

(1960's and earlier)

- primitive file processing

Database management systems

(1970's)

- network and relational database systems
- data modeling tools
- indexing and data organization techniques
- query languages and query processing
- user interfaces
- optimization methods
- on-line transactional processing (OLTP)

Advanced databases systems

(mid-1980's - present)

- advanced data models:
 extended-relational, object-
- oriented, object-relational - application-oriented: spatial,
- temporal, multimedia, active,
- scientific, knowledge-bases,

World Wide Web.

Data warehousing and data mining (late-1980's - present)
- data warehouse and OLAP technology
- data mining and knowledge discovery

New generation of information systems (2000 - ...)

Figure 1.1: The evolution of database technology.