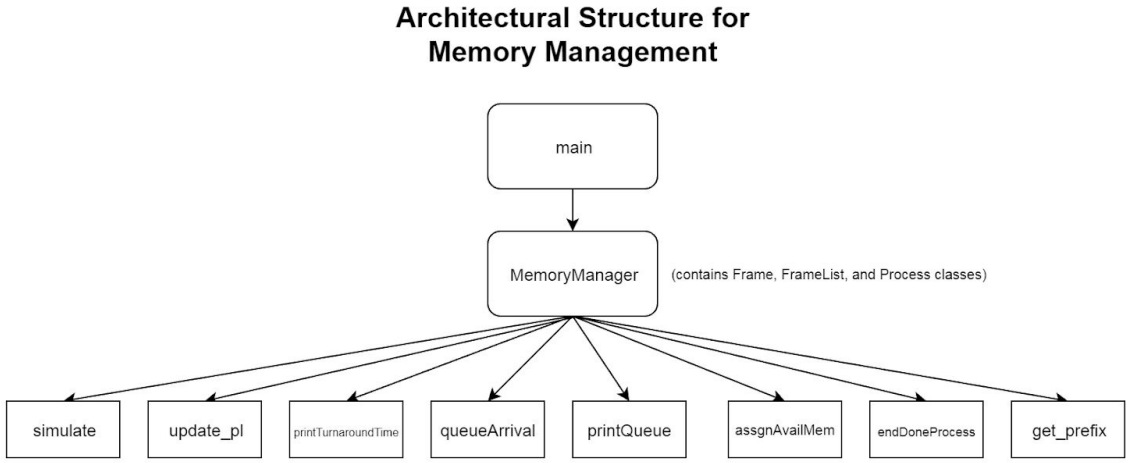
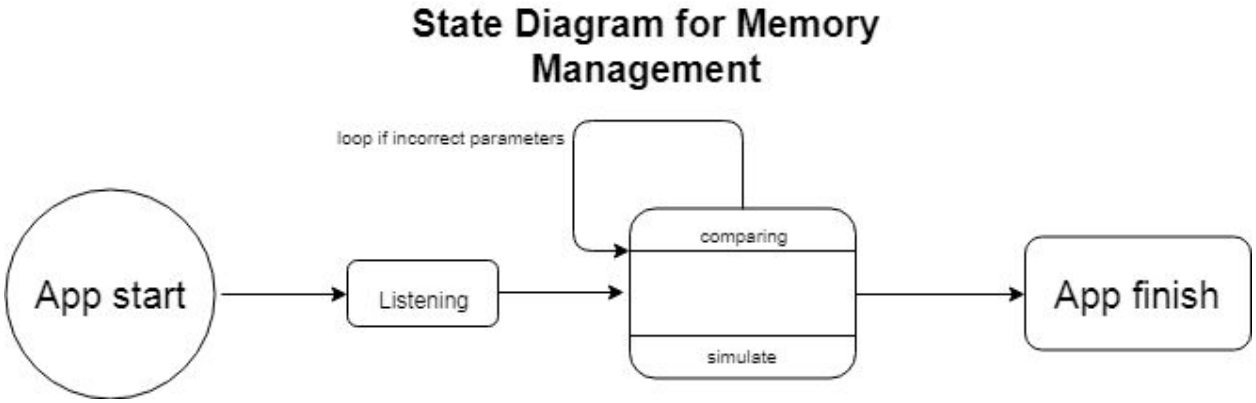
CPSC 351-02: Design of Assignment 2

Overall Architecture Structure:



State Diagram:



Memory Management Info:

This program is designed to simulate the process of memory management at the system level. A memory size and page size can be input by the user, along with a workload file of processes and information. This information is used to simulate the arrival and departure of processes with various memory requirements. The processes are assigned to memory and executed on a first in first out basis. Information about these events is displayed to the user through STDOUT.

