DATABASE SYSTEMS: HISTORY & PURPOSE

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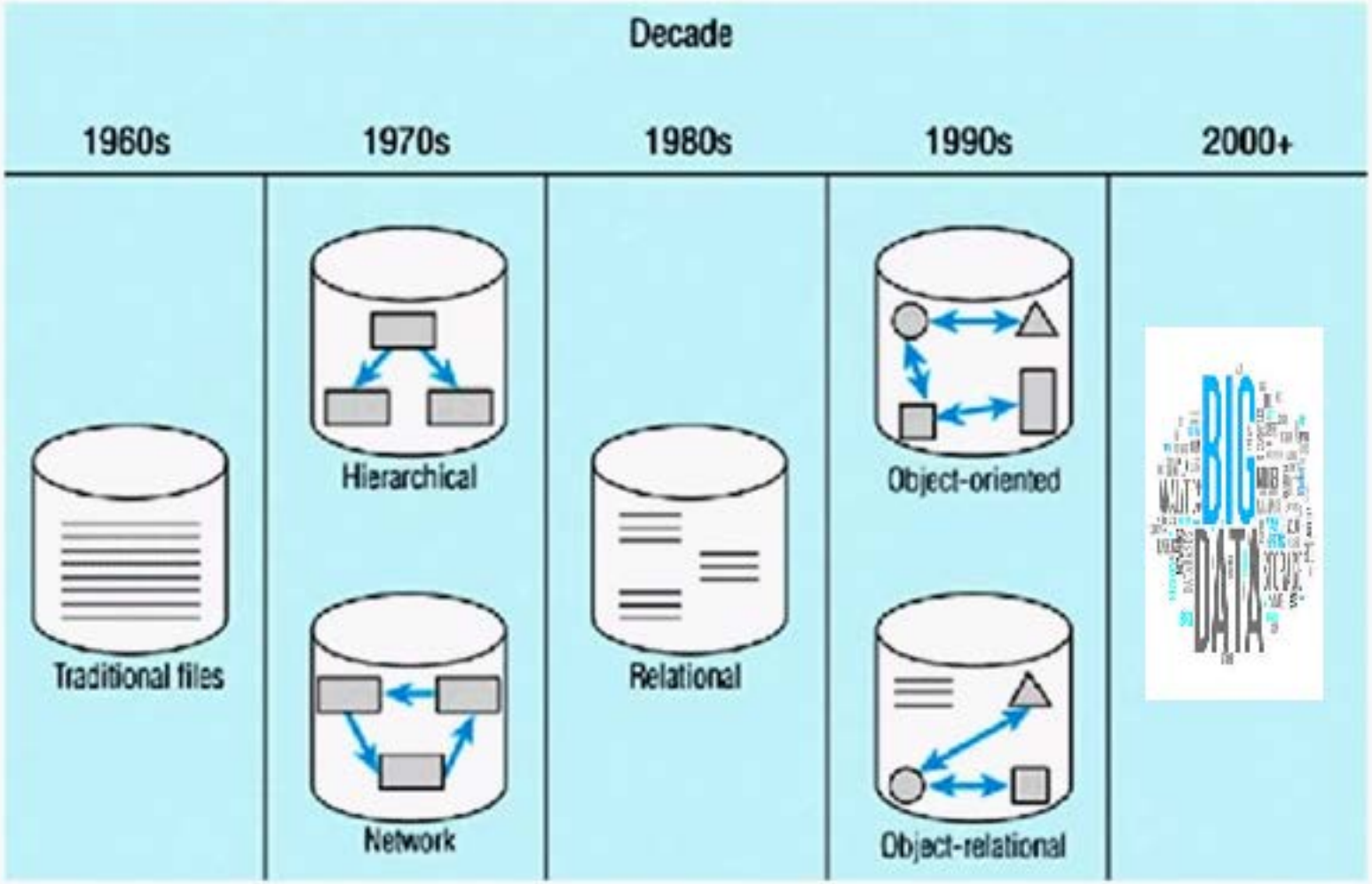
History of Database Systems

- 1950s and early 1960s:
  - Data processing using magnetic tapes for storage
    - Tapes provided only sequential access
  - Punched cards for input
- Late 1960s and 1970s:
  - **Hard disks** allowed direct access to data
  - **Network and hierarchical data models** in widespread use
  - **Ted Codd** defines the **relational data model**
    - Would win the ACM Turing Award for this work
  - High-performance (for the era) transaction processing

History (cont.)

