RAMA UNIVERSITY

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FACULTY OF ENGINEERING & TECHNOLOGY

BCS-501 Operating System

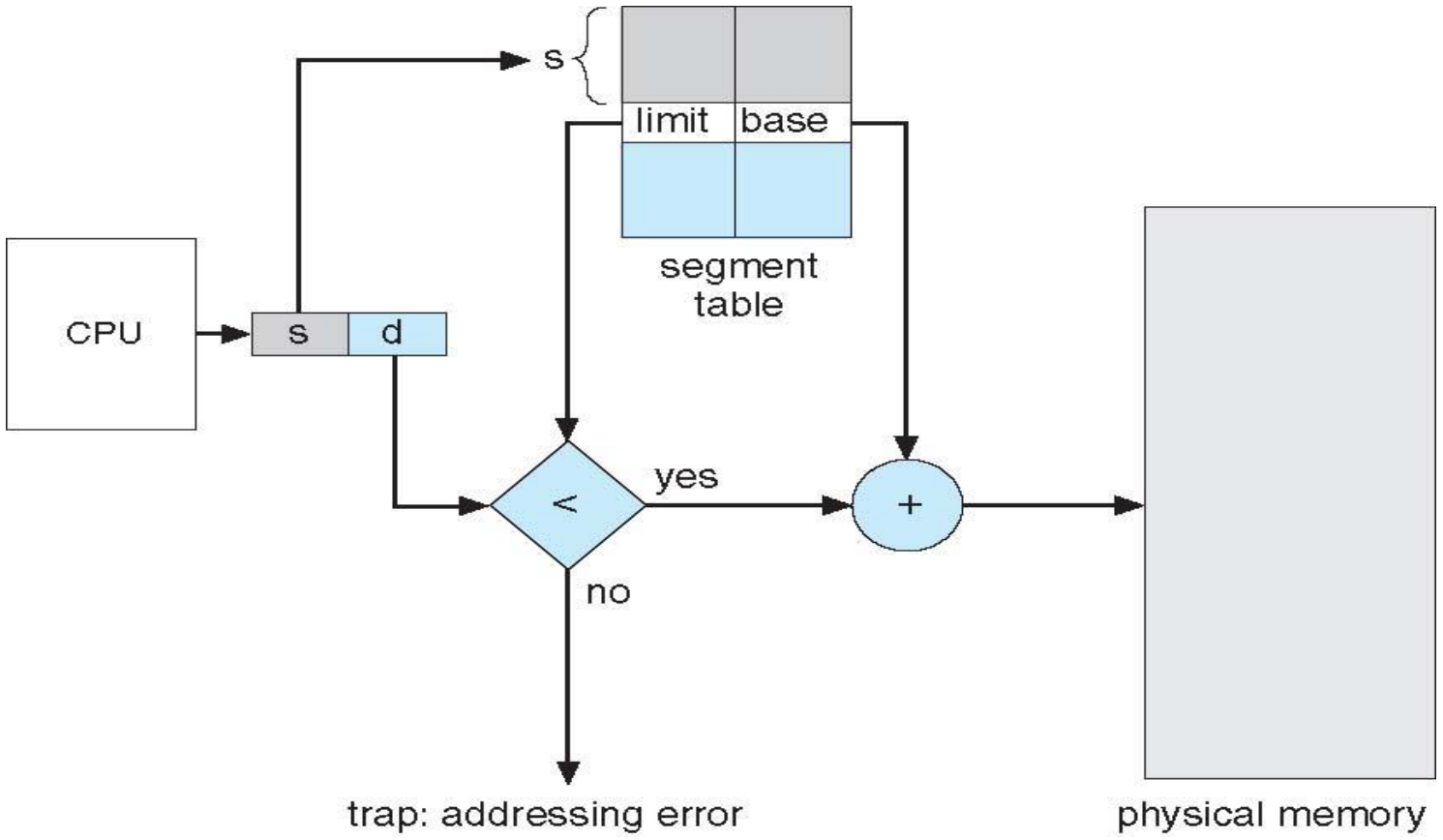
Lecturer-22

Manisha Verma
Assistant Professor
Computer Science & Engineering

MEMORY MANAGEMENT

- Segmentation Hardware
- Paging
- Address Translation Scheme
- Paging Hardware

Segmentation Hardware



Paging

•Physical address space of a process can be noncontiguous; process is allocated physical memory whenever the latter is available

- ➢Avoids external fragmentation
- ➢Avoids problem of varying sized memory chunks

•Divide physical memory into fixed-sized blocks called frames

- ➢Size is power of 2, between 512 bytes and 16 Mbytes

•Divide logical memory into blocks of same size called pages
Keep track of all free frames

•To run a program of size *N* pages, need to find *N* free frames and load program

