Nicholas Chirico
Operating Systems
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Project 3

Included Files:
- pageReplace.cpp   - primary program file.
- memory.hpp   - defines functions and memorypool
- q   - executable to quickly compile
- requests   - file with page requests
- OSProject3.pdf   - this file
- fill_requests.sh   - makes fresh requests file [0,99]
- fill_rogue_requests.sh   - makes fresh requests file [-120,120]
- readable_requests.sh   - makes easily read requests file.

Careful with the "fill_requests.sh", "fill_rogue_requests.sh", and "readable_requests.sh" executables. They don't ask before they remove the old file. Also I'm not actually sure what the range on the rogue fill is, but I do know that if the non negative version of the value is divisible by 3 it becomes negative. That much I can say for sure.

Compilation instructions:
    Either run q (with "./q"), or "g++ pageReplace.cpp", then "./a.out". I'm sure you knew that last bit. Nothing too fancy here.

Summary:
    My implementation for this was really rather simple. I made a class called memorypool that does all the heavy lifting. To start off we load up a vector of strings(the pages object) from a requests file. Then it's just a matter of cycling through the pages and using the obnoxiously obviously named functions.

Result: -------------------------->

Conclusion / Lessons Learned:
    I'm gonna be completely honest. I feel like this project I learned more about making cool bash scripts than anything else! I'm kidding... Kind of. For me this project really made it obvious just how important readable code is. After I'd implemented my memorypool functionality it was insultingly simple to implement the algorithm. It made me feel like I knew what I was doing for a few minutes.

```
nick#project3: ./a.out
1: page miss, page  1 fills empty frame 0
99: page miss, page  99 fills empty frame 1
74: page miss, page  74 fills empty frame 2
56: page miss, page  56 fills empty frame 3
74: page hit, page  74 is in page 2
45: page miss, page  45 fills empty frame 4
55: page miss, page  55 fills empty frame 5
93: page miss, page  93 fills empty frame 6
44: page miss, page  44 fills empty frame 7
1: page hit, page  1 is in page 0
82: page miss, page  82 fills empty frame 8
10: page miss, page  10 fills empty frame 9
96: page miss, page  96 replaces page 99 in frame 1
84: page miss, page  84 replaces page 56 in frame 3
96: page hit, page  96 is in page 1
74: page hit, page  74 is in page 2
94: page miss, page  94 replaces page 45 in frame 4
14: page miss, page  14 replaces page 55 in frame 5
40: page miss, page  40 replaces page 93 in frame 6
88: page miss, page  88 replaces page 44 in frame 7
nick#project3: 
```