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.081089 sec
Serial Runtime: 0.078939 sec
● wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.079827 sec
Serial Runtime: 0.077889 sec
● wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.081268 sec
Serial Runtime: 0.078239 sec
● wtownsend2@hs101-1:~/COSC420/Homework/hw03$ ./test
Parallel Runtime: 0.079441 sec
Serial Runtime: 0.077740 sec
○ wtownsend2@hs101-1:~/COSC420/Homework/hw03$
```