JPA

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Winter Term 2018

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Introduction

JPA Basic

- idea: "map whole Java classes to database records"
- a typical system architecture with ORM (Object Relational Model)

```
@Entity
public Person {
  @Id
  private Long id;
  private String hasName;
  // setters+getters
}
```

```
CREATE TABLE PERSON (
  ID bigint PRIMARY KEY NOT NULL,
  HASNAME varchar(255)
);
```

JPA Main Concepts

- Entity: a class (JavaBean) representing a set of persistent objects mapped onto a relational table
- Persistence Unit: the set of all classes that are persistently mapped to one database
- Persistence Context: the set of all objects of the entities defined in the persistence unit
- Entity manager : the interface for interacting with a Persistence Context

JPA – EntityManager

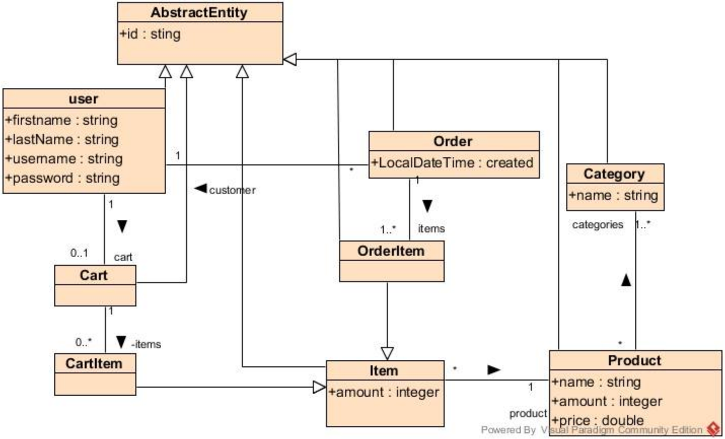
- **EntityManager (EM)** instance is in fact a generic DAO, while entities can be understand as DPO (managed) or DTO (detached).
- Selected operations on EM (CRUD) :

Create	:	em.persist(Object o)
Read	:	em.find(Object id), em.refresh(Object o)
Update	:	em.merge(Object o)
Delete	:	em.remove(Object o)
native/JPQL queries	:	em.createNativeQuery, em.createQuery, etc.
Resource-local transactions	:	em.getTransaction.[begin(),commit(),rollback()]

Tasks

JPA Entities

Clone the GIT repo https://gitlab.fel.cvut.cz/ear/b181-eshop.Checkout branch b181-seminar-03-task The package cz.cvut.kbss.ear.model contains JPA entities (sketched in the diagram below).



Task 1: 1 Point

What do you have to fix?

- Some annotations are missing (entities or relationship between them, e.g., OneToOne, ManyToOne, setter and getter, etc)
  - E.g., fix the relationship between order and user.
- Some entities are broken
  - E.g., category entity

Acceptance criteria: Project is compilable.

Task 2: 1 Point

In this task you should write a DAO class using a simple JPQL query using Entity Manager (em).

- Create `UserDao` class.
- In `UserDao`, implement `findByUsername` which creates a query to find a user by its name.

Acceptance criteria: Project is buildable, i.e., all tests pass.

The End

The End

Thank You

Resources

- https://cw.fel.cvut.cz/wiki/_media/courses/b6b33ear/lecture-02-jpa-h.pdf
- http://www.objectdb.com/api/java/jpa/annotations