Comp 790 Operating Systems HW3 Report

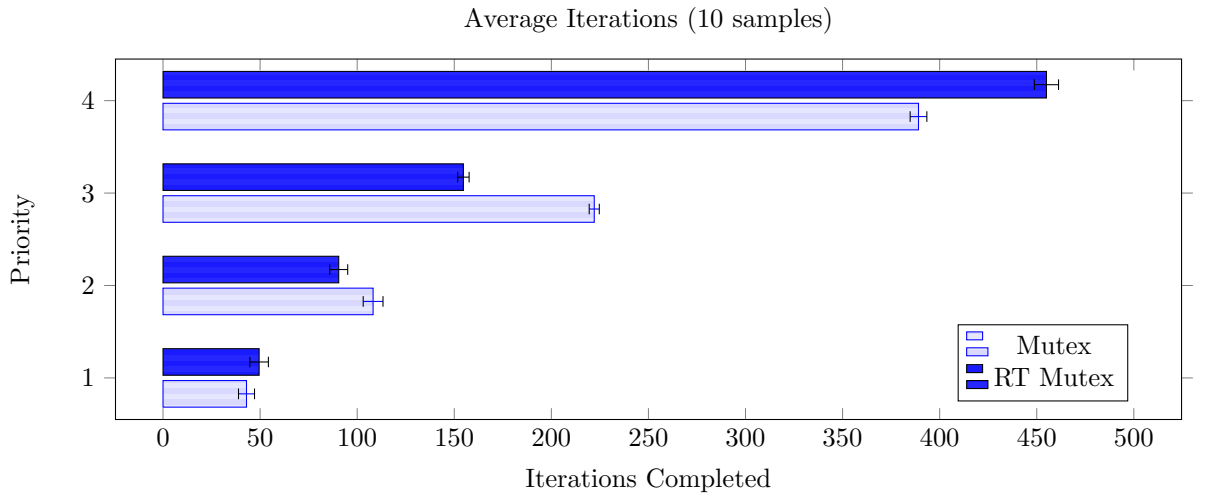
David Dunn

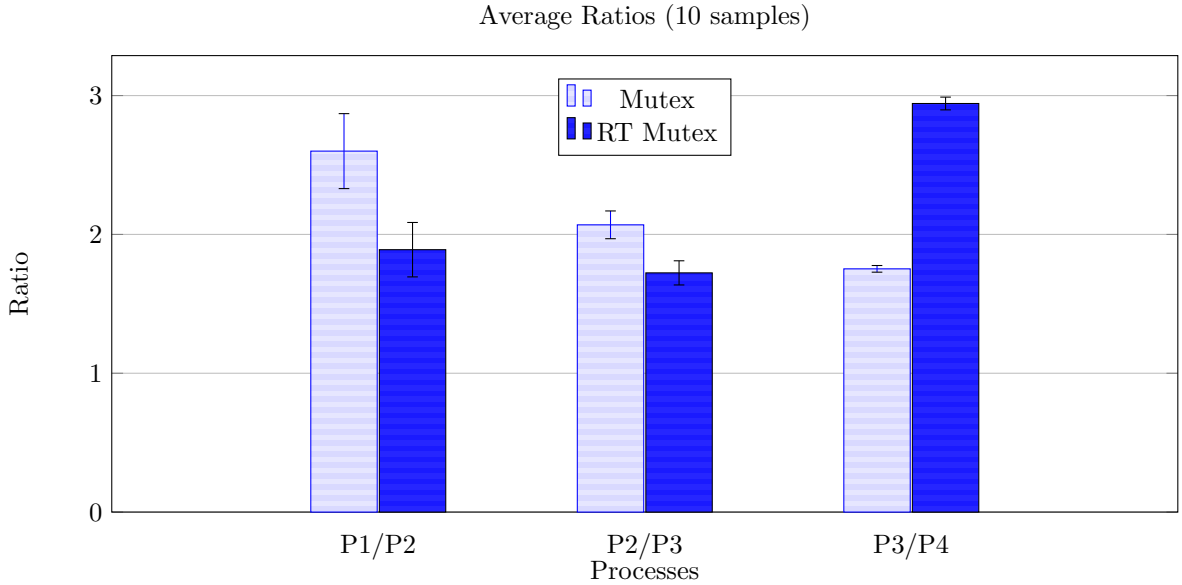
February 14, 2018

1 Process

After making sure my module was working correctly, I ran the inserted the mutex module, then ran the shell script 10 times, recording the results and clearing the log file after each run. I then removed the mutex module and inserted the rt_mutex and repeated the procedure. As I was doing so the consistency of the numbers showed that the output was not always printed in order as I had assumed, so I went back through the output and recorded it properly. Since the data from mutex was gone, I reinserted that module and did those 10 iterations again.

2 Results





3 Discussion

When comparing the regular mutex to the real-time version, the number of iterations for the level 4 priority process is significantly higher for real-time, which is as expected. What is surprising is that those iterations

came mostly at the expense of the priority 3 process and slightly at the priority 2 process instead of just the priority 1. Things didn't get pushed down the priority chain quite as I expected. The much decreased iterations of priority 3 is quite stark. This can be seen in the ratio figure, where the largest ratio is between P4 and P3 on the real-time mutex. It is easy to see how it changed from the standard mutex, where the P3/P4 ratio was the smallest for that mutex type. Interestingly the regular mutex had a smoothly decreasing ratio as the priority increased, which the real-time mutex did not exhibit.

As can be seen from the standard deviation bars in the figures, the variance in the data was quite small. Only the P1/P2 ratio for the standard mutex had a significantly large standard deviation, all others were very tightly bounded.