

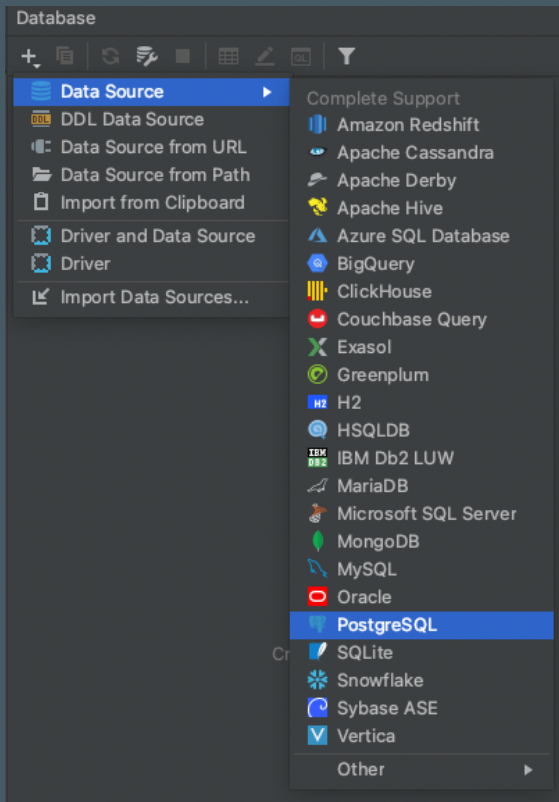
# SQL - Structured Query Language

- ANSI Standard since SQL-86
- many dialects and proprietary per vendor
- many versions: SQL-86, SQL-89, SQL-92,... SQL:2016
- Don't panic, there is a common subset which covers 99%

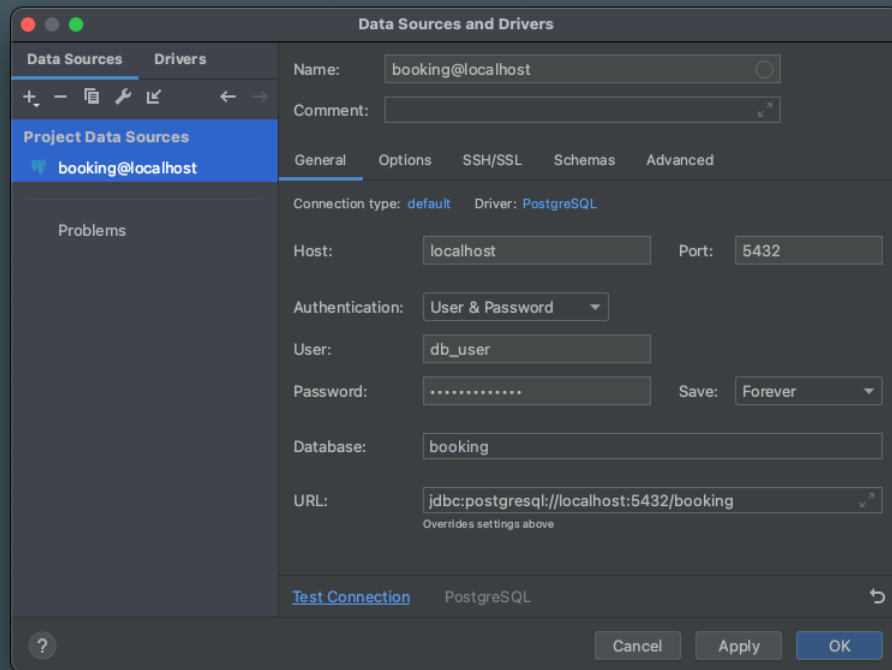
# SQL - Structure

- DDL: Data definition language (CREATE, DROP, ALTER, TRUNCATE)
- DQL: Data query language (SELECT)
- DML: Data manipulation language (INSERT, UPDATE)
- DCL: Data control language (GRANT, REVOKE)

