Database Administration

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Scope of DBA

- What role? What tasks are performed?
- What skills are necessary?

Case study

- Manage invoices:
 - Add invoice
 - List invoices
- More operations:
 - List invoices for product
 - Top 10 products
- Assumption:
 - Large number of users

Customer >	(# 123
prod. x		54
prod. y		21
prod. z		63
	Total:	138

Java version

Application

Java

logical data model logical operations select algorithms select physical data structures distribution concurrency control provide algorithms

provide physical data structures

RDBMS version

logical data model logical operations

Application

DBMS

Role and tasks

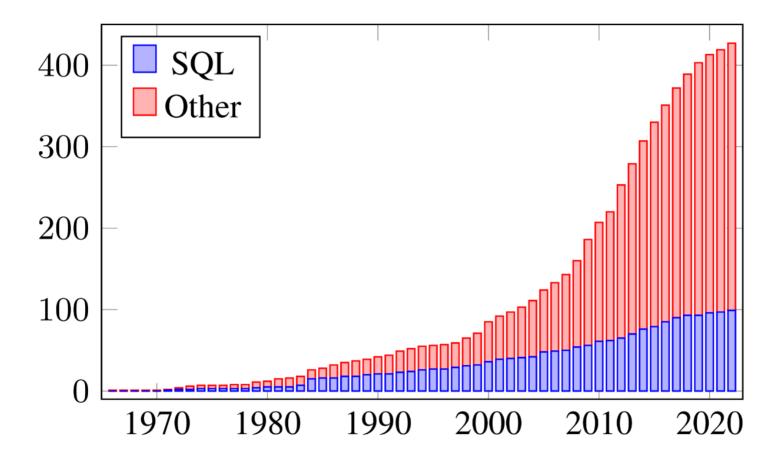
Application Java OS

logical data model **Application** logicaloperations select physical data structures distribution select algorithms concurrency control provide algorithms **DBA** provide physical data structures **DBMS** memory management I/O hardware abstraction OS

Role and tasks

- Application development:
 - Bridge the gap between the (high level) application and DBMSs
- Database operation:
 - Interaction with the OS
 - Backups, security, etc

Database systems



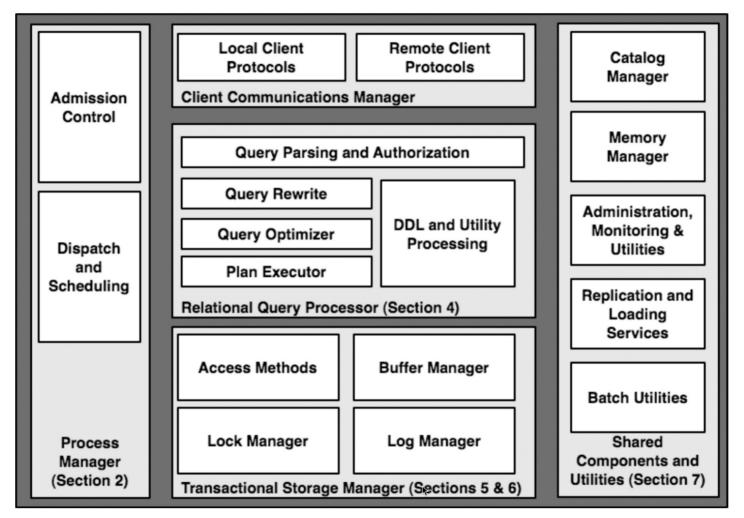
Source: https://db-engines.com/

Skills

In-depth knowledge of DBMSs (plural!)

- Experimentation and deduction
- Ingenuity in problem solving

Architecture of a database system



Source: J. Hellerstein et al. Architecture of a Database System.

Roadmap

- Physical structures
- Query execution
- Redundancy
- Query optimization
- Transactional recovery
- Transactional isolation

Relational

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