

# Fullstack Development

# Preflight project - database

# Prerequisite

- Docker
  - Docker desktop
- Database management tools
  - Dbeaver





# Database choices

- Relational database (Comparison)
  - PostgreSQL
  - MariaDB
  - MySQL
  - SQLite
- NoSQL
  - Types
  - Vendors

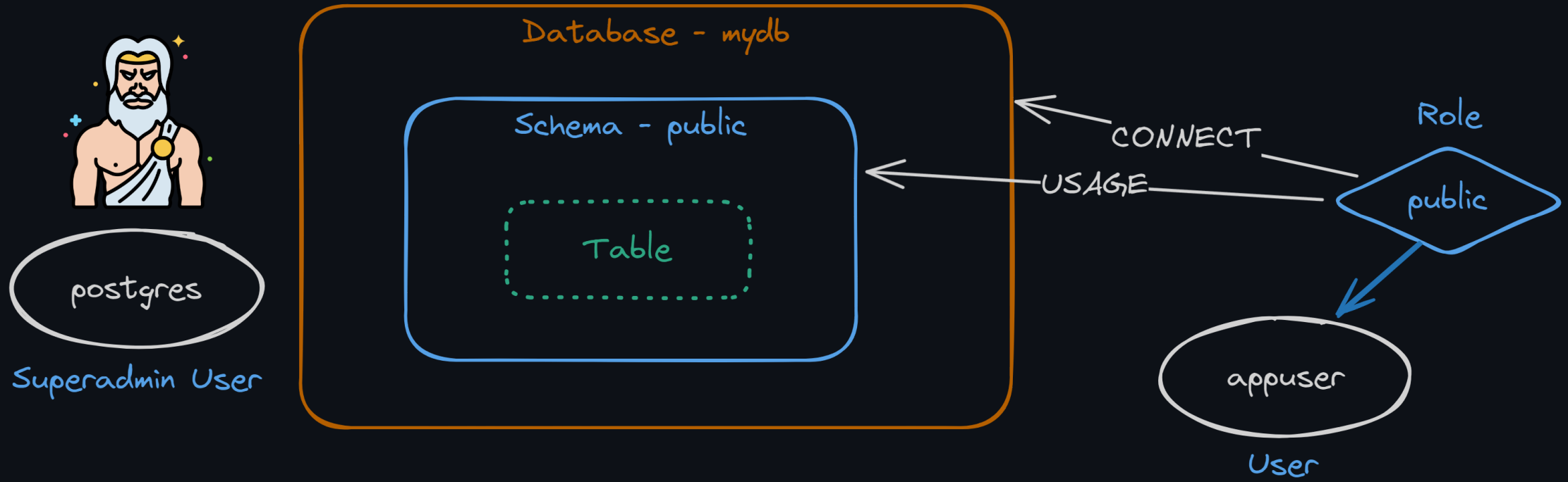
# Should you run database on docker container?

It depends.

