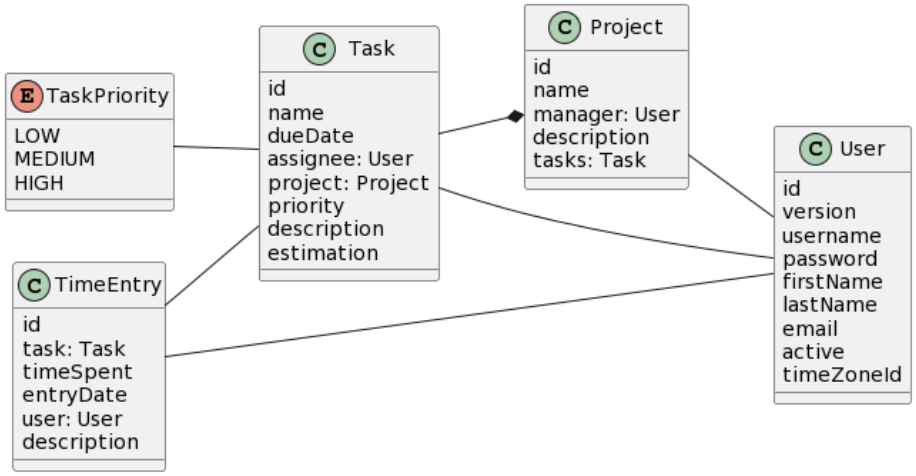
Assignment 1

Build your app's data model

For this assignment complete the data model of the application.



Let's briefly describe the objects present:

- **`User`** – JPA entity that defines application users. It is present in the application from the start. It won't need any changes.
- **`Project`** – JPA entity that represents projects in the application. It relates to **`User`** through Many-to-One association and to **`Task`** through One-to-Many compostion.
- **`Task`** – JPA entity that holds attributes for tasks. It is in composition with **`Project`** via the `project` reference attribute, therefore it can only be created inside some project. It is also associated with **`User`** via the `assignee` reference attribute.
- **`TaskPriority`** – enumeration with three possible priority values for the task.
- **`TimeEntry`** – JPA entity whose objects reflects the progress made on a task. Users create instances of this entity specifying a corresponding task, the amount of time spent, the entry date, and a short description.

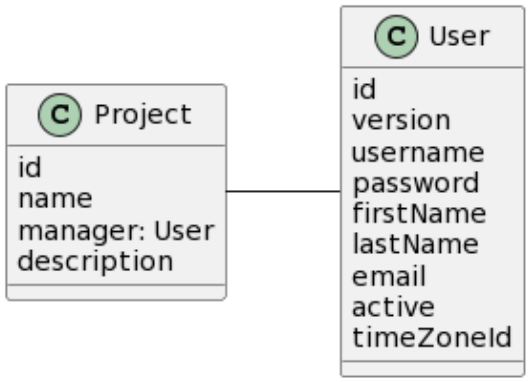
Step 1: Create Project entity

Note: The **Project** entity was created in one of the videos. If your application already has such an entity, proceed to the next step.

1. Create a new JPA entity named “Project”.
2. Use Entity Designer to define the following attributes:

Attribute name	Type	Additionally
`name`	String	Check the **Mandatory** checkbox.
manager	**User**	Define the Many-to-One association with the **`User`** entity.
`description`	String	Check the **Unlimited** checkbox.

The data model after this step:

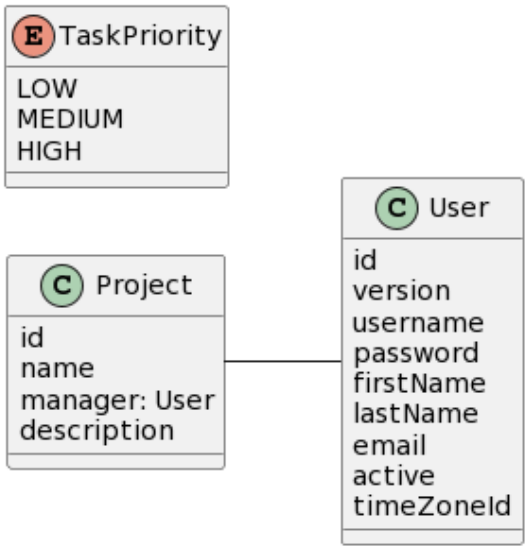


Step 2: Create TaskPriority Enumeration

1. Create a new Enumeration named “TaskPriority”. Keep the **Id type** value to String.
2. Use Entity Designer to define the following set of constants:

Value	Id
LOW	A
MEDIUM	B
HIGH	C

The data model after this step:



