**IS 306 Data Management Communications and Networking**

**HOP03 – Entity Relationship Diagrams**

1/5/2019 Developed by Clark Ngo

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**Before You Start**

* Version numbers may not match with the most current version at the time of writing. If given the option to choose between stable release (long-term support) or most recent, please choose the stable release rather than beta-testing version.
* This tutorial targets Windows users and MacOS users.
* There might be subtle discrepancies along the steps. Please use your best judgement while going through this cookbook style tutorial to complete each step.
* For your working directory, use your course number. This tutorial may use a different course number as an example.
* The directory path shown in screenshots may be different from yours.
* If you are not sure what to do or confused with any steps:
  1. Consult the resources listed below.
  2. If you cannot solve the problem after a few tries, ask a TA for help.

**Learning Outcomes**

Students will be able to:

* Build ER Diagrams using an online tool
* Learn relationships such as one-to-one, one-to-many, and many-to-many

**Resources**

* SQL Tutorial – <https://www.w3schools.com/sql/default.asp>
* Online Database Diagram – <https://dbdiagram.io/d>

**Preparation**

**Run your Docker Application**

Find the Docker App and double-click

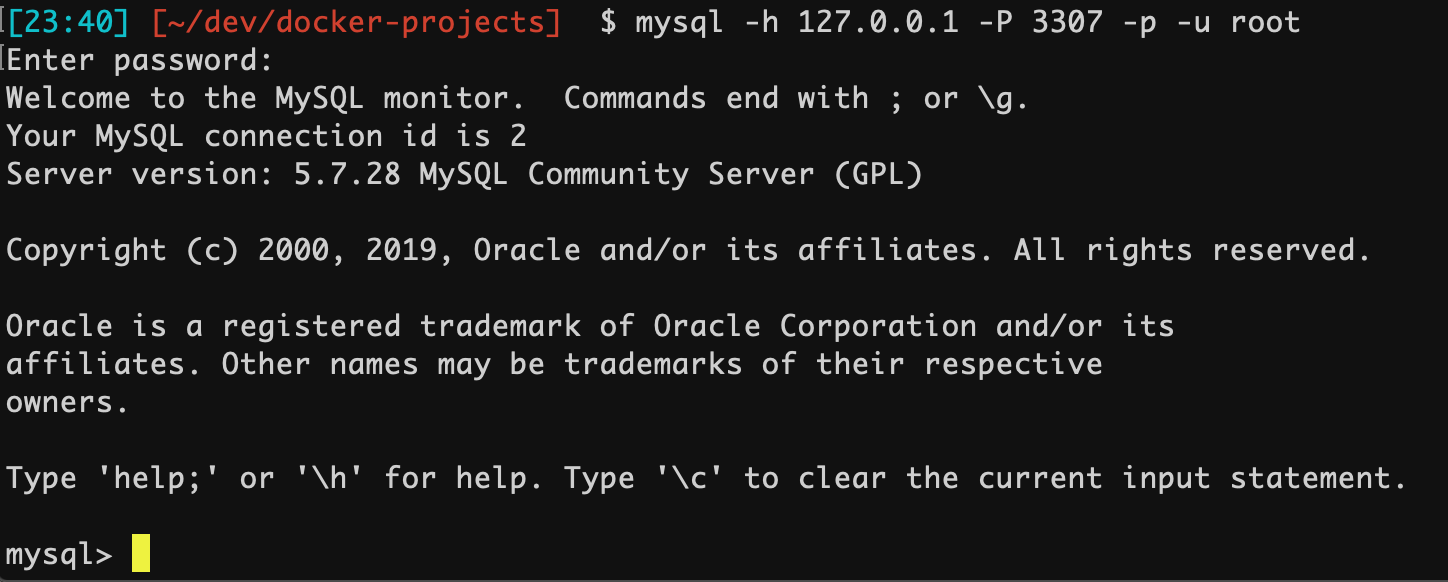
**Run an MySQL interactive shell**

Open your terminal / command prompt and type the following:

mysql -h 127.0.0.1 -P 3307 -p -u root

When prompted for password: *passwd*

Example output in MacOS:



**Use a Database**

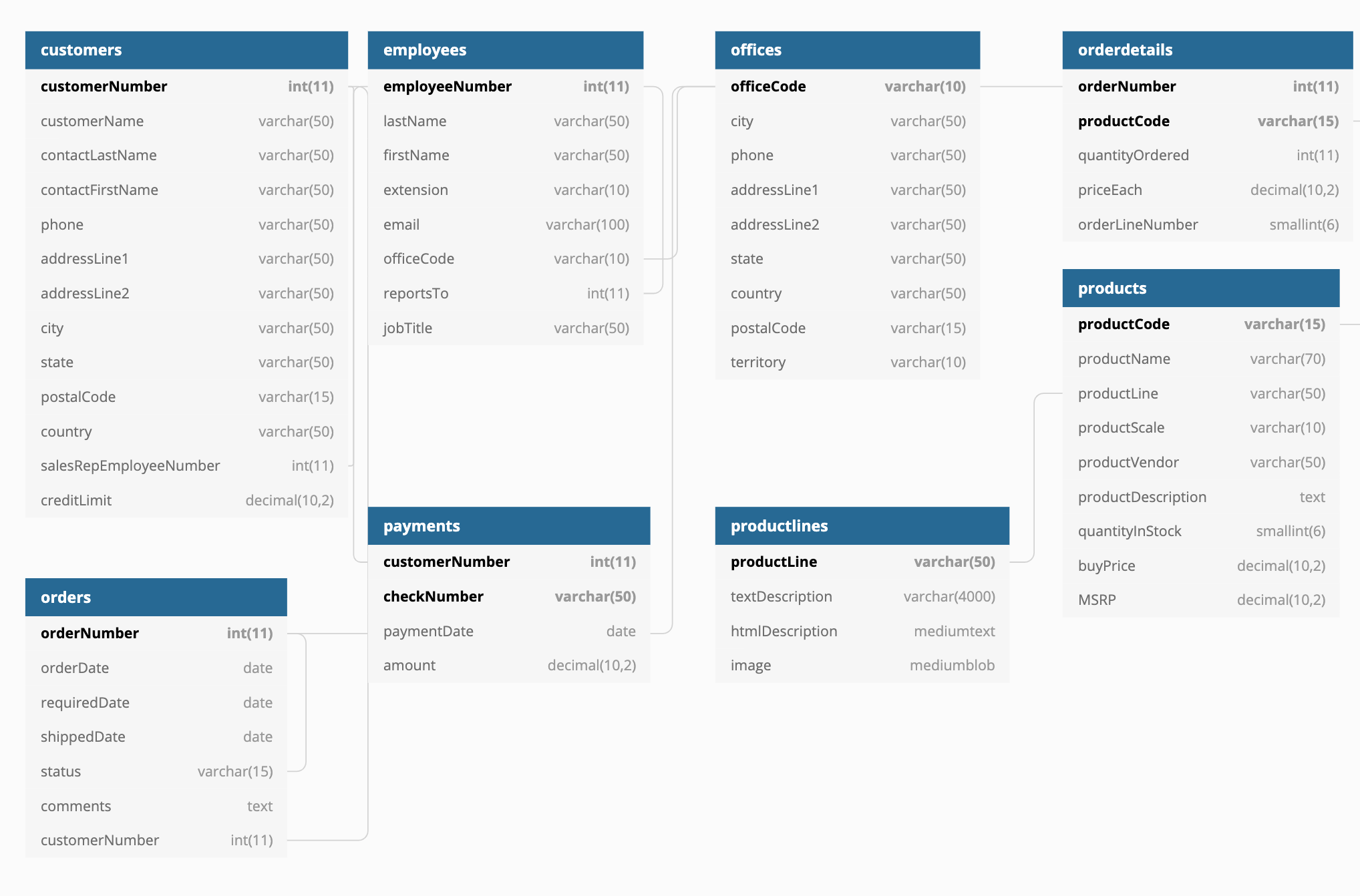
**Syntax: USE *database\_name*;**

USE classicmodels;

