Storage and access

- *Instructor*

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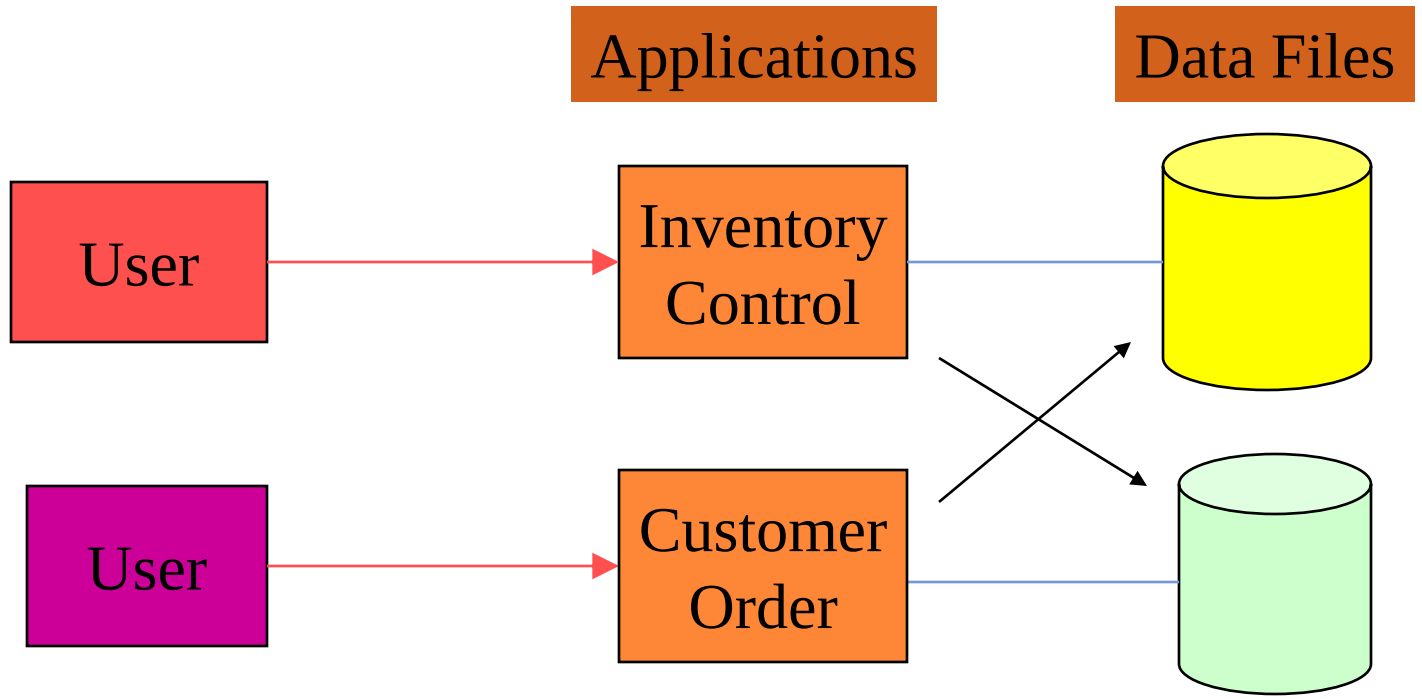
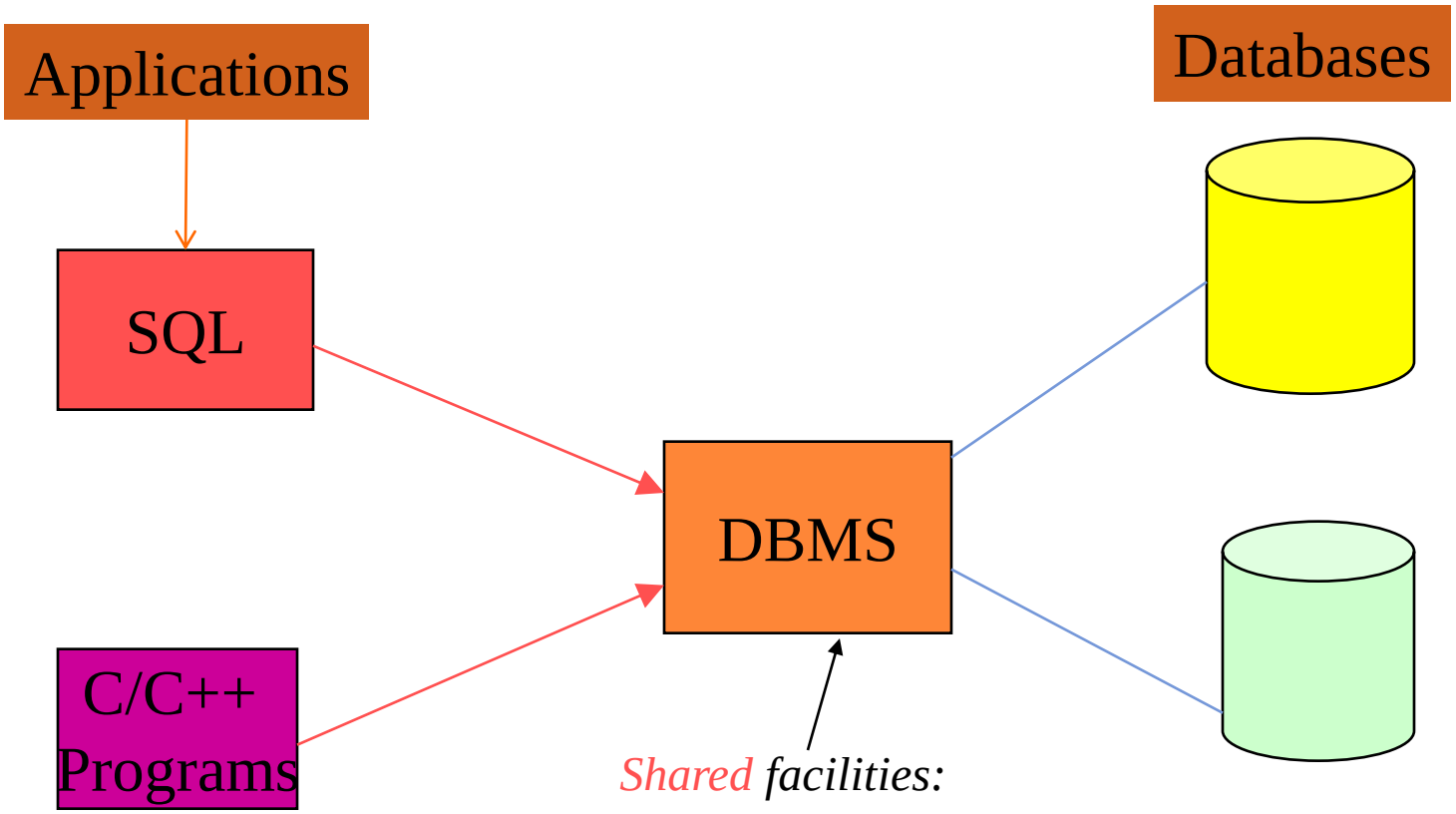
BEFORE WE HAVE DBMS



