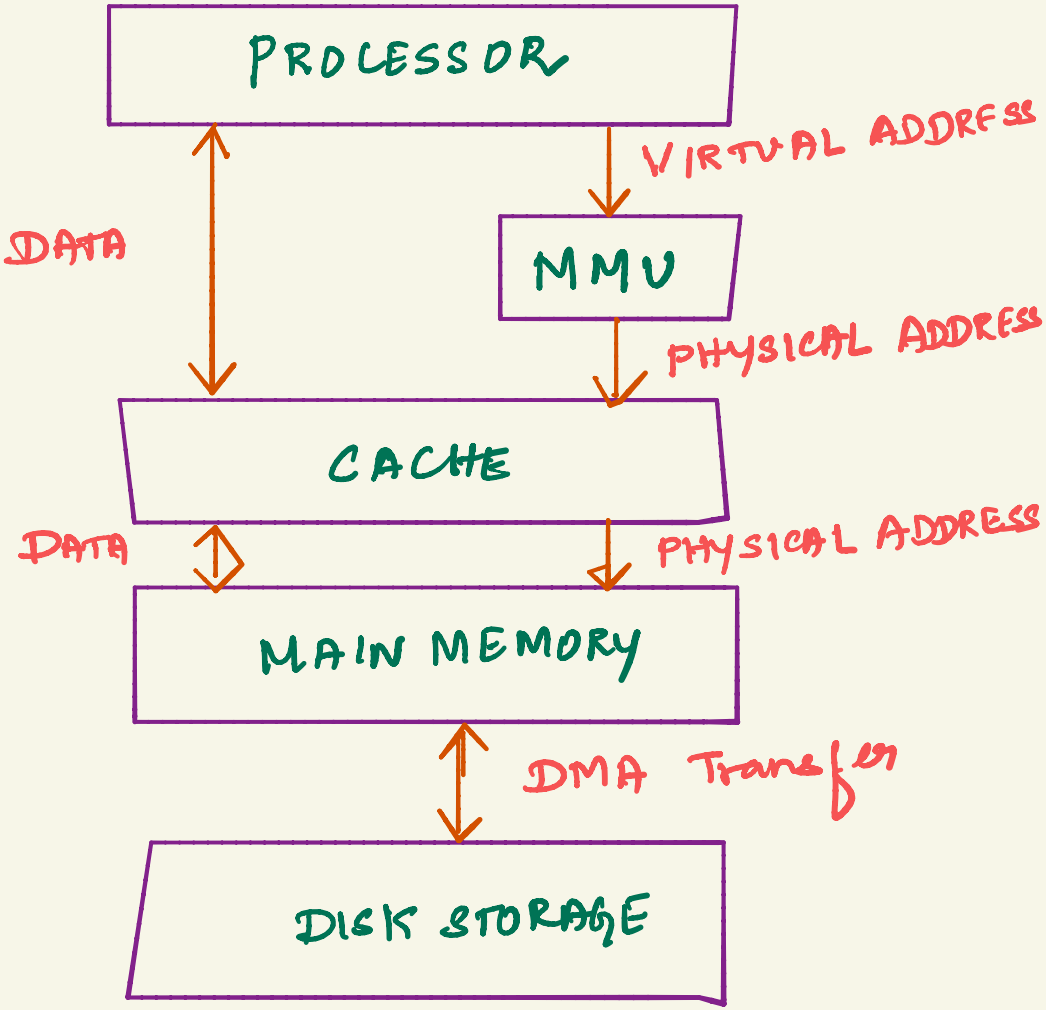
Virtual Memory Organization



→ physical memory is not as large as the address space of the processor.

→ $2^{32} = 2^2 2^{30} =$ 4 Gbytes

→ Size of the memory will range from 1 GB to 4 GB.

→ If the program not completely fits into the main memory, parts (not currently executed) will be stored in Secondary memory, later while execution those parts are brought into main memory.

