luv2code

Mapping Lists

List

An ordered collection of items

that allows duplicates

Use Case for List

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Student and Images

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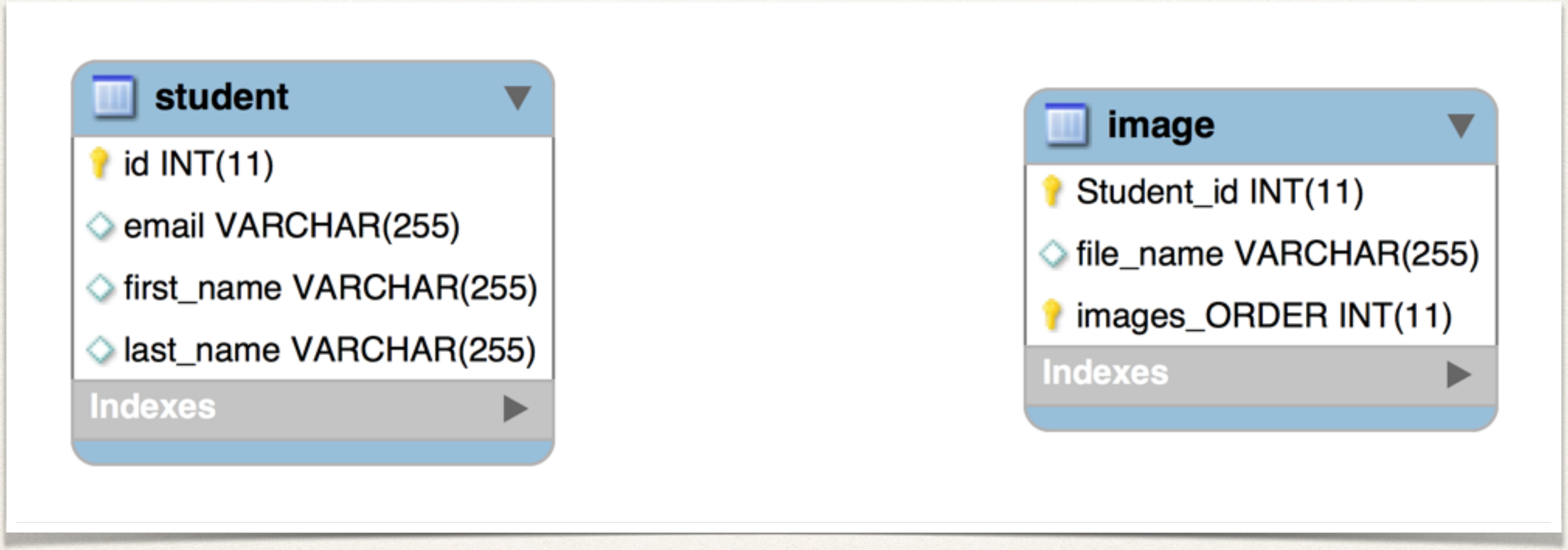
Database Diagram



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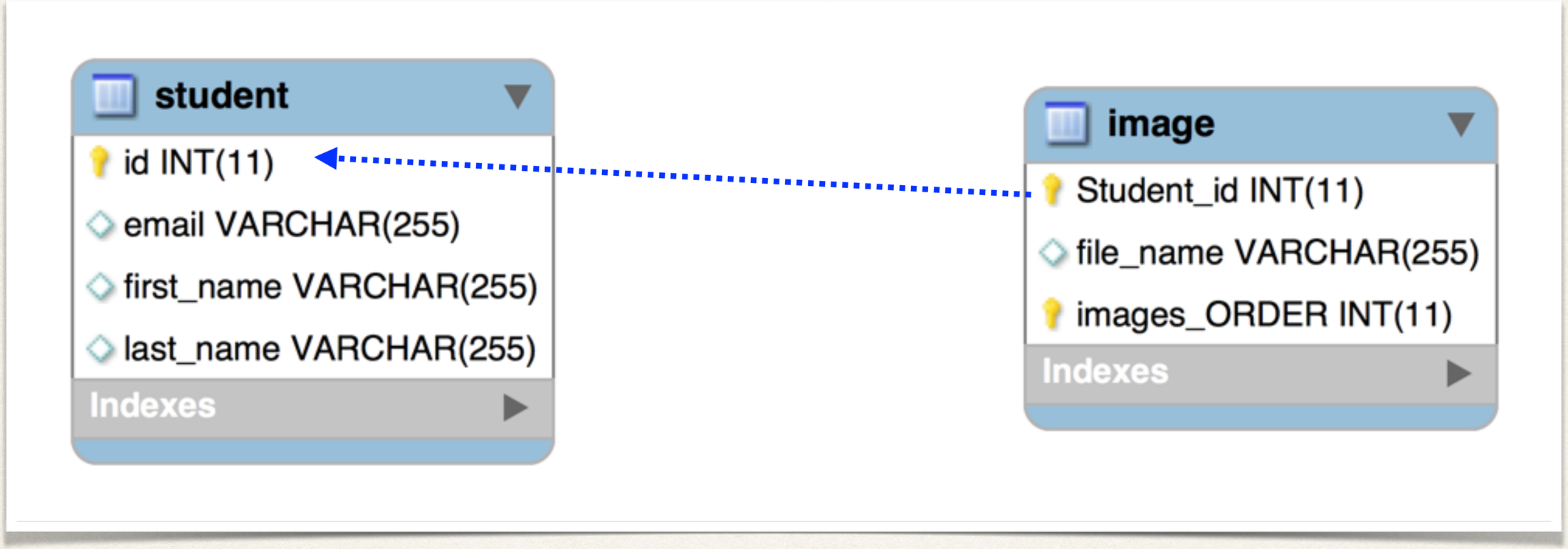

