# Inheritance: Joined Table

# Inheritance Mapping Strategies

- Single table
- Table per class
- **Joined table**
- Mapped superclass

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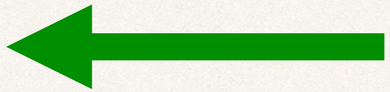
- **Joined table** 
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- Inheritance is modeled with a foreign key
- Hibernate will join the data based on primary key and foreign key

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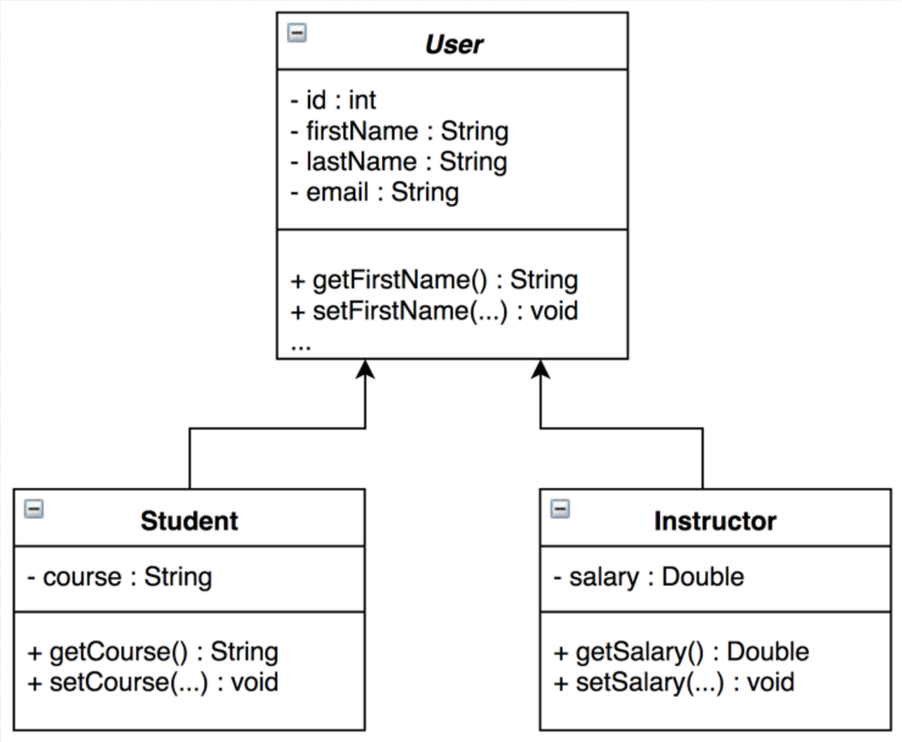

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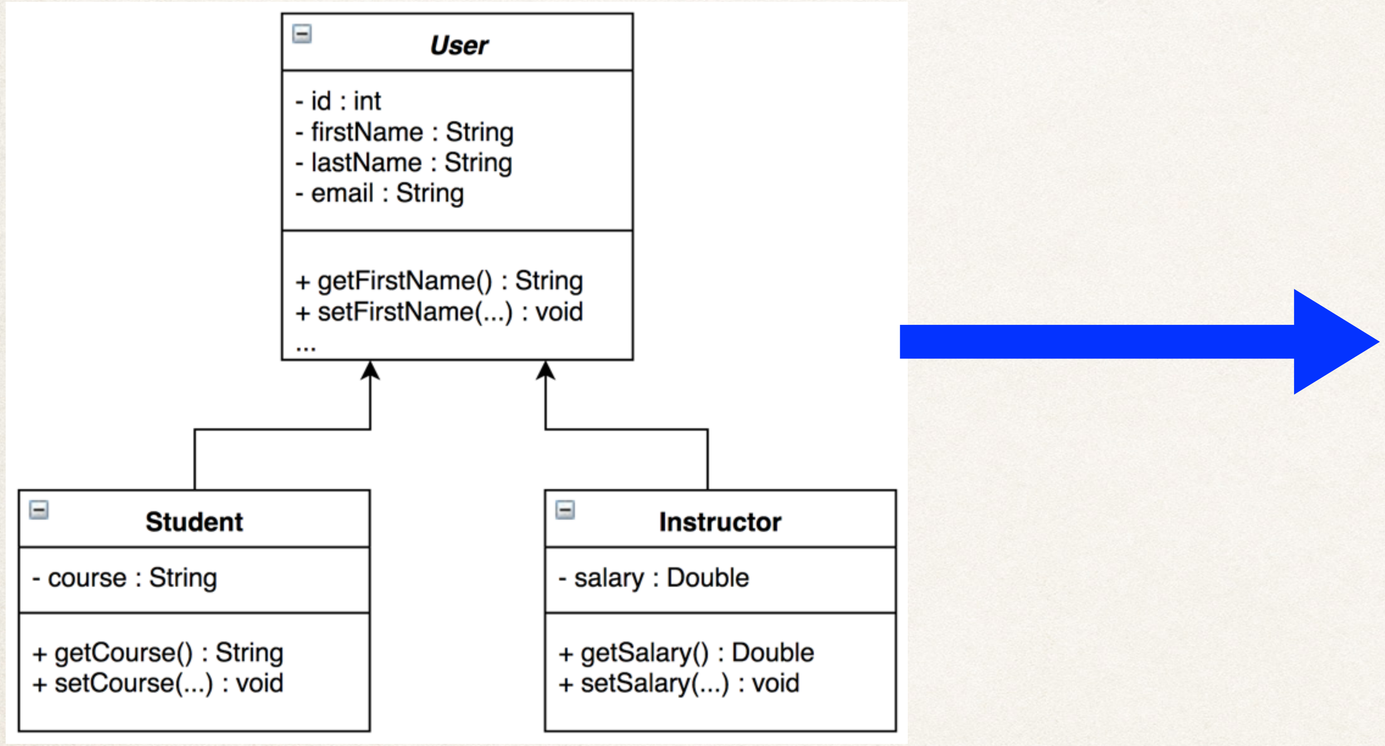

