Inheritance: Comparison

Inheritance Mapping Strategies

Inheritance Mapping Strategies

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

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Which one???

Inheritance Mapping Strategies

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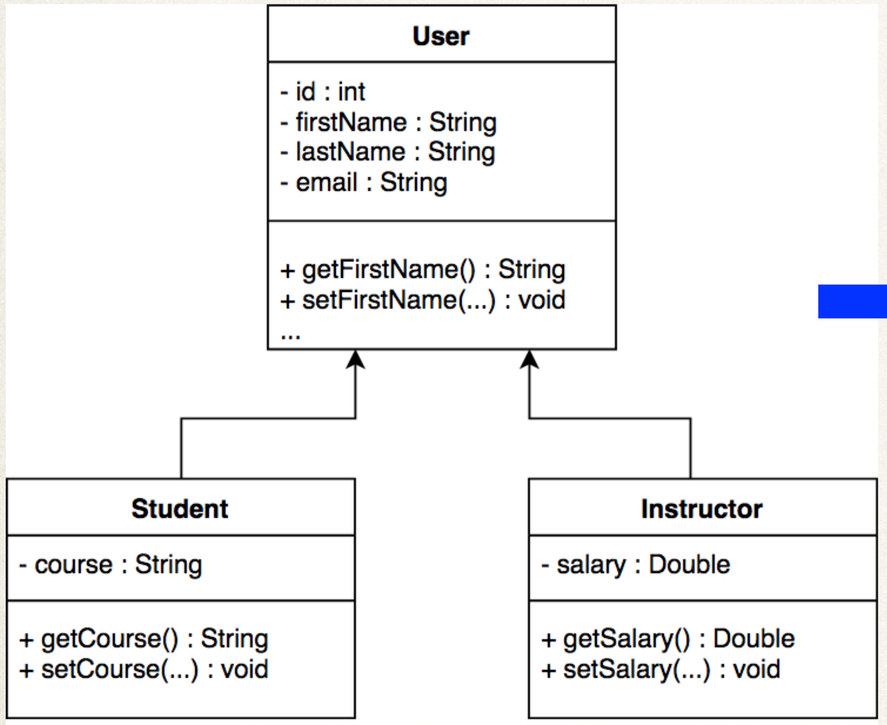
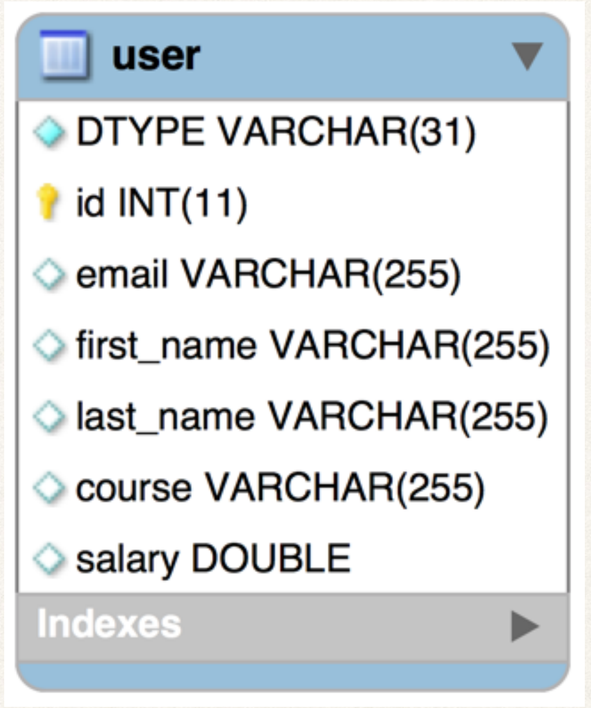
Quick Recap

Single Table

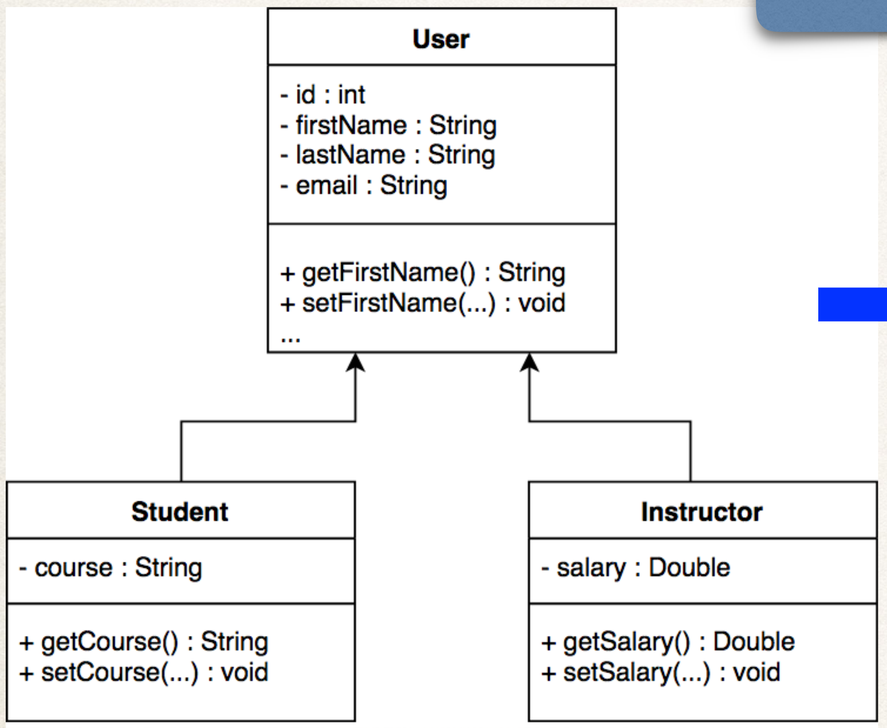
Single Table

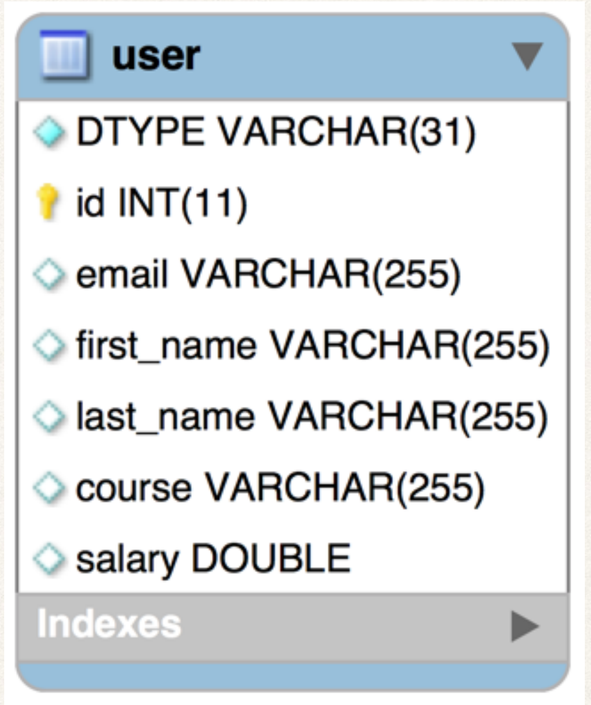




Single Table

Table has columns for all fields in inheritance tree





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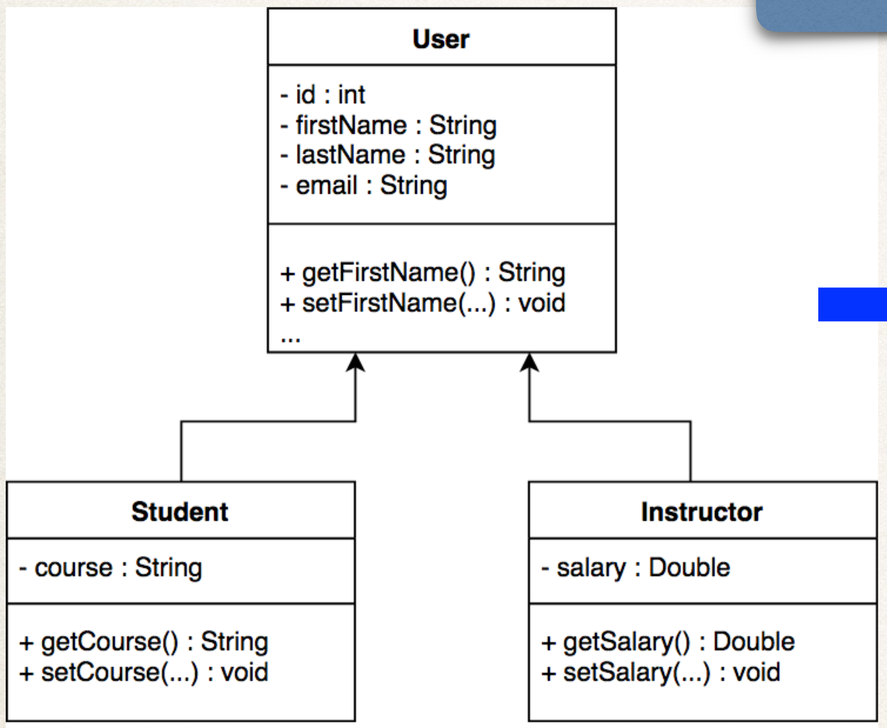