- 1980s:
  - Research **relational prototypes** evolve into commercial systems
    - IBM Research begins **System R** prototype – led to first IBM relational database product **SQL/DS**
    - UC Berkeley begins **Ingres** prototype – led to commercial products-IMB DB2, Oracle (Larry Ellison-1977)
    - **SQL** becomes industrial standard
  - Parallel and **distributed database systems**
  - Late 1980s **Object-oriented database** systems (initial work) - cater to the need of complex data processing in CAD and other applications
- 1990s:
  - Large decision support and **data-mining** applications
  - Large multi-terabyte **data warehouses**
  - Growth of WWW, Emergence of Web commerce
- Early 2000s:
  - **XML** and **XQuery** standards
  - Automated database administration
- Later 2000s:
  - Giant data storage systems – Big Data
    - Google BigTable, Yahoo PNuts, Amazon, ..

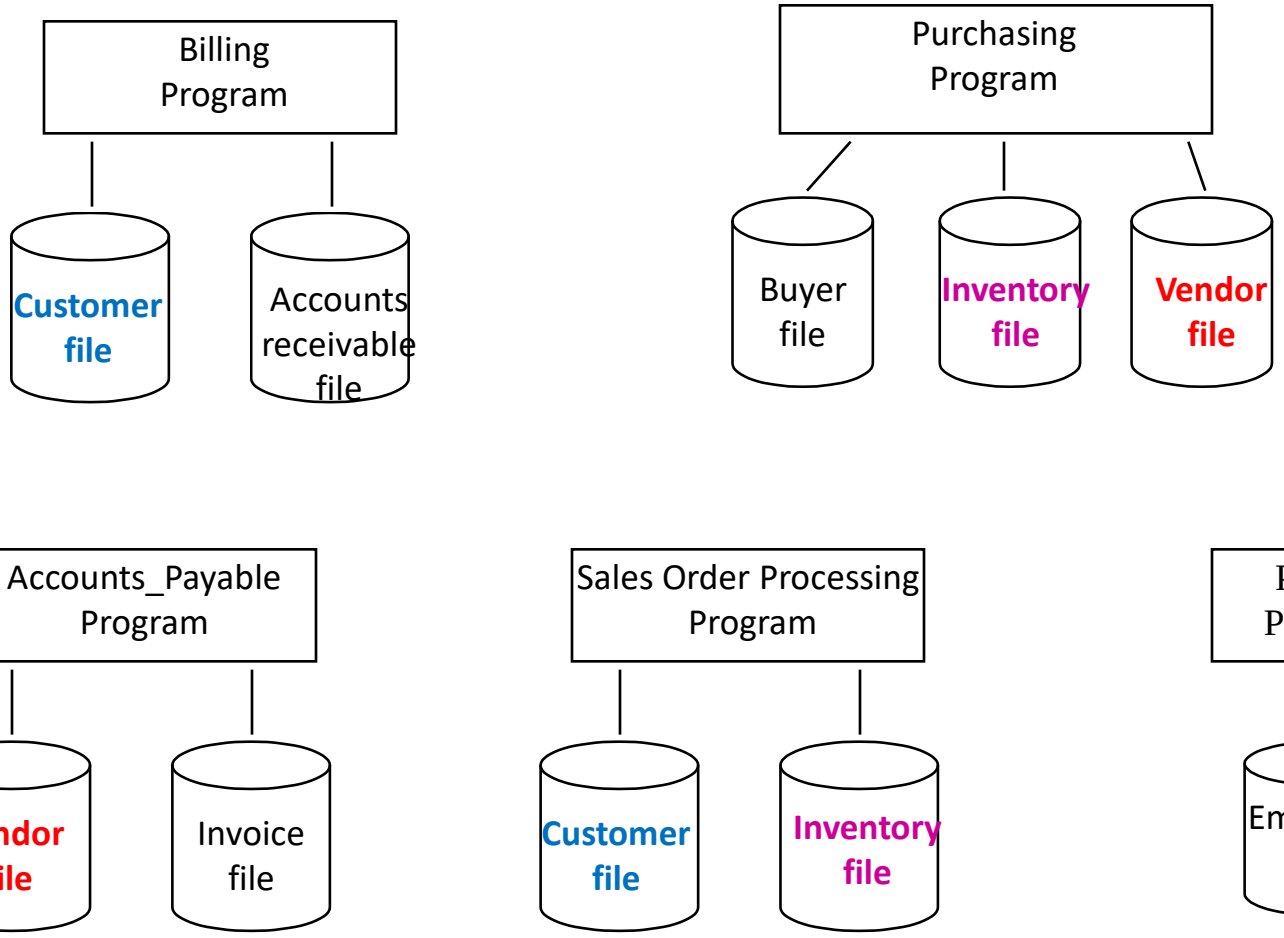
Database Decade Models



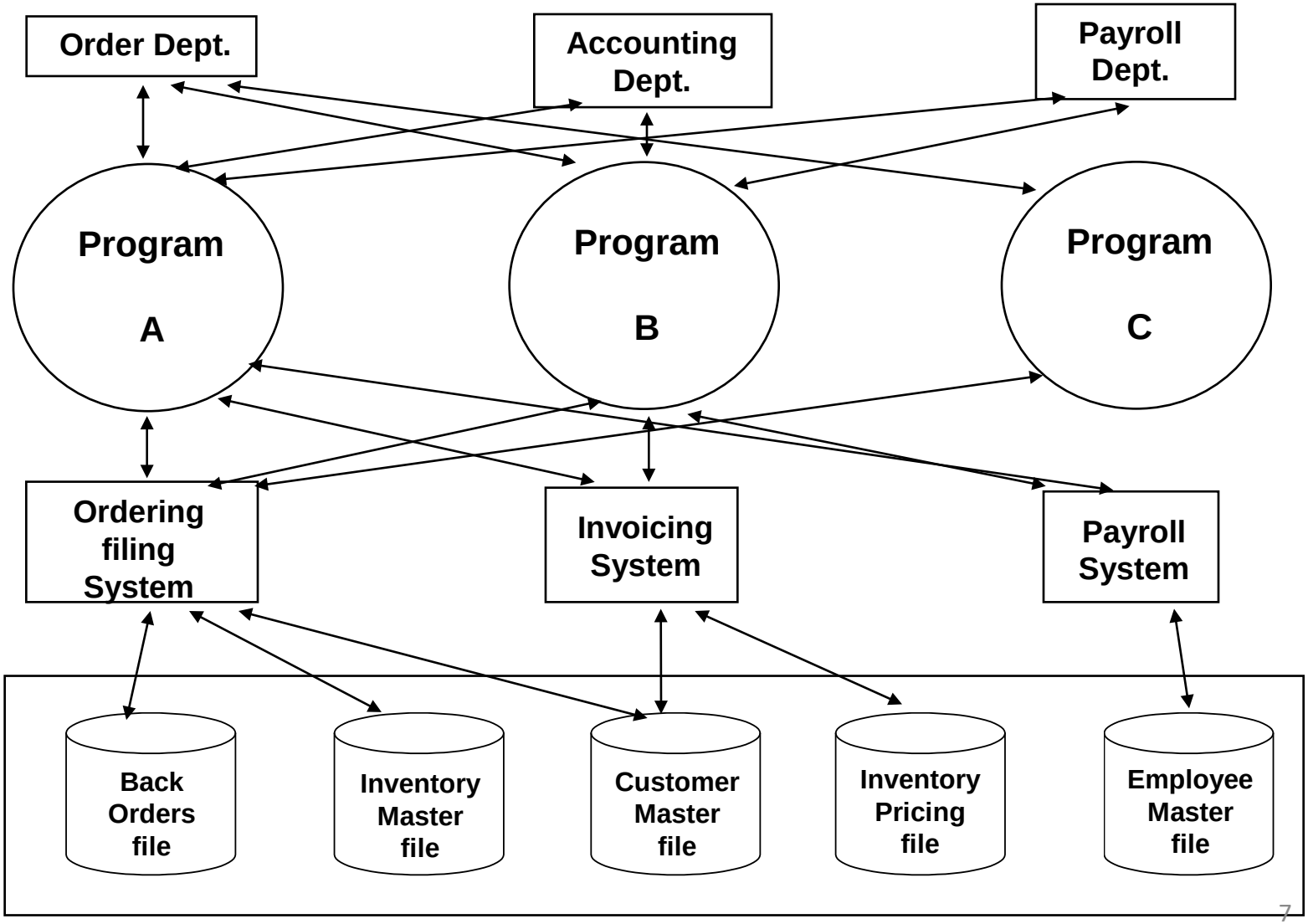
Drawbacks of File Processing System/ PURPOSE OF DATABASE SYSTEMS

- Data Redundancy and Inconsistency
- Difficulty in Accessing Data
- Integrity Problems
- Atomicity Problems
- Data Isolation
- Concurrent Access Anomalies
- Security problems

File Processing Systems



Database Approach



Thank You!