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Operating System

Lab : 14

Logical Addressing:

In computing, a logical address is the address at which an item (memory cell, storage element, network host) appears to reside from the perspective of an executing application program.

A logical address may be different from physical address due to the operation of an address translator or mapping function. Such mapping functions may be, in the case of a computer memory architecture, a memory management unit (MMU) between the CPU and the memory bus.

Use of Logical Address:

Logical address is used to reference to access the physical memory location. A logical address is generated so that a user program never directly access the physical memory and the process donot occupies memory which is acquired by another process thus corrupting that process.

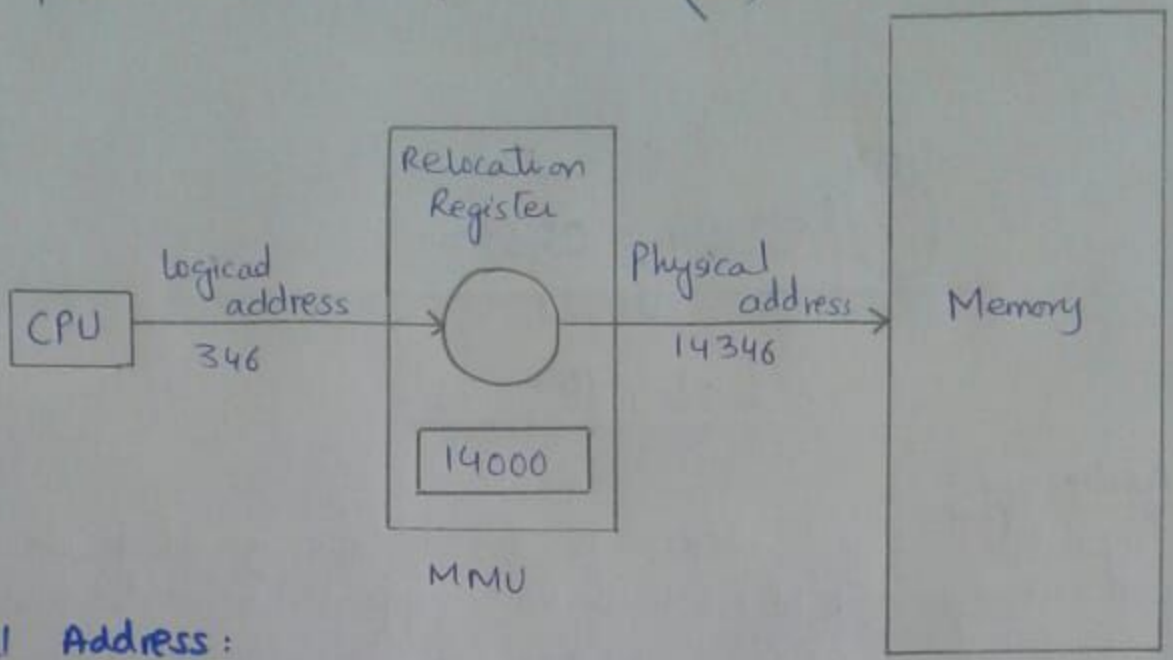
On which layer the logical address can work write anyone example.

Data Link and Physical Layers:

Layer 2 (Data link) receives packets from layer 3. whereas Layer 4 perfoms logical addressing (IPV4, IPV6).

Layer 2 perfoms Physical addressing. It adds sender and receiver MAC addresses to the data packet to form a data unit called a frame. Layer 2 enables frames to be transported via local media (e.g copper wire, optical fiber, or air). This layer is embedded as software in

our computer's Network interface card (NIC)



Logical Address:

- The CPU generates the logical address (here 346).
- The MMU will generate the base address (here, 14000) which is stored in the Relocation Register.
- The value of relocation register (here, 14000) is added to the logical address to get the physical address ie 14000 + 346 = 14346 (Physical address).

Two parts of logical Address:

- **Page Number:**
  A page number in which the address resides.
- **offset:**
  offset from the begining of that page.

Which devices uses logical addressing system?

Router can use logical as well physical addressing system.

How many bits are in a logical address?

Logical address space contains 32 pages and to represent 32 pages we need 5 bits ($2^5 = 32$) and each page contain 2048 words therefore the offset or "d" parameter can be represented by 11 bits ($2^{11} = 2048$). so total no of bits to represent logical address = 5+11 = 16