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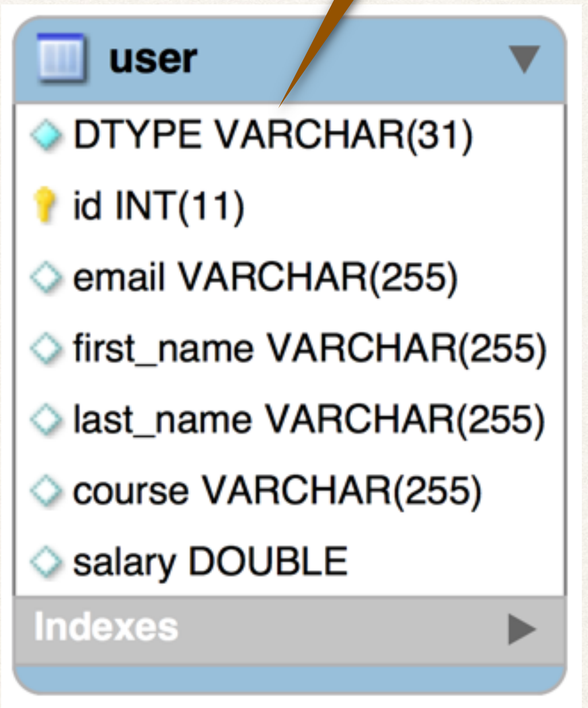
Discriminator column The class/type of data



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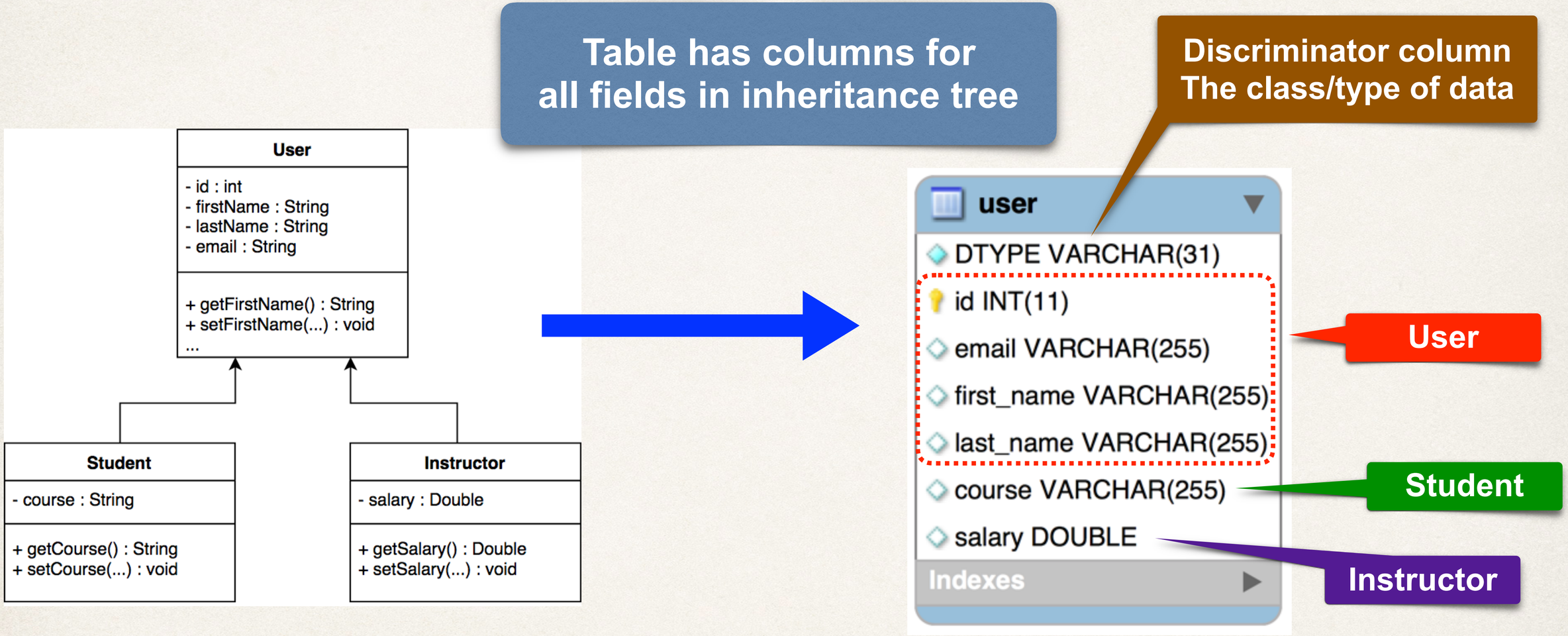

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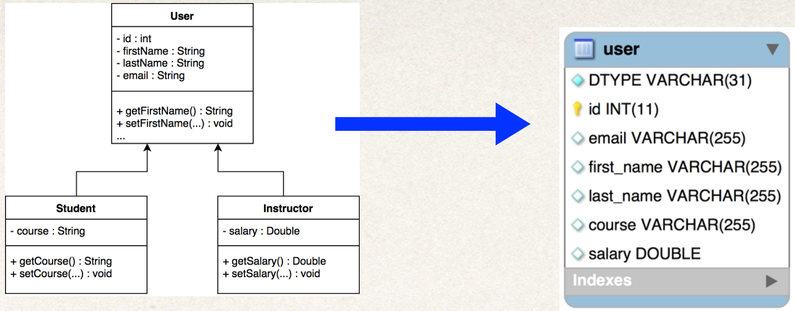
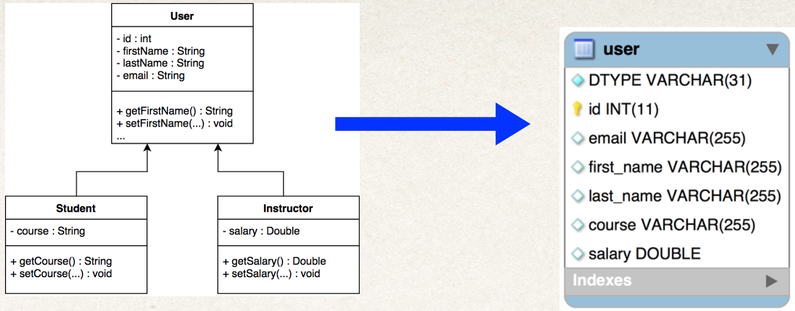


Single Table

- Advantages



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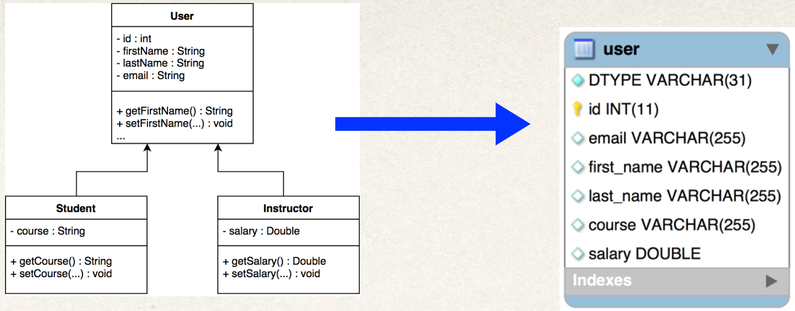
  - Simple and straight-forward implementation



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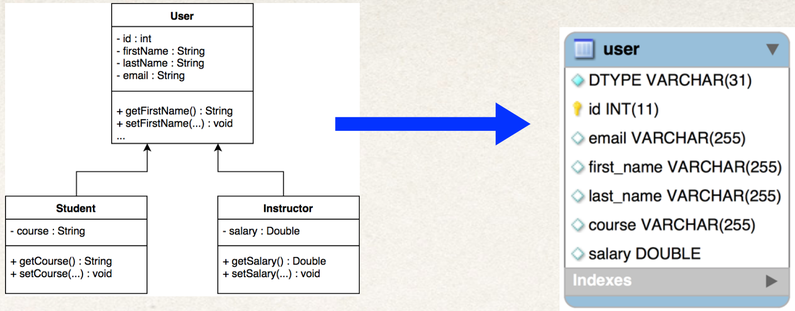

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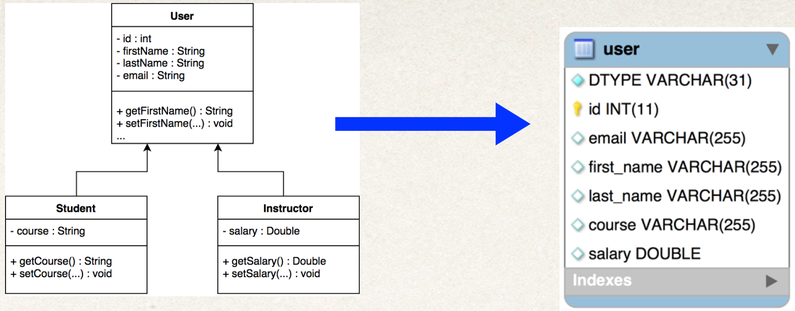