Test Outputs

Parameter input:

```
Memory size: 2000
Page size (1:100, 2:200, 3:300): 1
Workload file: in1.txt
```

Sample Partial Output:

```
                200-299: Process: 6 Page: 3
                300-399: Process: 7 Page: 1
                400-499: Process: 2 Page: 1
                500-599: Process: 2 Page: 2
                600-699: Process: 2 Page: 3
                700-799: Process: 2 Page: 4
                800-899: Process: 2 Page: 5
                900-999: Process: 2 Page: 6
                1000-1099: Process: 7 Page: 2
                1100-1199: Process: 7 Page: 3
                1200-1299: Process: 7 Page: 4
                1300-1399: Process: 4 Page: 1
                1400-1499: Process: 4 Page: 2
                1500-1599: Process: 7 Page: 5
                1600-1699: Process: 7 Page: 6
                1700-1799: Process: 7 Page: 7
                1800-1899: Process: 7 Page: 8
t = 1600, Process 8 arrives
        Input queue: [8]
        Memory map:
                0-99: Process: 6 Page: 1
                100-199: Process: 6 Page: 2
                200-299: Process: 6 Page: 3
                300-399: Process: 7 Page: 1
                400-499: Process: 2 Page: 1
                500-599: Process: 2 Page: 2
                600-699: Process: 2 Page: 3
                700-799: Process: 2 Page: 4
                800-899: Process: 2 Page: 5
                900-999: Process: 2 Page: 6
                1000-1099: Process: 7 Page: 2
                1100-1199: Process: 7 Page: 3
                1200-1299: Process: 7 Page: 4
                1300-1399: Process: 4 Page: 1
                1400-1499: Process: 4 Page: 2
                1500-1599: Process: 7 Page: 5
                1600-1699: Process: 7 Page: 6
                1700-1799: Process: 7 Page: 7
                1800-1899: Process: 7 Page: 8
        MM moves Process 8 to memory
        Input queue: []
        Memory map:
                0-99: Process: 6 Page: 1
                100-199: Process: 6 Page: 2
                200-299: Process: 6 Page: 3
                300-399: Process: 7 Page: 1
                400-499: Process: 2 Page: 1
                500-599: Process: 2 Page: 2
                600-699: Process: 2 Page: 3
                700-799: Process: 2 Page: 4
                800-899: Process: 2 Page: 5
                900-999: Process: 2 Page: 6
                1000-1099: Process: 7 Page: 2
                1100-1199: Process: 7 Page: 3
                1200-1299: Process: 7 Page: 4
                1300-1399: Process: 4 Page: 1
                1400-1499: Process: 4 Page: 2
                1500-1599: Process: 7 Page: 5
                1600-1699: Process: 7 Page: 6
                1700-1799: Process: 7 Page: 7
                1800-1899: Process: 7 Page: 8
                1900-1999: Process: 8 Page: 1
t = 2000, process 2 completes
        Memory map:
                0-99: Process: 6 Page: 1
                100-199: Process: 6 Page: 2
                200-299: Process: 6 Page: 3
                300-399: Process: 7 Page: 1
                400-999: Free frame(s)
                1000-1099: Process: 7 Page: 2
                1100-1199: Process: 7 Page: 3
                1200-1299: Process: 7 Page: 4
                1300-1399: Process: 4 Page: 1
                1400-1499: Process: 4 Page: 2
                1500-1599: Process: 7 Page: 5
                1600-1699: Process: 7 Page: 6
                1700-1799: Process: 7 Page: 7
                1800-1899: Process: 7 Page: 8
                1900-1999: Process: 8 Page: 1
        process 4 completes
        Memory map:
                0-99: Process: 6 Page: 1
                100-199: Process: 6 Page: 2
                200-299: Process: 6 Page: 3
                300-399: Process: 7 Page: 1
                400-999: Free frame(s)
                1000-1099: Process: 7 Page: 2
                1100-1199: Process: 7 Page: 3
                1200-1299: Process: 7 Page: 4
                1300-1499: Free frame(s)
                1500-1599: Process: 7 Page: 5
                1600-1699: Process: 7 Page: 6
                1700-1799: Process: 7 Page: 7
                1800-1899: Process: 7 Page: 8
                1900-1999: Process: 8 Page: 1
        process 7 completes
        Memory map:
                0-99: Process: 6 Page: 1
                100-199: Process: 6 Page: 2
                200-299: Process: 6 Page: 3
                300-1899: Free frame(s)
                1900-1999: Process: 8 Page: 1
t = 2100, process 8 completes
        Memory map:
                0-99: Process: 6 Page: 1
                100-199: Process: 6 Page: 2
                200-299: Process: 6 Page: 3
                300-1899: Free frame(s)
t = 3000, process 6 completes
        Memory map:
                0-1899: Free frame(s)
Average Turnaround Time: 1175
Press any key to continue . . .
```