Programming project 2, milestone 3 — due on Thursday 16 November 2000

The aim is to examine virtual memory management algorithms employed by the operating system.

Third week goals.

Implement realistic simulations of a number of page replacement algorithms.

Algorithms you must implement:

- OPT (also known as MIN), described in Stallings, and in: Belady Laszlo, "A Study of Replacement Algorithms for a Virtual Storage Computer", IBM Systems Journal, 1966.
- FIFO (first-in, first-out), described in Stallings
- LRU (least-recently used), described in Stallings
- MRU (most-recently used)

Also consider implementing:

- Clock, as described in Stallings
- SEQ, as described in: Gideon Glass and Pei Cao, "Adaptive Page Replacement Based on Memory Reference Behavior", Sigmetrics 1997.
- EELRU, as described in: Yannis Smaragdakis, Scott F. Kaplan, and Paul R. Wilson, "EELRU: Simple and Effective Adaptive Page Replacement", Sigmetrics 1999, available at http://www.cs.amherst.edu/ sfkaplan/papers/eelru.ps.gz
- Your own page replacement algorithm

Note that instead of producing and storing reference traces in files, it may be more efficient to produce them and then consume immediately.

Your document must detail: the benchmark suite, the tracing tools, statistics of the page reference traces, statistics of page usage requirements of each trace, how each page replacement algorithm is implemented, and the statistics of running various page replacement algorithms. You must provide a figure like Figure 8.1 in Stallings for each trace. You must provide a figure like Figure 8.15 in Stallings for each trace.