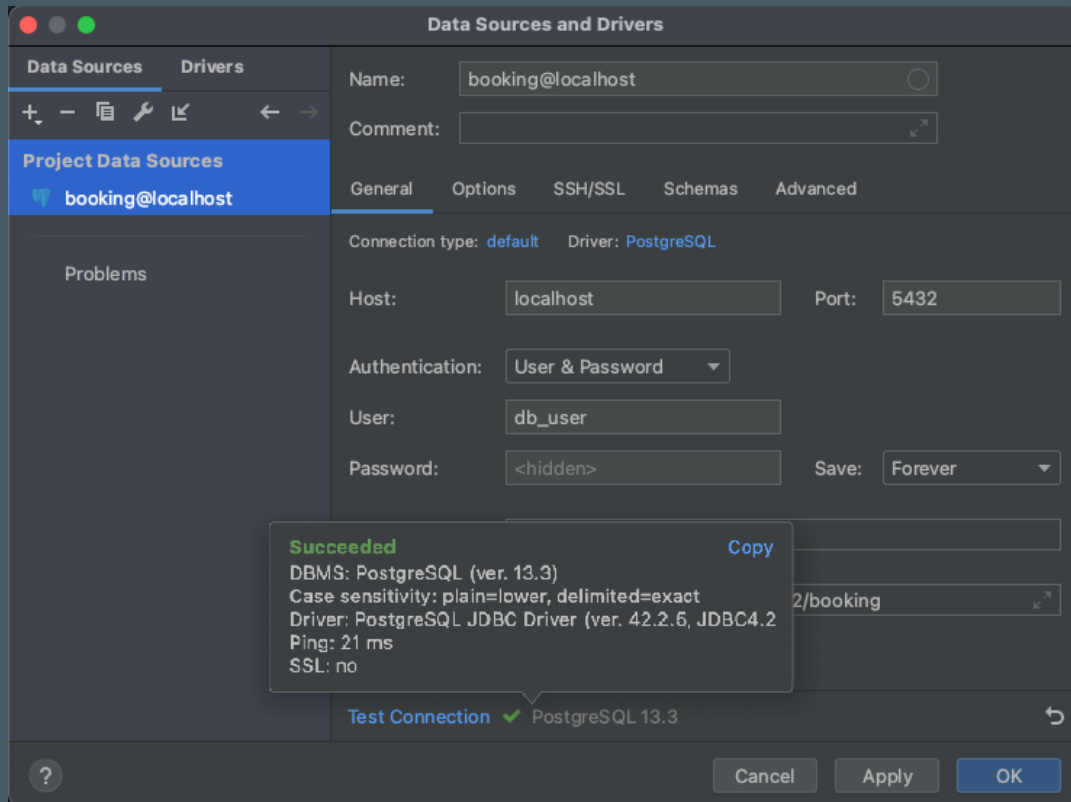
# DB Tool - IntelliJ Idea - Add datasource



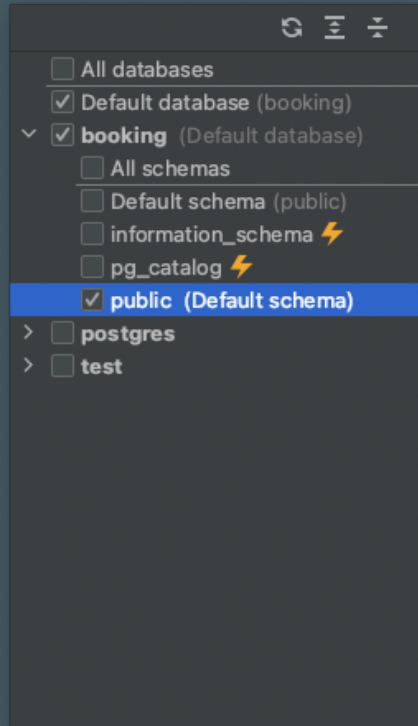
# DB Tool - IntelliJ Idea - Configure connection



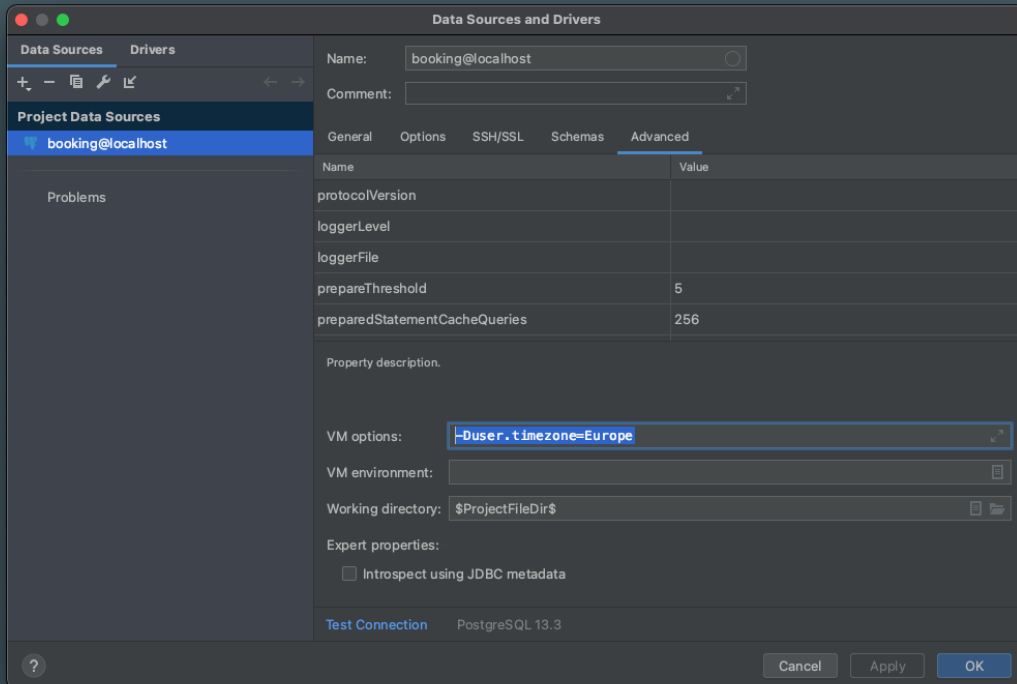
# DB Tool - IntelliJ Idea - Test connection