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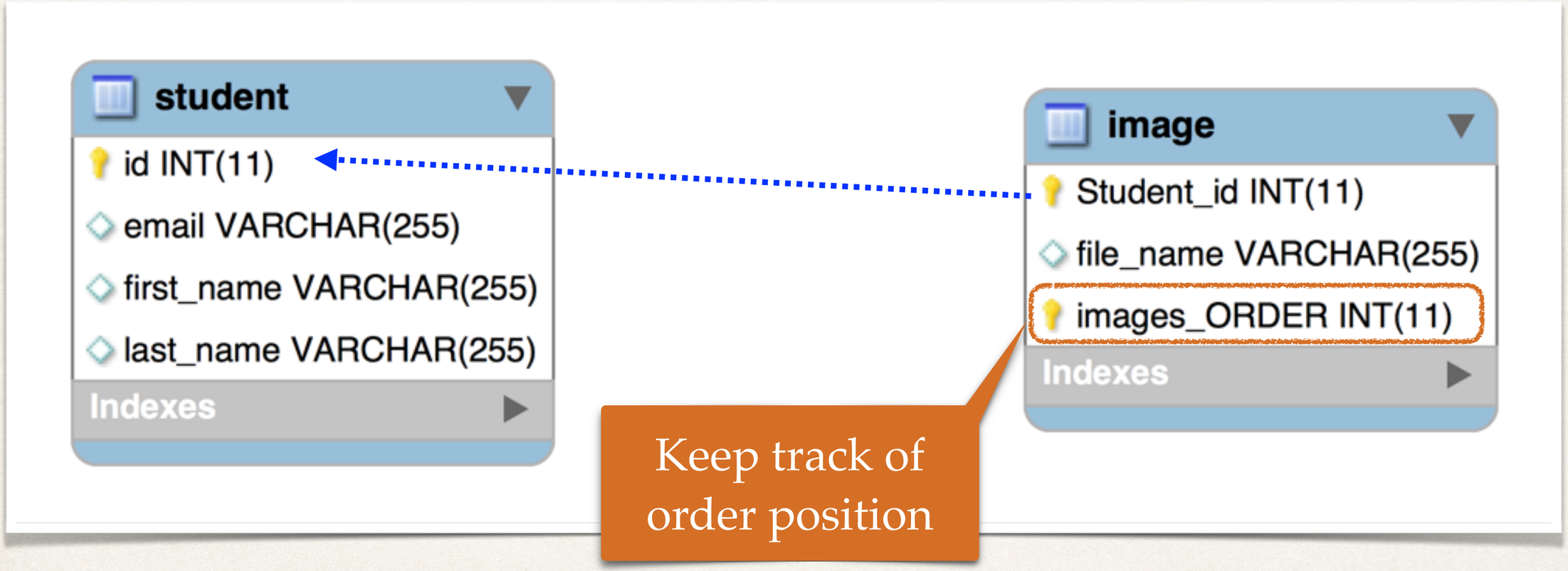

Development Process

Step-By-Step

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1. Create database tables

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2. Map the element collection

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Step-By-Step

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3. Develop the main application

Step 1: Create database tables: `student`

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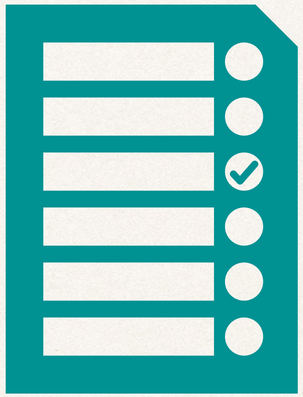
- Previously, we created database tables by running a SQL script



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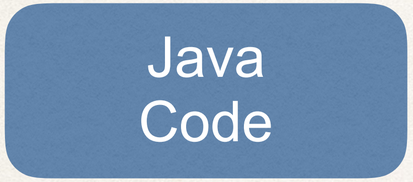

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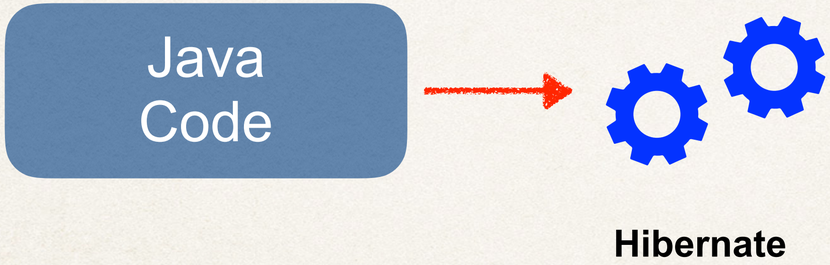

