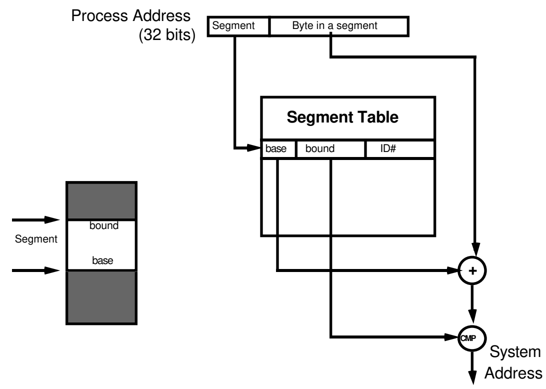
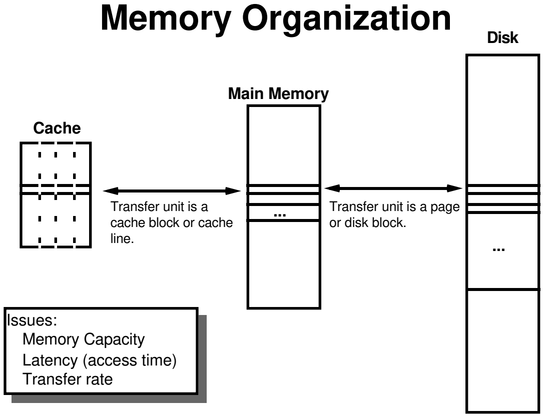
Managing Memory

Though it is difficult to create a fast instruction execution engine, memory systems can present even more serious complications. As we will see, a well designed memory system will probably contribute more to the overall performance of a computer than a thoughtfully designed ISA. Today, we review basic concepts, with a deeper discussion of these issues later.

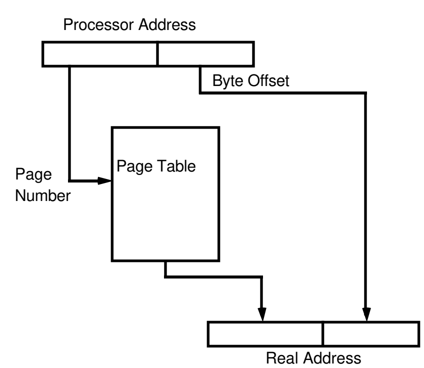
Memory Segmentation



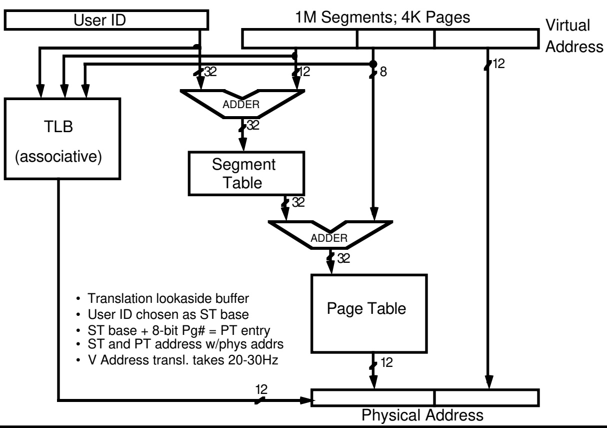
Memory Organization



Paging



Virtual Addressing



- Translation lookaside buffer
- User ID chosen as ST base
- ST base + 8-bit Pg# = PT entry
- ST and PT address w/phys addrs
- V Address transl. takes 20-30Hz

Virtual Addressing Example