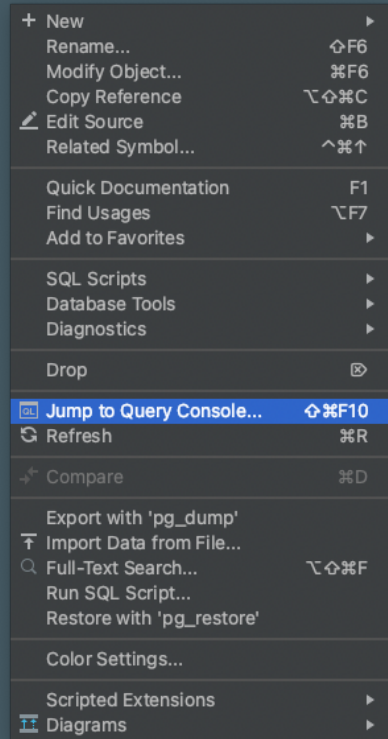
# DB Tool - IntelliJ Idea - Select schema



# DB Tool - IntelliJ Idea - Timezone



# DB Tool - IntelliJ Idea - Open console





# Create table

```
CREATE TABLE player
(
  id          BIGINT GENERATED BY DEFAULT AS IDENTITY PRIMARY KEY,
  name        TEXT NOT NULL,
  birthday    DATE NOT NULL
);
```

# Create table with reference

```
CREATE TABLE booking
(
  id          BIGINT GENERATED BY DEFAULT AS IDENTITY PRIMARY KEY,
  court       INT          NOT NULL,
  player_id   BIGSERIAL NOT NULL REFERENCES player (id),
  start_time  TIMESTAMP WITH TIME ZONE,
  end_time    TIMESTAMP WITH TIME ZONE
);
```

# PostgreSQL data types

[Postgres Data Types](#)

# Insert new data

```
INSERT INTO player (id, name, birthday)
VALUES (DEFAULT, 'Sandra', '2002-04-01');
```

```
INSERT INTO player (name, birthday)
VALUES ('Peter', '2005-05-01');
```

# Bulk insert

```
INSERT INTO player (name, birthday)
VALUES ('Leon', '1990-12-01'),
       ('Paul', '1993-06-01'),
       ('Ben', '2004-09-01'),
       ('Finn', '1988-08-01'),
       ('Felix', '2001-06-01'),
       ('Lina', '2003-03-01'),
       ('Lea', '1996-11-01'),
       ('Clara', '1989-12-01'),
       ('Hanna', '2000-01-01');
```

# Query data

```
-- select all players born after year 2000
SELECT *
FROM player
WHERE birthday >= '2000-01-01';
```

```
-- Select all adults
SELECT *
FROM player
WHERE birthday < NOW() - INTERVAL '18 years';
```

# More queries

```
SELECT *  
FROM player  
WHERE birthday < NOW() - INTERVAL '18 years'  
AND name ilike 'l%';
```

```
SELECT court, p.name, b.start_time from booking b  
join player p on p.id = b.player_id  
where p.name ilike 'l%';
```

# Update existing data

```
UPDATE player  
SET birthday = '2005-02-15'  
WHERE name = 'Peter';
```

## Exercise:

- Add other Peter (yes, same name) with different birthday
- Update Peters birthday to 1st of November 1999
- What's the result?



# Delete existing data

*-- good idea: first check what you delete*

SELECT \*

FROM player

where name = 'Peter';

*-- delete players by name*

DELETE

FROM player

WHERE name = 'Peter';

# Constraints - Some examples

```
-- Alternative way of adding constraints later:  
ALTER TABLE booking ADD FOREIGN KEY ("player_id") REFERENCES player ("id");  
  
-- prevent duplicates  
CREATE UNIQUE INDEX player_name_uidx ON player(name);  
  
-- index used for search  
CREATE INDEX player_birthday_idx ON player(birthday);
```