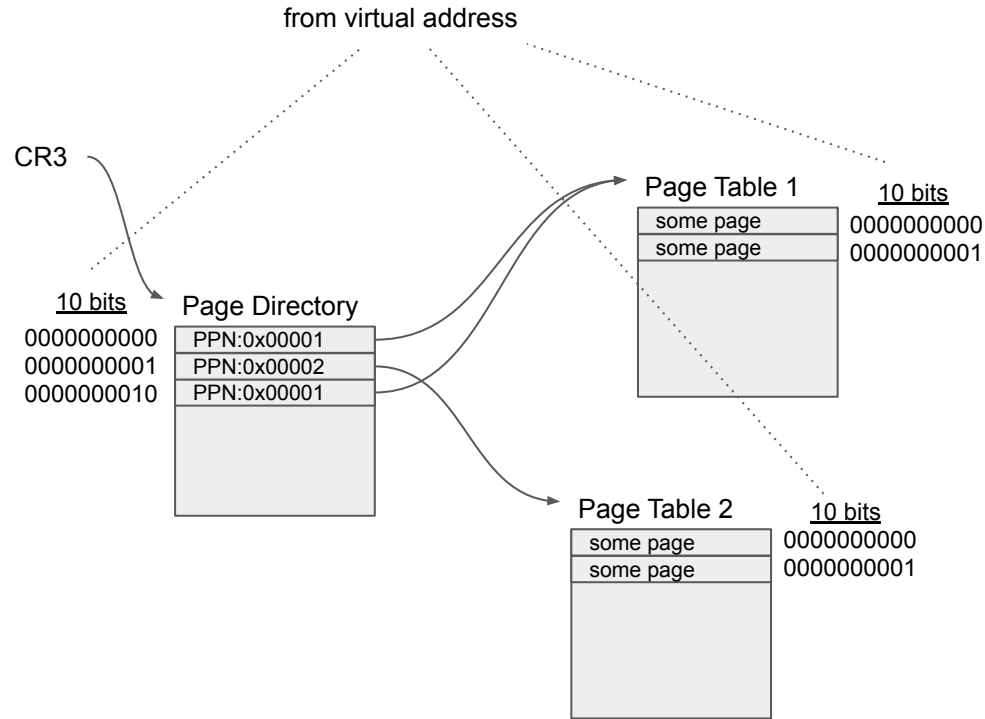


Winter 2018, CS 238P Midterm
Solution for Question 1

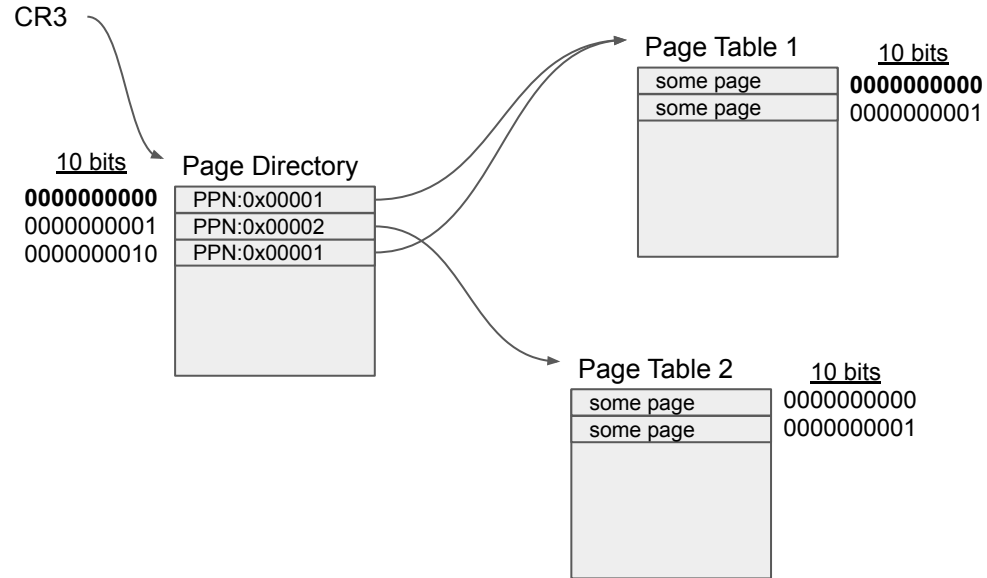
Prepared for Spring 2019, CS 238P
Aftab Hussain



