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ORM - JPA - Hibernate

Codecool, 2021

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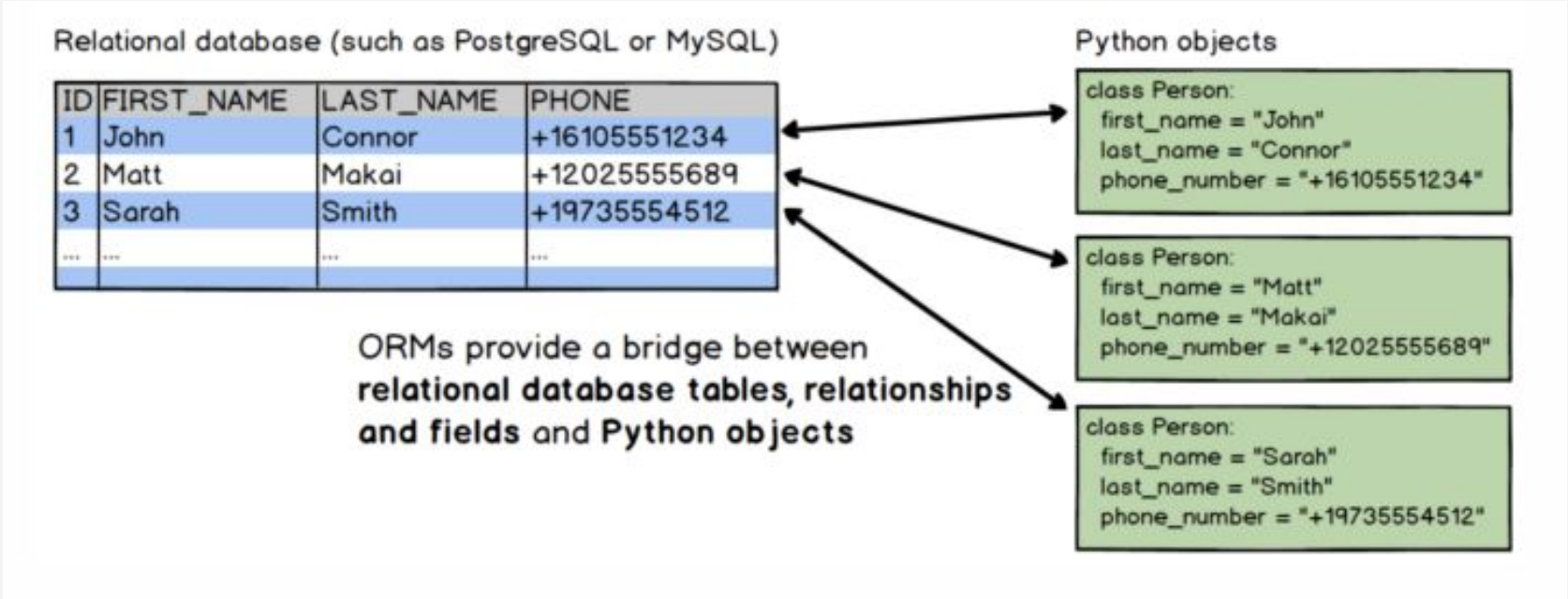
Agenda