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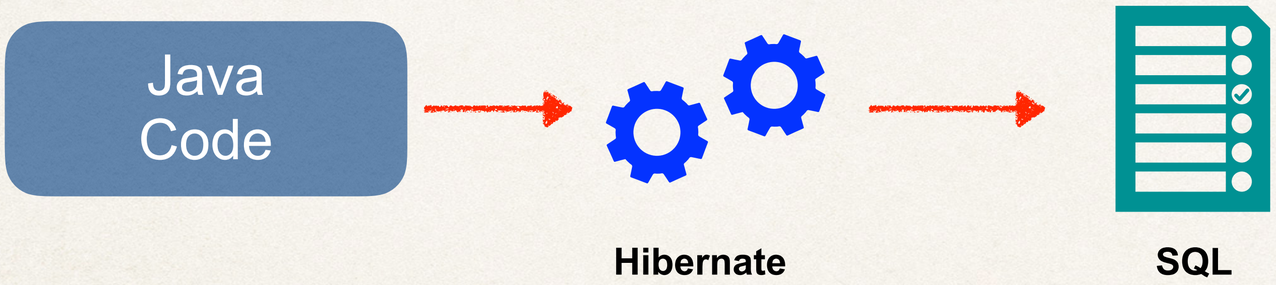

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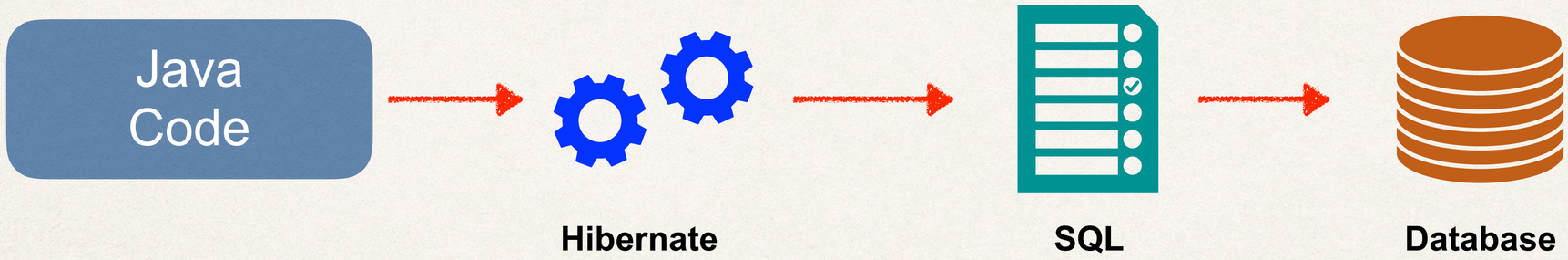

Hibernate Configuration

hbm: Hibernate mapping
ddl: Data definition language

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<property name="hibernate.hbm2ddl.auto">create</property>
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- When you run your app, Hibernate will **drop** tables then **create** them
- Based on the JPA/Hibernate annotations in your Java code

hbm: Hibernate mapping
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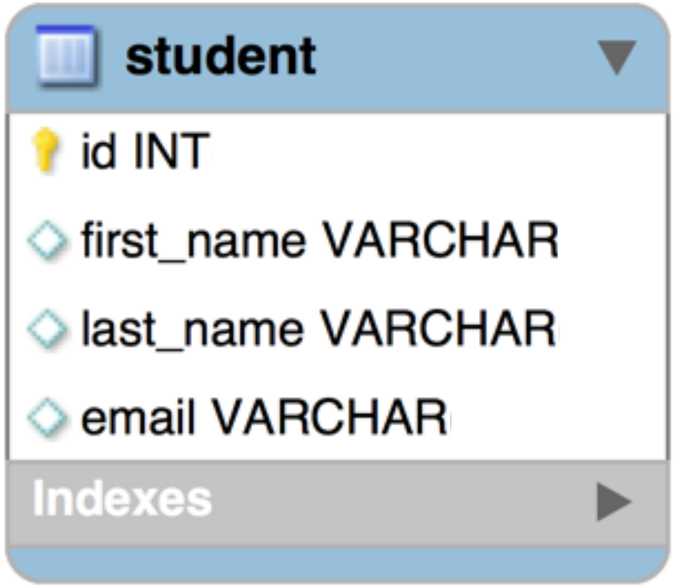
Creating Tables based on Java Code



Creating Tables based on Java Code

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@Entity
@Table(name="student")
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  // constructors, getters / setters
}
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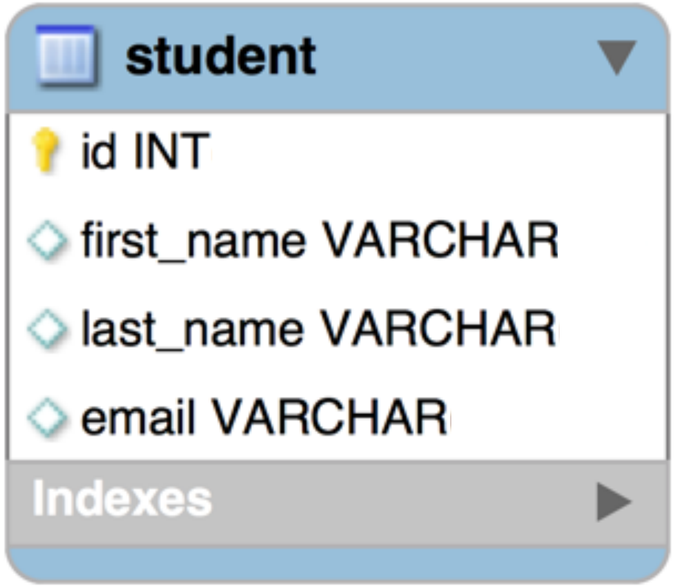

