# FACULTY OF ENGINEERING & TECHNOLOGY

## BCS-501    Operating System
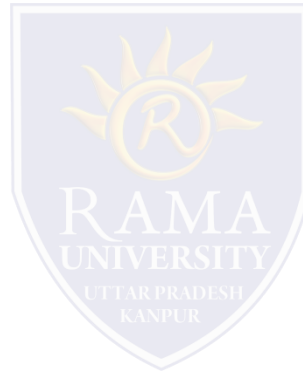
## Lecturer-25

**Manisha Verma**
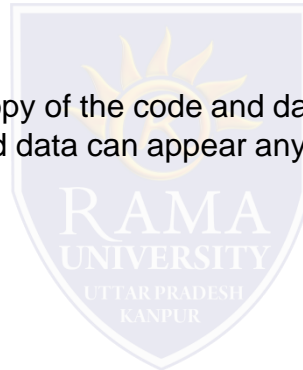Assistant Professor
Computer Science & Engineering

# Pages

➢**Shared Pages**

➢**Shared Pages Example**

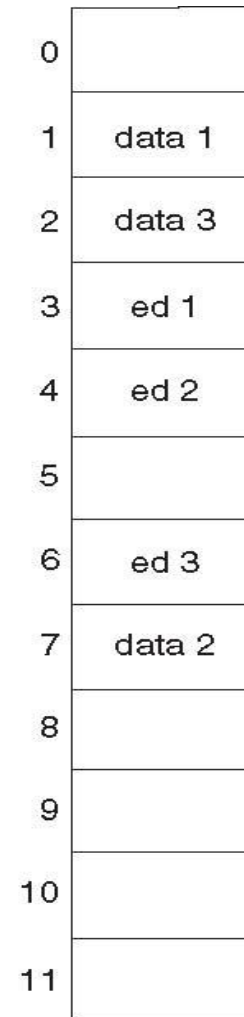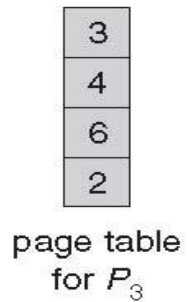➢**Structure of the Page Table**

➢**Hierarchical Page Tables**

# Shared Pages

- Shared code
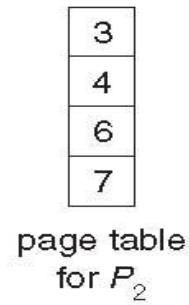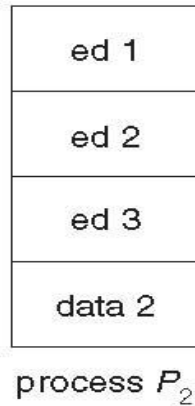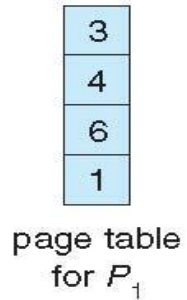
    - One copy of read-only (reentrant) code shared among processes (i.e., text editors, compilers, window systems)
    - Similar to multiple threads sharing the same process space
    - Also useful for interprocess communication if sharing of read-write pages is allowed


- Private code and data
    - Each process keeps a separate copy of the code and data
    - The pages for the private code and data can appear anywhere in the logical address space

# Shared Pages Example

•Memory structures for paging can get huge using straight-forward methods
  •Consider a 32-bit logical address space as on modern computers
  •Page size of 4 KB (212)
  •Page table would have 1 million entries (232 / 212)
  •If each entry is 4 bytes -> 4 MB of physical address space / memory for page table alone
    •That amount of memory used to cost a lot
    •Don't want to allocate that contiguously in main memory
•Hierarchical Paging
•Hashed Page Tables
•Inverted Page Tables
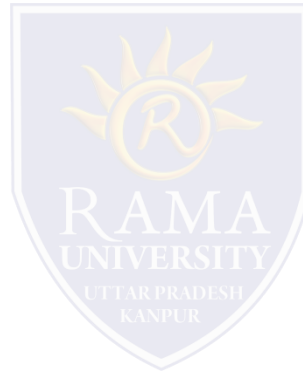
# Hierarchical Page Tables

•Break up the logical address space into multiple page tables

•A simple technique is a two-level page table

•We then page the page table determine the base address of memory location
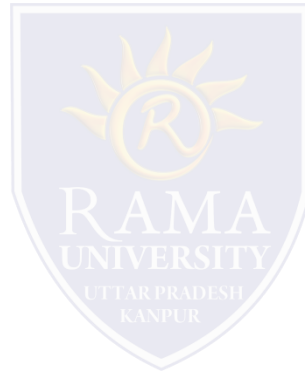
What is contained in the page table?
A. Base address of each frame and corresponding page number
B. Memory address and corresponding page number
C. File name and corresponding page number
D. None of Above

The chunks of a memory are known as
A. Sector
B. Offset
C. Page
D. Frame

Which of the following is an essential file of a MS-DOS boot disk?
A. COMMAND.COM
B. START.COM
C. TREE.COM
D. VER.COM
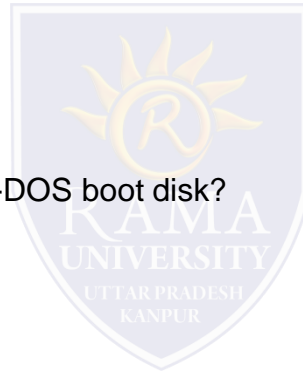
Which of the following resources must be protected by the operating system?
A. I/O
B. Memory
C. CPU
D. All of the above

Which of the following is major activities of an operating system in regard to secondary-storage management?
A. Free-space management
B. Storage allocation
C. Disk scheduling
D. All of the above