**Creating an ER Diagram**

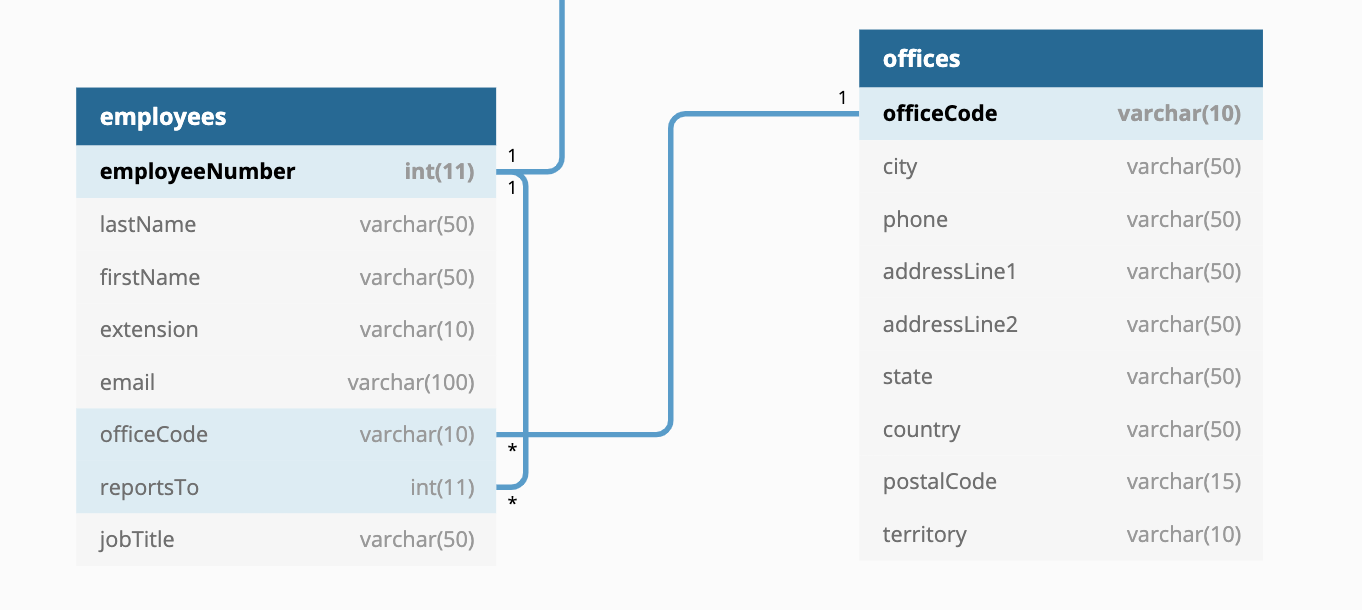
**Uploading .sql file to an online ER Diagram generator**

1. Open mysqlsampledatabase.sql file in a text editor
2. Copy the script
3. Go to <https://dbdiagram.io/d>
4. Click Import, then Import from MySQL
5. Paste the script, then choose Submit



**Association: One-to-many Relationship**

**Two tables with relationship**



Capture 1 relationship and describe the relationship and answer why

**Questions you can answer for submission:**

Knowledge: Why is ER Diagram important?

Knowledge: What is Entity? Can you give an analogy to understand it better?

Knowledge: What is Attribute? Can you give an analogy to understand it better?