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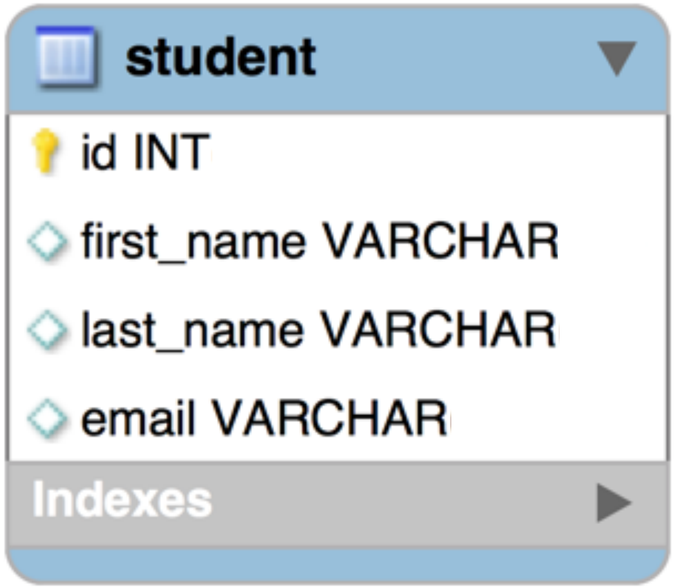

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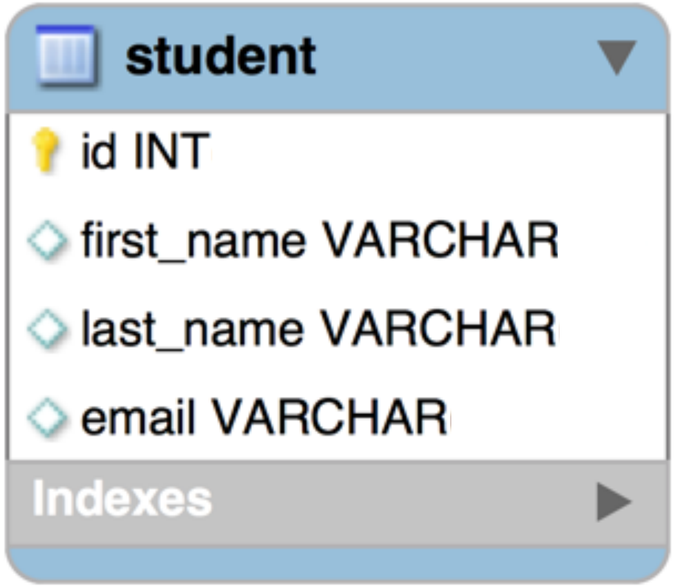

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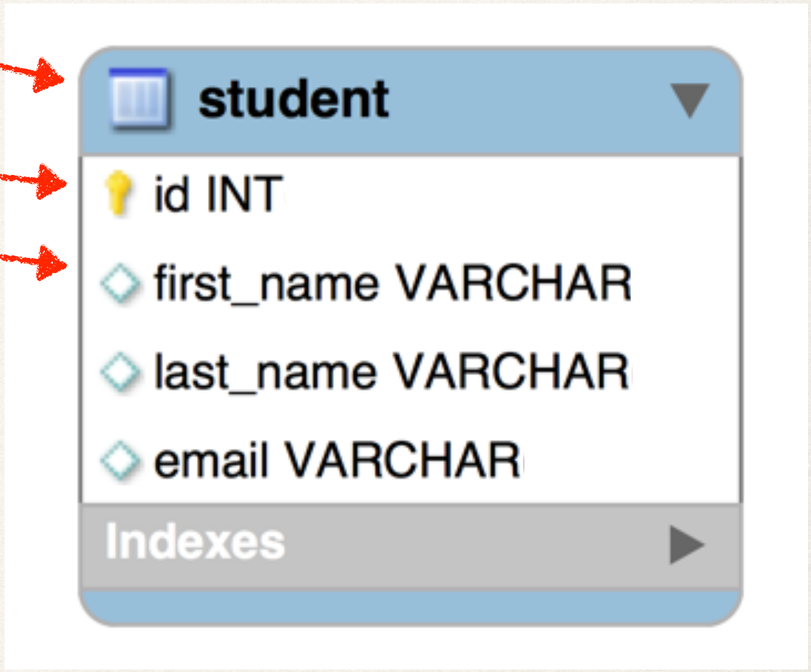

