Lab1 Intro

Lab1: Agenda

- Διαδικαστικά
- DBMS Installation
- Lab schema Installation
- Lab schema Explaination

Διαδικαστικά

Παρουσίες, Ωράριο
Εργασία Μαθήματος

DBMS (Data Base Management System)

1. Supported DBMS:
   -  https://www.mysql.com/
   -  https://mariadb.org/
   -  https://www.postgresql.org/

2. 💡 Un Supported DBMS:
   - ORACLE®
     https://www.oracle.com/database/technologies/appdev/xe.html
   - Microsoft SQL Server https://www.microsoft.com/en-us/sql-server/sql-server-downloads
   - IBM DB2 https://www.ibm.com/analytics/db2

3. ⚠️ **Danger Zone :**
   - 
   - Key/value stores, NoSQL Databases
   - Column-oriented/ Hierarchical databases
   - Document-oriented databases
   - Graph databases
   - Object-Oriented databases
   - map/reduce frameworks, or semantic data stores
   - … any other kind

mysql-vs-postgresql comparison

- 📖 **read:** mysql-vs-postgresql comparison https://www.digitalocean.com/community/tutorials/sqlite-vs-mysql-vs-postgresql-a-comparison-of-relational-database-management-systems

DBMS Clients - Graphical and Enhanced Clients

- (LIST) https://mariadb.com/kb/en/graphical-and-enhanced-clients/
  - MySQL Workbench🔗
  - Database Workbench🔗
  - Dbeaver🔗
  - Heidisql🔗
  - DbVisualizer🔗
  - Phpmyadmin🔗
  - ... any other tool ...

Development Tools

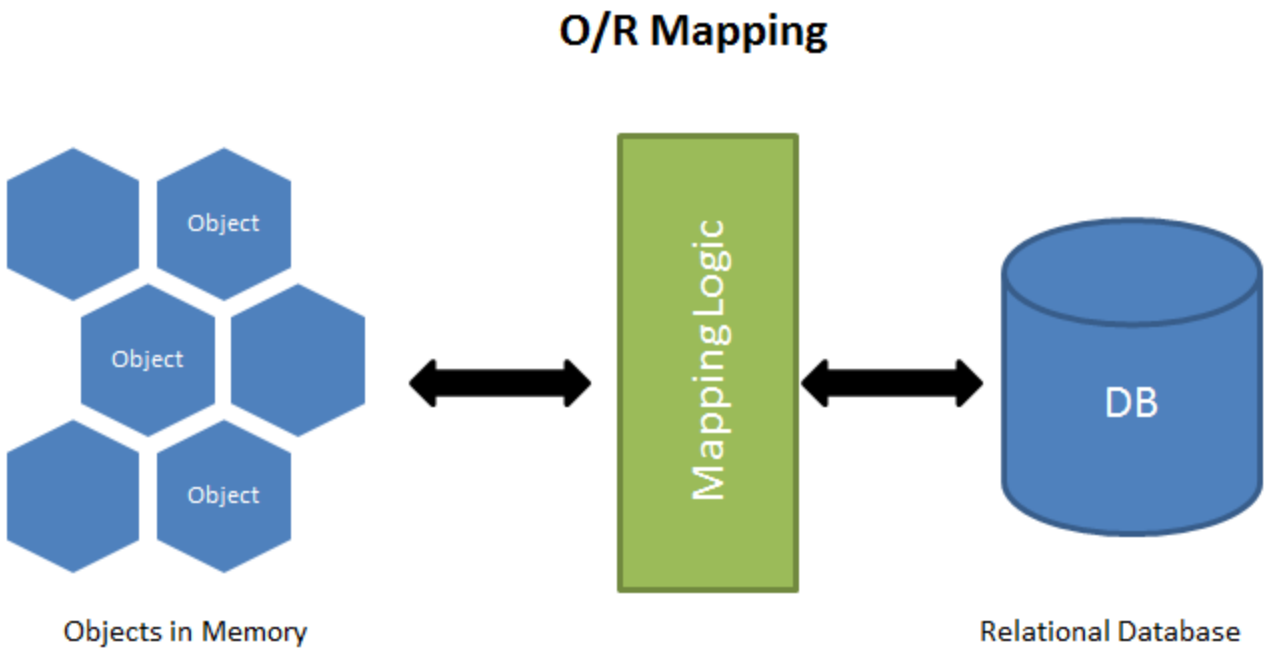
1. Supported:

- Java
- PHP
- Nodejs / JavaScript
- Python

2. 💡 Un Supported:

- .NET
- C/ C++
- your choice ...