Question: When a customer ordered 10 PC monitors, how many files do you have to update?

Key issues: data sharing, data redundancy

After we have DBMS



Shared facilities:

- *Backup and recovery*
- *Data storage and access modules*
- *Programming tools, etc.*

Database Systems vs File Systems

- Advantages
  - Sharing of data
  - Control of redundancy
  - Data consistency
  - Improved data standards
  - Better data security
  - Improved data integrity
  - Balancing of conflicting requirements
  - Faster development of new applications
  - Better data accessibility
  - Economy of scale
  - More control over concurrency
  - Better backup and recovery procedures

Database Systems vs File Systems

- Disadvantages
  - High cost of DBMS
  - Higher programming cost
  - High conversion cost
  - Slower processing
  - Increased vulnerability
  - More difficult recovery

Access methods

- Sequential file organization
  - Storage of records by key is;
  - Simple
  - Easy to understand
  - Easy to manage
  - Direct or random access
  - Insertion of new record

Access methods

- Indexed sequential file organization
  - Dense index
    - Entry of every record in the file
    - Location by disk scheme (tracks)
  - Sparse index
    - Entry of last record in the disk scheme (tracks)
    - Location of higher value

Access methods

- Direct file organization
  - Random access
  - Rapid direct non sequential access
  - Hashing algorithms
  - Computational algorithms
  - To convert key value in some memory location

Staged database design approach