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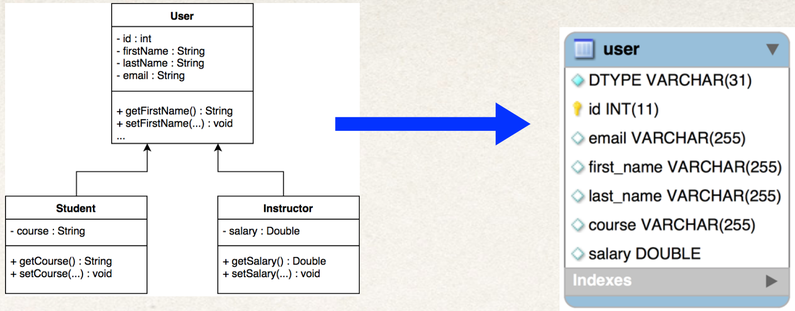

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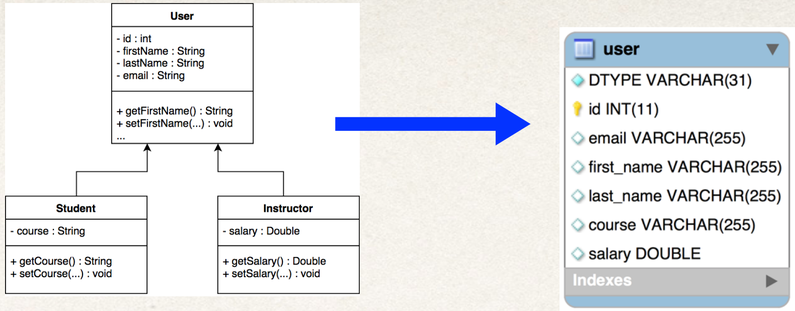

- Advantages
  - Simple and straight-forward implementation
  - Since data is in a single table, results in the best query performance

- Disadvantages
  - Each row only uses a subset of fields and sets others to null
  - Since fields are nullable, this may present issues with data integrity

Table per Class

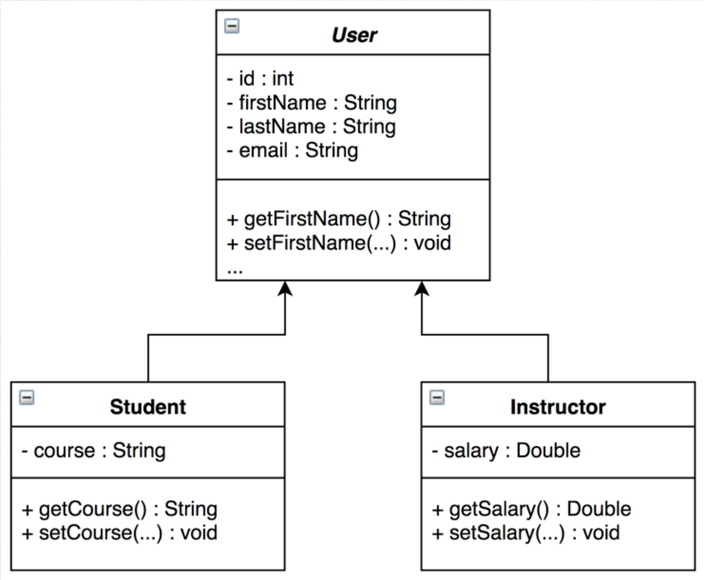

Table per Class

Table per class for the concrete classes

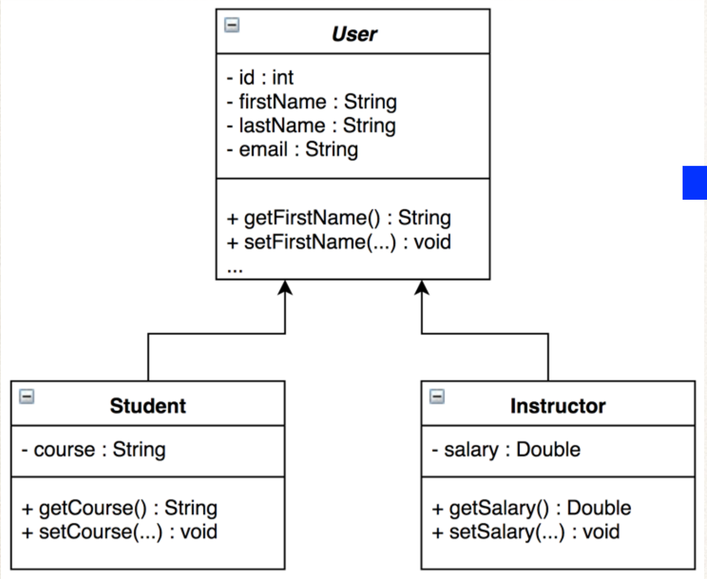

Table: Student

id	email	first_name	last_name	course
1	mary@luv2code.com	Mary	Public	Hibernate

User

Student

Table: Instructor

id	email	first_name	last_name	salary
2	john@luv2code.com	John	Doe	20000

User

Instructor

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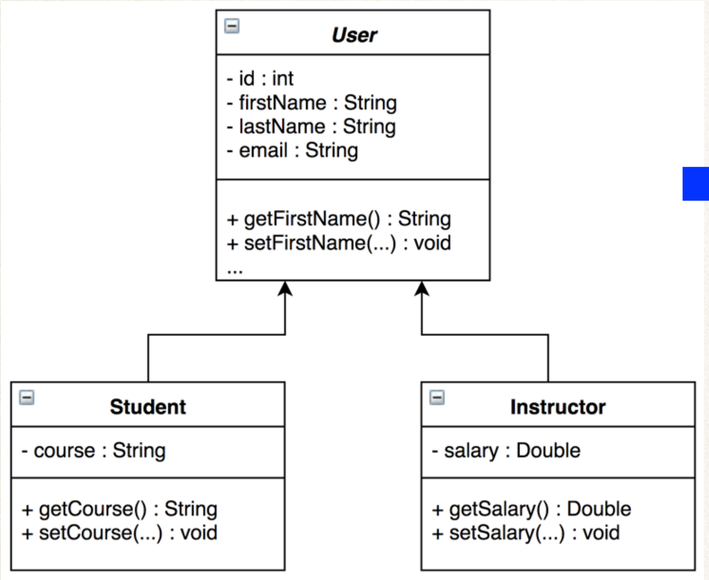

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Note: Only the related fields
No extra columns

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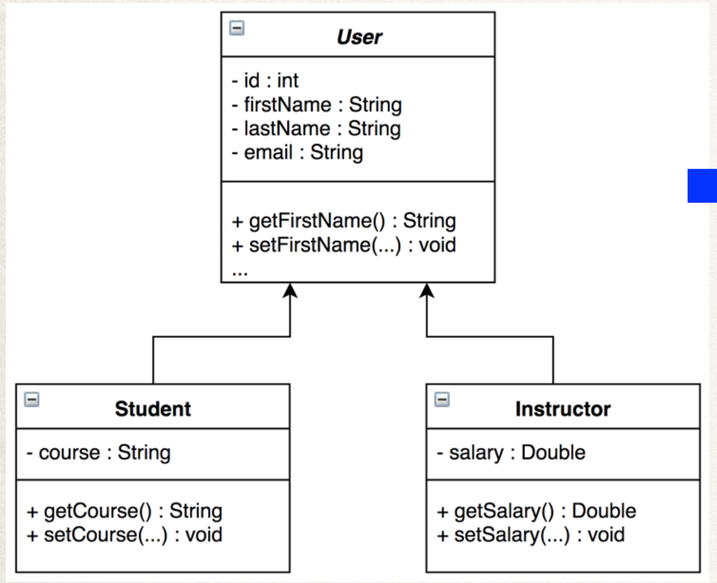

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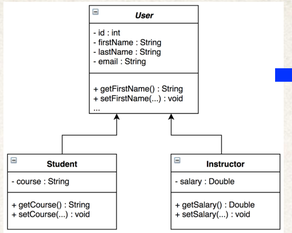
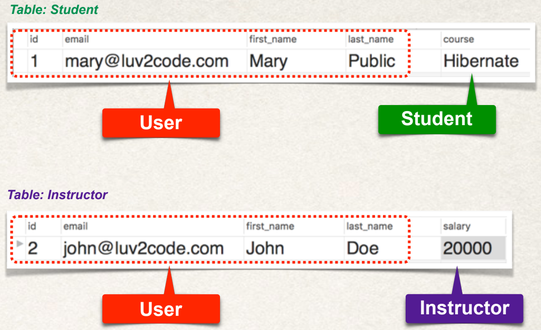
Required a "sequence table"