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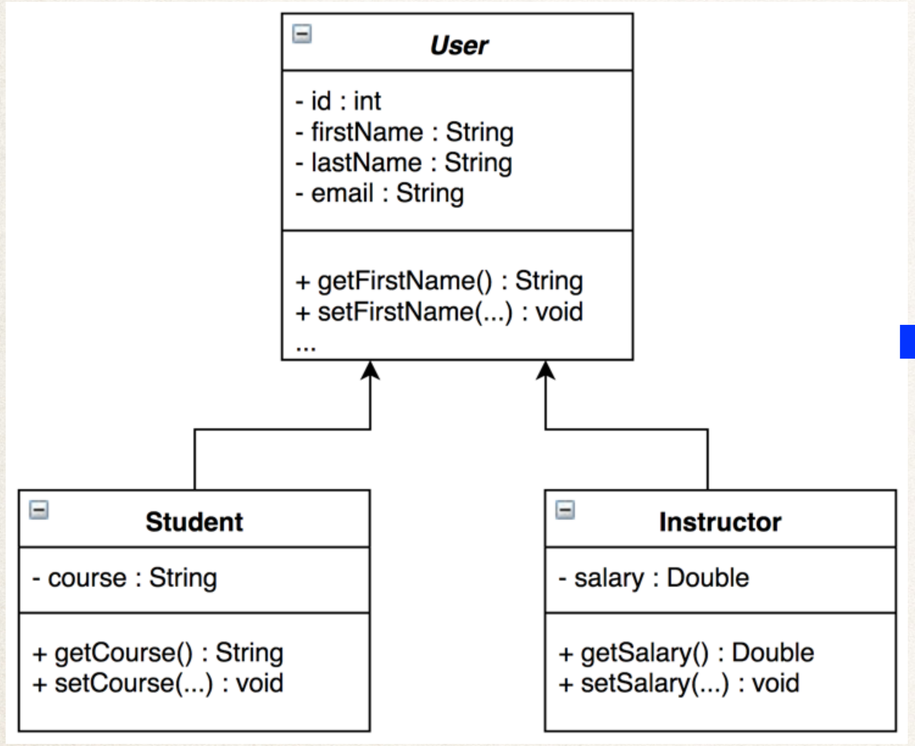
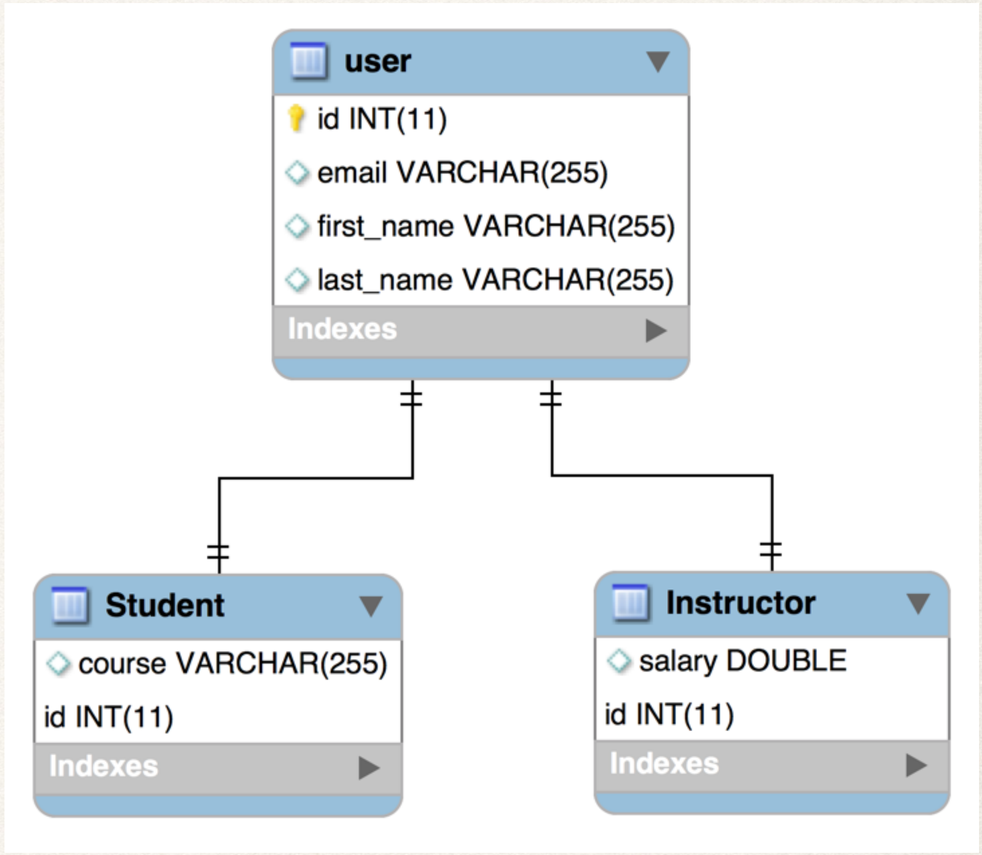
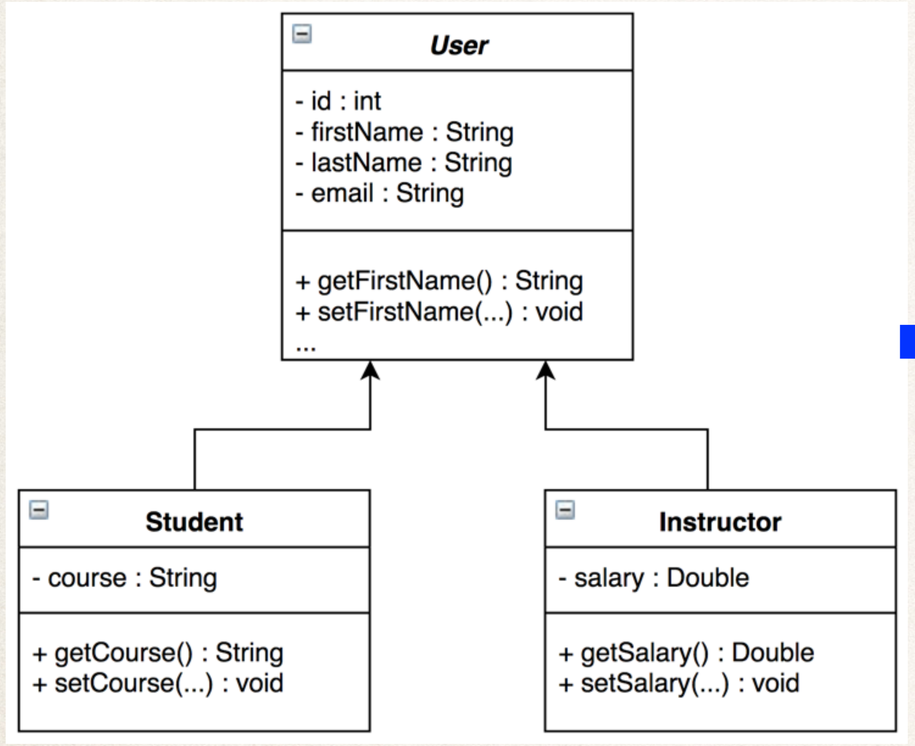
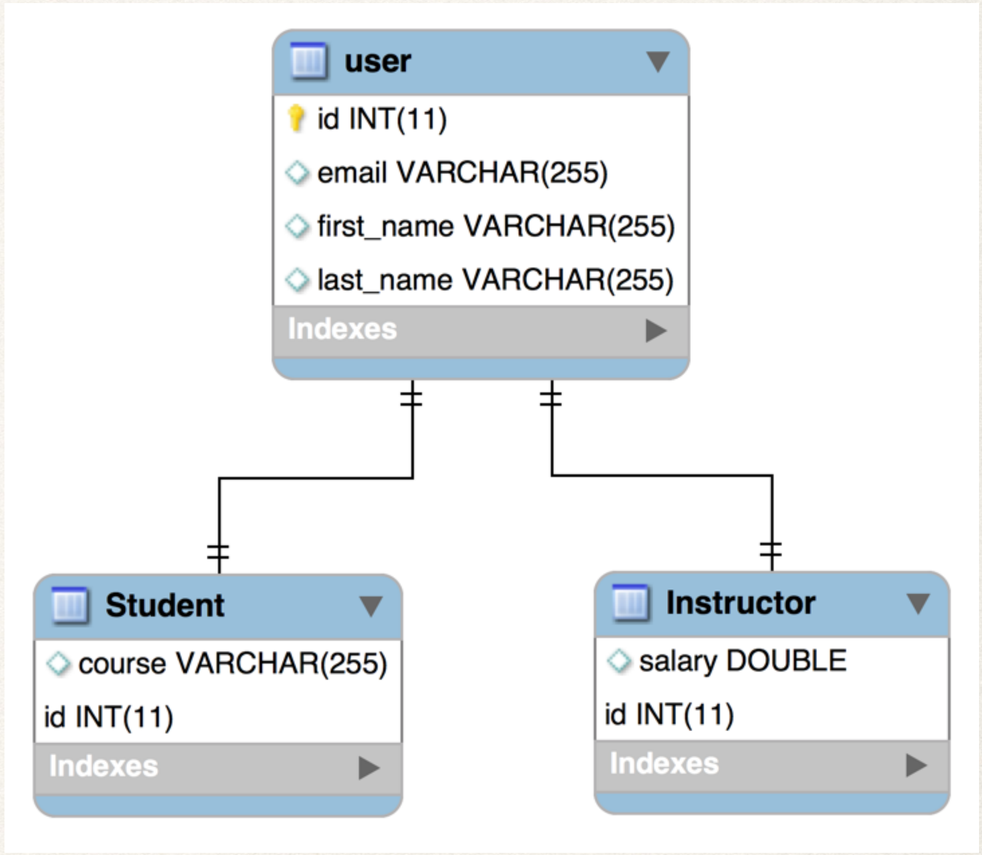


