

Project 2: README

For this project, the FIFO, LRU, and the Segmented FIFO policies were implemented. Trace files such as bzip.trace and sixpack.trace, which are real recordings of a running program, were used in our simulation.

Files necessary to compile the program:

- memsim.cpp: The main interface of the simulator, takes inputs from the terminal and the trace files
- fifo.cpp: File that implements the First-In-First-Out policy
- lru.cpp: File that implements the Least Recently Used policy
- vms.cpp: File that implements the Segmented FIFO policy
- makefile: The makefile which compiles all of these files. The makefile target is called memsim
- policies.h: File which includes the policies and the PageEntry class which stores information for each entry
- bzip.trace: Trace file to be tested
- sixpack.trace: Trace file to be tested

To compile the program:

1. Use “make memsim” to compile all of the files using the makefile, if it is compiled on the student cluster. Else, use “mingw32-make memsim” or “nmake memsim” to compile them.
2. Use “g++ -std=c++11 memsim.cpp fifo.cpp lru.cpp vms.cpp -o memsim” if compiling on the cluster. Else, use “g++ memsim.cpp fifo.cpp lru.cpp vms.cpp -o memsim” to compile them.

To run the program:

1. For FIFO and LRU use this format:
“./memsim tracefile nFrames policy quiet/debug” if on the student cluster or “.\memsim tracefile nFrames policy quiet/debug” if not on the student cluster
2. For Segmented FIFO (vms) use this format:
“./memsim tracefile nFrames policy percentage quiet/debug” if on the student cluster or “.\memsim tracefile nFrames policy quiet/debug” if not on the student cluster

Explanation of terminal inputs:

- tracefile: Name of the tracefile (bzip.trace or sixpack.trace for example)
- nFrames: Number of frames to use
- policy: fifo, lru, or vms
- percentage: If using vms, this is the percentage between 1 and 100
- quiet: Will only print statistics at the end
- debug: Will print information for every event that happens.

Running Examples:

`./memsim bzip.trace 64 fifo quiet`

Total memory frames: 64

Events in trace: 1000000

Total disk reads: 1467

Total disk writes: 514

FIFO took 518.011ms

`./memsim bzip.trace 64 vms 25 quiet`

Total memory frames: 64

Events in trace: 1000000

Total disk reads: 1367

Total disk writes: 471

SFIFO took 1107.97ms

`./memsim bzip.trace 64 lru quiet`

Total memory frames: 64

Events in trace: 1000000

Total disk reads: 1264

Total disk writes: 420

LRU took 1636.02ms