Table per Class

- Advantages





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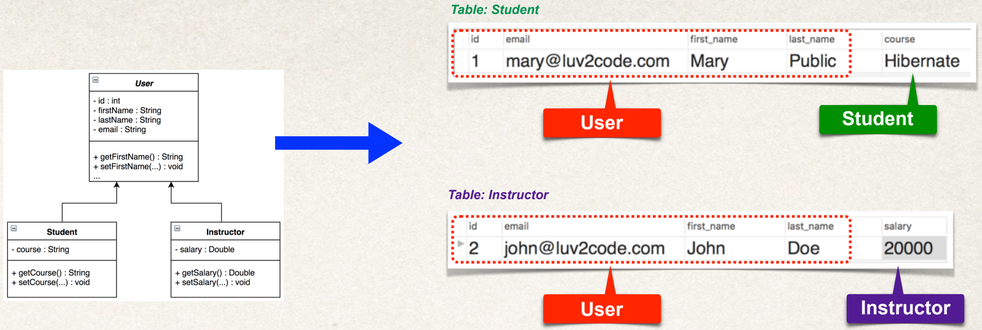

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  - Queries on concrete sub-classes perform generally well

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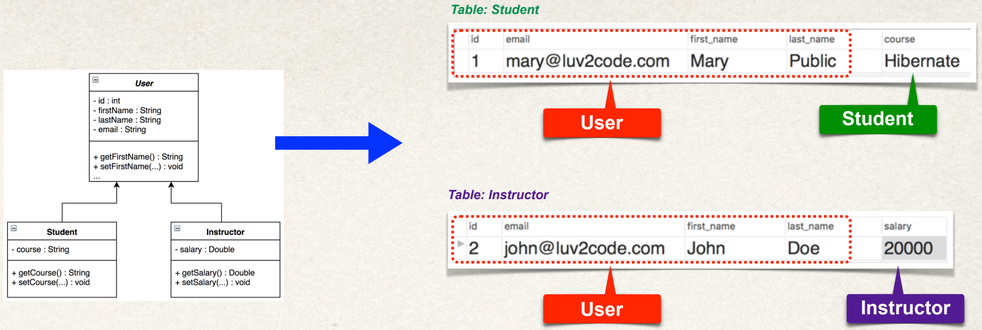

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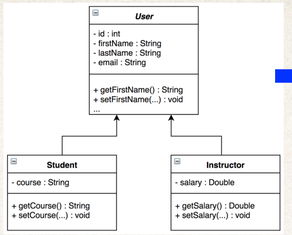

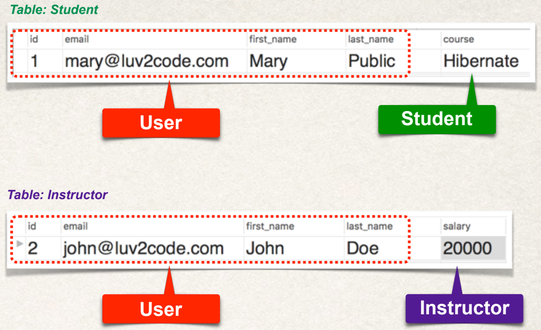

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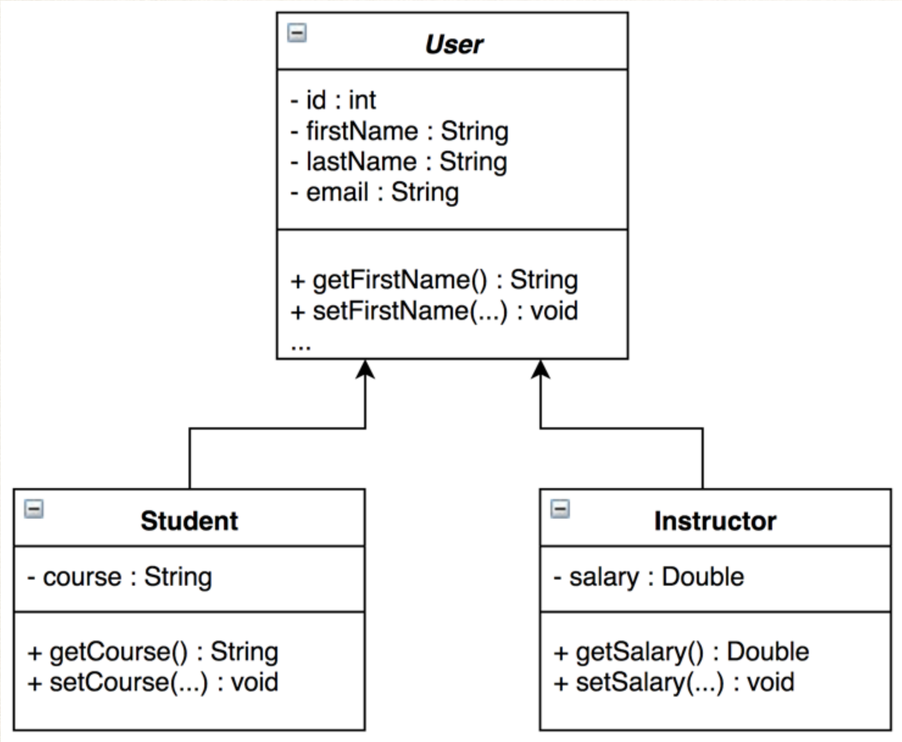
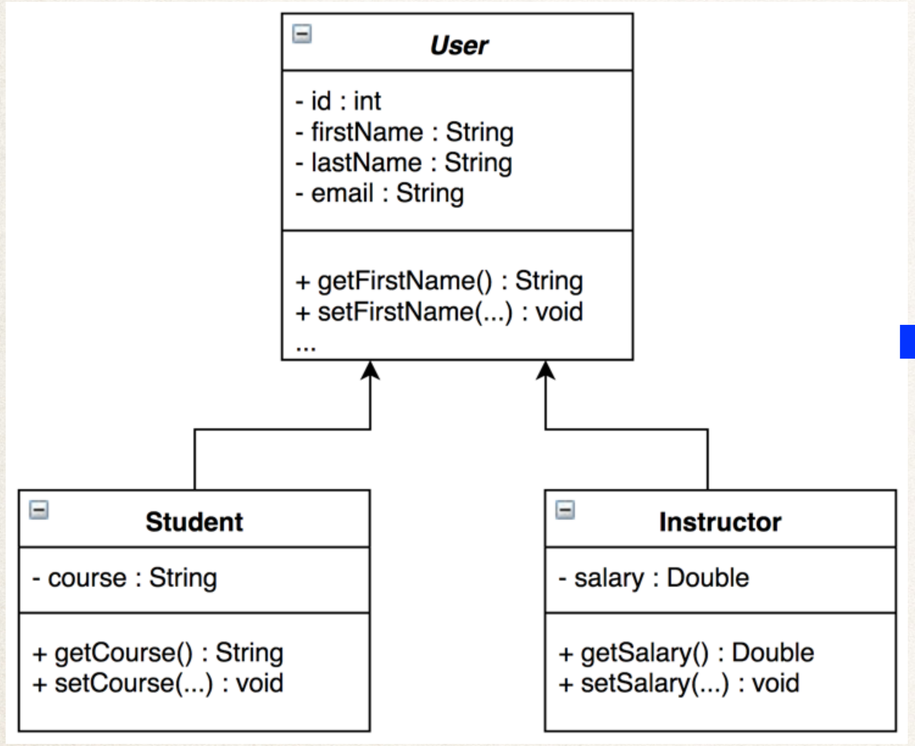
- Disadvantages
  - Slow performance for queries on superclasses (results in many joins)
  - Query performance slows down for very deep inheritance trees
  - ID generation with sequence tables in a high-volume multi-threaded environment is slow