# Joined Tables

**Inheritance is modeled by joining on primary and foreign keys**



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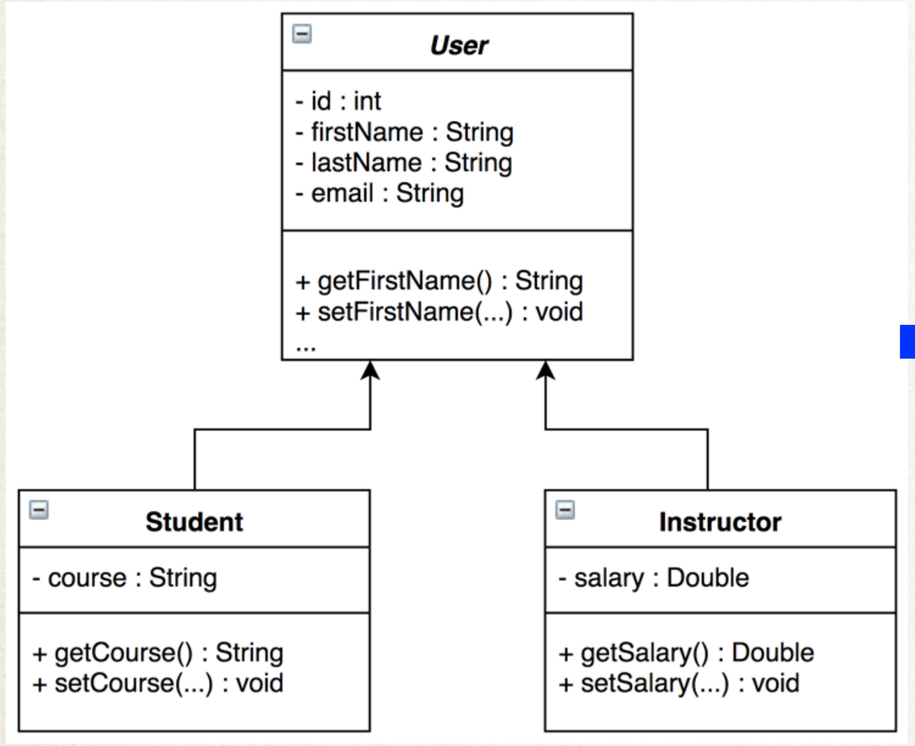


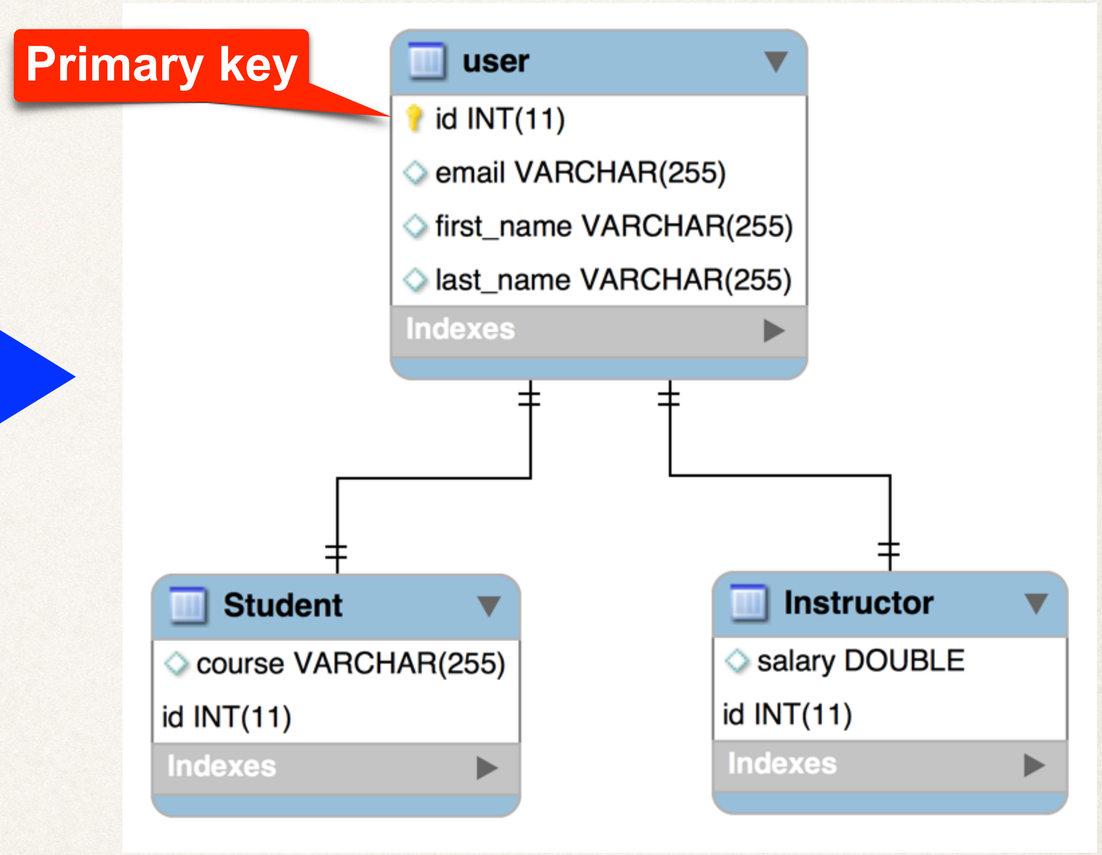

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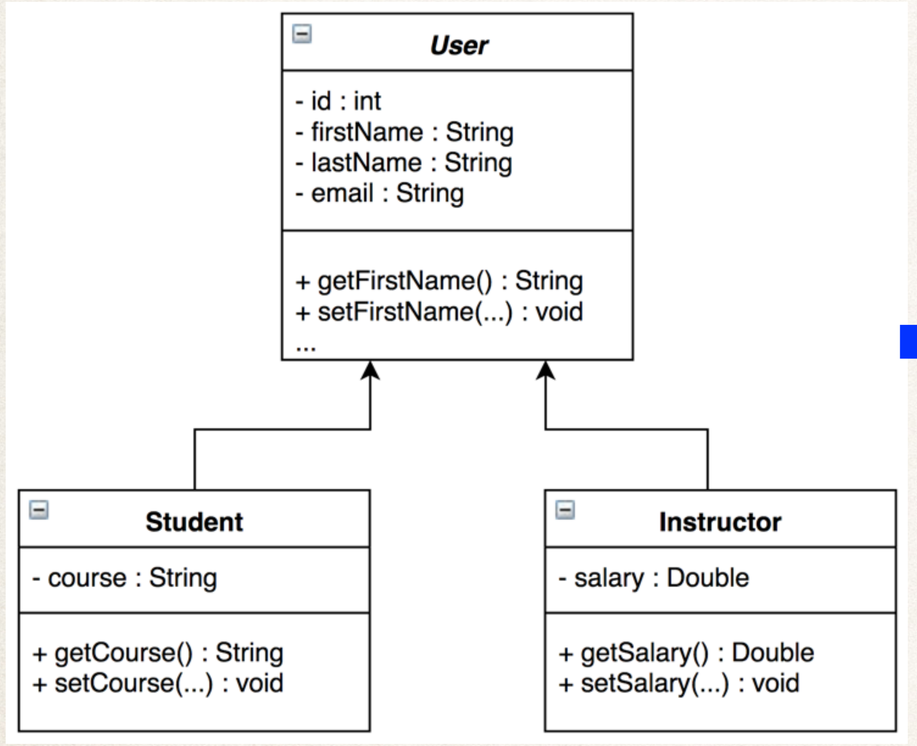