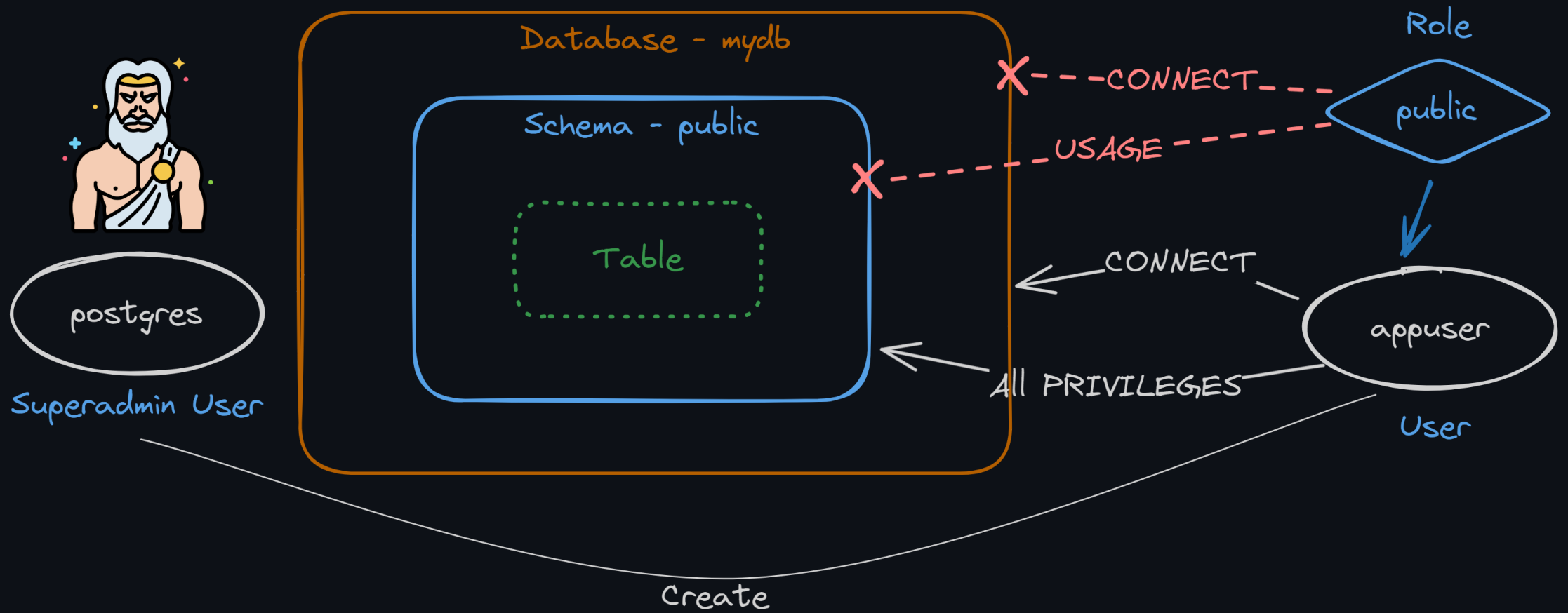
# Spinning up database instance

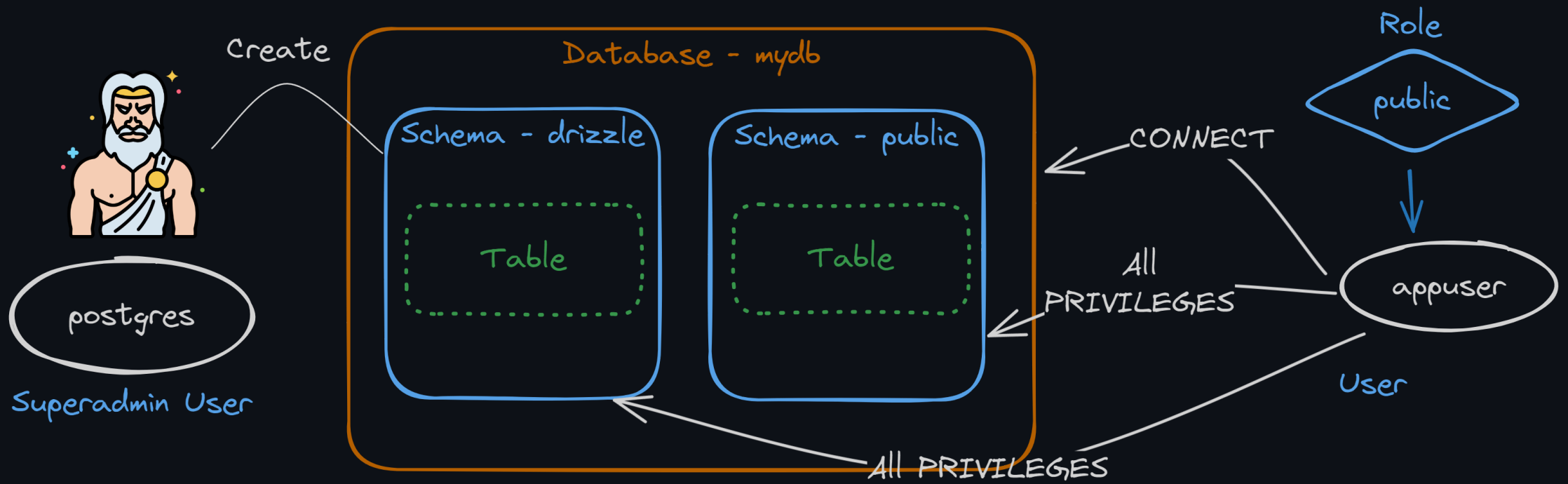
- Files
  -  `./.env` Copy from [here](#).
  -  `./.gitignore` [\(link\)](#)
  -  `./docker-compose.yml` [\(link\)](#)
-  `docker compose up -d`

# Database user management









# DB user management

- `docker exec -it postgres_container bash`
- `psql -U postgres -d mydb`

```
REVOKE CONNECT ON DATABASE mydb FROM public;
REVOKE ALL ON SCHEMA public FROM PUBLIC;
CREATE USER appuser WITH PASSWORD '1234';
CREATE SCHEMA drizzle;
GRANT ALL ON DATABASE mydb TO appuser;
GRANT ALL ON SCHEMA public TO appuser;
GRANT ALL ON SCHEMA drizzle TO appuser;
```

## Note on `psql`

- `\l` to list all databases
- `\du` to list users
- `\dn` to list schema
- `\dt` to list tables
- `\c` to view connected database or change to another db.

# ORM

- Object Relational Mapper
- A piece of software designed to translate between the data representations used by databases and those used in programming (in our case, Typescript).

# Should you use ORM?

It depends.

# JavaScript / TypeScript ORM

- List

# Setting up Drizzle

- `npm init -y`
- `npm i drizzle-orm postgres dotenv`
- `npm i -D drizzle-kit`
- `npm i typescript ts-node tsconfig-paths`







# TypeScript




- `npx tsc --init`
- Add this in `./tsconfig.json`

```
{
  "ts-node": {
    "require": ["tsconfig-paths/register"]
  },
  "compilerOptions": {
    // ...
    "baseUrl": ".",
    "paths": {
      "@db/*": [".db/*"]
    }
    // ...
  }
}
```



# Database initialization

- Files
  -  `./db/utils.ts` [\(Link\)](#)
  -  `./db/schema.ts` [\(Link\)](#)
  -  `./drizzle.config.ts` [\(Link\)](#)
-  `npx drizzle-kit push`

# Migration

-  `./db/migrate.ts` [\(Link\)](#)
-  `npx drizzle-kit generate`
-  `npx ts-node ./db/migrate.ts`

# CRUD

-  `./db/client.ts` [\(Link\)](#)
-  `./db/prototype.ts` [\(Link\)](#)
- `npx ts-node ./db/prototype.ts`