

Backend Development with Java

“Databases, JDBC, Virtualization, Docker”

Detailed Course Syllabus

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| Instructor: | © Elvin Taghizade |
| Duration: | 1 months |
| Lesson time: | 3 times a week, 2 hours each lesson |

A. Third Part - Introduction to Databases

1. Introduction / Software Setup
 - a. Install PostgreSQL
 - b. Install DataGrip/DBeaver
 - c. Database created and connection
 - d. Relational and non-relational databases
 - e. Structured Query Language - SQL
 - f. DML, DDL, TCL, DCL
2. Database fundamentals
 - a. All lessons at [w3school](#) & [Postgres doc](#)
 - b. DDL and Constraints
 - c. ERD - Relational database modeling
3. SQL - Syntax, creation, insertion, fetching
 - a. DML, filtering and sorting data
 - b. Aggregate functions
4. Relationships
 - a. One-to-one
 - b. One-to-many & many-to-one
 - c. Many-to-many
 - d. Joins
 - e. Cartesian Products
5. JDBC
 - a. Introduction to JDBC API
 - b. connection, statements, resultset
 - c. JDBC transactions
6. Virtualization, VMs
7. Containerization, Docker
 - a. Create postgres docker containers and connect to it from java app
 - b. Network modes for docker apps
8. Practice: Booking Application with JDBC