

ECS150
WQ2004
Addendum to HW3
Due: Thursday, March 11, 2004, 4:45PM, HW box

Question Addendum-1: Consider the following program:

```
var A,B: array[1..1000] of integer;  
for I in 1..1000 do  
    A[1001 - I] := A[I] + B[I]  
endfor;
```

Assume that an integer occupies a word. Arrays A and B are split up into pages such that a page holds elements of A or B. Main memory can hold two pages of 100 words each. Assume that the code and variable I are placed in another page frame and no instruction fetch or access to variable I produces a page fault; also assume the presence of a register to hold temporary values. Also assume that main memory is initially empty.

Part a. Show the page reference string

Part b. Compute the number of page faults generated by the program for two cases

- (i) The FIFO page replacement policy,
- (ii) MIN (The Optimal) page replacement policy.

The problem is not difficult, but make sure you look at what happens when A[500] (or thereabouts) is referenced; otherwise your answer will be off by a few page faults.

Question Addendum-2: Invent a page-reference string of length 5 for which LRU works worse than FIFO if main store has two page frames. Show the page frames that are in main memory after each of the references for both LRU and FIFO.

Question Addendum-3: Tanenbaum, Chapter 4, Number 8

Question Addendum-4: Tanenbaum, Chapter 4, Number 9