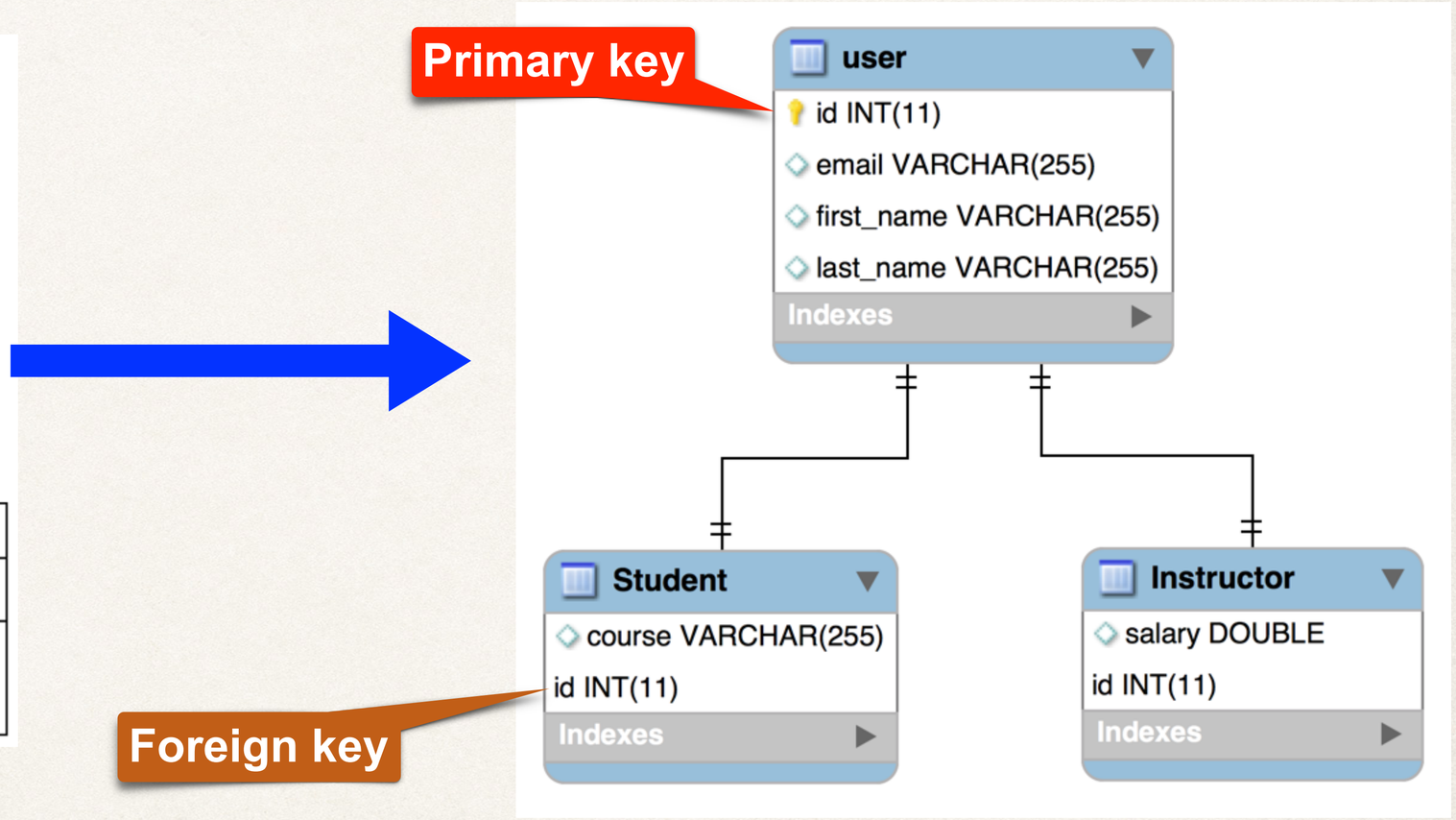

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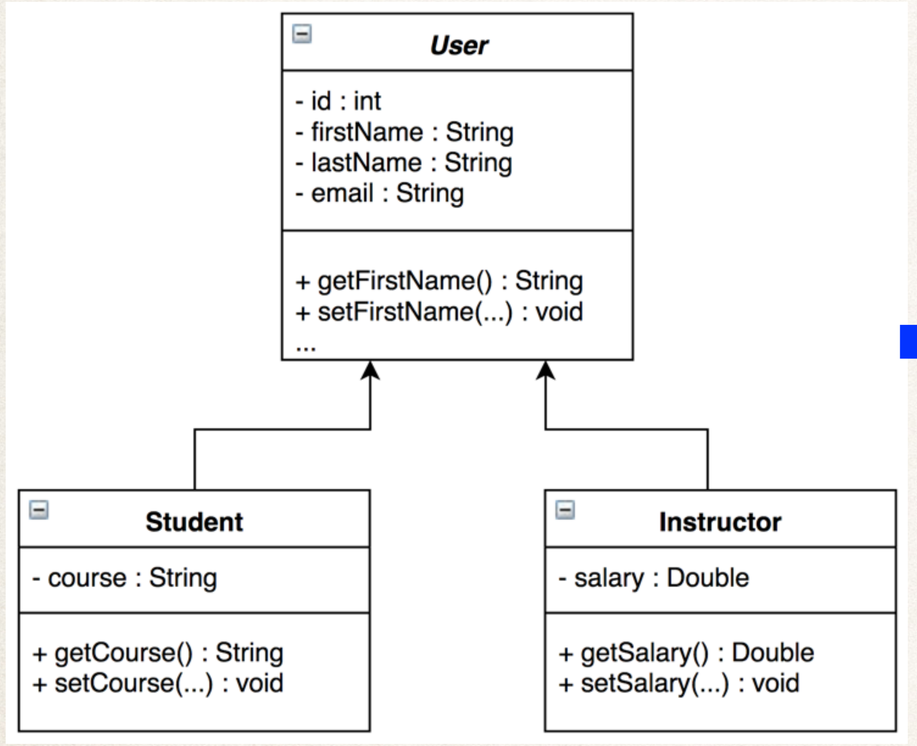


