

34 MMU

Monday, November 30, 2015 09:59

Friday is Candy, ask about anything, if Peter can't answer, then he'll give you a piece of candy

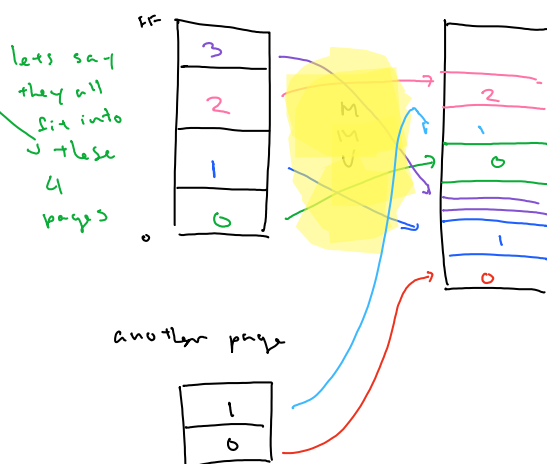
the **Memory Management Unit (MMU)**

- x86 Magical Piece of Circuitry
- When you run a program, the OS puts together a piece of Memory, that the program goes into the memory, turns into a process
 - A process is customarily, thinks it owns all of the machine
 - An illusion, because its one of like 150
 - A process thinks it looks like



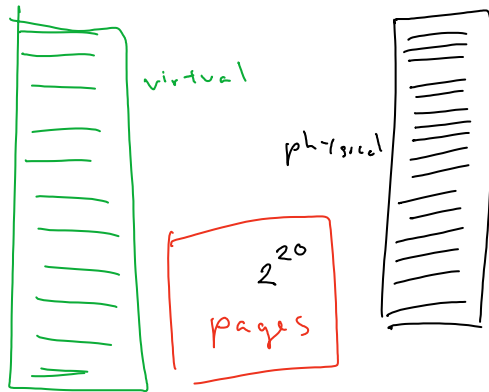
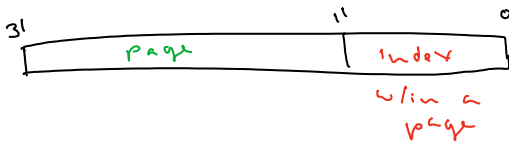
- MMU allows the process to pretend it starts at address 0
- **MMU turns virtual addresses into physical addresses**

Standard Size of a Page in x86 is 4kB (4096 Bytes)



The mapping constantly changes

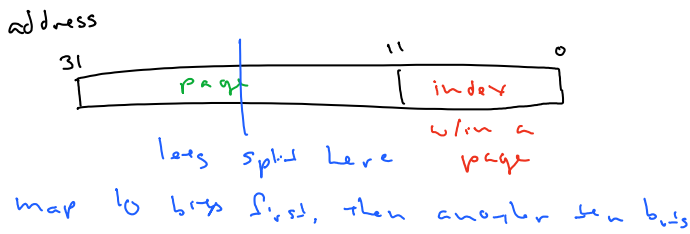
address



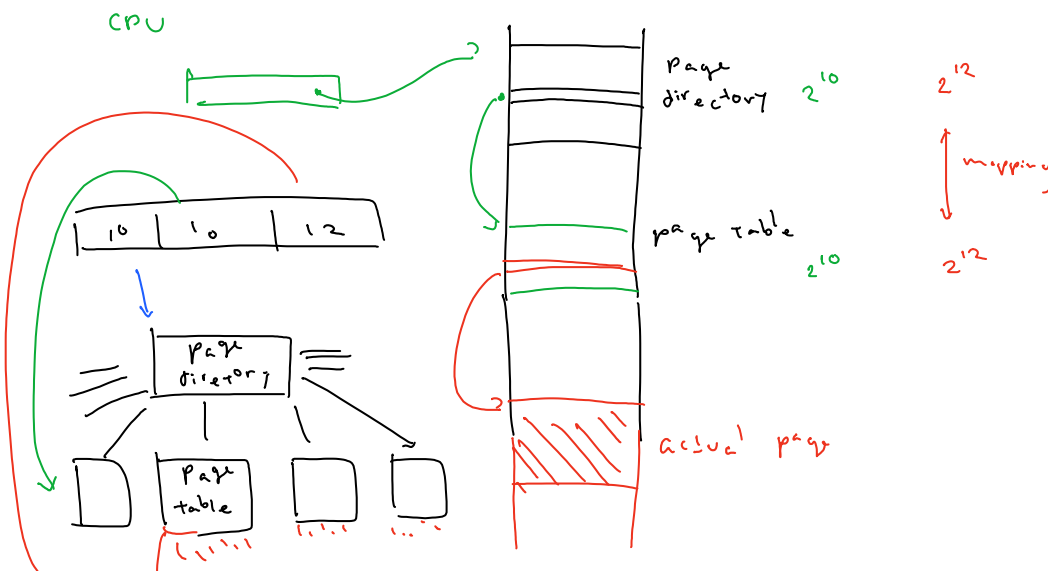
$2^{20} \leftrightarrow 2^{20}$
mapping

one mapping
20 bits \Rightarrow more convenient
32 bits

worst case mapping
 2^{22} bytes \rightarrow 4MB



map 10 bits first, then another ten bits





Add code to quickly map 2^{20} to 2^{20}

TLB - Translation Look Aside

Buffer