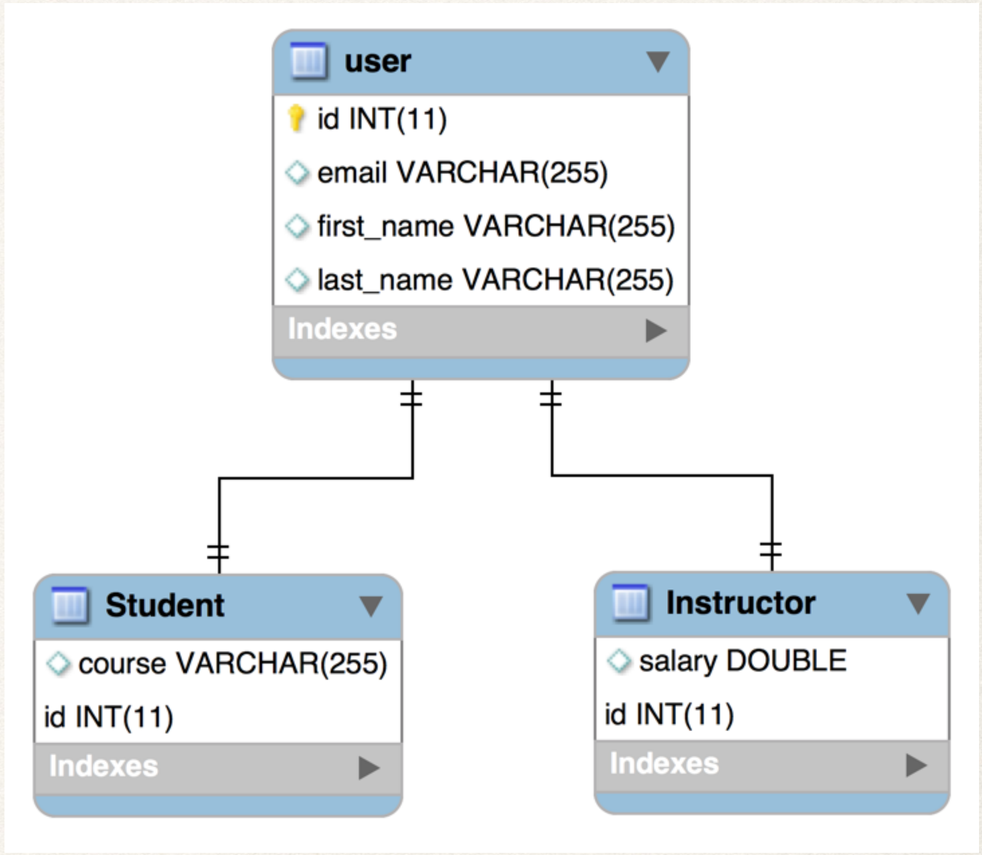
Joined Tables



Joined Tables

Inheritance is modeled by joining on primary and foreign keys





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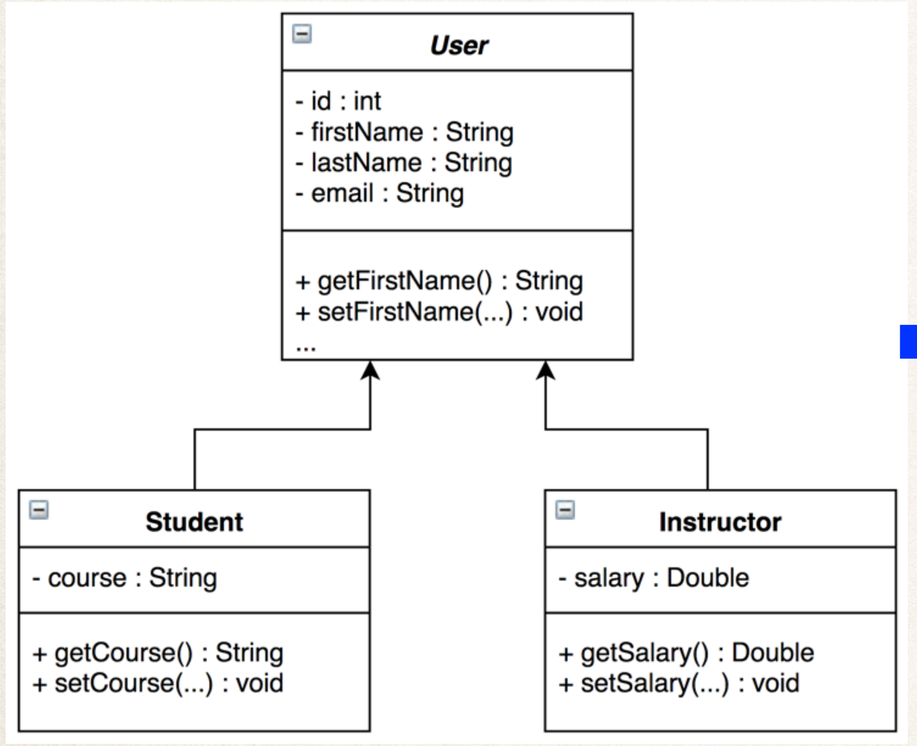

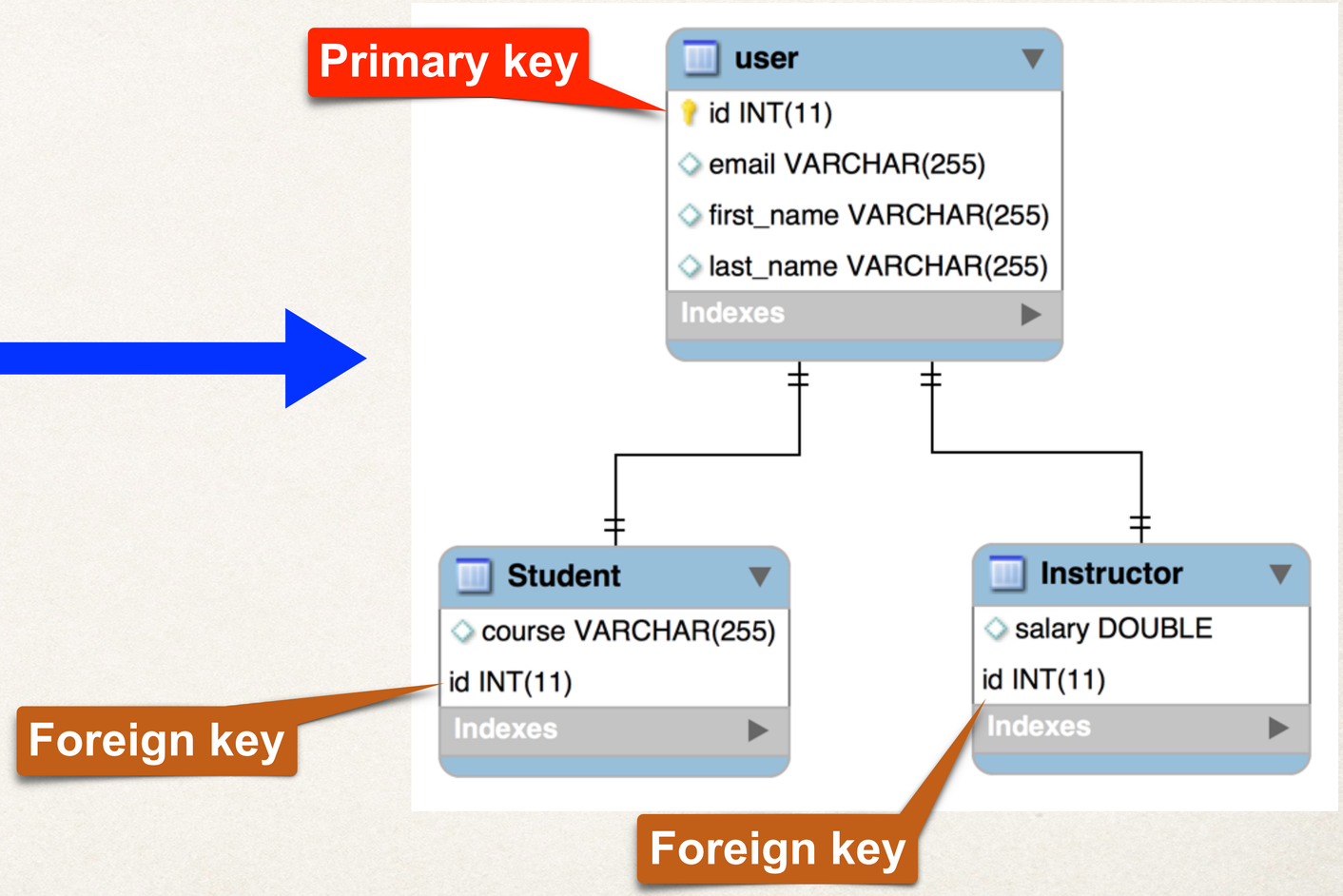

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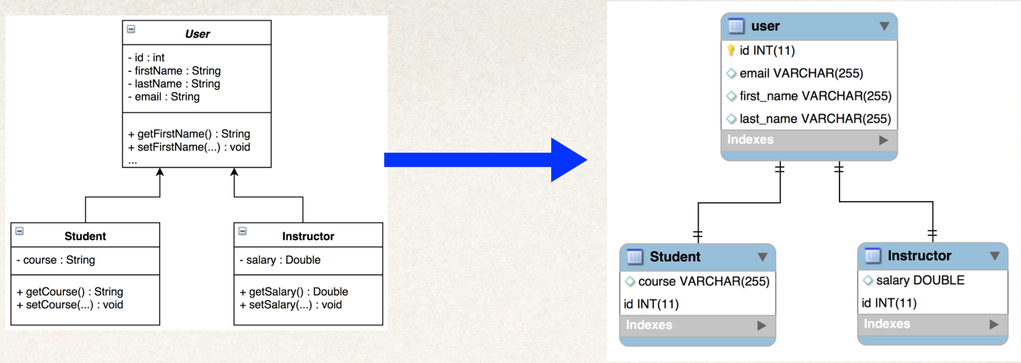
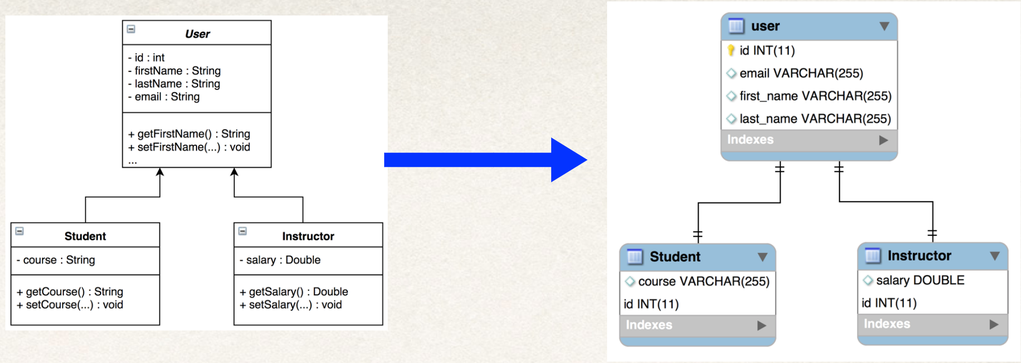


