

**CMSI 387**  
**OPERATING SYSTEMS**  
Spring 2007

## Assignment 0412

This assignment should cap off your study of memory management.

### Not for Submission

Read Chapters 8 and 9 in SGG.

### For Submission

#### Exercises

Do the following exercises from SGG; submit your answers in hardcopy.

1. SGG Exercise 9.3
2. SGG Exercise 9.4
3. SGG Exercise 9.5
4. SGG Exercise 9.14
5. SGG Exercise 9.15

#### Programming

Write the following mini-programs and commit them to CVS. To keep interfaces and tests uniform, header and test harness files have been committed to your respective CVS repositories.

1. Paged memory:
  - a. Implement a rudimentary paged memory manager as specified by the *page.h* and *pageTest.c* files that have been committed to your */homework/cmsi387/page* directory.
  - b. Add a *myTest()* function to the *pageTest.c* test harness that designates a new page table and additional test cases. A call to *myTest()* is already part of *pageTest.c*'s *main()* function.
2. Segmented memory:
  - a. Implement a rudimentary segmented memory manager as specified by the *segment.h* and *segmentTest.c* files that have been committed to your */homework/cmsi387/segment* directory.
  - b. Add a *myTest()* function to the *segmentTest.c* test harness that designates a new page table and additional test cases. A call to *myTest()* is already part of *segmentTest.c*'s *main()* function.
3. Virtual memory page replacement:
  - a. Implement FIFO and LRU page replacement algorithms (essentially SGG Exercise 9.21) as specified by the *pageReplacement.h* and *pageReplacementTest.c* files that have been committed to your */homework/cmsi387/page-repl* directory. These functions are structured so that they accept a reference string then produce a “report” showing how memory allocations changed for that reference string.
  - b. Add a *myTest()* function to the *pageReplacementTest.c* test harness that designates a new page table and additional test cases. A call to *myTest()* is already part of *pageReplacementTest.c*'s *main()* function.

Commit your work “in place” at their preloaded locations and tag it as *hw-0412*.