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OS: ch 8

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8.1, 8.2, 8.5, 8.6, 8.11, 8.18

8.1:

2) Virtual Addresses are turned into Physical Addresses by searching through an index of references that represent a space in physical memory.

b)

i 1,052
1000 0011 100

$$1,052 = 1 \times 1,024 + 28$$
$$7 \times 1,024$$

$$\text{PA for } 1,052 = 7,168 + 1,052$$
$$\text{PA} = 8,220$$

page # =
VA / page size

$$\frac{1,052}{1,024} = 1$$

1 sets frame
7

ii 2,221

$$2,221 / 1,024 = 2$$

2 sets frame
fault

iii 5,499

$$5,499 / 1,024 = 5$$

5 sets frame
0

$$0 \times 1,024 = 0$$

$$\text{PA for } 5,499 = 0 + 5,499$$

$$\text{PA} = 5,499$$

8.2:

Page Size = $1kb = 1000$ bytes
each int is 4 bytes long

a) If a page is 1000 bytes and we have 4-page working set then we'd have 250 bytes for each set. So when the program runs over this you'd get a page fault

b) Maybe change the size or value of size constant to 100

8.5:

	A	B	C	D	A	B	E	A	B	C	D	E
1	A	A	A	D	D	D	E	E	E	E	E	E
2		B	B	B	A	A	A	A	A	C	C	C
3			C	C	C	B	B	B	B	B	D	D

8.6:

1	1	1	1	1	1	1	6	6	6	2	2	2	2	5	5	5	5
2	0	0	0	0	7	7	7	1	1	1	1	4	4	4	4	2	2
3		2	2	2	2	0	0	0	0	3	3	3	1	1	1	4	

8.11:

a) 400 ns, 200 ns to access base and 200 ns to access the word

b) 20 ns Penalty, 85% hit
Hit time + Miss rate \times Miss Penalty
 $200 + (.15 \times 20)$
 $= 203$ ns

c) A normal virtual memory scheme would have the effect of doubling the memory access time

8.18: