

Development of database applications in Java

Course code: JAVADB

The course focuses on the access of Java applications to the database. In the course, we will first look at the low-level approach to working with the database using JDBC & JdbcTemplate, which is especially suitable for batch processing, then what programmers should know about SQL so as not to swear that the database is slow (usually not, it is poorly used), but we will mainly focus on the efficient use of the database using JPA and Spring Data JPA.

Affiliate	Duration	Course price	ITB
Praha	5	36 000 Kč	50
Brno	5	36 000 Kč	50
Bratislava	5	1 650 €	50

The prices are without VAT.

Course terms

Date	Duration	Course price	Type	Course language	Location
 03.11.2025	5	36 000 Kč	Telepresence	CZ/SK	GOPAS Praha
 03.11.2025	5	36 000 Kč	Telepresence	CZ/SK	GOPAS Brno
 03.11.2025	5	1 650 €	Telepresence	CZ/SK	GOPAS Bratislava
23.02.2026	5	36 000 Kč	Presence	CZ/SK	GOPAS Praha
15.06.2026	5	36 000 Kč	Presence	CZ/SK	GOPAS Praha

The prices are without VAT.

Required input knowledge

- The course assumes knowledge and experience with programming in Java at the level of the JAVAPROG2 and JAVADB course

Teaching methods

- Expert explanation with practical examples, exercises on computers.

Studying materials

- Printed presentations of the subject matter.

Course syllabus

Course syllabus

JDBC & JdbcTemplate

- HikariCP
- Connection pool settings
- Batch update
- Soft parsing vs. hard parsing
- SQL query optimization
- Execution plan
- Indices

JPA Entity

- Types (Primitive, String, Date & Time, Numeric, Binary, UUID, ...)
- Generate primary key value

Links between entities

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Development of database applications in Java

- @OneToMany, @ManyToOne, @OneToOne, @ManyToMany
- Fetching strategy
- FetchType.EAGER Vs. FetchType.LAZY
- Bidirectional & unidirectional ties
- N + 1 problem
- LazyInitializationException
- Open Session In View Anti-Pattern
- join fetch, JPA entity graph

Transaction

- ACID
- Why (not) use two-phase commit
- Flush mechanism & when flush operation occurs

Other JPA topics

- HQL (Hibernate Query Language)
- Different inheritance strategies: single table, join table, table-per-class
- JPA Batching insert / update / delete operations
- Logging of SQL operations
- Pageable & Sort
- Criteria API & Query DSL
- Spring JPA Data & custom methods on JpaRepository interface
- Spring Data REST

Caching

- Database level caching
- First level cache, second level cache

Locking

- Pessimistic & optimistic locking

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