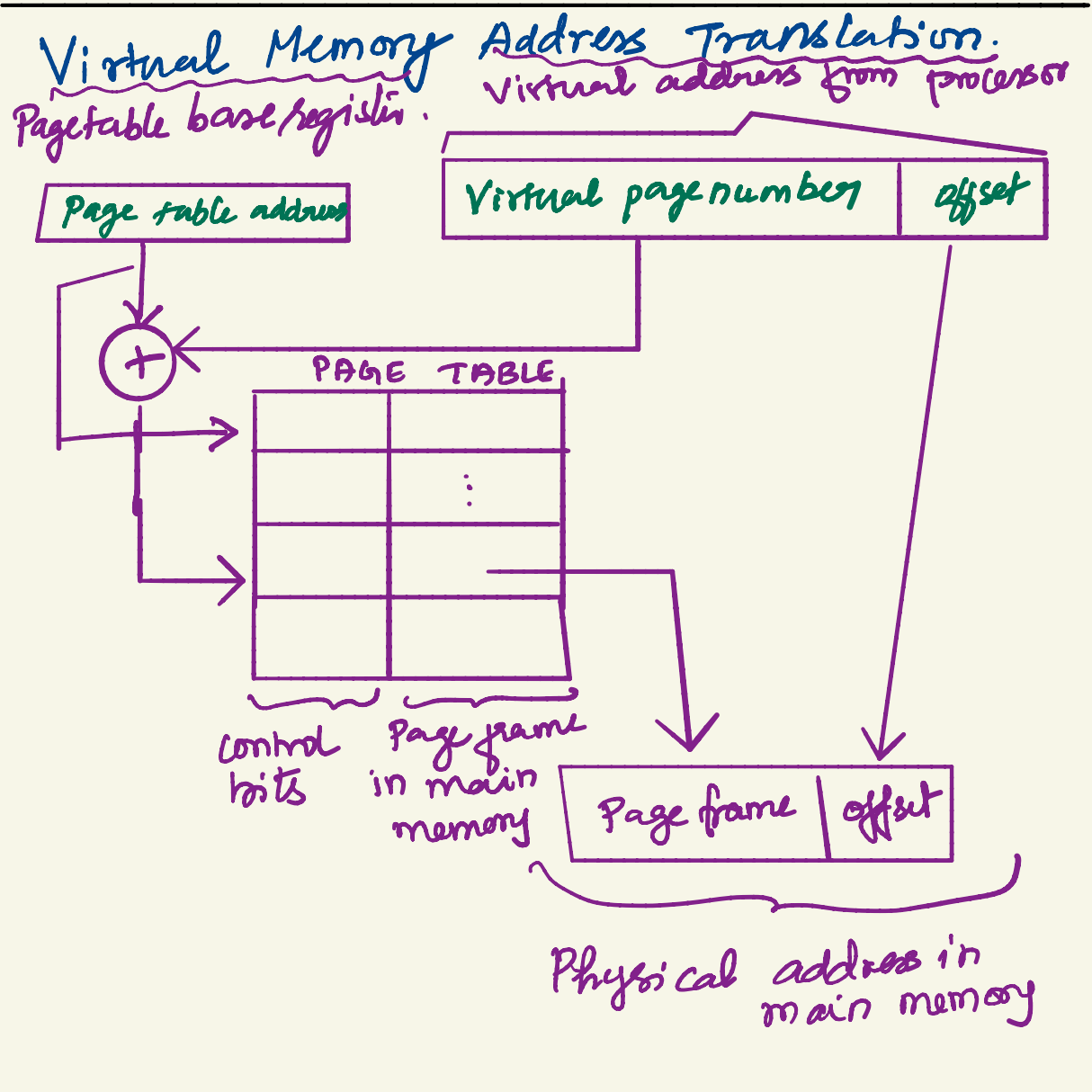
→ "These actions are automatically performed by operating system using a scheme — Virtual Memory."

→ The _____ bridges the speed gap between the processor and main memory and is implemented in _____ [H/w (or) S/w]

→ The _____ mechanism bridges the big and speed gaps between the main memory and secondary storage and implemented in _____ [H/w (or) S/w]

cache techniques and virtual memory techniques are _____ [similar / different].

Virtual Memory Address Translation.