•Set up a page table to translate logical to physical addresses

•Backing store likewise split into pages

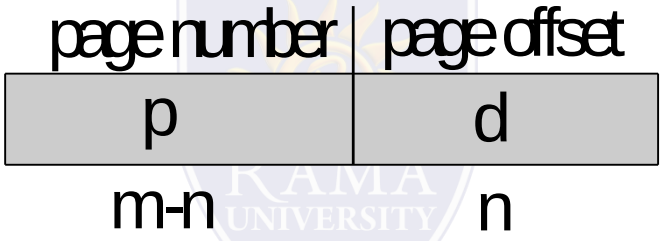
•Still have Internal fragmentation

Address Translation Scheme

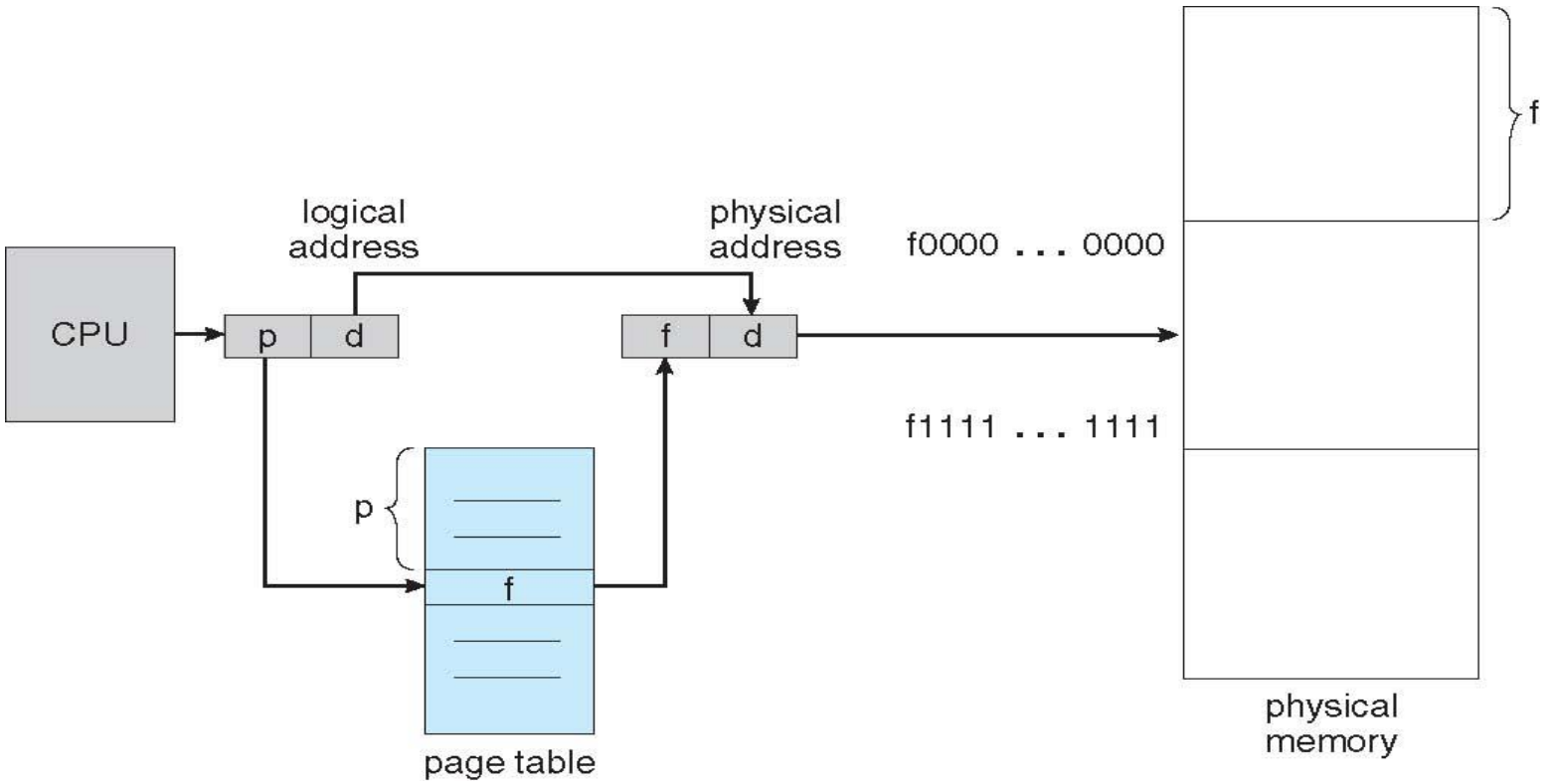
•Address generated by CPU is divided into:

- ➢Page number (*p*) – used as an index into a page table which contains base address of each page in physical memory

- ➢Page offset (*d*) – combined with base address to define the physical memory address that is sent to the memory unit



Paging Hardware



MCQ

In FIFO page replacement algorithm, when a page must be replaced…….
A. oldest page is chosen
B. newest page is chosen
C. random page is chosen
D. none of the mentioned

Effective access time is directly proportional to:
A. page-fault rate
B. hit ratio
C. memory access time
D. none of the mentioned

Which algorithm chooses the page that has not been used for the longest period of time whenever the page required to be replaced?
A. first in first out algorithm
B. additional reference bit algorithm
C. least recently used algorithm
D. counting based page replacement algorithm

he first fit, best fit and worst fit are strategies to select a _____.
A. process from a queue to put in memory
B. processor to run the next process
C. free hole from a set of available holes
D. All of these

In internal fragmentation, memory is internal to a partition and ..
A. is being used
B. is not being used
C. is always used
D. None of these