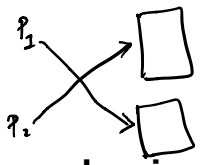
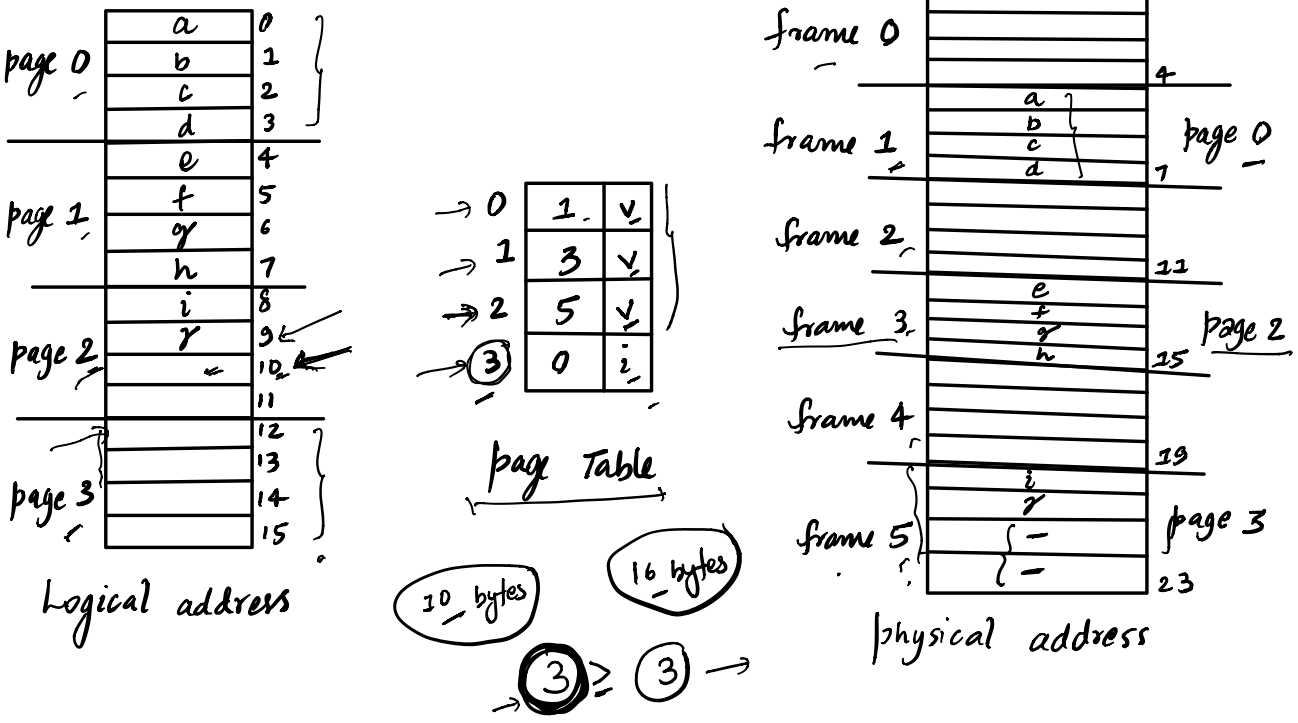
MEMORY PROTECTION IN PAGING



- Protection bits can be associated along with the frame number in the page table
- One protection bit can be defined to check whether the page is read only page or not.
- Another bit called valid-invalid bit can be associated with the page table to check whether a page exists in process logical address space or not

Assume that the System has 4-bit logical address space.

page size = 4 bit



- Any reference to page number 3 in the page table will cause segmentation fault
- The program extends only till logical address 9. What if we try to access memory location 10?

(0-15) (0-9)

- Drawback: Rarely does a program uses all its address range. It would be a huge waste of memory if we keep a page table entry for every page in the address range
- Some systems provide hardware support in form of page-table length register(PLTR) to indicate the size of the page table
- If page number >= PLTR, segmentation fault is raised

OTHER IMPORTANT BITS ASSOCIATED WITH PAGE TABLE

- Referenced bit - whether the page was accessed in the last clock cycle or not
- Dirty or modified bit - whether the page has been modified or not (1, 0)
- Cache enables/disabled bit - whether caching is enabled for the page or not