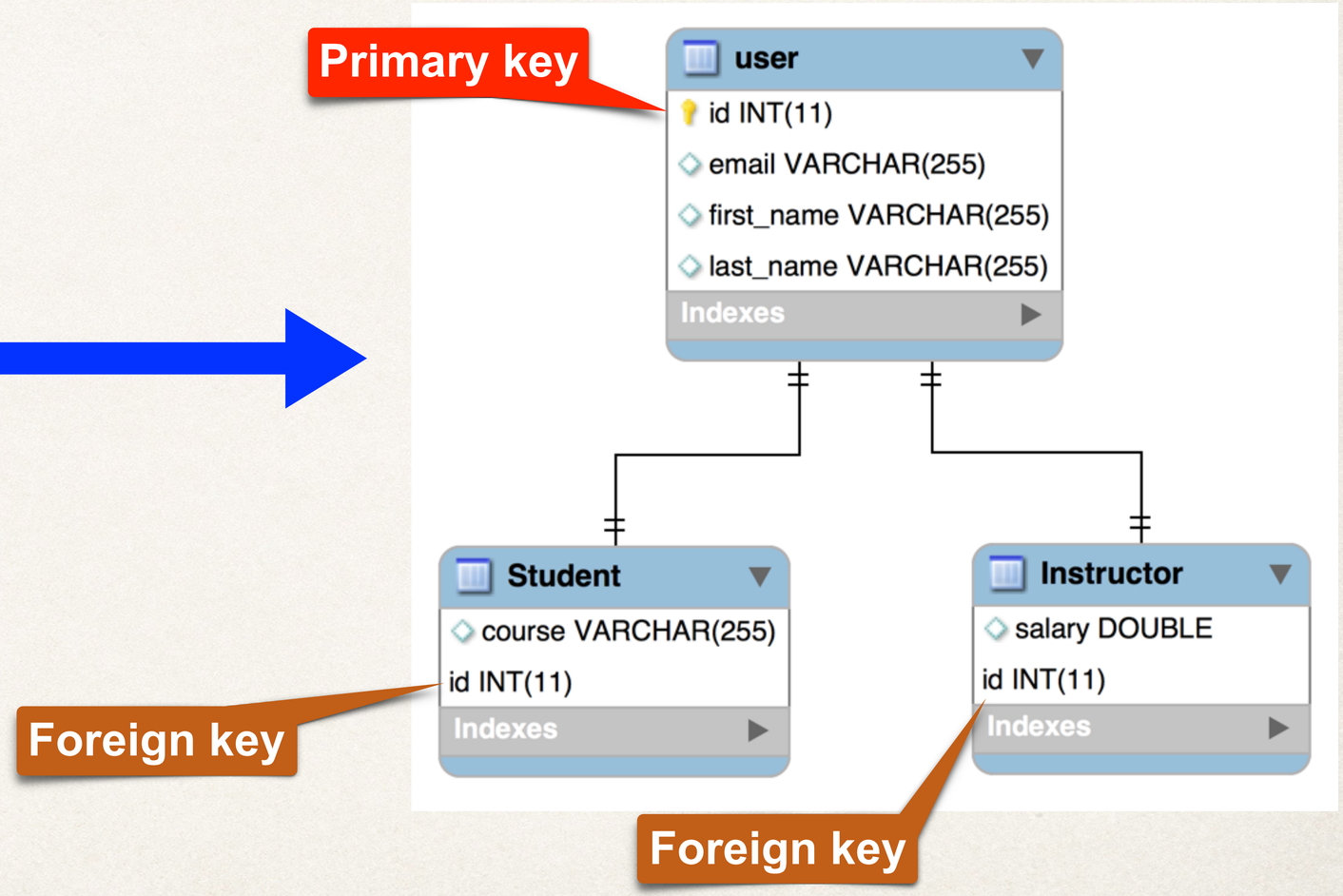

# Development Process

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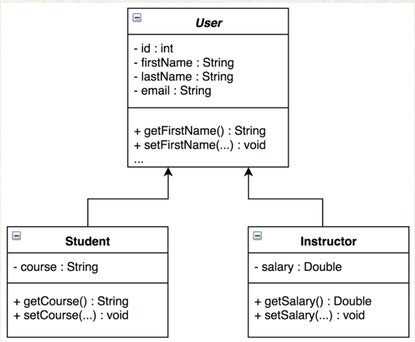
3. Develop main application

# Step 1: Superclass - Inheritance strategy

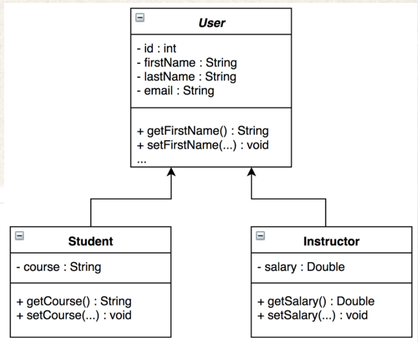


# Step 1: Superclass - Inheritance strategy

```
@Entity
@Table(name="user")
@Inheritance(strategy = InheritanceType.JOINED)
public abstract class User {

...

}
```



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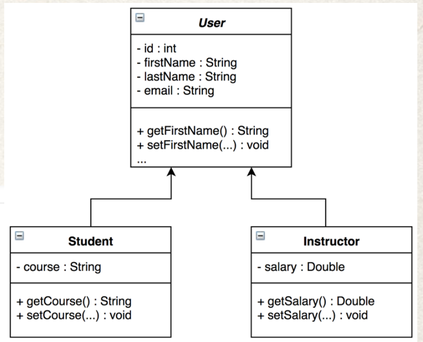
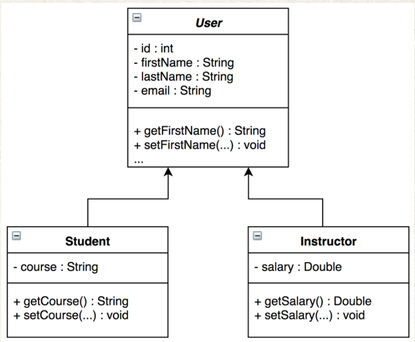



**All classes are mapped to tables**

**Inheritance represented with joins on primary and foreign key**

# Step 2: Update ID generation strategy



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  @Id
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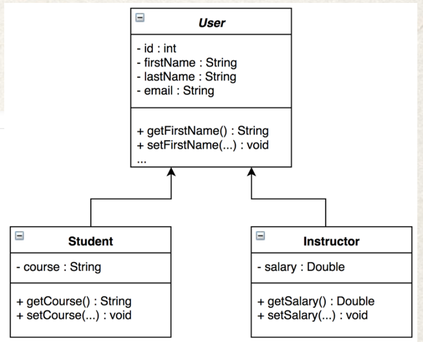
  @Column(name="id")
  private int id;

}
```



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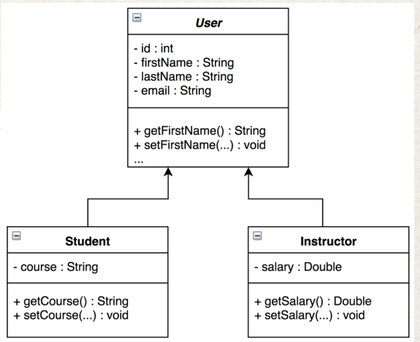


**Leverage "auto-increment" feature of the database**

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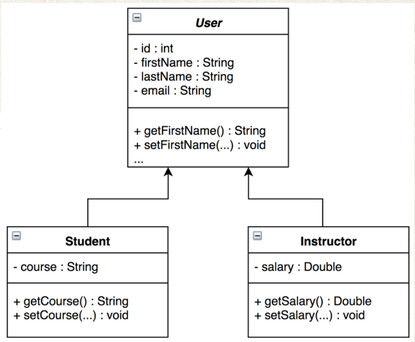


**Leverage "auto-increment" feature of the database**

**Superclass has the id field defined**

**ID primary key is only in one table (no need for sequence table)**

# Step 3: Develop the main application

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Student's course

```
// create the objects
Student tempStudent = new Student("Mary", "Public", "mary@luv2code.com", "Hibernate");
Instructor tempInstructor = new Instructor("John", "Doe", "john@luv2code.com", 20000.00);

// start a transaction
session.beginTransaction();

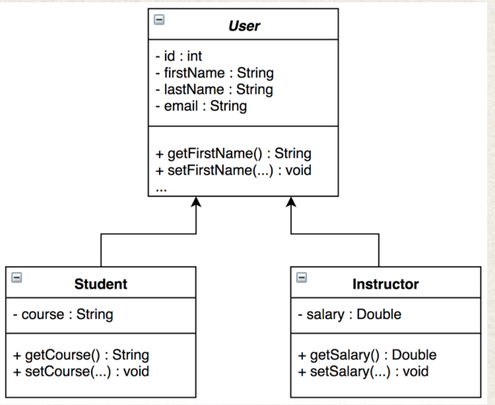
// save the objects
System.out.println("Saving the student and instructor...");
session.save(tempStudent);
session.save(tempInstructor);