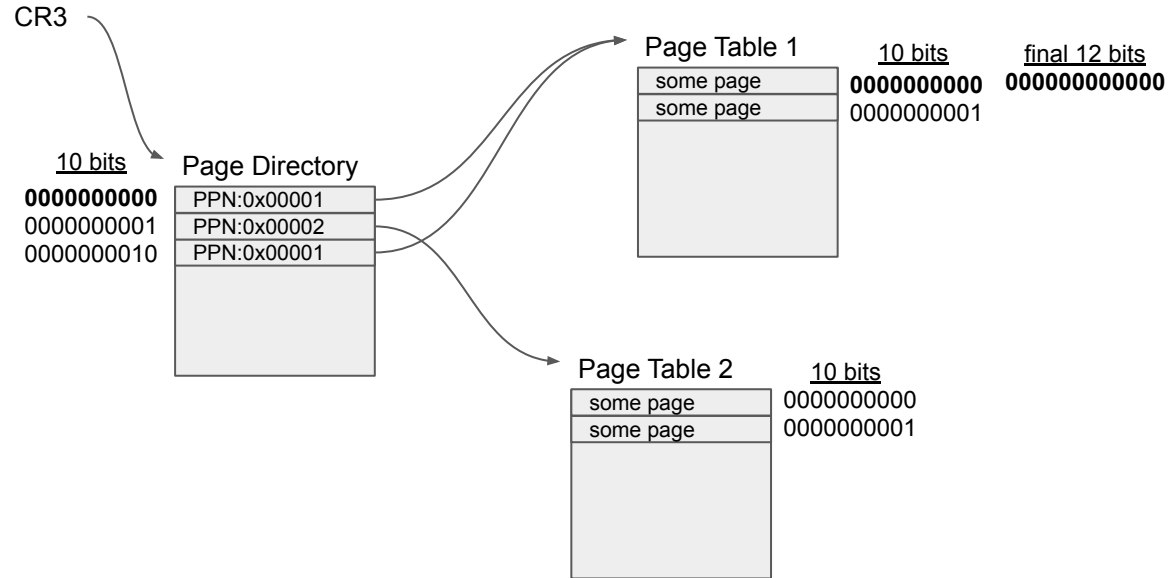
> From the Page Directory, we get 3 virtual address ranges that are mapped.

> We don't care about the exact contents of the entries in Page Table 1 and Page Table 2 in order to calculate the ranges. We only care about the minimum and maximum virtual addresses bounded by these entries.