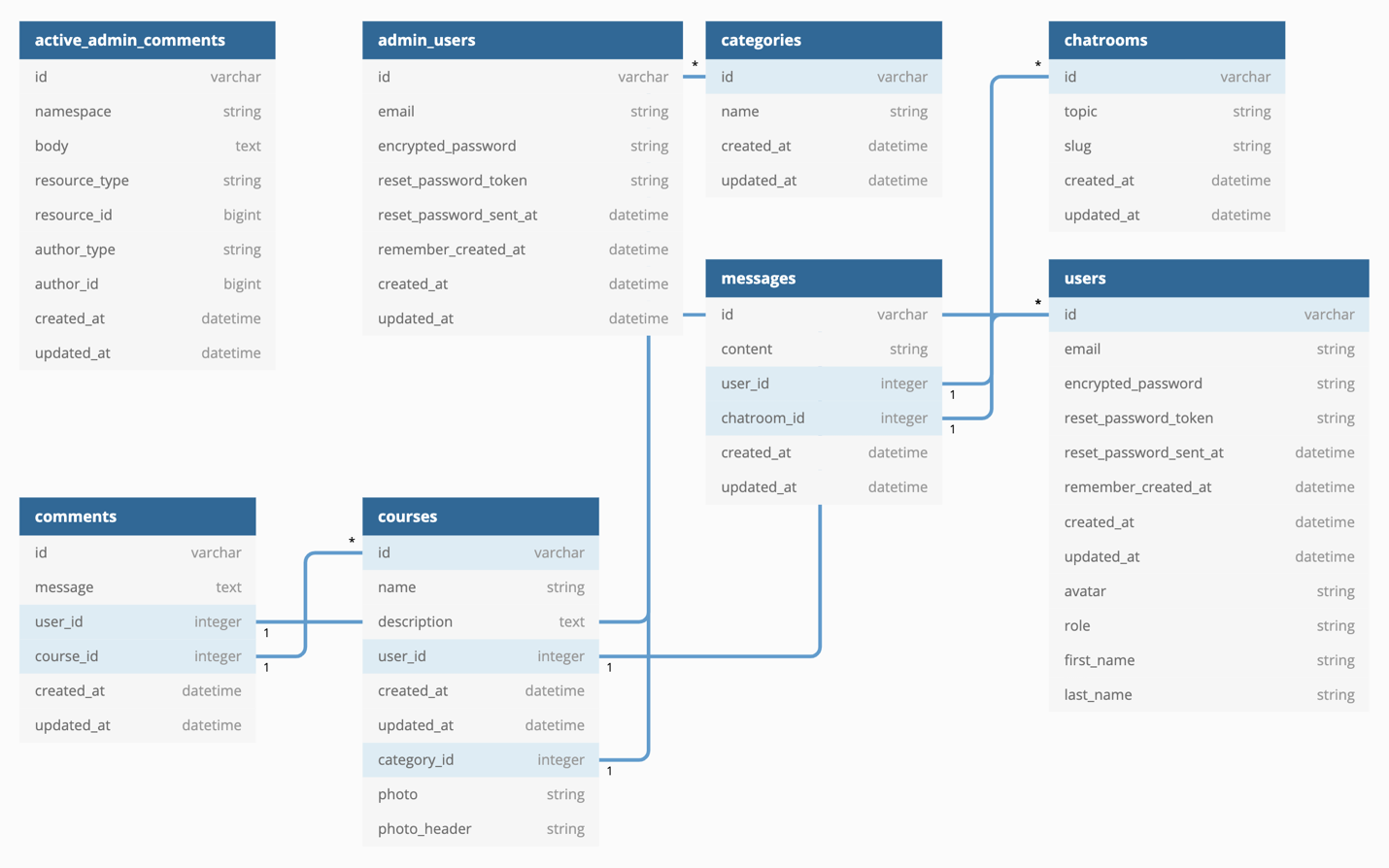
Application: When to use one-to-one relationship? Why is it not used commonly?

Application: When to use many-to-many relationship? Why use that?

Technical: How do you draw relationships? Where do you put the 1 or the \*?

**Understanding ER Diagrams**

**ER Diagram for Online Course Application**



Source: <https://github.com/clarkngo/curriculum>

Note: Zoom in to view better

Capture 1 relationship and describe the relationship and answer why

**Questions you can answer for submission:**

Knowledge: What’s the use of admin tables? Why do we need to implement those?

Knowledge: What’s the difference between *users* and *admin\_users*? Why?