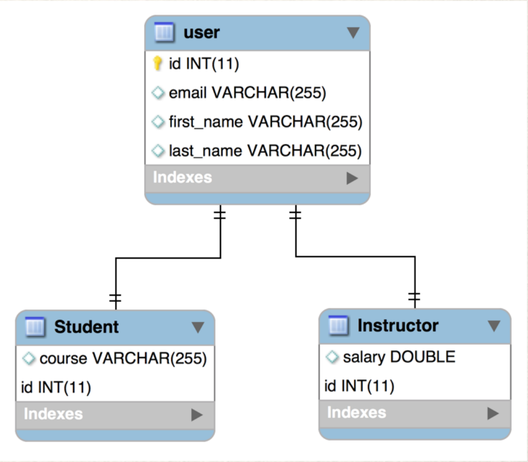
// commit the transaction
session.getTransaction().commit();
```

Instructor's salary

All of this code is the same

# Run the App



# Run the App

***Console output***

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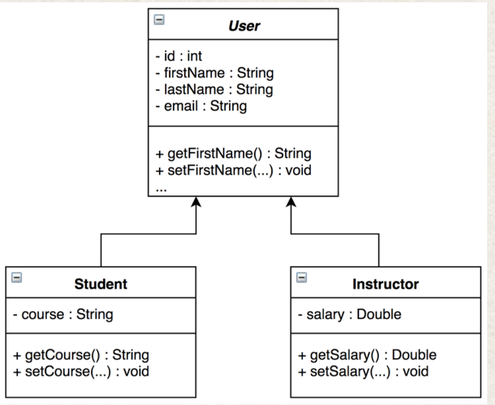


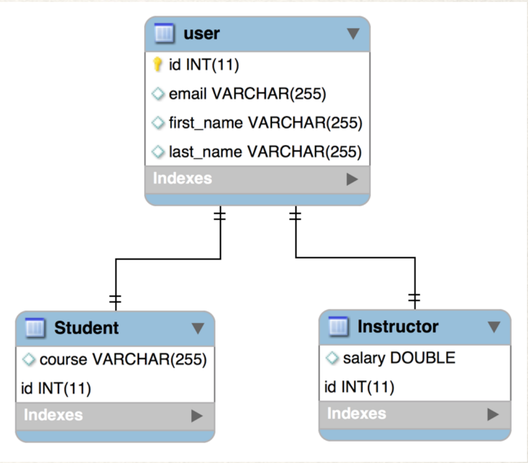

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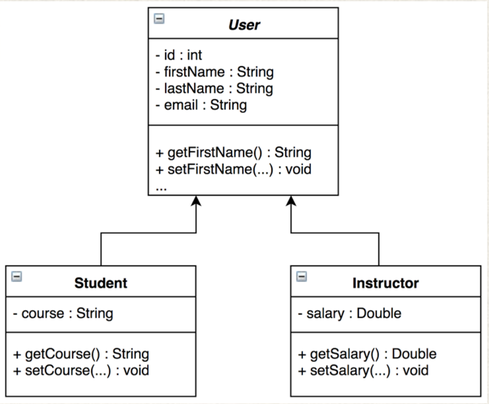
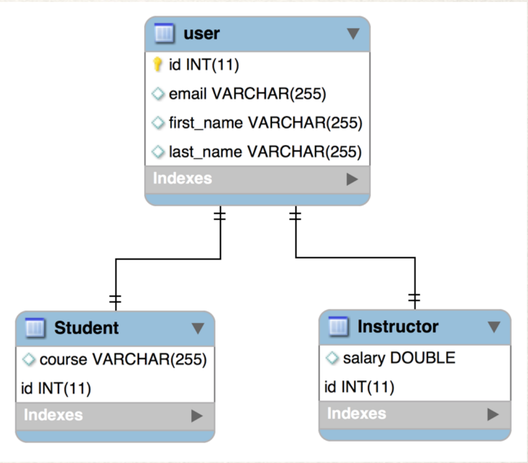
```

***Table: user***

| id | email | first_name | last_name |
|---|---|---|---|
| 1 | mary@luv2code.com | Mary | Public |



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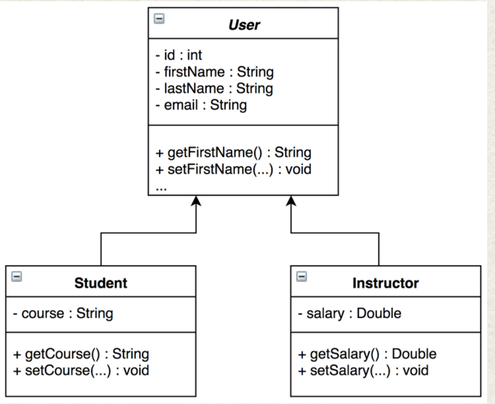


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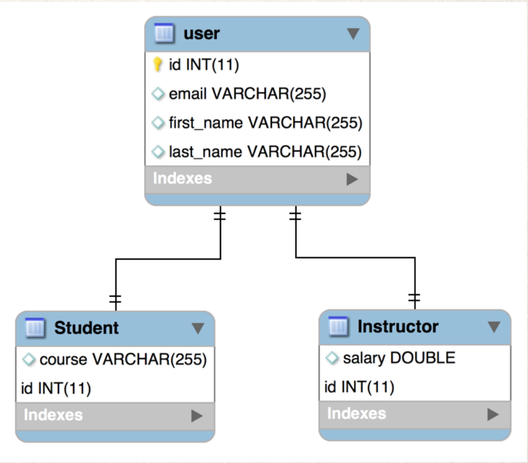


***Table: user***

**Primary key**

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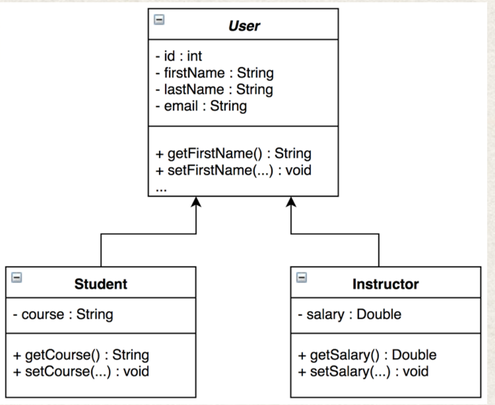
# Run the App

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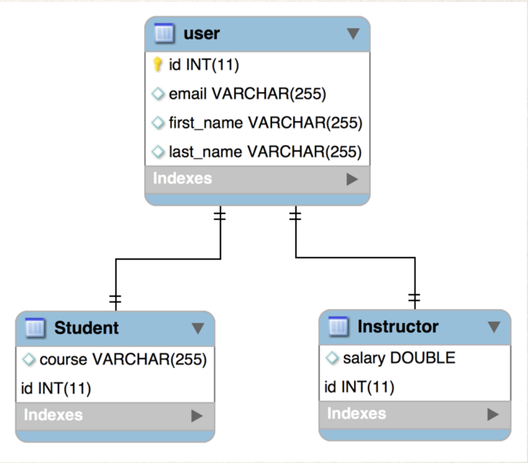


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***Table: Student***

| course | id |
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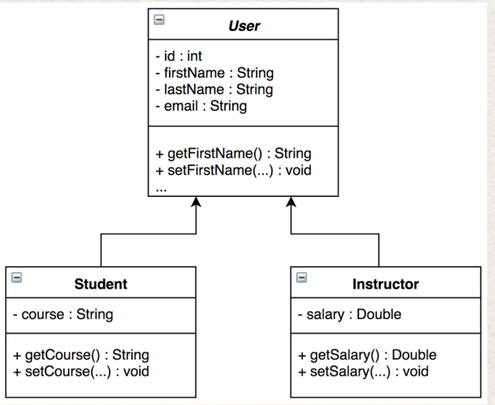
| Hibernate | 1 |

# Run the App

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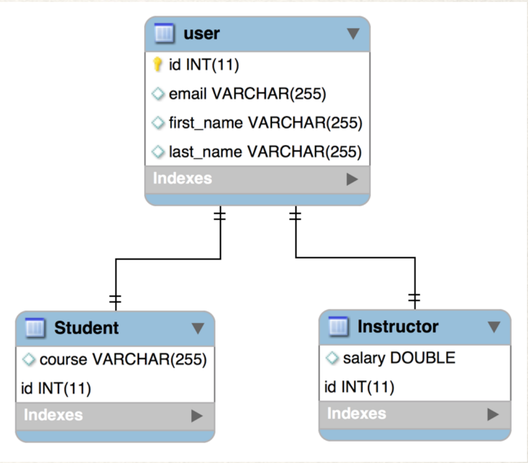


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***Table: Student***

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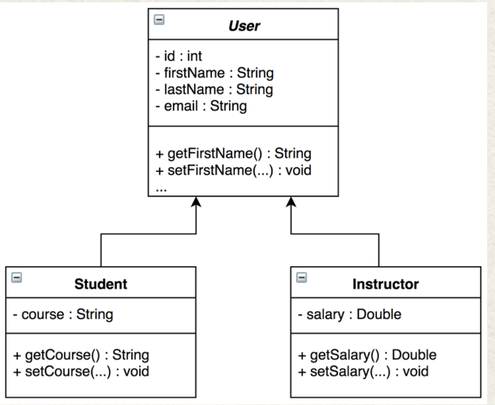
Foreign key