Constructing first virtual address range



Constructing first virtual address range



Constructing first virtual address range

range min
0x0

CR3

10 bits
0000000000
0000000001
0000000010

Page Directory

PPN:0x00001
PPN:0x00002
PPN:0x00001

Page Table 1

some page
some page

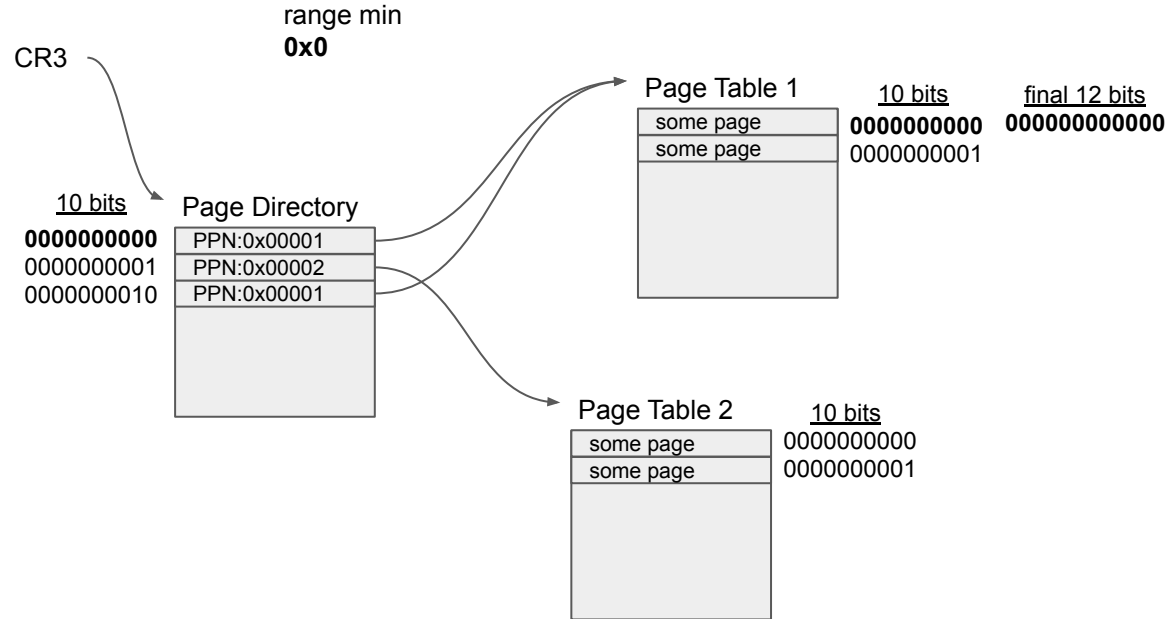
10 bits
0000000000
0000000001

final 12 bits
000000000000

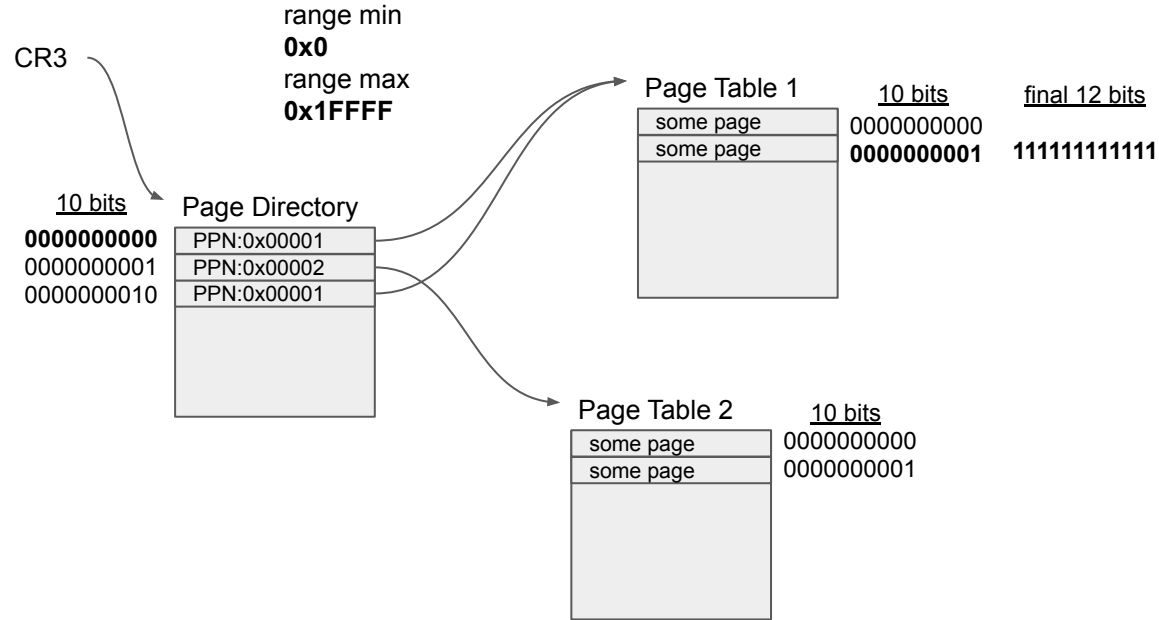
Page Table 2

some page
some page

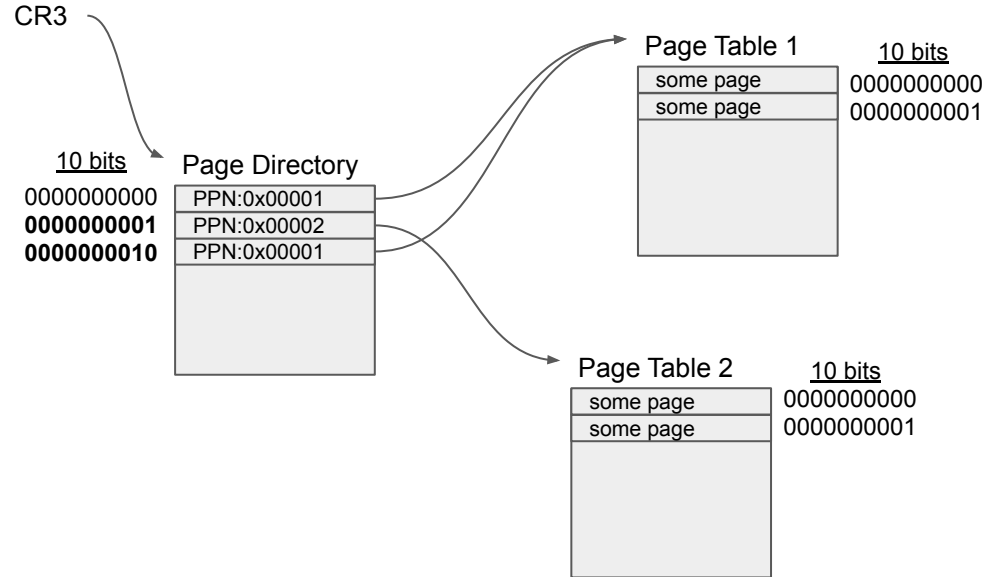
10 bits
0000000000
0000000001



Constructing first virtual address range



Do similarly for
the next two ranges.



We get:

0x0 - 0x1FFFF

0x400000 - 0x401FFF

0x800000 - 0x801FFF

CR3

10 bits

0000000000
0000000001
0000000010

Page Directory

PPN:0x00001
PPN:0x00002
PPN:0x00001

Page Table 1

10 bits

some page
some page

0000000000
0000000001

Page Table 2

10 bits

some page
some page

0000000000
0000000001