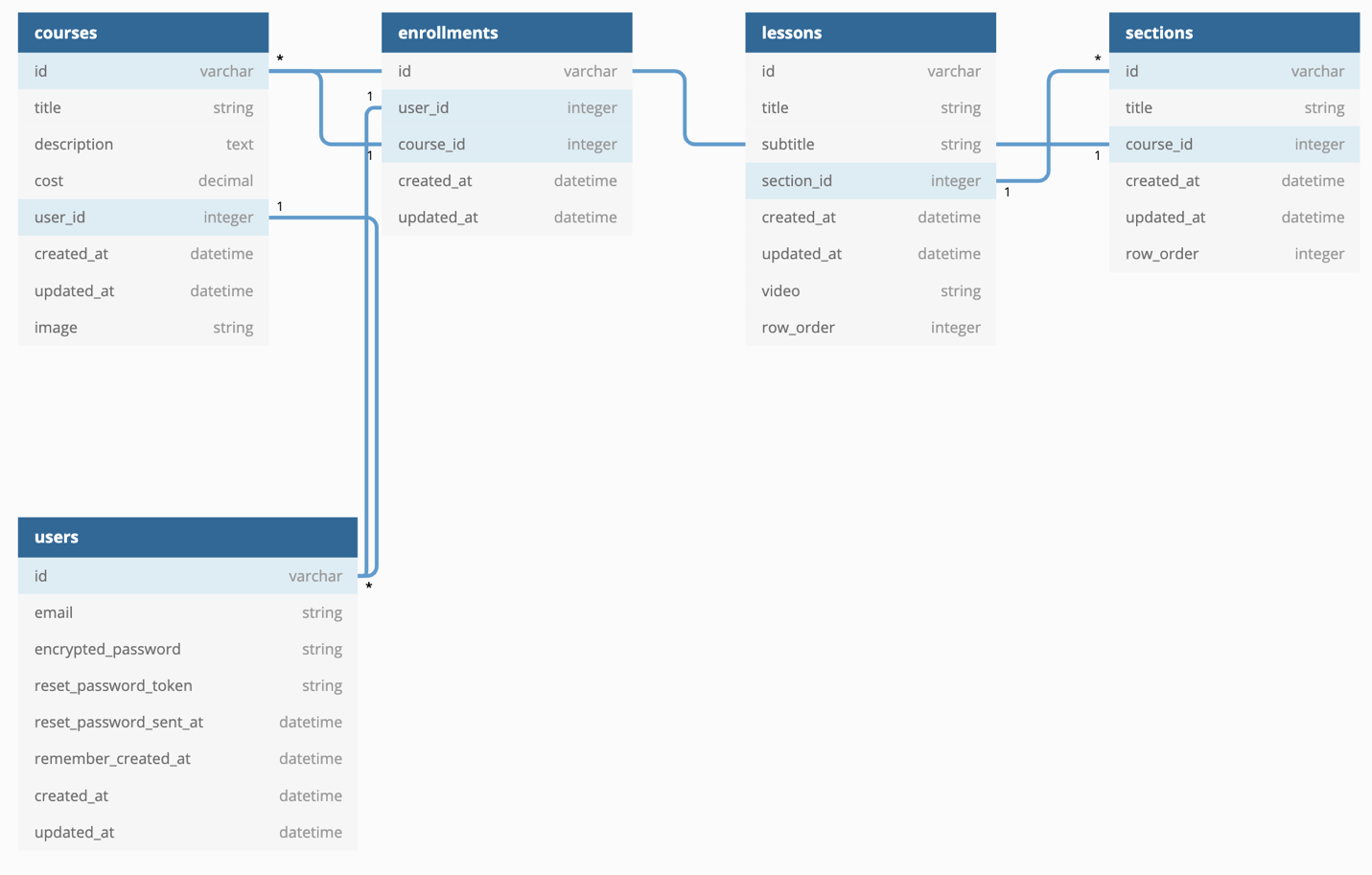
Application: If I were to add an instructor, where would you connect to relationship?

Best Practice: Why do we need to add *created\_at* and *updated\_at* attributes?

Improvement: Can you suggest anything to make the ER Diagram better?