3. ⚠️ Danger Zone



- ORM Frameworks https://en.wikipedia.org/wiki/List_of_object–relational_mapping_software

- If still unsure
  - OK

```
var sql = "SELECT id, first_name, last_name, phone, birth_date FROM persons WHERE id = 10";
var result = context.Persons.FromSqlRaw(sql).ToList();
var name = result[0]["first_name"];
```

  - ⚠️ **Warning: NOT OK**

```
var person = repository.GetPerson(10);
var firstName = person.GetFirstName();
```

Web Dev Stack

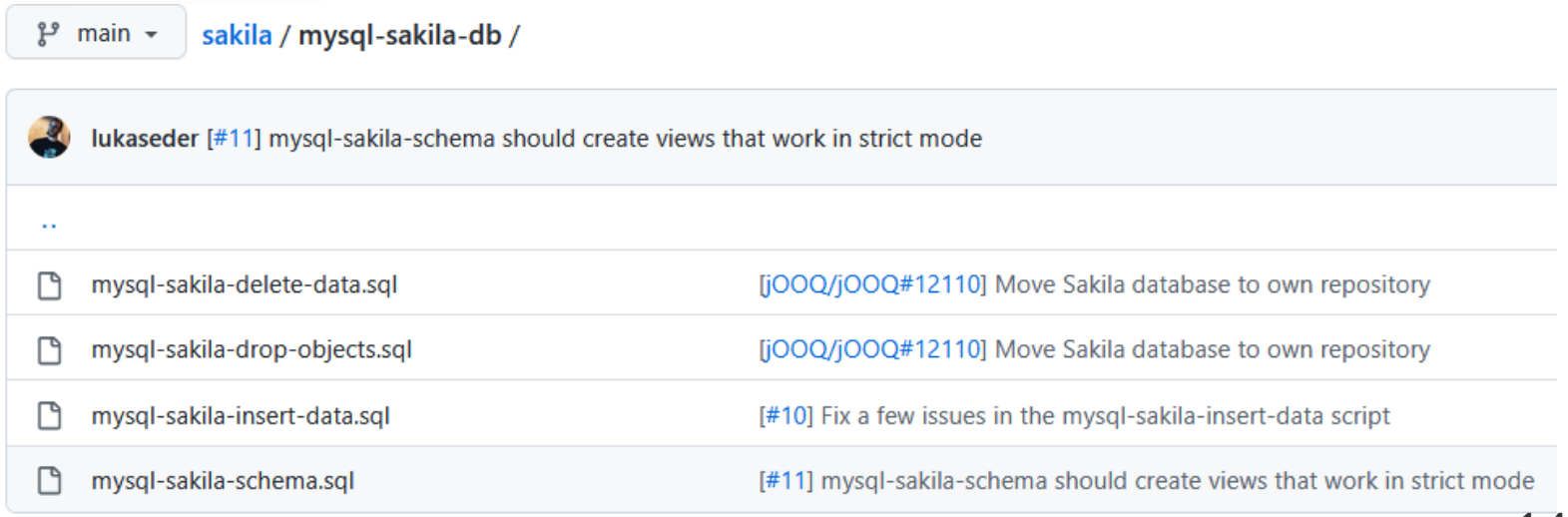
- Bundles with **A**pache, **M**ySql/ MariaDB, **P**HP

1. Windows XAMP (Also for Linux, OS X)
   - 💡 **Tutorial:** installation-process-of-xamp
2. Mac MAMP
   - 💡 **Tutorial:** how-to-install-mamp-on-your-mac (Also for Windows)
3. Linux LAMP
   - 💡 **Tutorial:** LAMP Stack for Ubuntu install

