



Module 13

Operating Systems Two

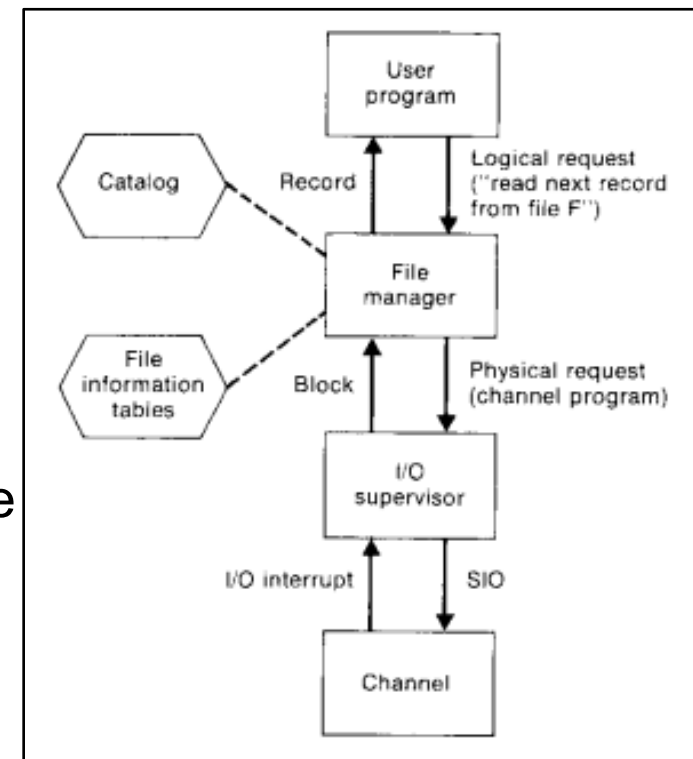


Module Thirteen

- This week, we are going to talk about :
- Operating Systems: Part Two
- Hardware Independent Tasks
 - File Processing
 - Job Scheduling
 - Resource Allocation
 - Data Security
- Design Options

File Processing

- Channel program
 - Inconvenient
 - Channel #, drive #, record address (cylinder, sector)
 - Wait - completion, device busy
- File manager
 - The way applications may access data files.
 - Programmers do not need to develop file management software routines.
 - Between user program and I/O server
 - Logical request - filename, record key