# Run the App

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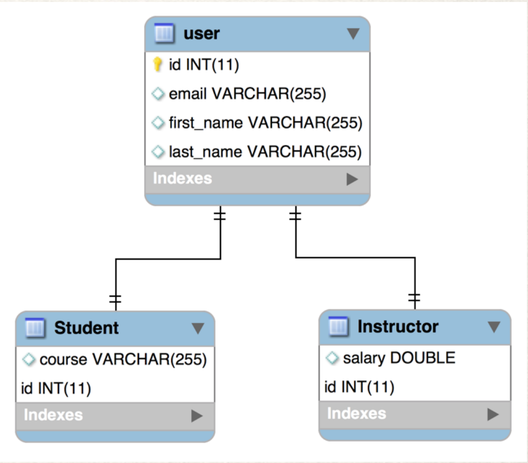


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***Join on primary key and foreign key***

***Table: Student***

| course | id |
|---|---|
| Hibernate | 1 |

**Foreign key**

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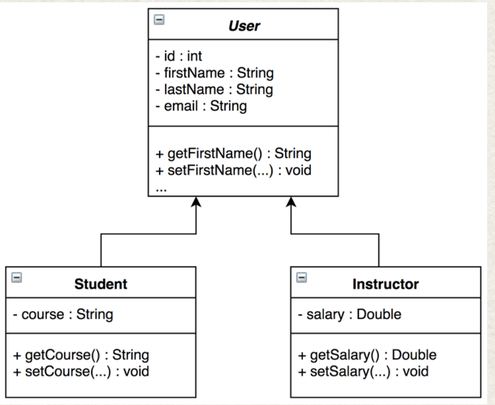


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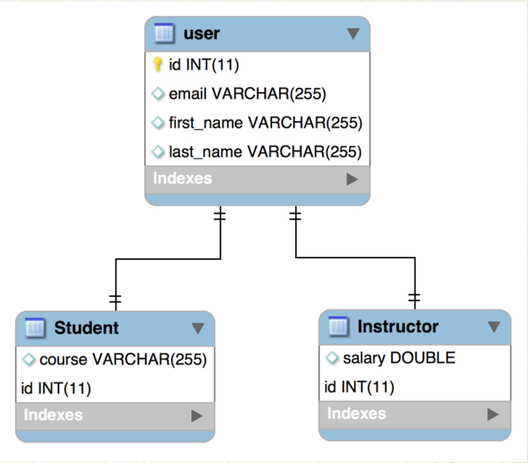


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***Join on primary key and foreign key***

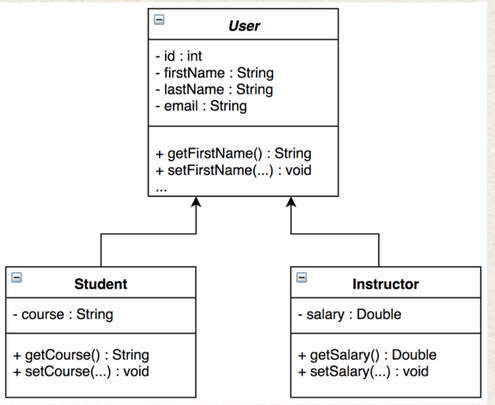
***Table: Student***

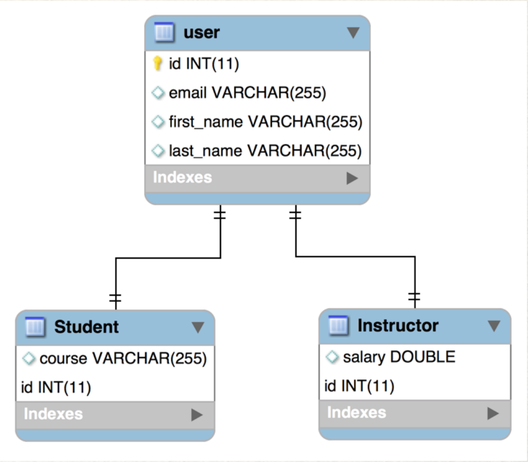
| course | id |
|---|---|
| Hibernate | 1 |

**Foreign key**

**Behind the scenes,**
**Hibernate handles this for you**

# Run the App



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***Console output***

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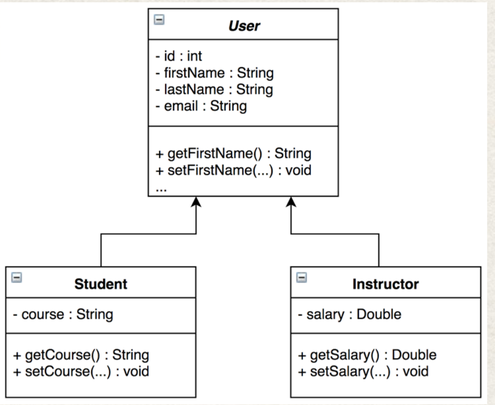
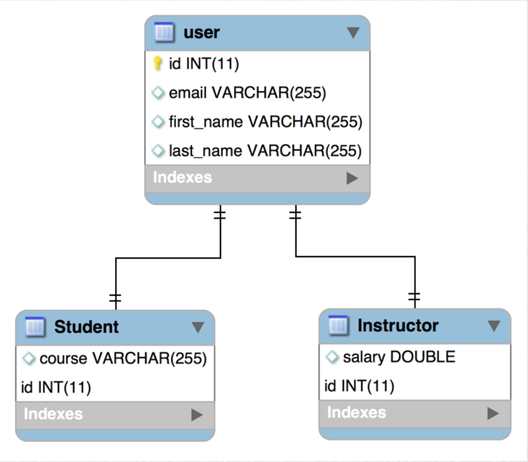
```



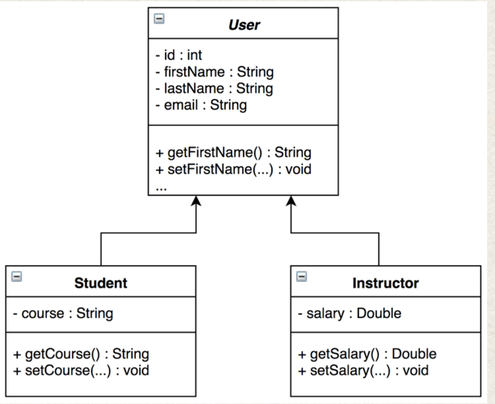
# Run the App

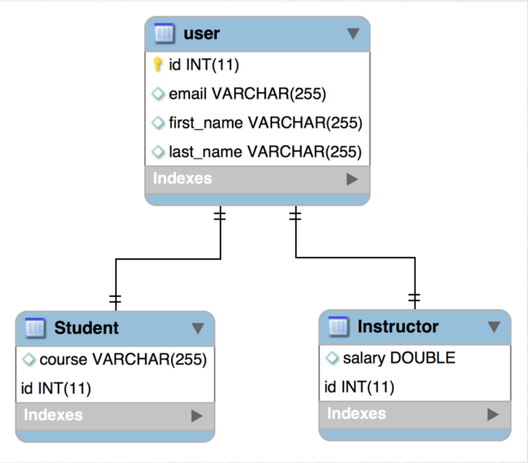
***Console output***

