

Introduction To SQL Databases With Java

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- Relational Databases
- Postgres Installation
- SQL
- Java and SQL
- Spring Data

About Me

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Relational Databases

- RDBMS: Relational database management system
- SQL: Structured Query Language
https://en.wikipedia.org/wiki/Relational_database

Popular Vendors - SQL Is Leading

<https://db-engines.com/en/ranking>

Rank			DBMS
Jun 2021	May 2021	Jun 2020	
1.	1.	1.	Oracle +
2.	2.	2.	MySQL +
3.	3.	3.	Microsoft SQL Server +
4.	4.	4.	PostgreSQL +
5.	5.	5.	MongoDB +
6.	6.	6.	IBM Db2 +
7.	7.	↑ 8.	Redis +
8.	8.	↓ 7.	Elasticsearch +

Sample Project - Tennis Court Booking

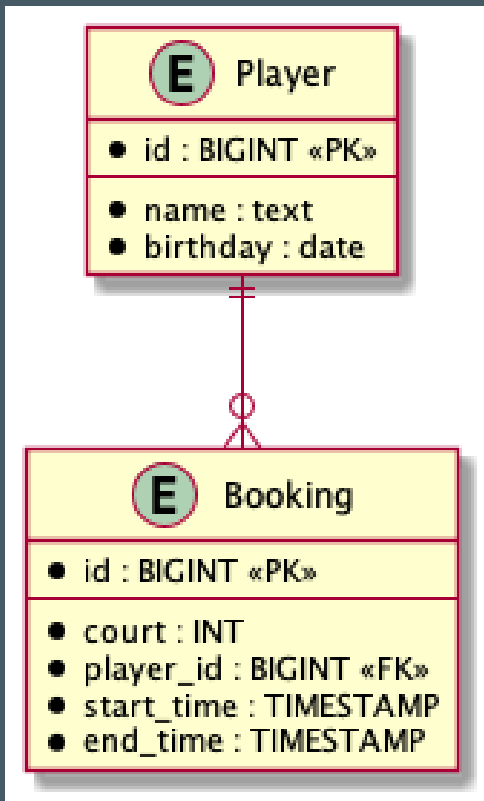


player <peter> books court <1> on <Fri 14:00>

Relations / Tables / Entities

SQL term	Relational term	Example
Table	Relation or Base relvar	Player, Booking
Row	Tuple or record	Booking "Fred, Friday, 14:00, Court 1"
Column	Attribute or field	Player: id, name, birthday
View or result set	Derived relation	All bookings for court 2 on friday

Entity Relationship Diagram



Relationship Concepts and Terms

- Primary key
- Foreign key
- Many to one: Children -> Mother
- Many to many: Student <-> Teacher
- One to many: Mother -> Children

Question: What relationship has "parents - children"?

ACID

ACID is a feature of database transactions intended to guarantee data validity.

- Atomicity: Transaction is a single unit
- Consistency: Data won't get corrupt by your transaction
- Isolation: Concurrent transactions do not influence each other
 - here it gets more complicated as conflicts are possible and strategies exist (concurrency control mechanisms) to mitigate them
- Durability: Survive power outage