Step 3: Create Task entity

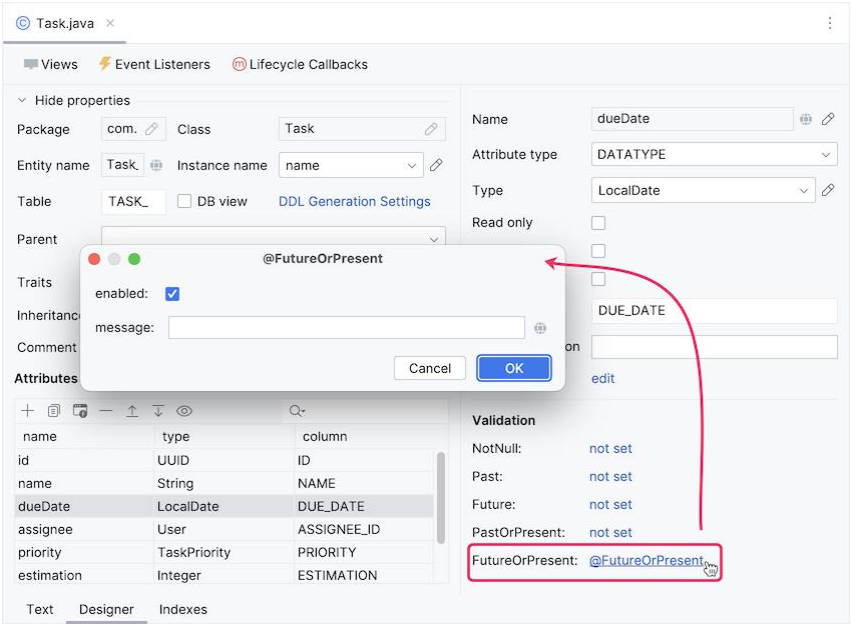
1. Create a new JPA entity named “Task”.

   Note: “Task” and some other names are reserved. When creating an entity with this name, it will be automatically renamed to `Task_`.

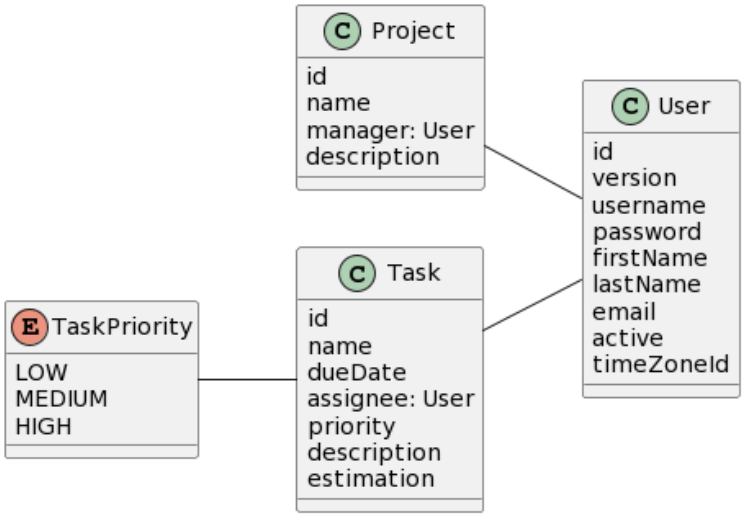
2. Use Entity Designer to define the following attributes:

Attribute name	Type	Additionally
`name`	String	Check the **Mandatory** checkbox.
`dueDate`	LocalDate	Define the **@FutureOrPresent** validation.[1]
`assignee`	`User`	Define the Many-to-One association with the `User` entity.
`priority`	`TaskPriority`	Set ENUM in the **Attribute type** field. Then set `TaskPriority` in the **Type** field.
`description`	String	Check the **Unlimited** checkbox.
`estimation`	Integer	Define the **@PositiveOrZero** validation.

[1] To add bean validations use the panel on the right side of the designer. Click on the link next to the constraint you need and complete the fields in the popup:



The data model after this step:

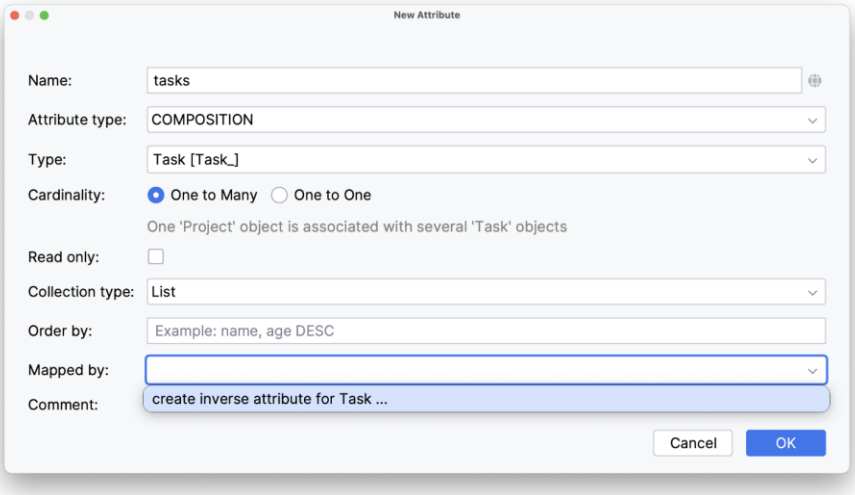

Project
id
name
manager: User
description
User
id
version
username
password
firstName
lastName
email
active
timeZoneId
Task
id
name
dueDate
assignee: User
priority
description
estimation
TaskPriority
LOW
MEDIUM
HIGH

