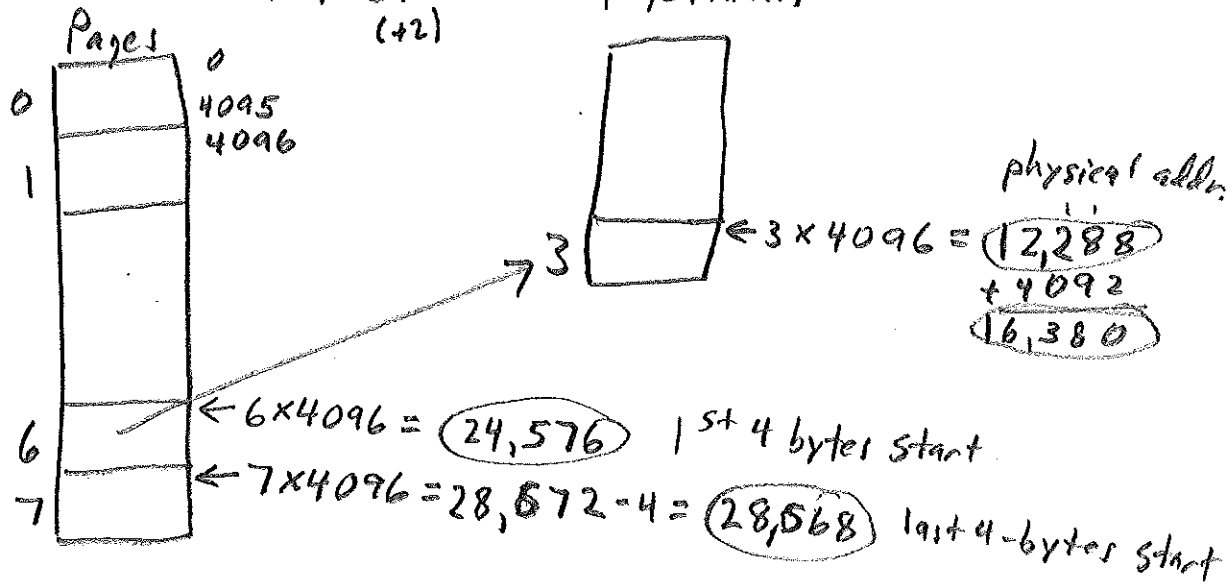


OS, HW #5 Ch. 6 6.5, 6.8, 6.10, 6.17

Prog. project 6.1 (+2)

Extra Credit: 6.2 (+2)

6.5



0.5

6.8 64-bit virtual addresses + 1 MB pages

0.5

$$\frac{2^{64}}{2^{20}} = 2^{44} \text{ pages} \times 2^2 \text{ bytes} = 2^{46} \text{ bytes in page table}$$

6.10  $2^{32} \times 2^4 = 2^{36}$  addr. space

a) Page Table chunk  $4KB = 2^{12}$

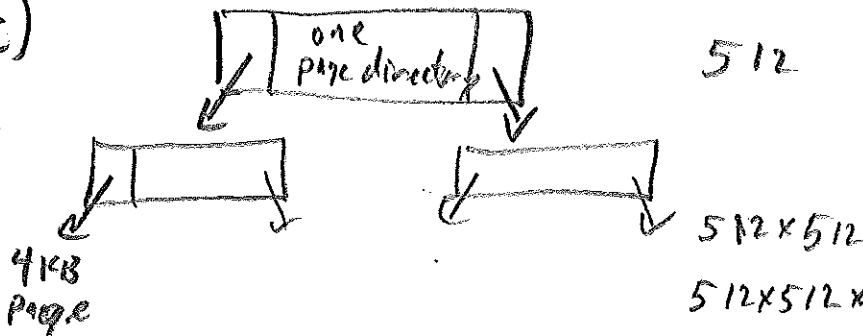
PT entry 8 bytes

$$\frac{2^{12}}{2^3} = 2^9 = 512 \text{ page table entries per page}$$

b)  $2^9 \times 2^{12} = 2^{21} = 2 \text{ MB}$

table "chunk" or directory page.

c)



(HW5-1)

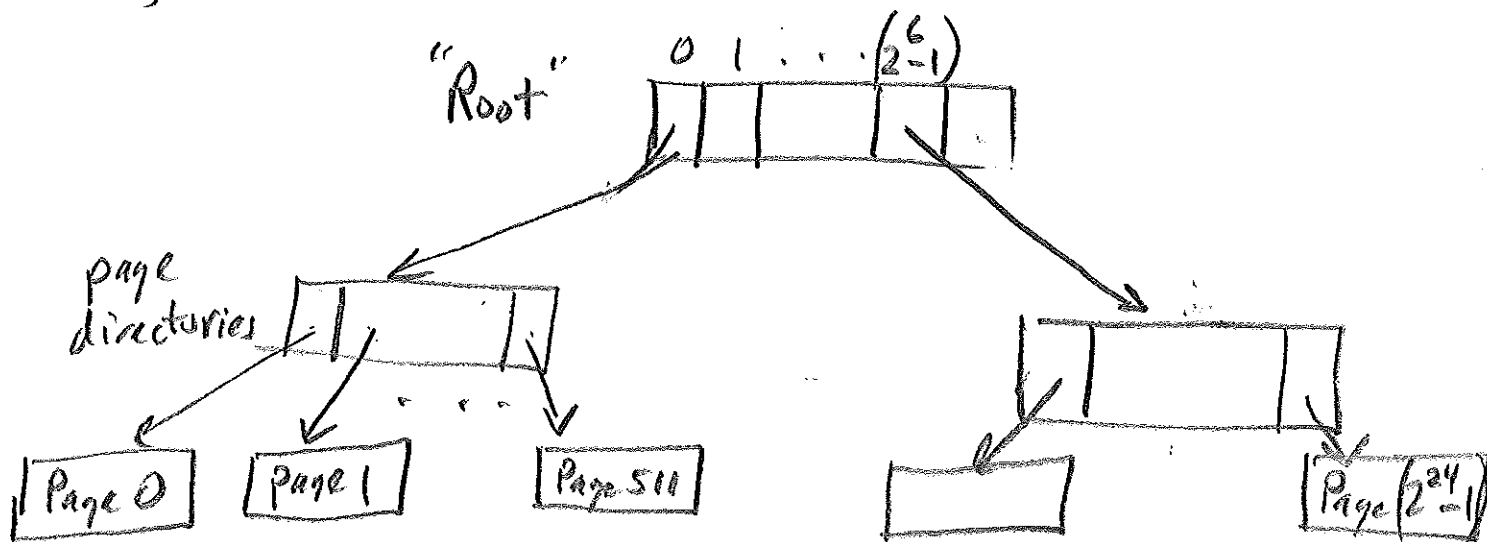
$$512 \times 512 \times 4KB = 2^9 \times 2^9 \times 2^{12} = 2^{30} = 16B$$

6.10

d)

$\frac{2^{36}}{2^{30}} = 2^6$  page directories pointed at by root

e)



6.17(a) It required "work" to zero out a page on the zero page list, so a free page is preferred.

(b) The standby pages have been used more recently than the free pages, so the standby pages might be used in a soft page fault if accessed again to avoid a disk access.

(c) Modified pages must be 1st be written back to disk to update the corresponding page on the disk.