Joined Tables

- Advantages
  - Normalized database model
  - No duplicate mapping of inherited fields



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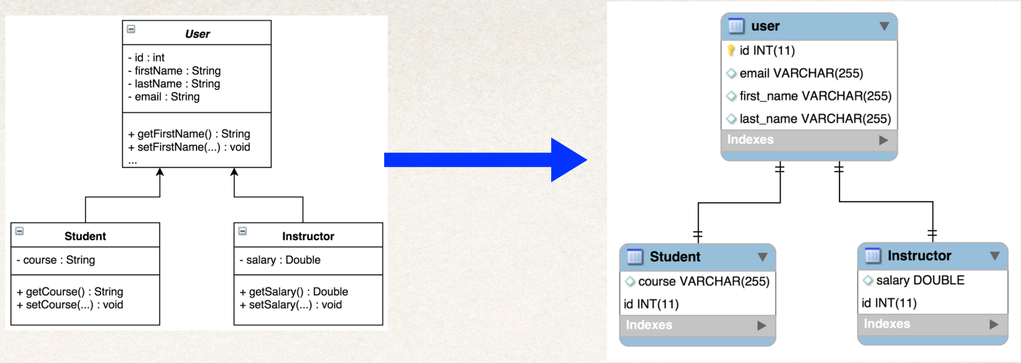

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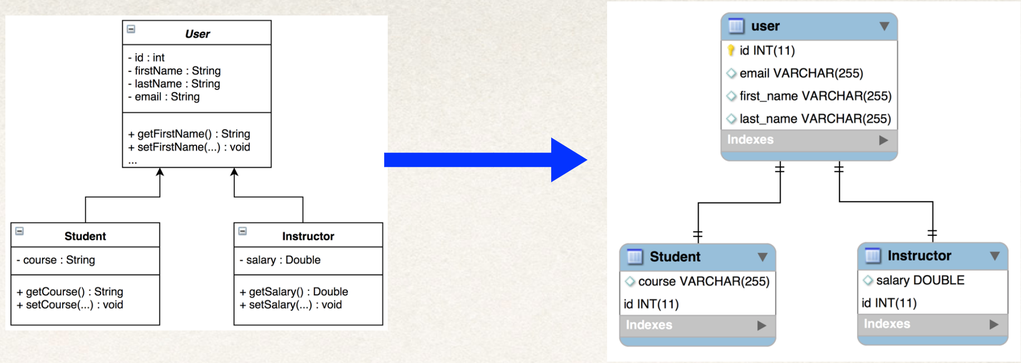

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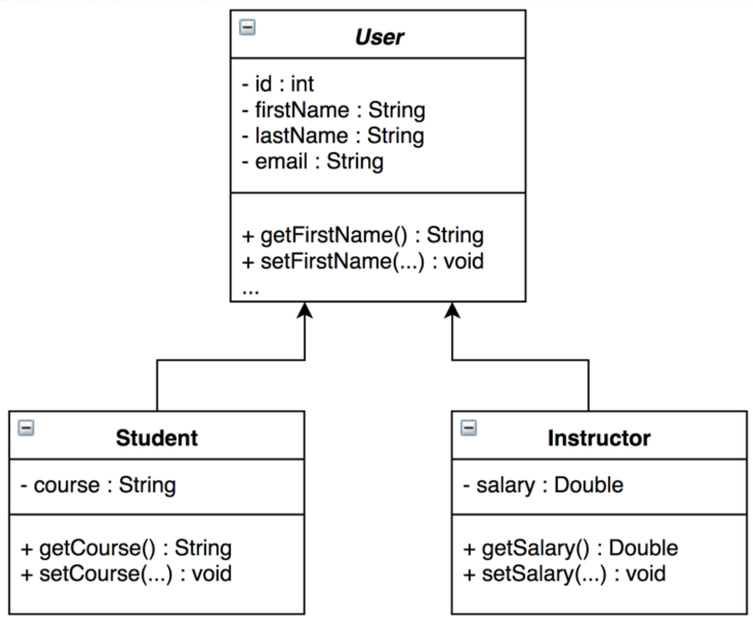
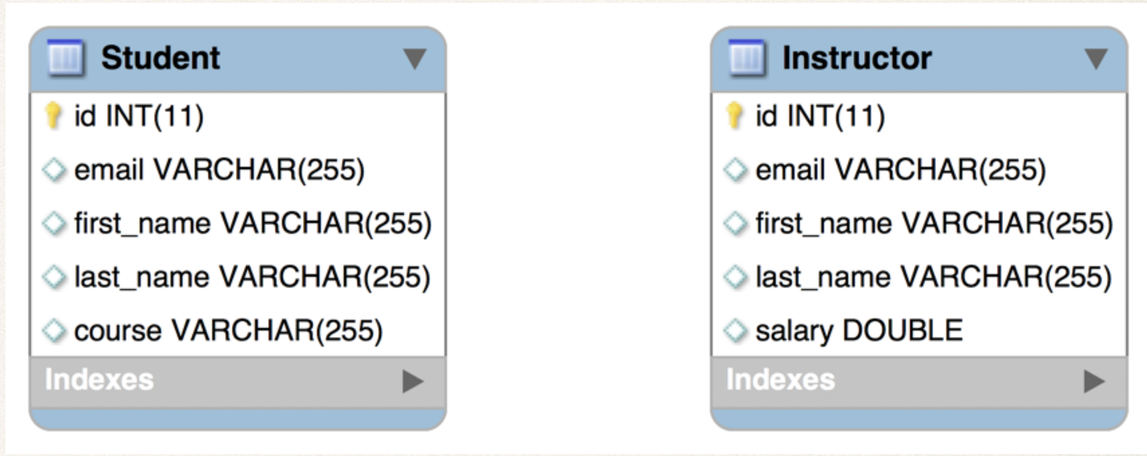
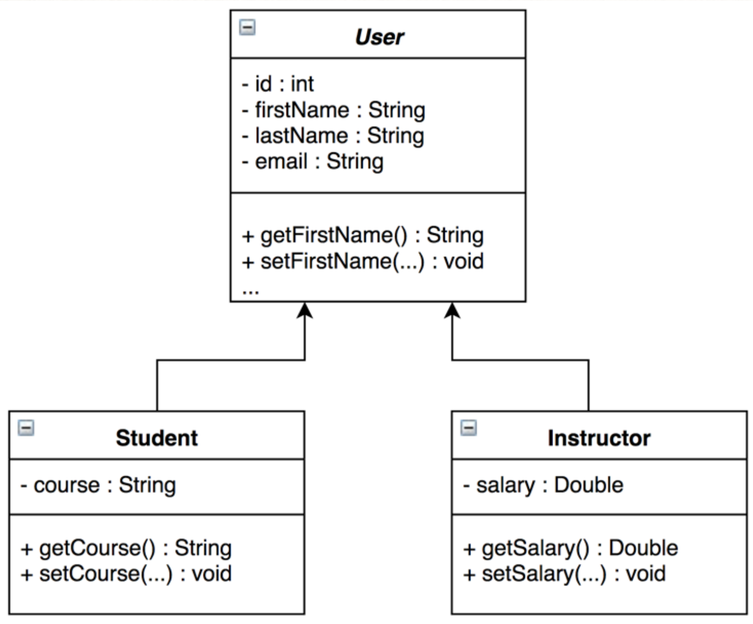