Step 4: Define Task->Project composition

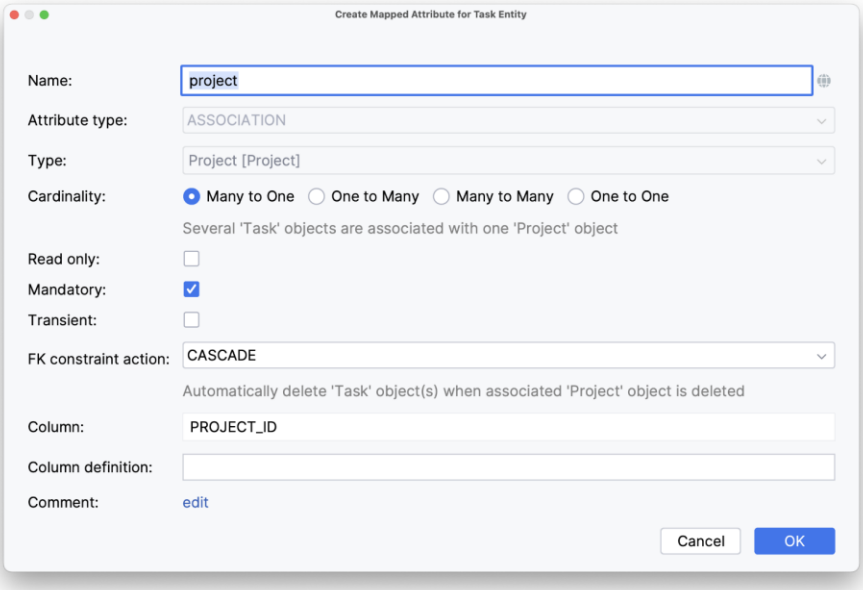
1. Add an additional attribute to `Project`:

Attribute name	Type	Additionally
`tasks`	`Task_`	Define the One-to-Many composition with the `Task_` entity.

Entities that relate through composition need to know about each other, so when adding the attribute, create an inverse attribute for the Task_ entity. To do this, in the **Mapped by** field select **create inverse attribute for Task...** :

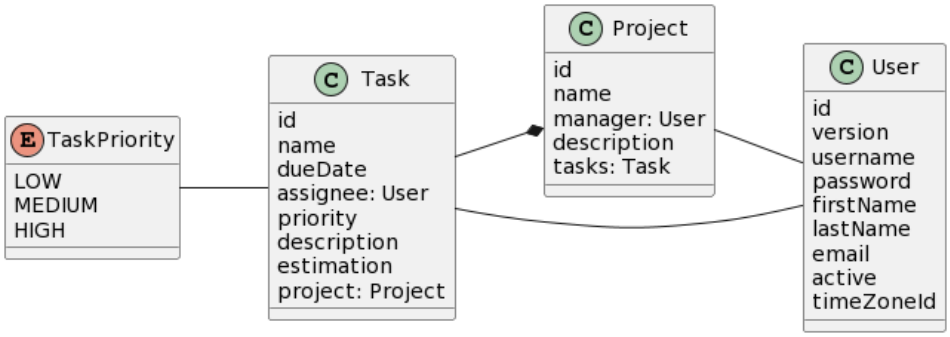


The inverse attribute properties will be generated automatically. You will see them next:



Just click OK.

The data model after this step:


TaskPriority
LOW
MEDIUM
HIGH
Task
id
name
dueDate
assignee: User
priority
description
estimation
project: Project
Project
id
name
manager: User
description
tasks: Task
User
id
version
username
password
firstName
lastName
email
active
timeZoneId

Step 5: Create TimeEntry entity

1. Create a new JPA entity named “TimeEntry”.
2. Use Entity Designer to define the following attributes:

Attribute name	Type	Additionally
`task`	**`Task_`**	Define the Many-to-One association with the **`Task_`** entity.
`timeSpent`	Integer	Check the **Mandatory** checkbox. Define the @**PositiveOrZero** validation.
`entryDate`	LocalDateTime	Check the **Mandatory** checkbox.
`user`	**`User`**	Define the Many-to-One association with the **`User`** entity. Check the **Mandatory** checkbox.
`description`	String	Check the **Unlimited** checkbox.

The data model is now complete!