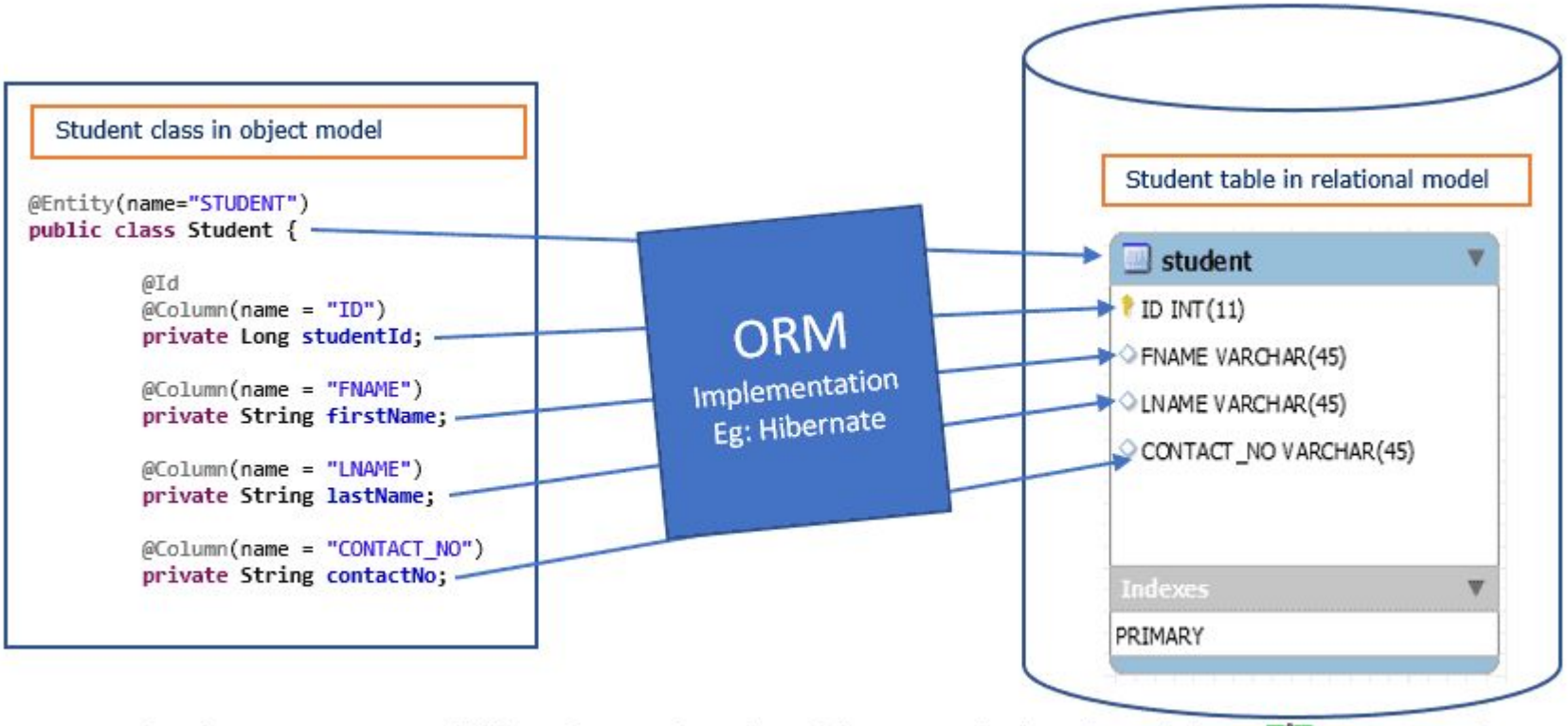
- What is ORM?
- JPA
- Hibernate
- Annotations

ORM

Object–relational mapping

Converts data between incompatible type systems using object-oriented programming languages. This creates, in effect, a "virtual object database" that can be used from within the programming language.


Relational database (such as PostgreSQL or MySQL)
ID FIRST_NAME LAST_NAME PHONE
1 John Connor +16105551234
2 Matt Makai +12025555689
3 Sarah Smith +19735554512
... ...
Python objects
class Person:
first_name = "John"
last_name = "Connor"
phone_number = "+16105551234"
class Person:
first_name = "Matt"
last_name = "Makai"
phone_number = "+12025555689"
class Person:
first_name = "Sarah"
last_name = "Smith"
phone_number = "+19735554512"
ORMs provide a bridge between
relational database tables, relationships
and fields and Python objects

