



WEB TECHNOLOGIES USING JAVA

COURSE 9 – JPA / HIBERNATE

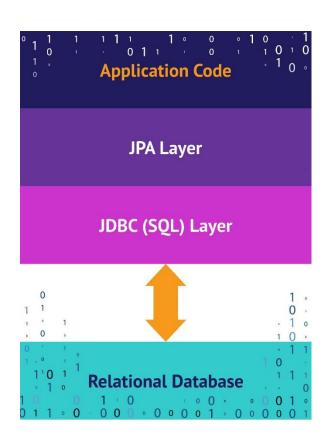
AGENDA

- JPA / HIBERNATE OVERVIEW
- JPA ARCHITECTURE
- ENTITIES
- RELATIONSHIPS



JPA / HIBERNATE OVERVIEW

- JPA is a specification that lets you define which objects should be persisted, and how those objects should be persisted in your Java applications.
- JPA defines a set of concepts that can be implemented by any tool or framework.
- Every JPA implementation provides an ORM layer.
- The ORM layer converts Java classes and objects so that they can be stored and managed in a relational database:
 - Names of persisted objects --> tables
 - Fields of persisted objects --> columns
 - Objects --> rows
- Hibernate is a JPA implementation.





JPA ARCHITECTURE

package javax.persistence Persistence Persistence Unit Creates Configured By \uparrow created during app startup EntityManagerFactory small unit of work with database Creates EntityTransaction Lives for short time. Removed by: -database commit Creates EntityManager -database rollback Manages Query Entity Query database. Uses SQL/JPQL objects that persists into database with the help of EntityManager



ENTITIES

- @Entity
- @Table
- @Column
- @Id
- @Enumerated



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- @OneToOne
- @OneToMany
- @ManyToOne
- @ManyToMany
- May be unidirectional or bidirectional.



One-to-One Entity Relationship **EntityA EntityB** myldB myldA int int JPA entities entityB EntityB stringB String Object reference **EntityB** EntityA myldA INTEGER(10) myldB INTEGER(10) Table relation EntityB_myldB INTEGER(10) stringB VARCHAR(255) References the primary key of EntityB table i.e. a foreign key column. Horrelling.



One-to-One Bidirectional Relationship EntityB EntityA myldB int myldA JPA entities refEntityA EntityA refEntityB EntityB String Bidirectional object references **EntityA** EntityB myldA INTEGER(10) myldB INTEGER(10) Table relation RefEntityB_myldB INTEGER(10) VARCHAR(255) 1 str References the primary key of EntityB LogicBig table i.e. a foreign key column.



One-to-Many Relationship EntityB EntityA myldB int myldA JPA entities String entityBList List<EntityB> str Entity collection reference. EntityA EntityA_EntityB EntityB INTEGER(10) EntityA_MyldA INTEGER(10) myldB INTEGER(10) Tables EntityBList_MyldB INTEGER(10) 1 str VARCHAR(255) Unique Join table



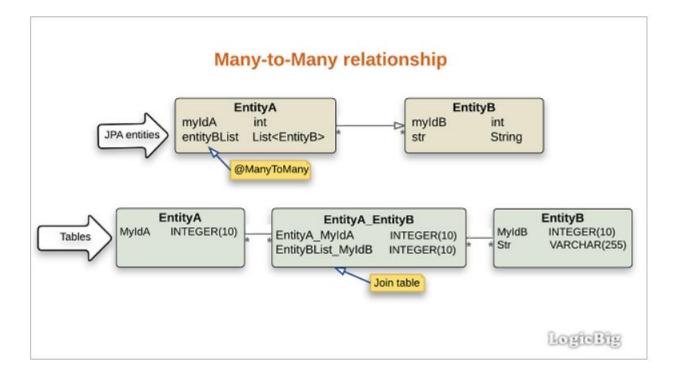
Many-to-One Relationship **EntityB EntityA** myldB int myldA refEntityB JPA entities String EntityB str Entity reference **EntityA EntityB** myldA INTEGER(10) INTEGER(10) myldB Table relation RefEntityB_myldB INTEGER(10) 1 str VARCHAR(255) Foreign key column. LogicBig



One-to-Many/Many-to-One Bidirectional relationship **EntityA EntityB** myldA myldB int int JPA entities String strA strB String entityBList List<EntityB> refEntityA EntityA @ManyToOne @OneToMany **EntityB** EntityA myldB INTEGER(10) INTEGER(10) **Tables** myldA VARCHAR(255) strB VARCHAR(255) strA refEntityA_myldA INTEGER(10) Foregin key LogicBig



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Many-to-Many Bidirectional relationship EntityA EntityB myldA myldB int JPA entities strA String strB String entityBList List<EntityB> List<EntityA> entityAList @ManyToMany @ManyToMany **EntityA** EntityA_EntityB EntityB INTEGER(10) MyldA INTEGER(10) MyldB EntityA MyldA INTEGER(10) Tables VARCHAR(255) VARCHAR(255) strA strB EntityBList MyldB INTEGER(10) Join table Logicing



BIBLIOGRAPHY

- Spring in Action, by Craig Walls
- Spring REST, by Balaji Varanasi, Sudha Belida
- Pro JPA 2, Mike Keith, Merrick Schincariol



Q&A

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THANK YOU

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