

File System Solution

- File System

- A collection of individual files accessed by applications programs

- Limitations

- Separated and Isolated Data
 - Data Duplication
 - Application Program Dependencies
 - Incompatible Files
 - Lack of Data Sharing



Database Solution

- Database
 - A structure that contains data
- Organize Data through
 - Entities
 - Attributes
 - Relationships



Database Management Systems

- A program, or a collection of programs through which users interact with a database
- Popular DBMS:
 - Microsoft Access
 - MySQL
 - PostgreSQL
 - MongoDB(NoSQL)



Advantage of DBMS

- Getting more information from the same amount of data
- Sharing data
- Balancing conflicting requirements
- Controlling redundancy
- Facilitating consistency
- Referential integrity
- Expanding security
- Increasing productivity
- Providing data independence



Disadvantage of DBMS

- Increased complexity
- Greater impact of failure
- More difficult recovery
- Larger file size



When is a DBMS Not Appropriate?

- In short, when the advantages cannot outweigh the disadvantages:
 - Database is small with a simple structure
 - Applications are simple, special purpose and relatively static.
 - Applications have real-time requirements
 - Examples: Traffic signal control
 - ECU patient monitoring
 - Concurrent, multi-user access to data is not required.