MP5 – CSCE 313

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Introduction:

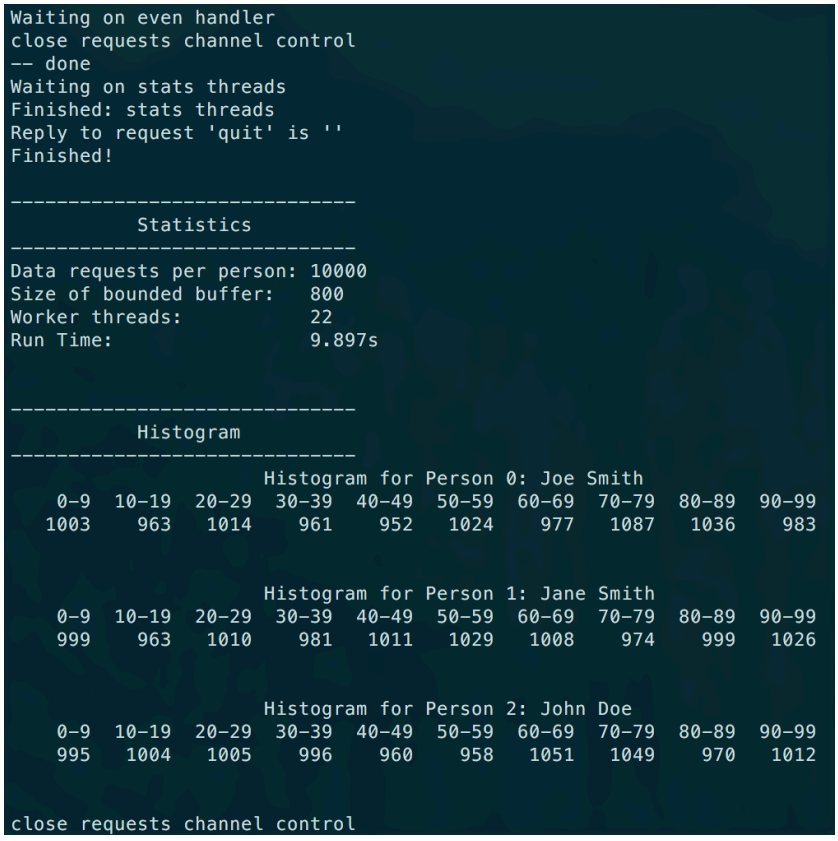
In this machine problem we replaced the worker thread functionality with a single thread event handler. This event handler managed multiple request channels to take care of the requests. We experience similar performance results when changing the number of request channels, which correlates to worker threads from MP4.

Procedure:

First we brainstormed how to implement an event handler in place of worker threads. After creating a plan of attack, we converted our pseudo-code to C++ code and tested it. After fixing a few issues, we managed to successfully implement our program.

Result:

The result of running the program can be seen in the following screenshot:



```
Waiting on even handler
close requests channel control
-- done
Waiting on stats threads
Finished: stats threads
Reply to request 'quit' is ''
Finished!

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           Statistics
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Data requests per person: 10000
Size of bounded buffer:   800
Worker threads:           22
Run Time:                 9.897s


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           Histogram
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                    Histogram for Person 0: Joe Smith
    0-9  10-19  20-29  30-39  40-49  50-59  60-69  70-79  80-89  90-99
   1003    963   1014    961    952   1024    977   1087   1036    983


                    Histogram for Person 1: Jane Smith
    0-9  10-19  20-29  30-39  40-49  50-59  60-69  70-79  80-89  90-99
    999    963   1010    981   1011   1029   1008    974    999   1026


                    Histogram for Person 2: John Doe
    0-9  10-19  20-29  30-39  40-49  50-59  60-69  70-79  80-89  90-99
    995   1004   1005    996    960    958   1051   1049    970   1012


close requests channel control
```

Conclusion:

Measure performance:

Does increasing the number of request channels still improve the performance and if so by how much?

Using 10000 requests and a buffer size of 800 we got the following results for runtime at different amounts of request channels:

Number of Request Channels	Runtime (s)
20	10.2
21	9.9
22	9.8
25	9.8
28	9.8
30	9.8

As you can see, to a certain extent, increasing the number of request channels does improve runtime, however this effect seems to bottle off at around 22 request channels for our amount of requests and buffer size.

Is there a point at which increasing the number of request channels does not further improve performance?

As explained above, after roughly 22 request channels, increasing the amount of worker threads does not give as much of a desired runtime improvement.