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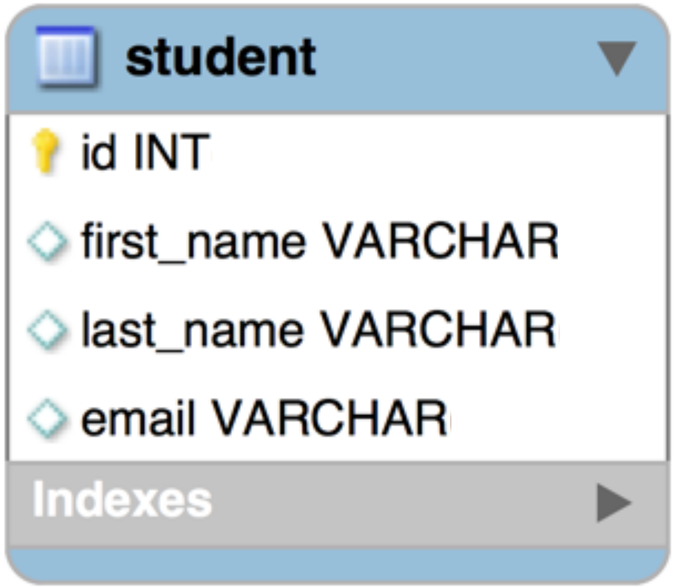

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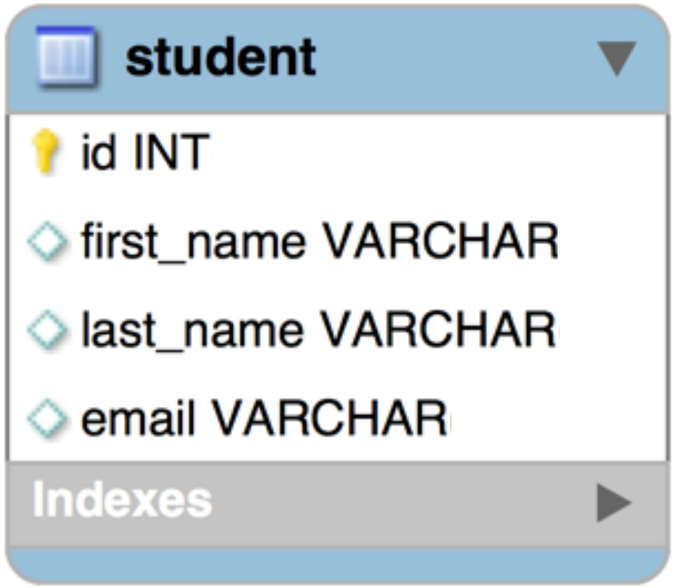

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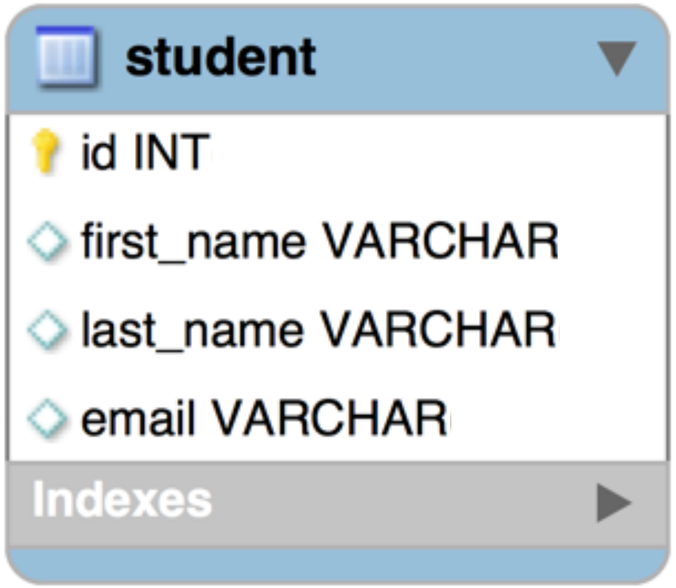
Hibernate will generate and execute this

```
create table student (id integer not null auto_increment,
                      email varchar(255), first_name varchar(255),
                      last_name varchar(255), primary key (id))
```



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`validate`	Validate the database tables schema
`update`	Update the database tables schema

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- You normally don't want to **drop** your production data
  - **All data is deleted!!!**
- Instead for Production, you should have DBAs run SQL scripts

Step 2: Map the element collection

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```
private List<String> images = new ArrayList<String>();
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Annotation to Map Lists

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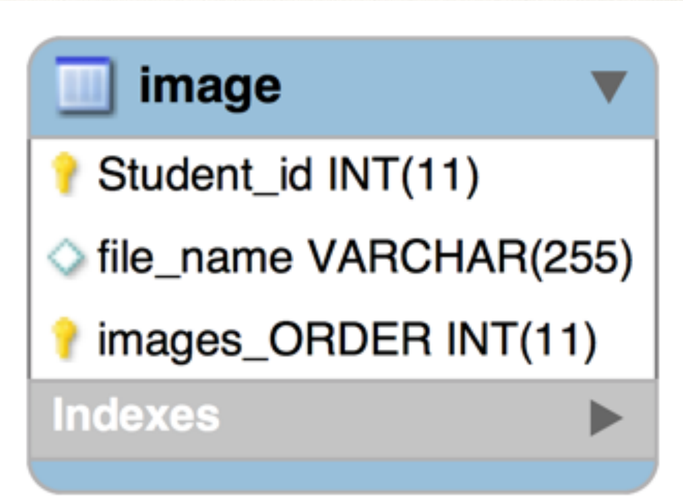