```
Hibernate: insert into user (email, first_name, last_name) values (?, ?, ?)
Hibernate: insert into Instructor (salary, id) values (?, ?)
```

***Table: user***

| id | email | first_name | last_name |
|---|---|---|---|
| 2 | john@luv2code.com | John | Doe |



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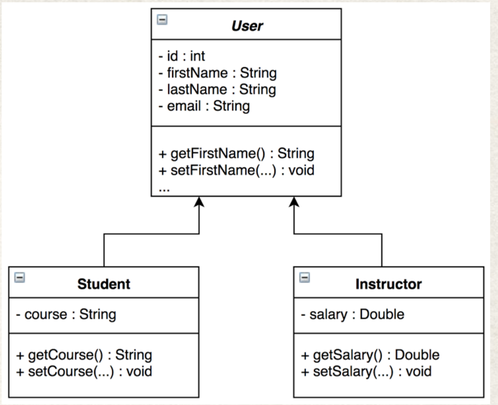


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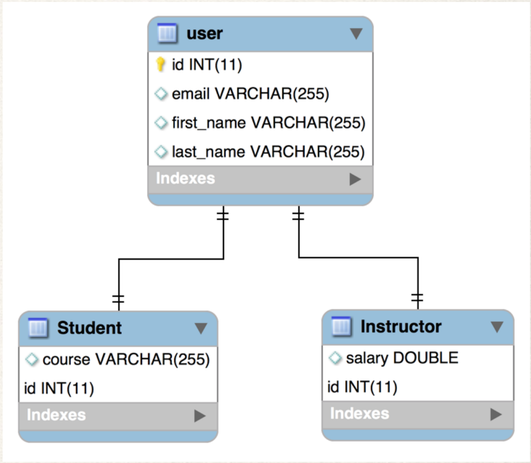


***Table: user***

**Primary key**

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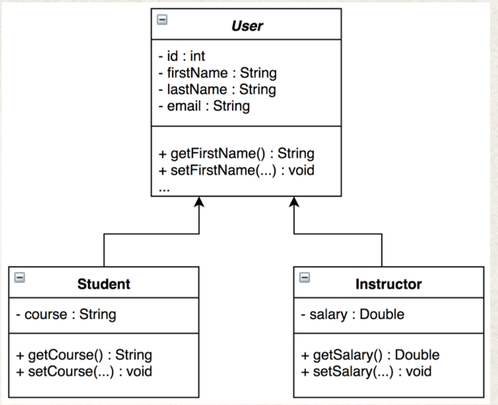


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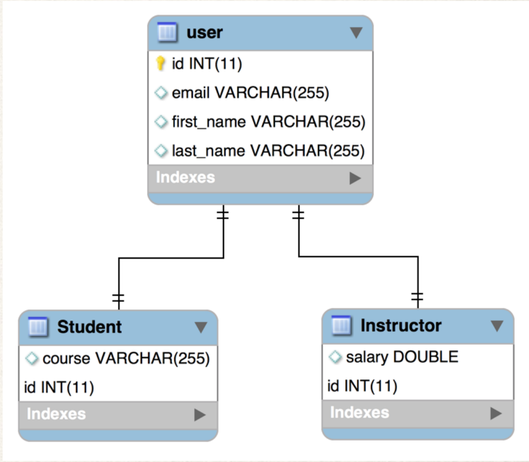


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|---|---|---|---|
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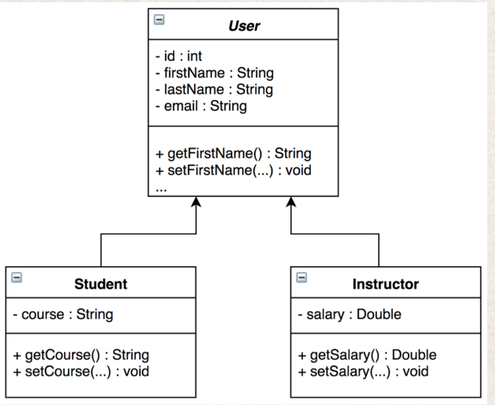
***Table: Instructor***

| salary | id |
|---|---|
| 20000 | 2 |

# Run the App

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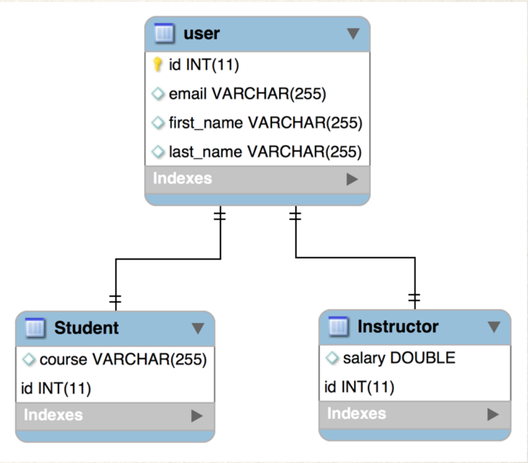


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| salary | id |
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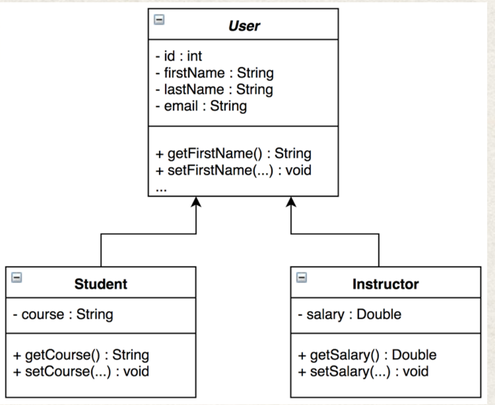
**Foreign key**

# Run the App

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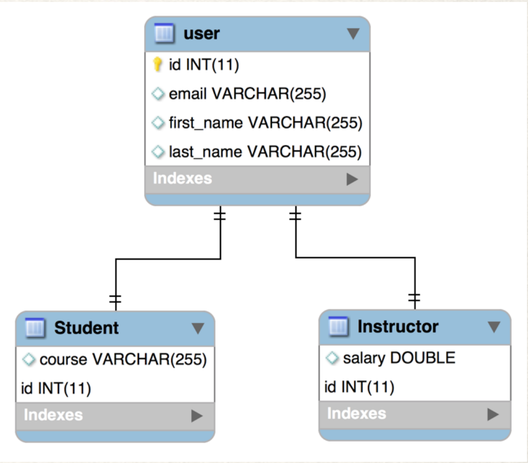


***Table: user***

**Primary key**

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| 2 | john@luv2code.com | John | Doe |

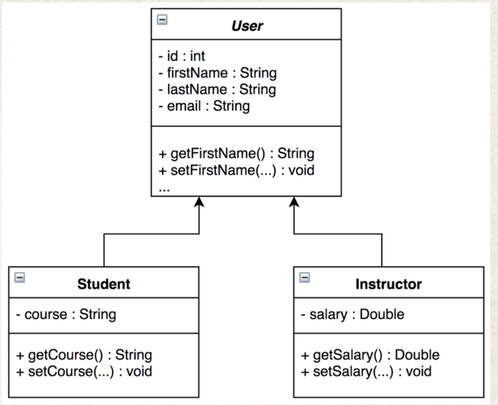
***Join on primary key and foreign key***

***Table: Instructor***

| salary | id |
|---|---|
| 20000 | 2 |

**Foreign key**

# Run the App

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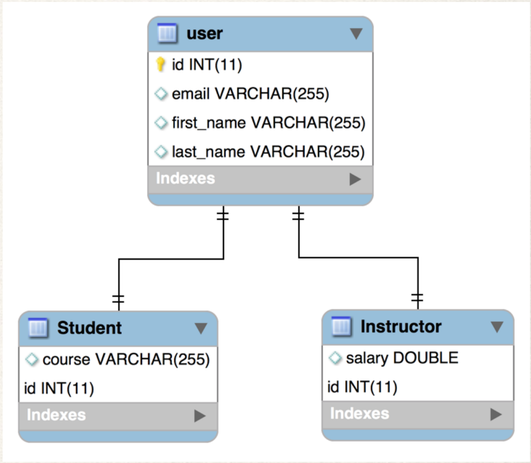


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***Join on primary key and foreign key***

***Table: Instructor***

| salary | id |
|---|---|
| 20000 | 2 |

**Foreign key**

**Behind the scenes,**
**Hibernate handles this for you**

# Joined Tables

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- Advantages

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  - Normalized database model

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  - Normalized database model
  - No duplicate mapping of inherited fields

- Disadvantages
  - Slow performance for queries on subclasses (results in many joins)
  - Query performance slows down for very deep inheritance trees