

# JPA

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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 understood 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()]`

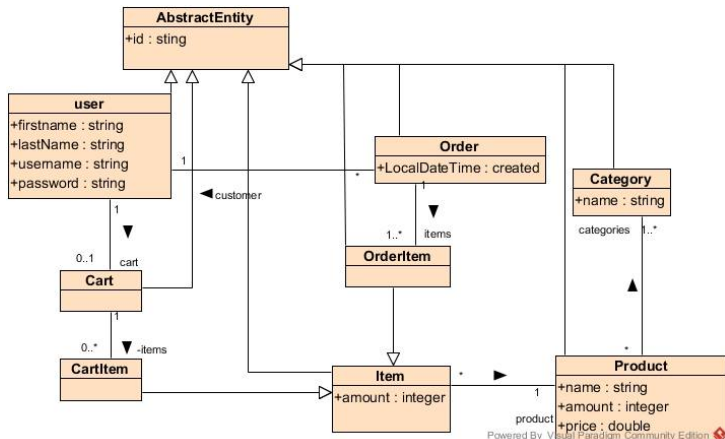


# Tasks



# 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



## Task 2: 1 Point

In this task you should write dao Class with JPQL simple query using Entity Manager (em).

- Create UserDao class.
- In UserDao class write a findByUsername method which creates a query to find a user by its name.



# The End



The End

Thank You



# Resources

- [https://cw.fel.cvut.cz/wiki/\\_media/courses/b6b33ear/lecture-02-jpa-h.pdf](https://cw.fel.cvut.cz/wiki/_media/courses/b6b33ear/lecture-02-jpa-h.pdf)
- <http://www.objectdb.com/api/java/jpa/annotations>