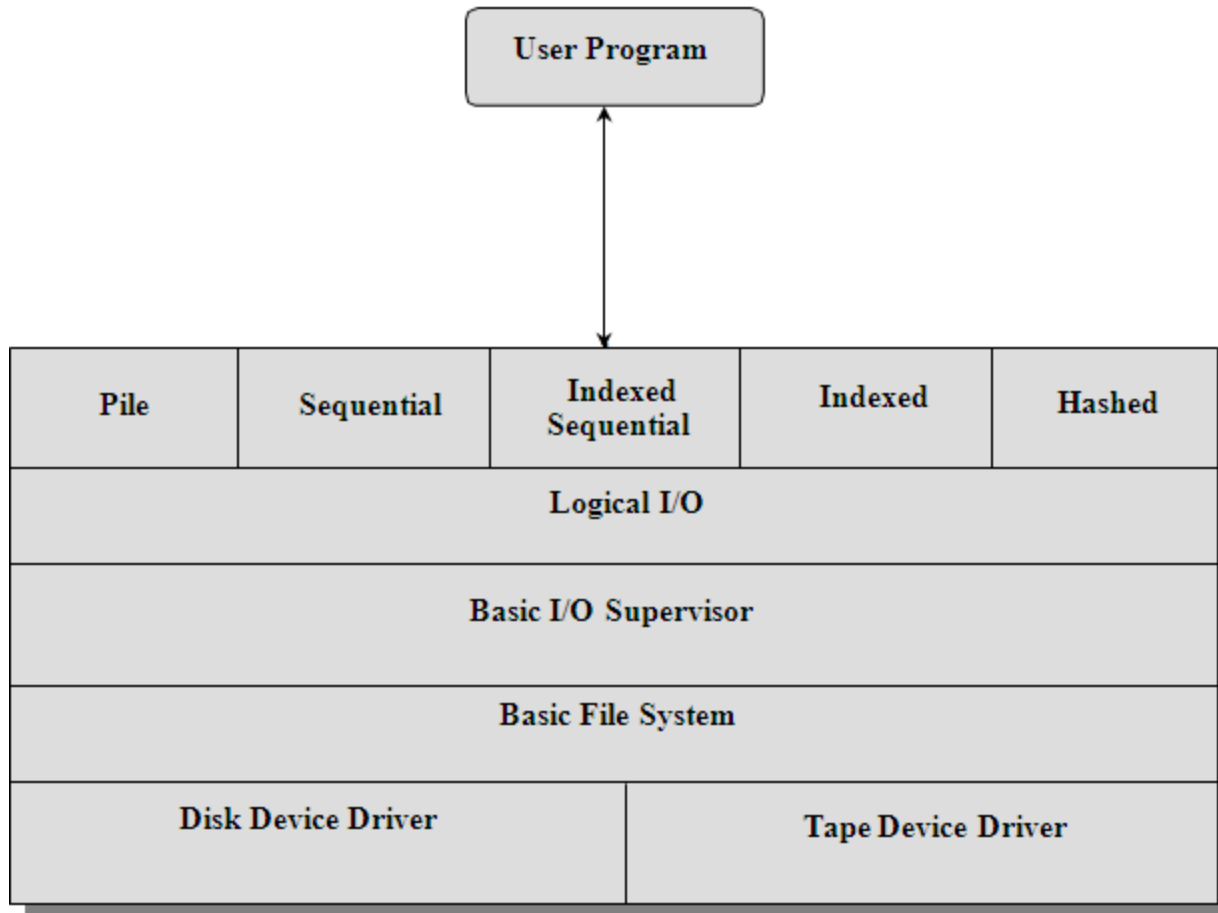




Terms Used with Files

- Field - basic element of data
 - contains a single value
 - characterized by its length and data type
- Record - collection of related fields treated as a unit
example: employee record
- File - collection of similar records
 - treated as a single entity
 - have unique file names
 - may restrict access
- Database - collection of related data
 - relationships exist among elements

File System Software Organization





Organization

- Device Drivers
 - Lowest level
 - Communicates directly with peripheral devices
 - Responsible for starting I/O operations on a device
 - Processes the completion of an I/O request
- Physical I/O
 - Deals with exchanging blocks of data
 - Concerned with the placement of blocks
 - Concerned with buffering blocks in main memory



Organization

- Basic I/O Supervisor
 - Responsible for file I/O initiation and termination
 - Control structures are maintained
 - Concerned with scheduling access to optimize performance
 - Part of the operating system
- Logical I/O
 - Allows users and applications to access records
 - Maintains basic data about file
- Access Method
 - Reflect different file structures
 - Different ways to store and process data

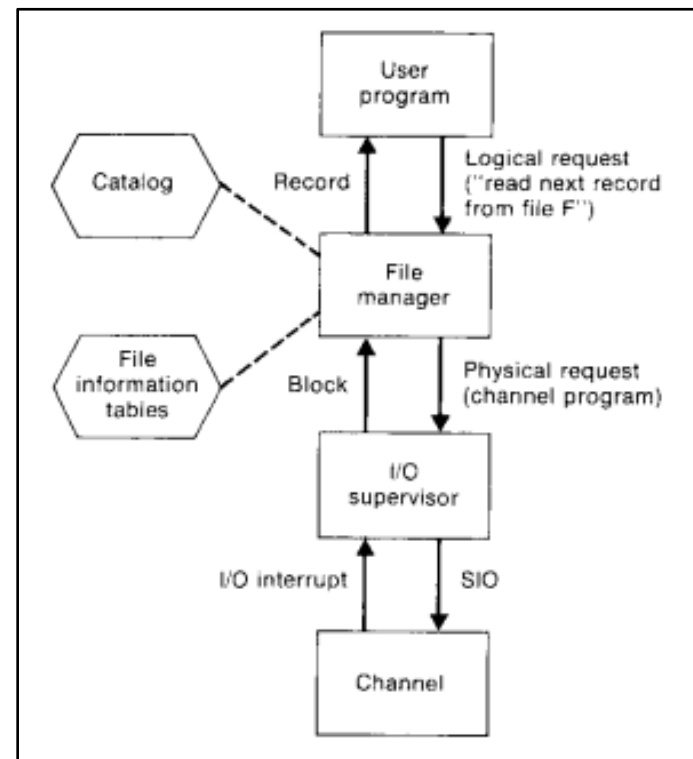


Criteria for File Organization

- Rapid access
 - needed when accessing a single record
 - not needed for batch mode
- Ease of update
 - file on CD-ROM will not be updated, so this is not a concern
- Economy of storage
 - should be minimum redundancy in the data
 - redundancy can be used to speed access such as an index
- Simple maintenance
- Reliability

File Management System

- Catalog - File Information Table
- Open File process
- Buffers, work areas, pointers
 -
 - File Status Block
 - Double Buffers





Functions of File Management

- Identify and locate a selected file
- Use a directory to describe the location of all files plus their attributes
- On a shared system describe user access control
- Blocking for access to files
- Allocate files to free blocks
- Manage free storage for available blocks



Summary

- Operating Systems Part Two
File Manager

Next: Job Scheduling