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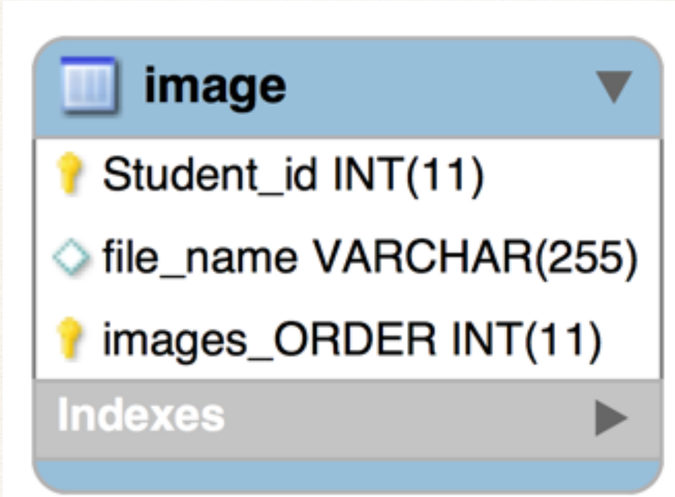

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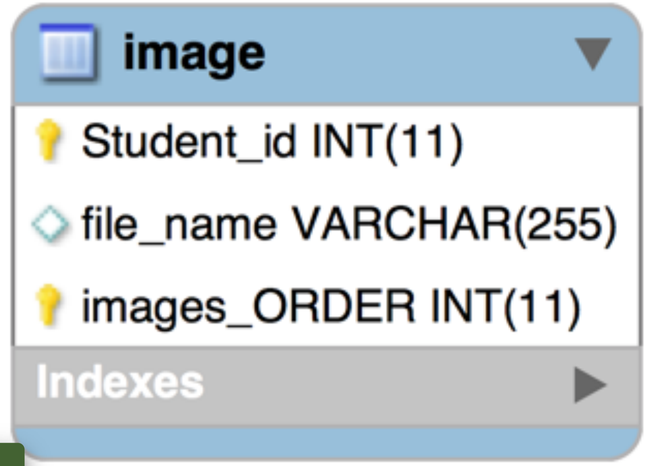
Use a **`List`** to track image file names



Mapping the Collection

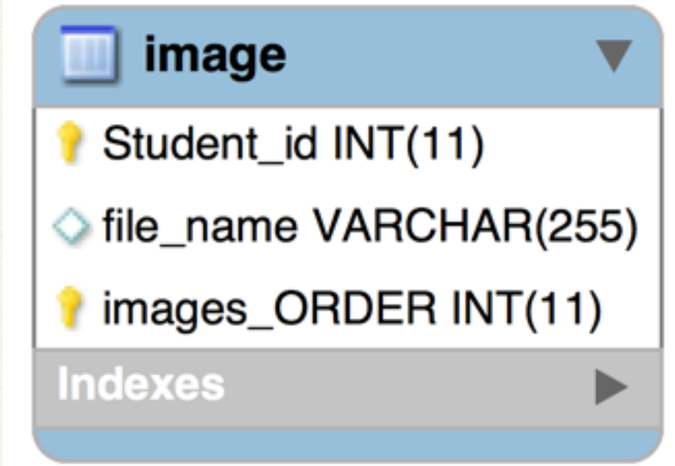
```
@Entity
@Table(name="student")
public class Student {

  …

  @ElementCollection
  @CollectionTable(name="image")
  @OrderColumn
  @Column(name="file_name")
  private List<String> images = new ArrayList<String>();


  …
}
```

Tells Hibernate we are mapping a collection



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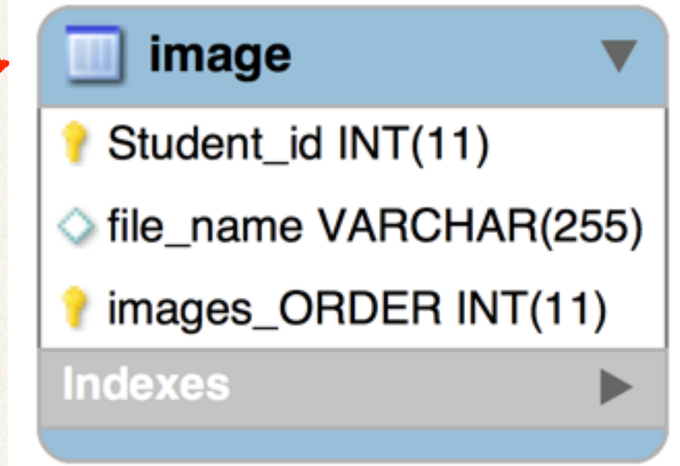
The name of the collection table



