

CSE 415 - Operating Systems
Homework Assignment #3
Spring 2012 - Prof. Butler
Due date: June 2, 2012

All questions must be done by yourself without outside assistance (with the exception of question 1, as noted below). Use the turnin script, located at <http://systems.cs.uoregon.edu/apps/turnin.cgi> to submit your assignment. You may submit either a plain text or a PDF file for the written questions. Don't send Word or OpenOffice files. You should submit a tarfile containing your written solutions and the code that you will write for question 1. Make sure to answer the questions posed, but remember that brevity is the soul of wit: be concise rather than rambling. If we can't understand your answer or it doesn't make sense, you will lose marks.

1. **Page Replacement** (20pts)

Write an implementation of FIFO and LRU page replacement algorithms as detailed in question 9.40 of Silbershcatz 8/e. You may use whichever programming language you would like to answer this question.

2. **Virtual Memory** (10pts)

Answer questions 9.28 (demand paging and CPU utilization) and 9.36 (buddy system) in Silbershcatz 8/e. For question 9.36, assume that the segment of allocated memory is 1024 bytes, not 1024 KB.

3. **Filesystem Interface** (5pts)

Answer question 10.11 (open-file table) in Silbershcatz 8/e.

4. **Filesystem Implementation** (15pts)

Answer questions 11.12 (granularity of disk storage allocation), 11.13 (performance optimizations versus consistency), and 11.15 (inodes and maximum file size) in Silbershcatz 8/e.

5. **Mass Storage** (10 pts)

Answer question 12.17 (seek time and distance) and 12.28 (disk reliability) in Silbershcatz 8/e.

Note: Like all assignments in this class **you are prohibited from copying any content from the Internet or sharing ideas, code, configuration, text or anything else or getting help from anyone in or outside of the class, except where noted.** Failure to abide by this requirement will result in sanctions ranging from zero on the assignment to dismissal from the class.