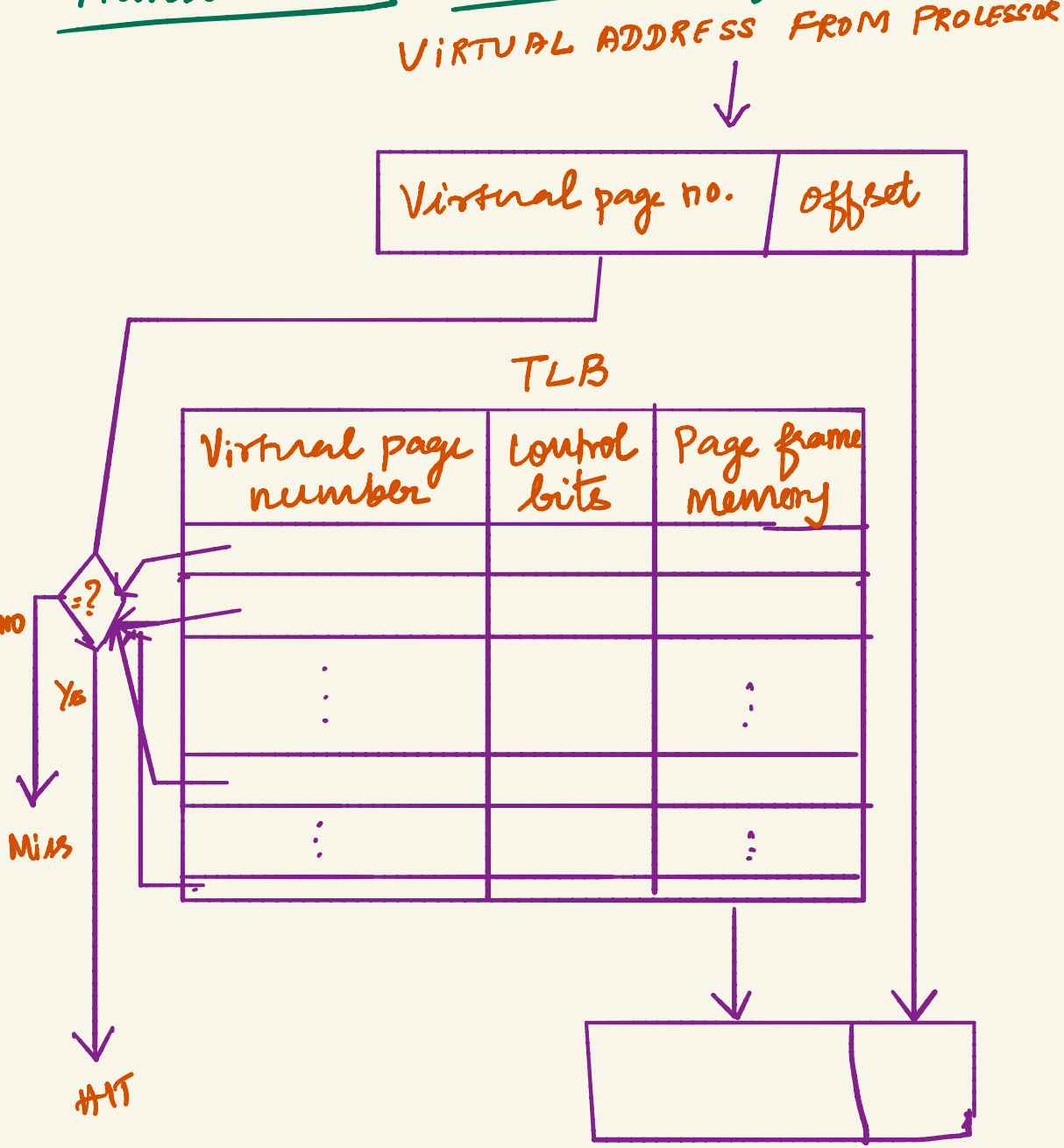
* Information about the main memory location of each page is kept in the page table.

* An area in a main memory that can hold one page is called page frame

* The starting address of page table is kept in the page table base register.

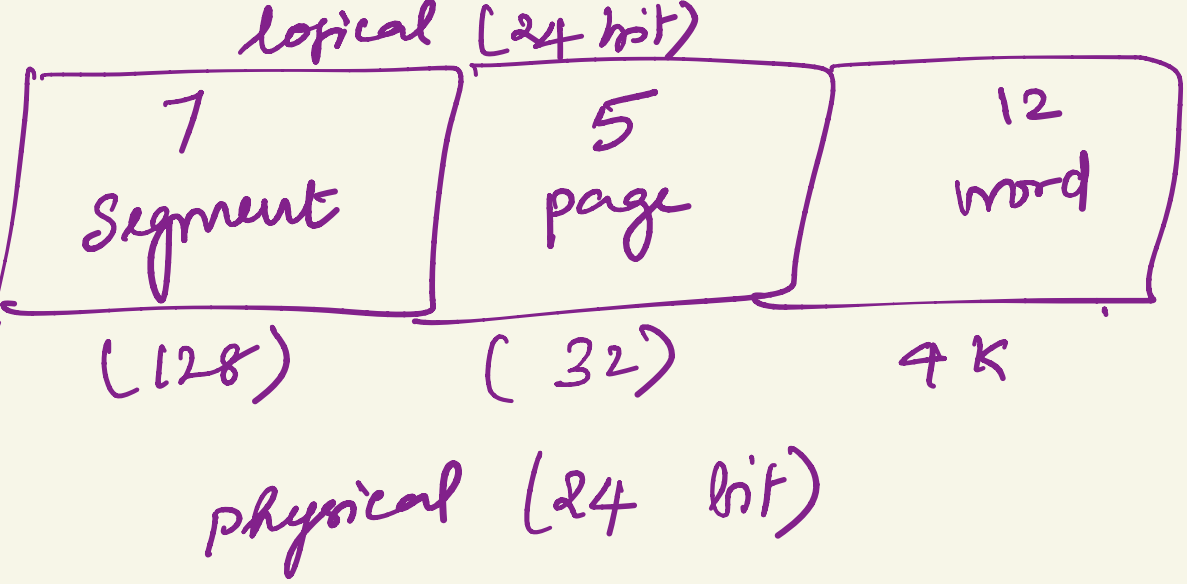
* Control bits < Valid / modified

Translation Look aside Buffer [TLB]



Example problem 1:

The logical address space in a computer system consists of 128 segments. Each segment can have upto 32 pages of 4K words in each. Physical memory consist of 4K blocks of 4K words in each. Formulate the logical and physical address formats.



physical (24 bit)