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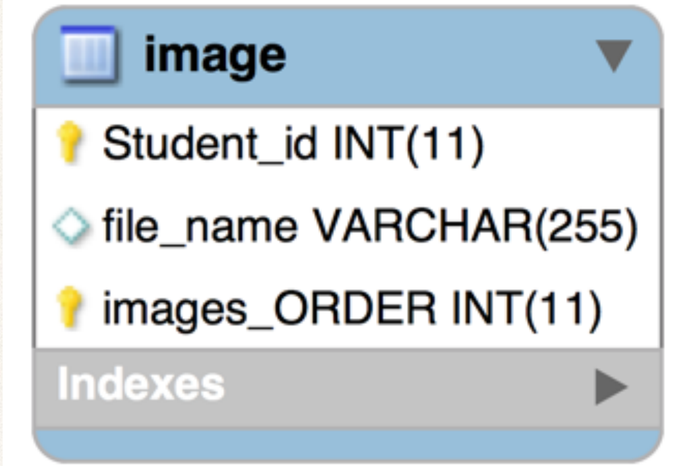
Column to track element order
Name defaults to: <property>_ORDER



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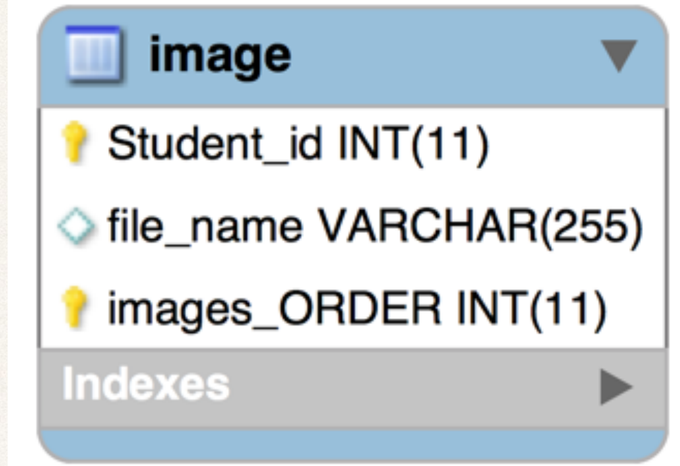

In this example
<property> is images

Mapping the Collection

To override default use:
`@OrderColumn(name="my_data_position")`

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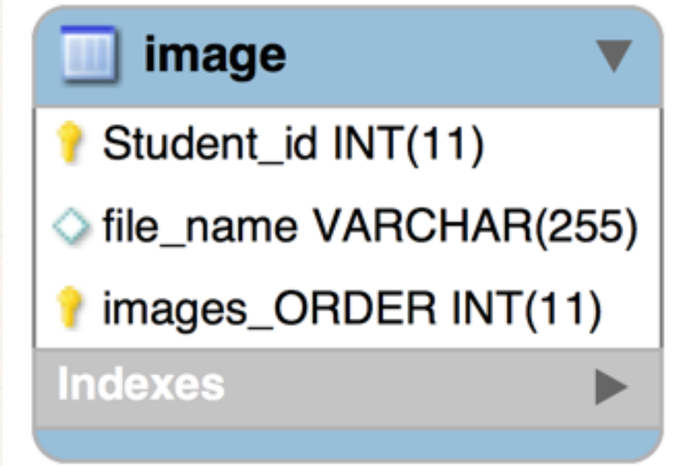
Column to track element order
Name defaults to: `<property>_ORDER`



In this example
`<property>` is `images`

Mapping the Collection

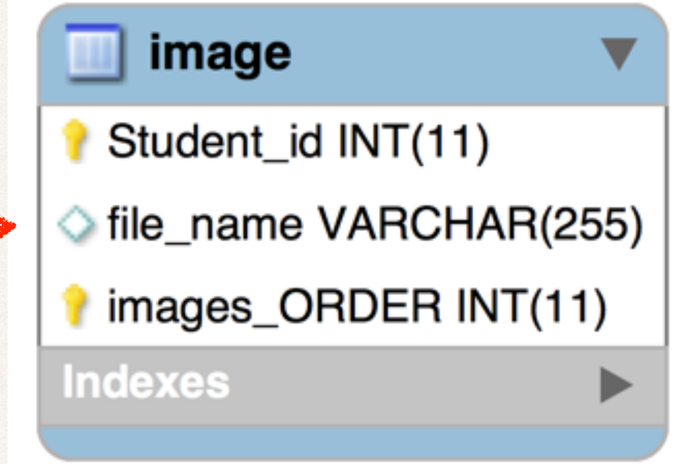
```
@Entity
@Table(name="student")
public class Student {

  …

  @ElementCollection
  @CollectionTable(name="image")
  @OrderColumn
  @Column(name="file_name")
  private List<String> images = new ArrayList<String>();


  …
}
```

