University of Wollongong

School of Computer Science and Software Engineering

CSCI212 Interacting Systems Autumn Session 2012

File Systems – Due 11:59pm Sunday April 1

Aim

To implement some demand paging replacement algorithms in C++.

Task

Your job is to write a C++ program which implements the four algorithms FIFO, LRU, LFU and Random given a specified page reference string and frame size (page table size).

The page reference string can be an arbitrary sequence of Upper Case characters (A-Z). There can be repeat characters in the sequence. Each page in the reference string refers to a period of time i.e. 1 milli second, starting at zero.

The page frame size can be an integer.

Invalid input should result in your program terminating

A typical run of your program would be

```
$ ./a.out
Enter Page Reference String: A Z B D D E F G H H H I J K K K K Z
Enter Page Frame Size: 2
. . .
```

Once the information is entered you are to report on the number of faults and where they occurred for each algorithm. For the random algorithm you can use a random number generator to help you. See it with the systems time.

In the example above you would get the following as output for FIFO

```
FIFO Performance

Page Fault at time = 0 swapped in candidate A
Page Fault at time = 1 swapped in candidate Z
Page Fault at time = 2 swapped in candidate B replacing page in
                                                        frame A
. . .
```

For each algorithm you should report the number of faults.

Place your code in `lab4.cpp`. It must compile with g++.

Submit:

Use the following submit directive to submit your code.

```
submit -c csci212 -a lab4 lab4.cpp
```