P254. #4

First fit:

Request	Hole Taken	Hole Left
12 MB	20 MB	10, 4, 8, 18, 7, 9, 12, 15
10 MB	10 MB	4, 8, 18, 7, 9, 12, 15
9 MB	18 MB	4, 8, 9, 7, 9, 12, 15

Best fit:

Request	Hole Taken	Hole Left
12 MB	12MB	10, 4, 20, 18, 7, 9, 15
10 MB	10MB	4, 20, 18, 7, 9, 15
9 MB	9 MB	4, 20, 18, 7, 15

Worset fit:

Request	Hole Taken	Hole Left
12 MB	20 MB	10, 4, 8, 18, 7, 9, 12, 15
10 MB	18 MB	10, 4, 8, 8, 7, 9, 12, 15
9 MB	15 MB	10, 4, 8, 8, 7, 9, 12, 6

next fit:

Request	Hole Taken	Hole Left
12 MB	20 MB	10, 4, 8, 18, 7, 9, 12, 15
10 MB	18 MB	10, 4, 8, 8, 7, 9, 12, 15
9 MB	9 MB	10, 4, 8, 8, 7, 12, 15

Page 254. #7

virtual address	offset	Frame	physical address
20	20	2	8212
4100	4	1	4100
8300	108	6	24684

Page 257. #28

28. If FIFO page replacement is used with four page frames and eight pages, how many page faults will occur with the reference string 0172327103 if the four frames are initially empty? Now repeat this problem for LRU.

FIFO:

Frame	Page	
0	~~0~~	3
1	~~1~~	0
2	7	
3	2	

~~0~~ → ~~1~~ → 7 → 2 → (3) → (0)

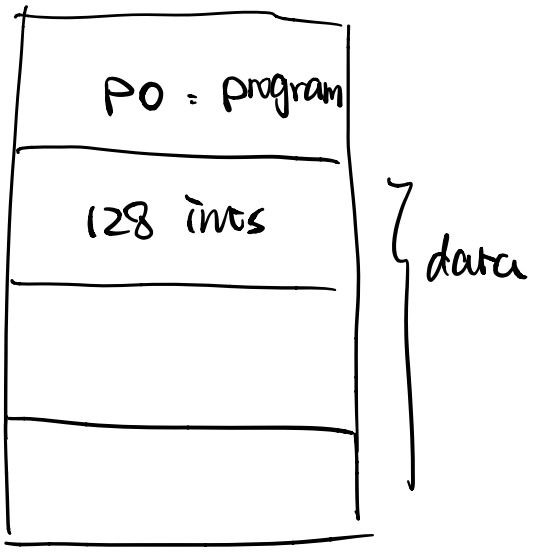
4 + 2 = 6 page faults

LRU:

Frame	Page	Count.
0	~~0~~ ~~3~~ 0	~~0~~ ~~4~~. 8
1	1	~~1~~ 7
2	7	~~2~~ 6
3	~~2~~ 3	~~3~~ ~~5~~ 9

4 + 3 = 7 page faults

Page 258. Q38.



each frame can store 2 rows

Assume program P0 is already loaded.

Fragment A:

since it operates columnwise

there will be a pagefault every 2 i

Assume pagefault at 0th row, so the data can be loaded into a frame, and no pagefault after the

last row

$$\#\text{pagefault} = (64 \div 2) * 64$$
$$= 2048$$

Fragment B:

It finishes the operation of a row before going to the next row

$$\#\text{pagefault} = 64 \div 2 = 32.$$

∴ fragment B has less pagefault.