The column for the image file name



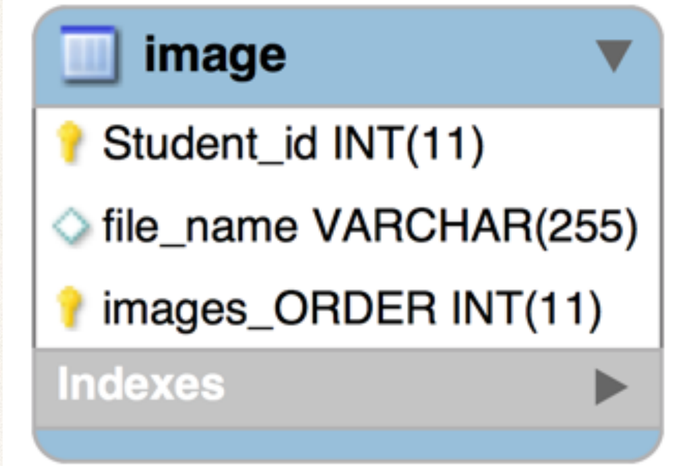
Mapping the Collection

```
@Entity
@Table(name="student")
public class Student {

  …

  @ElementCollection
  @CollectionTable(name="image")
  @OrderColumn
  @Column(name="file_name")
  private List<String> images = new ArrayList<String>();


  …
}
```



Step 3: Develop the main application

Step 3: Develop the main application

```
// create the object
Student tempStudent =  new Student("John", "Doe", "john@luv2code.com");
List<String> theImages = tempStudent.getImages();
```

Get a reference
to the images **`List`**

Step 3: Develop the main application

```
// create the object
Student tempStudent =  new Student("John", "Doe", "john@luv2code.com");
List<String> theImages = tempStudent.getImages();

theImages.add("photo1.jpg");
theImages.add("photo2.jpg");
theImages.add("photo3.jpg");
theImages.add("photo4.jpg");
theImages.add("photo4.jpg");
```

Now, let's add to the images **`List`**

Step 3: Develop the main application

```
// create the object
Student tempStudent =  new Student("John", "Doe", "john@luv2code.com");
List<String> theImages = tempStudent.getImages();

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theImages.add("photo4.jpg");
```

Now, let's add to the images **`List`**

Remember, duplicates are allowed in **`List`**

Step 3: Develop the main application

```
// create the object
Student tempStudent =  new Student("John", "Doe", "john@luv2code.com");
List<String> theImages = tempStudent.getImages();

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Step 3: Develop the main application

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theImages.add("photo2.jpg");
theImages.add("photo3.jpg");
theImages.add("photo4.jpg");
theImages.add("photo4.jpg");

// start a transaction
session.beginTransaction();
```

Step 3: Develop the main application

```
// create the object
Student tempStudent =  new Student("John", "Doe", "john@luv2code.com");
List<String> theImages = tempStudent.getImages();

theImages.add("photo1.jpg");
theImages.add("photo2.jpg");
theImages.add("photo3.jpg");
theImages.add("photo4.jpg");
theImages.add("photo4.jpg");

// start a transaction
session.beginTransaction();

// save the object
System.out.println("Saving the student and images..");
session.persist(tempStudent);
```

Step 3: Develop the main application

```
// create the object
Student tempStudent =  new Student("John", "Doe", "john@luv2code.com");
List<String> theImages = tempStudent.getImages();

theImages.add("photo1.jpg");
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theImages.add("photo3.jpg");
theImages.add("photo4.jpg");
theImages.add("photo4.jpg");

// start a transaction
session.beginTransaction();

// save the object
System.out.println("Saving the student and images..");
session.persist(tempStudent);

// commit the transaction
session.getTransaction().commit();
```

Run the App

Run the App

Console output

```
Hibernate: insert into student (email, first_name, last_name) values (?, ?, ?)
Hibernate: insert into image (Student_id, images_ORDER, file_name) values (?, ?, ?)
Hibernate: insert into image (Student_id, images_ORDER, file_name) values (?, ?, ?)
Hibernate: insert into image (Student_id, images_ORDER, file_name) values (?, ?, ?)
Hibernate: insert into image (Student_id, images_ORDER, file_name) values (?, ?, ?)
Hibernate: insert into image (Student_id, images_ORDER, file_name) values (?, ?, ?)
```

Run the App

Console output

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```

Table: student

id	email	first_name	last_name
1	john@luv2code.com	John	Doe

Run the App

Console output

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Hibernate: insert into student (email, first_name, last_name) values (?, ?, ?)
Hibernate: insert into image (Student_id, images_ORDER, file_name) values (?, ?, ?)
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Hibernate: insert into image (Student_id, images_ORDER, file_name) values (?, ?, ?)
```

Table: student

id	email	first_name	last_name
1	john@luv2code.com	John	Doe

Table: image

Student_id	file_name	images_ORDER
1	photo1.jpg	0
1	photo2.jpg	1
1	photo3.jpg	2
1	photo4.jpg	3
1	photo4.jpg	4

Run the App

Console output

```
Hibernate: insert into student (email, first_name, last_name) values (?, ?, ?)
Hibernate: insert into image (Student_id, images_ORDER, file_name) values (?, ?, ?)
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Table: student

id	email	first_name	last_name
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Student_id	file_name	images_ORDER
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Table: student

id	email	first_name	last_name
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Column to track element order

Table: image

Student_id	file_name	images_ORDER
1	photo1.jpg	0
1	photo2.jpg	1
1	photo3.jpg	2
1	photo4.jpg	3
1	photo4.jpg	4