**Understanding ER Diagrams**

**ER Diagram for Online Teaching Application**



Source: <https://github.com/clarkngo/flixter>

Note: Zoom in to view better

Capture 1 relationship and describe the relationship and answer why

**Questions you can answer for submission:**

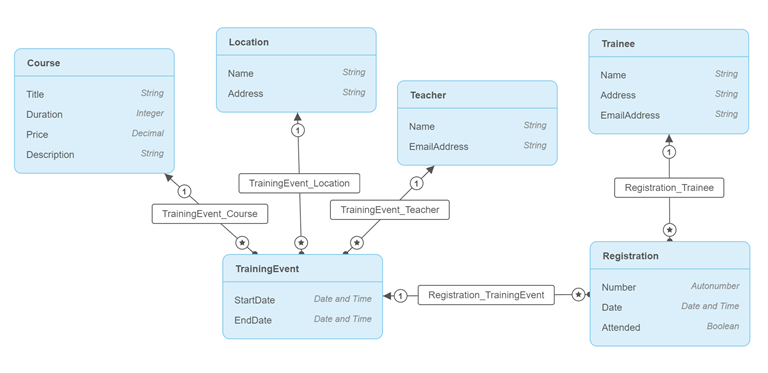
Knowledge: Why is *users* used for both *courses* and *enrollments*?

Knowledge: Why is the type of *video* attribute of *lessons* entity a string?

Knowledge: Why is the type of *image* attribute of *courses* entity a string?

**Understanding ER Diagrams**

**ER Diagram for Training Event Scheduling Application**



Source: <https://github.com/clarkngo/mendix>

Note: Zoom in to view better

Capture 1 relationship and describe the relationship and answer why

**Questions you can answer for submission:**

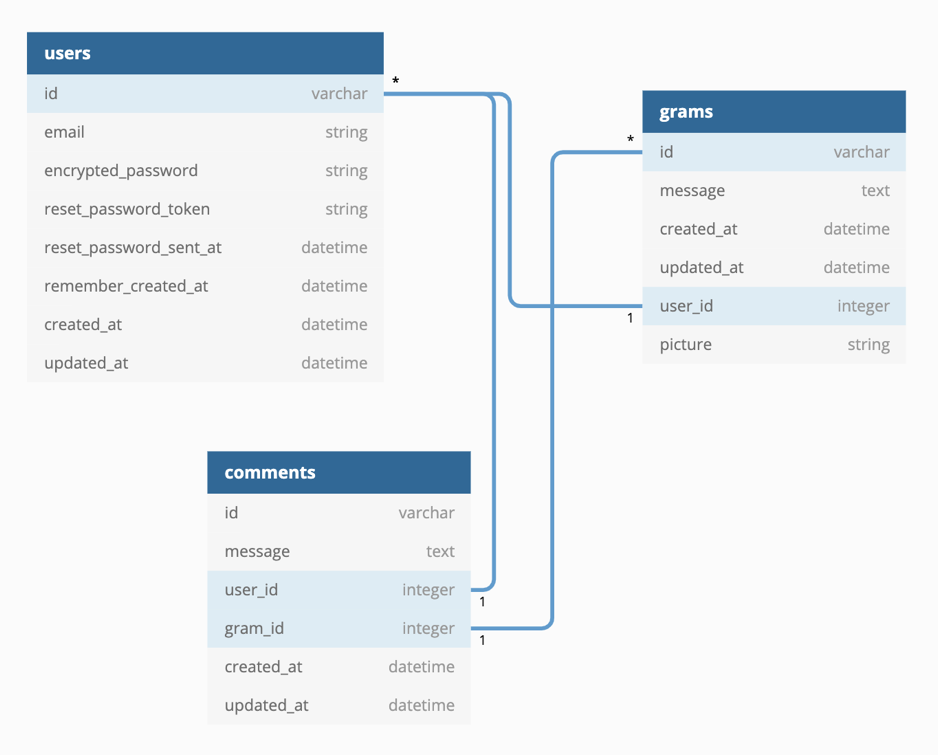
Knowledge: Please describe the whole ER diagram.

Best Practice: Why do we use Date and Time data type instead of numbers for date value?

Improvement: Can you suggest anything to make the ER Diagram better?

**Understanding ER Diagrams**

**ER Diagram for Simple Social Media Application**



Source: <https://github.com/clarkngo/grammable>

Note: Zoom in to view better

Capture 1 relationship and describe the relationship and answer why

**Questions you can answer for submission:**

Knowledge: What happens when you delete a user in the application?

Knowledge: What happens when you delete a gram in the application?

Knowledge: What happens when you delete a comment in the application?

Improvement: Can you suggest anything to make the ER Diagram better?