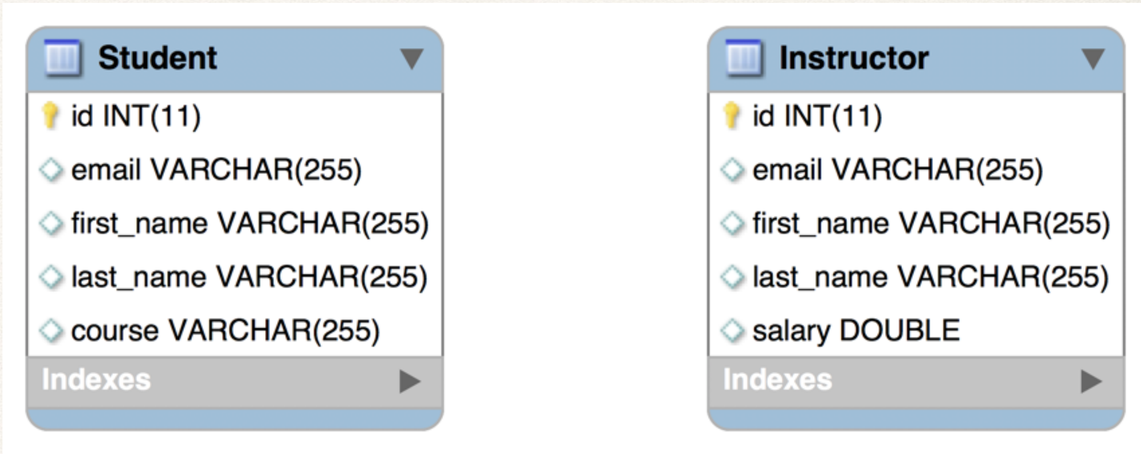


Mapped Superclass

Superclass defines common fields

Subclass table contains superclass fields and subclass fields





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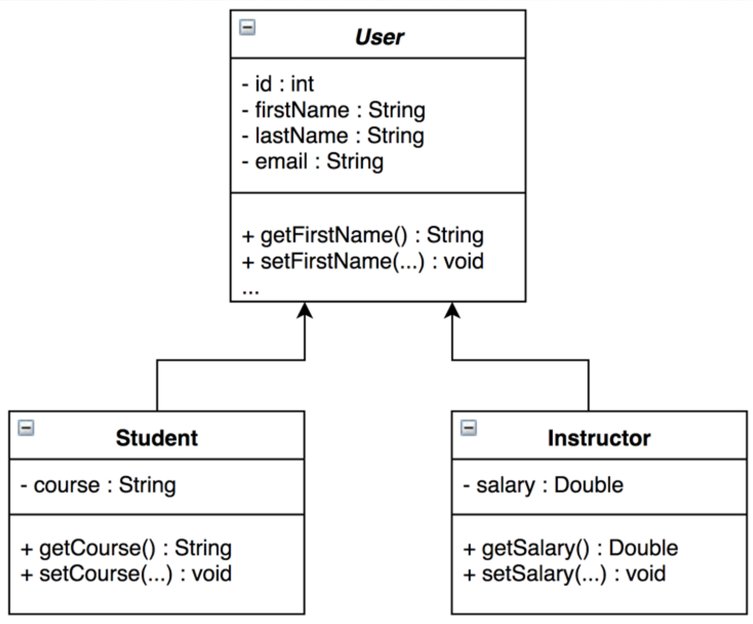

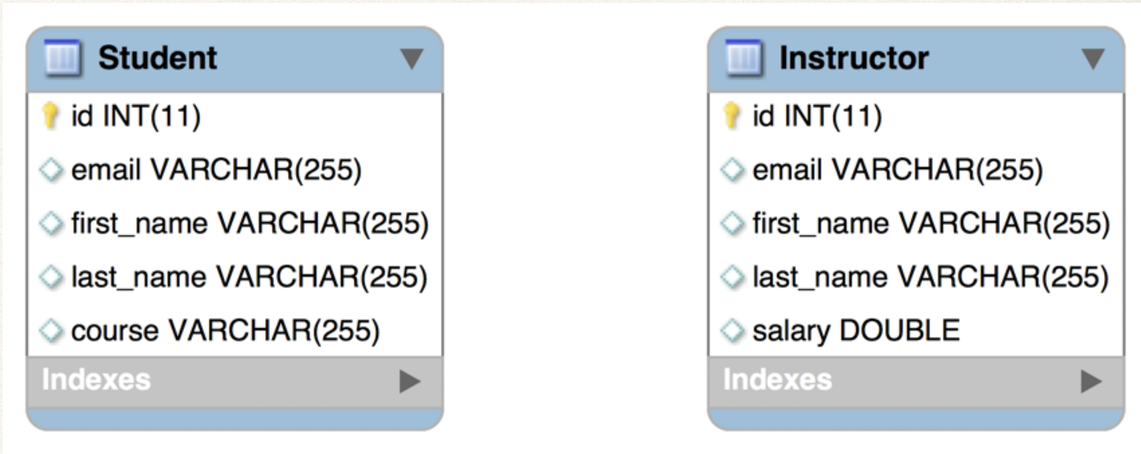

Only subclasses have tables in the database

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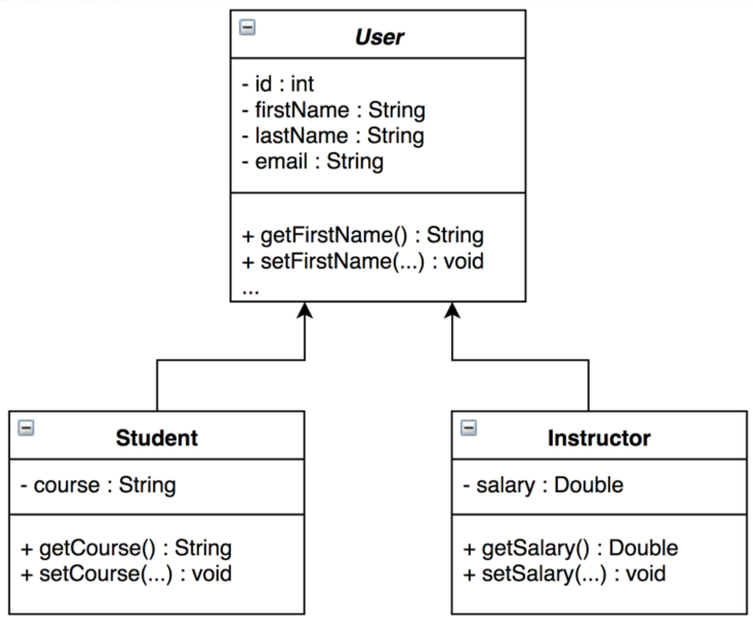

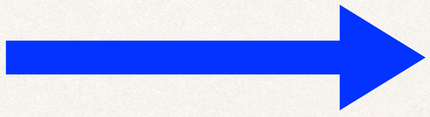

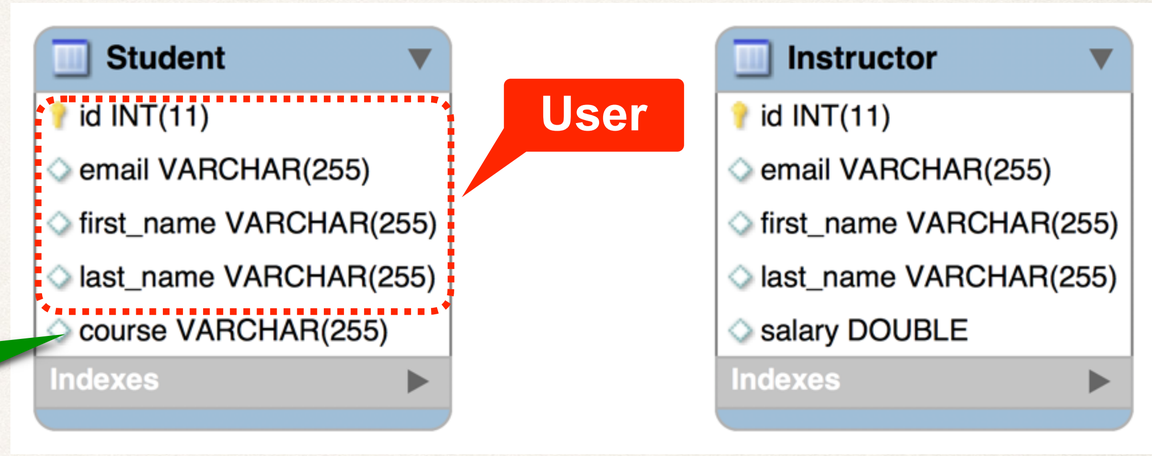

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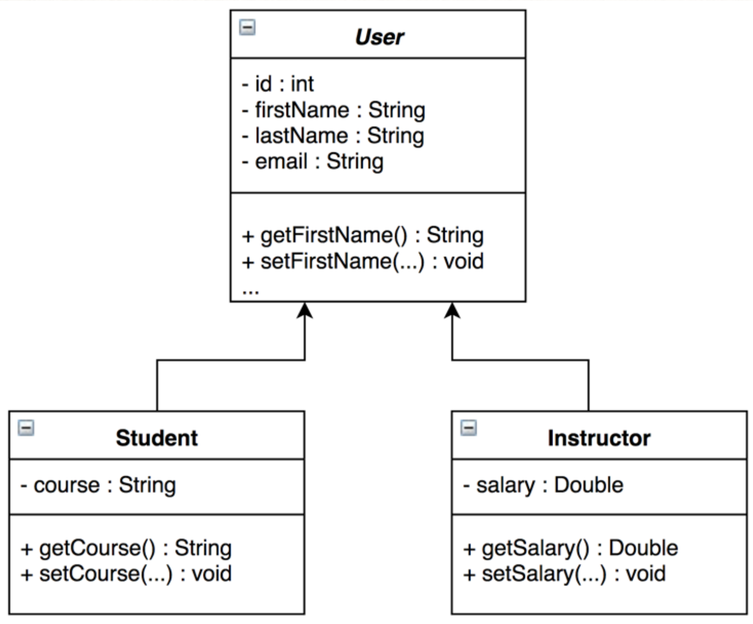