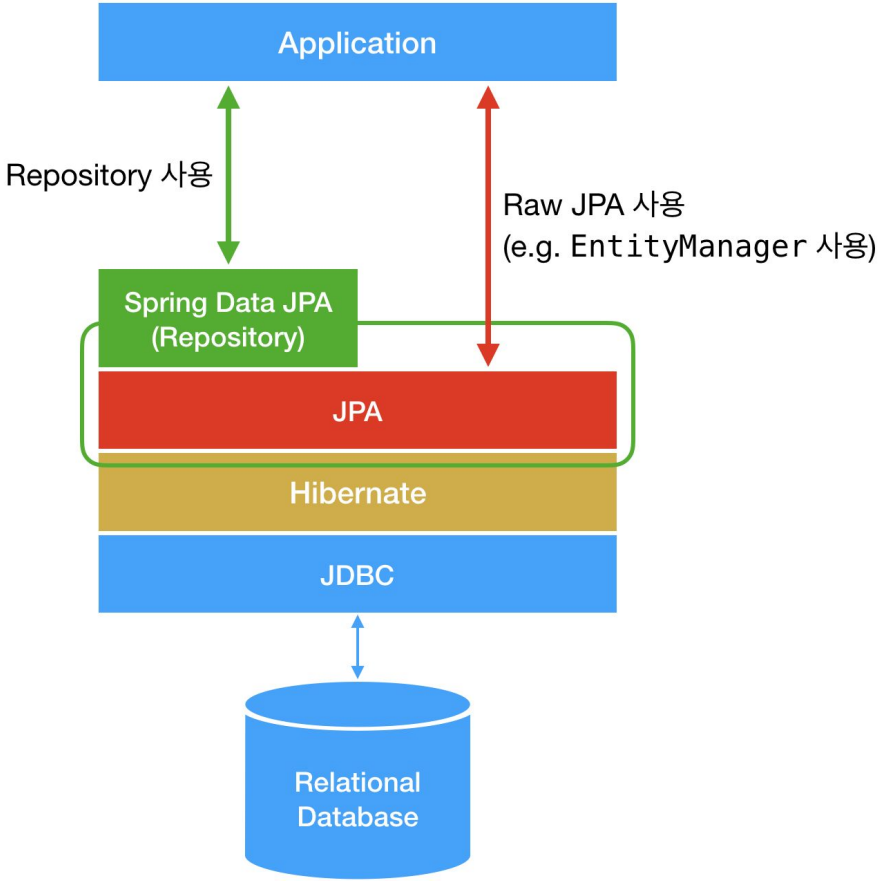


ORM implements responsibility of mapping the Object to Relational Model.

Hibernate

- Hibernate ORM (or simply Hibernate)
- object–relational mapping tool for the Java programming language.
- Framework
- mapping an object-oriented domain model to a relational database.

Spring Boot Data JPA



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Java Persistence (API) - JPA

It is a Jakarta EE application programming interface specification that describes the management of relational data in enterprise Java applications.

The API itself, defined in the **javax.persistence** package

https://dzone.com/articles/all-jpa-annotations-mapping-annotations

Entity

- lightweight Java class with its state typically persisted to a table in a relational database.
- Instances of such an entity correspond to individual rows in the table.
- Entities typically have relationships with other entities, and these relationships are expressed through object/relational metadata. This metadata may be specified directly in the entity class file by using annotations or in a separate XML descriptor file distributed with the application.

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@Entity

It is used to specify that the currently annotate class represents an entity type.

```
import javax.persistence.*;

@Entity
public class Employee {

    private String employeeId;
    private String lastName;
    private String firstName;

    public Employee() {

    }
    ...
```

@Table

It is used to specify the primary table of the currently annotated entity.

- @Enity(name) vs @Table
https://stackoverflow.com/questions/18732646/name-attribute-in-entity-and-table

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@Column

It is used to specify the mapping between a basic entity attribute and the database table column.

```
@Column(name = "EMPLOYEE_FIRST_NAME", nullable = false)
private String firstName;

@Column(name = "EMPLOYEE_LAST_NAME", nullable = true)
private String lastName;

@Column(name = "EMPLOYEE_EMAIL", unique = true)
private String email;
```

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@Id

It specifies the entity identifier. An entity must always have an identifier attribute, which is used when loading the entity in a given Persistence Context.

```
@Entity
@Table(name = "people")
public class Person implements Serializable {
    @Id
    @GeneratedValue(strategy = GenerationType.AUTO)
    private Integer id;

    @Column(length = 32)
    private String name;
```


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