

COMP310/ECSE427

Assignment 3

P254 #4

P1 12MB ; P2 10MB ; P3 9MB.

First-fit

10 MB	10 (P2)	(2)
4 MB		
20 MB	12 (P1)	(1)
18 MB	9 (P3)	(3)
7 MB		
9 MB	9 (P3)	(6)
12 MB	12 (P1)	(4)
15 MB	10 (P2)	(5)

Best-fit

10 MB	10 (P2)	(2)
4 MB		
20 MB	9 (P3)	(6)
18 MB	10 (P2)	(5)
7 MB		
9 MB	9 (P3)	(3)
12 MB	12 (P1)	(1)
15 MB	12 (P1)	(4)

Worst-fit

10 MB	10 (P2)	(5)
4 MB		
20 MB	12 (P1)	(1)
18 MB	10 (P2)	(2)
7 MB		
9 MB	9 (P3)	(6)
12 MB	12 (P1)	(4)
15 MB	9 (P3)	(3)

Next-fit

10 MB	9 (P3)	(6)
4 MB		
20 MB	12 (P1)	(1)
18 MB	10 (P2)	(2)
7 MB		
9 MB	9 (P3)	(3)
12 MB	12 (P1)	(4)
15 MB	10 (P2)	(5)

p254 #7.

a): 20

20 is in virtual page 0K-4K which corresponds to physical memory 8K-12K

$$\begin{aligned}\text{Therefore its physical address} &= 8192 + 20 \\ &= \underline{8212}\end{aligned}$$

b): 4100

4100 is in page 4K-8K which corresponds to physical memory 4K-8K.

$$\begin{aligned}\text{Therefore its physical address} &= 4096 + (4100 - 4096) \\ &= \underline{4100}\end{aligned}$$

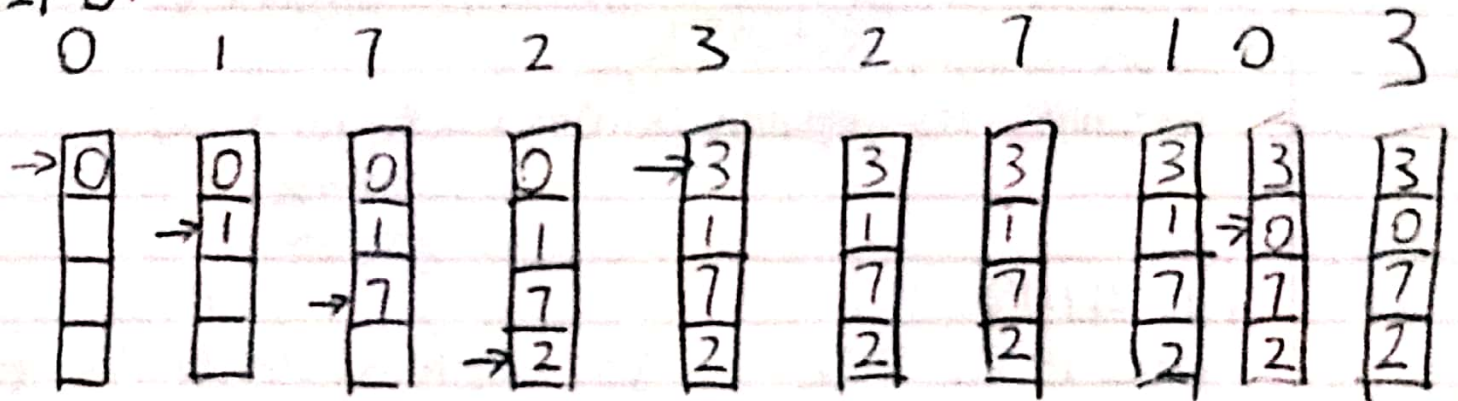
c): 8300

8300 is in page 8K-12K which corresponds to physical memory 24K-28K

$$\begin{aligned}\text{Therefore its physical address} &= 6 \times 4096 + (8300 - 4096 \times 2) \\ &= \underline{24684}\end{aligned}$$

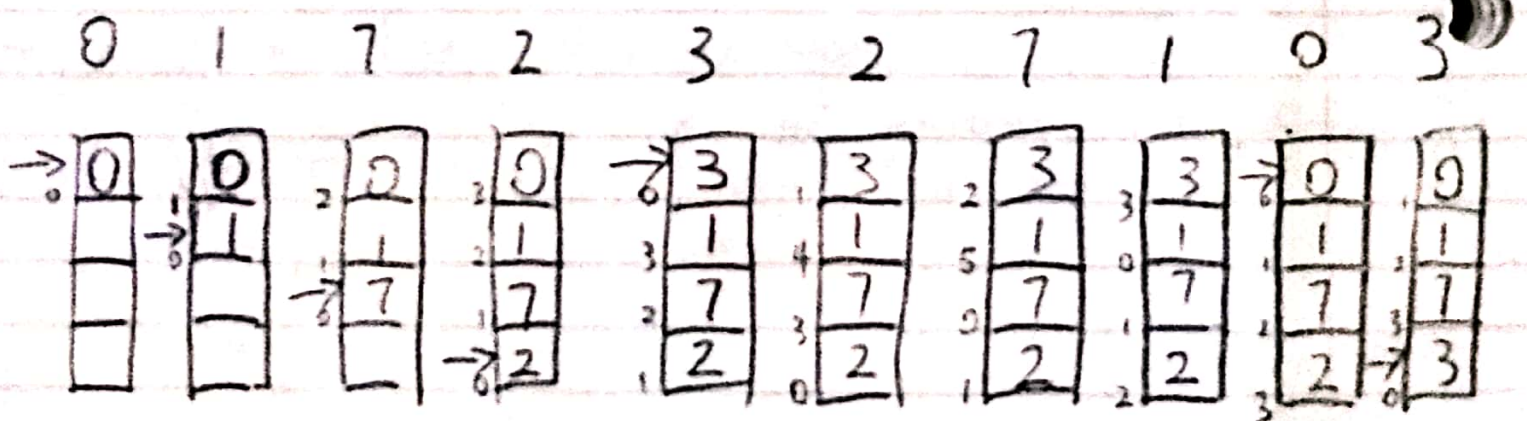
P257 #28
0172327103 4 frames, 8 pages.

FIFO.



There are total 6 faults.

LRU.



There are 7 faults.

P258 #38

int X[64][64]

4 page frames \rightarrow 128 words

We will need $64 \times 64 \div 128 = 32$ pages
Because the X is stored in row-major order,
one row of the array occupies half of a frame.

Fragment A.

The inner loop iterates through column^{order}, therefore there
will be one page fault for every two inner loop.

Total number of page fault is $64 \times 64 \div 2 = \underline{2048}$

Fragment B.

the inner loop iterates through row order.
Therefore there will be one page fault for every
two outer loop.

Total number of page fault is $64 - 2 = \underline{32}$

Fragment B will generate the lowest number
of page fault.