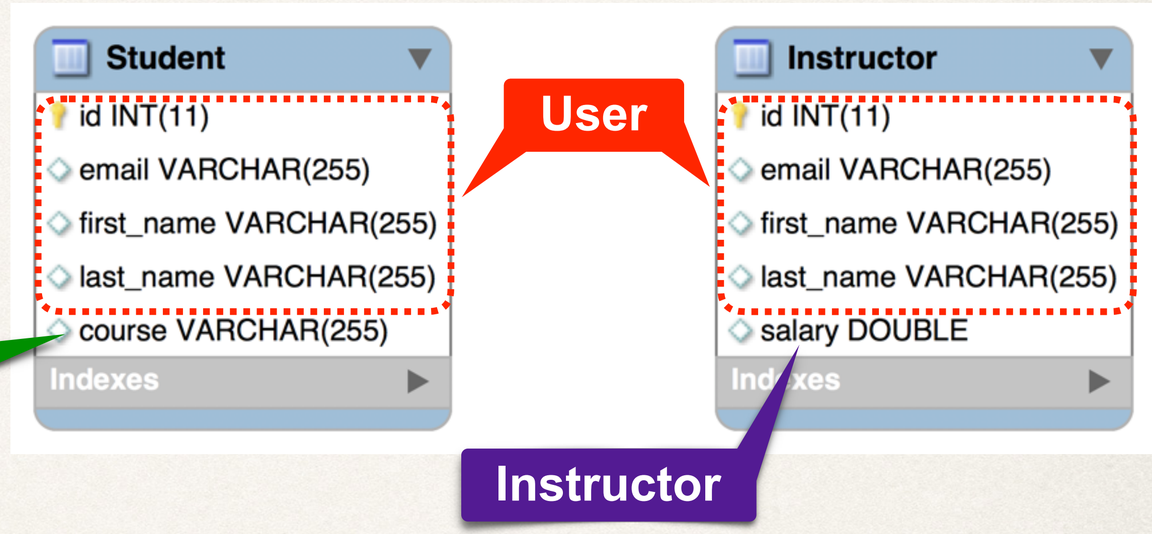

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Note: No table for superclass

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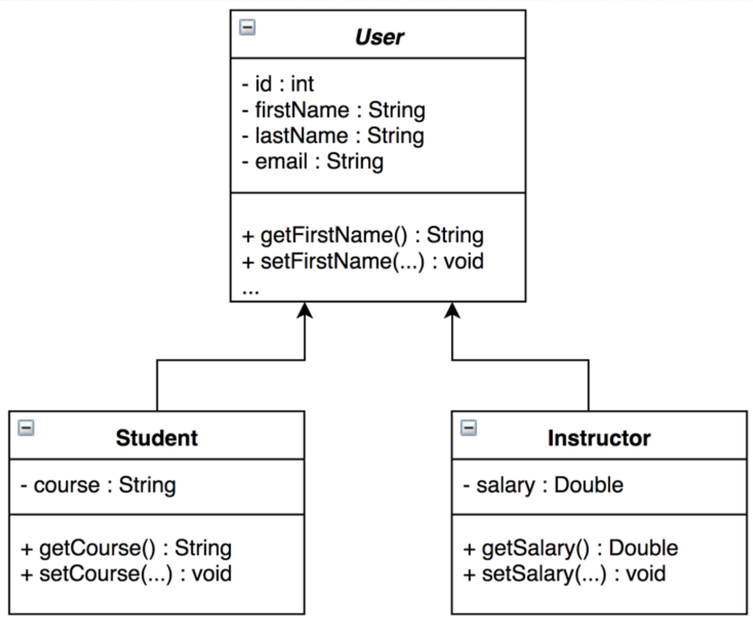
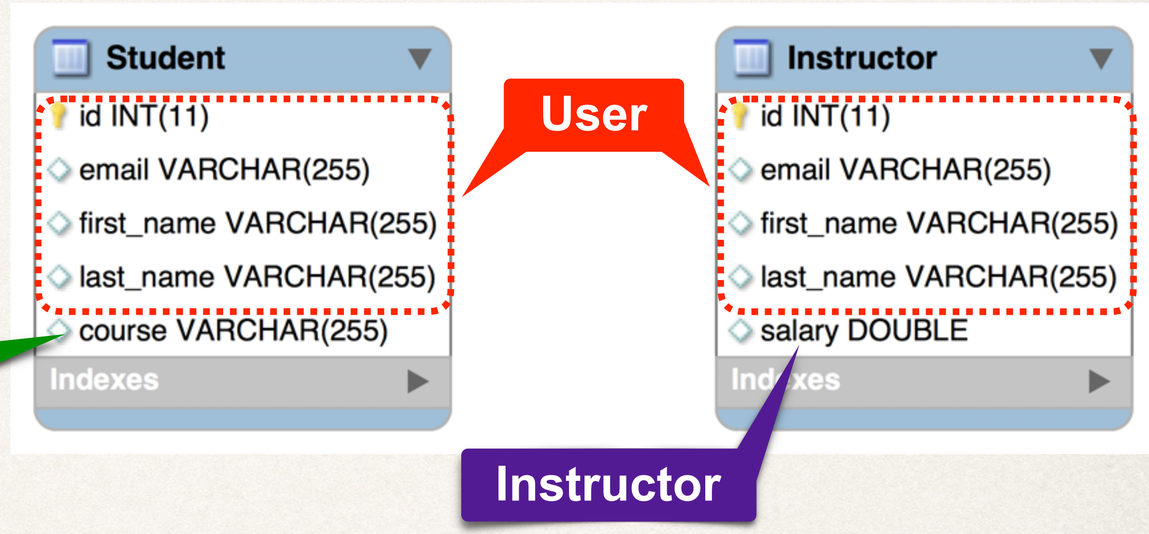
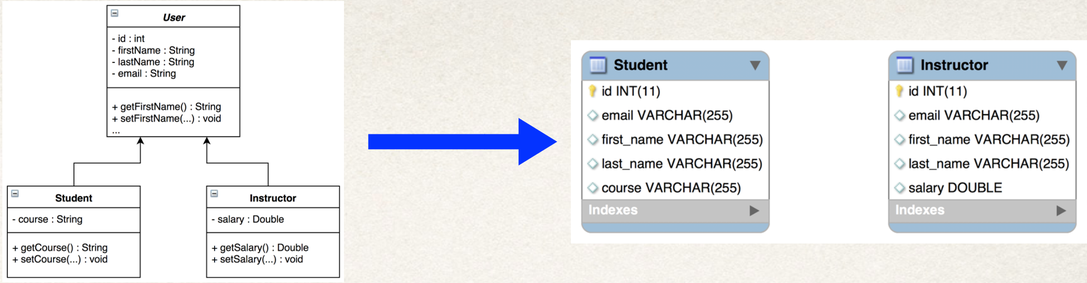
Subclass table contains superclass fields and subclass fields





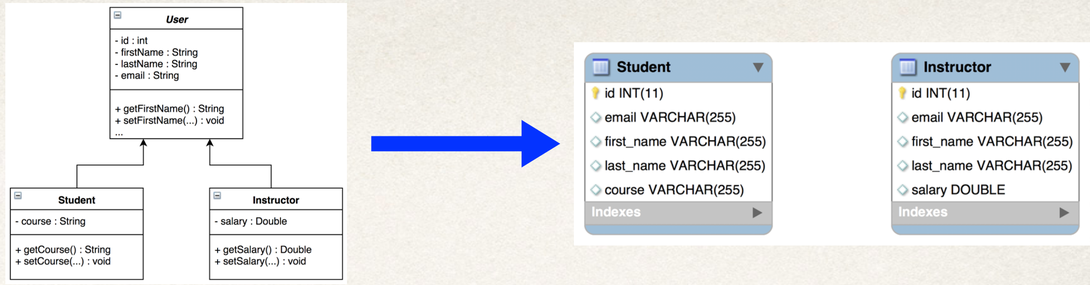
Only subclasses have tables in the database

Mapped Superclass



- Advantages
  - Simple and straight-forward implementation
  - Queries on concrete subclasses perform well (no need for joins)

Mapped Superclass



- Advantages
  - Simple and straight-forward implementation
  - Queries on concrete subclasses perform well (no need for joins)

- Disadvantages
  - For polymorphic queries, need to manually code HQL joins
  - For example, to query for all **`User`**s, need to join across **`Student`**, **`Instructor`** etc …
    - Requires manual HQL coding
    - May result in slower performance (results in many joins)