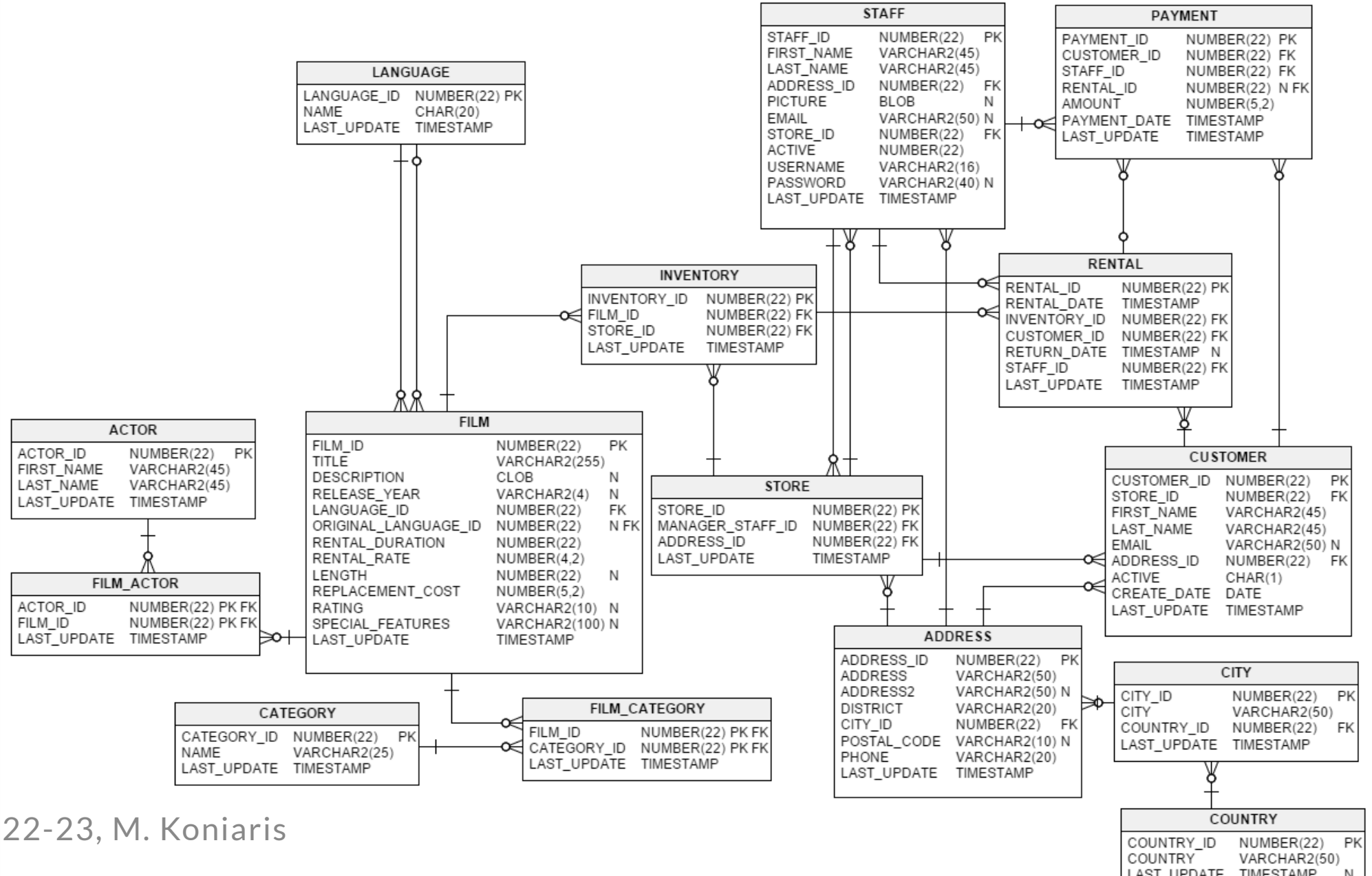
-  https://git-scm.com/

sample lab schema

- The Sakila example database https://github.com/jOOQ/sakila
- DVD (👽) Rental store
- SQL scripts
  1. delete data (for mysql)
  2. drop (for mysql)
  3. create
  4. insert



sample lab schema



Dummy Data για την εργασία

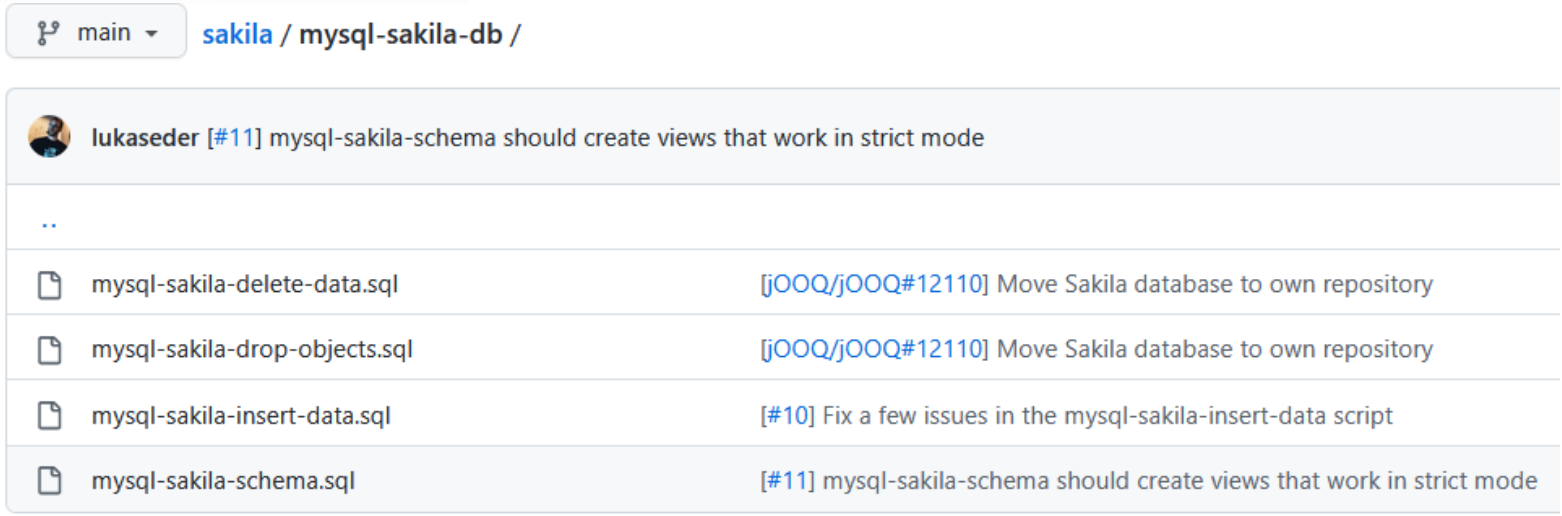
- Data generators
  1. http://filldb.info/
  2. https://generatedata.com/
  3. https://www.mockaroo.com/
  4. https://cobbl.io/

Installation Session 💻

1. Install {W|L|M} AMP
2. Connect
3. Install Lab schema
4. Walkthrough

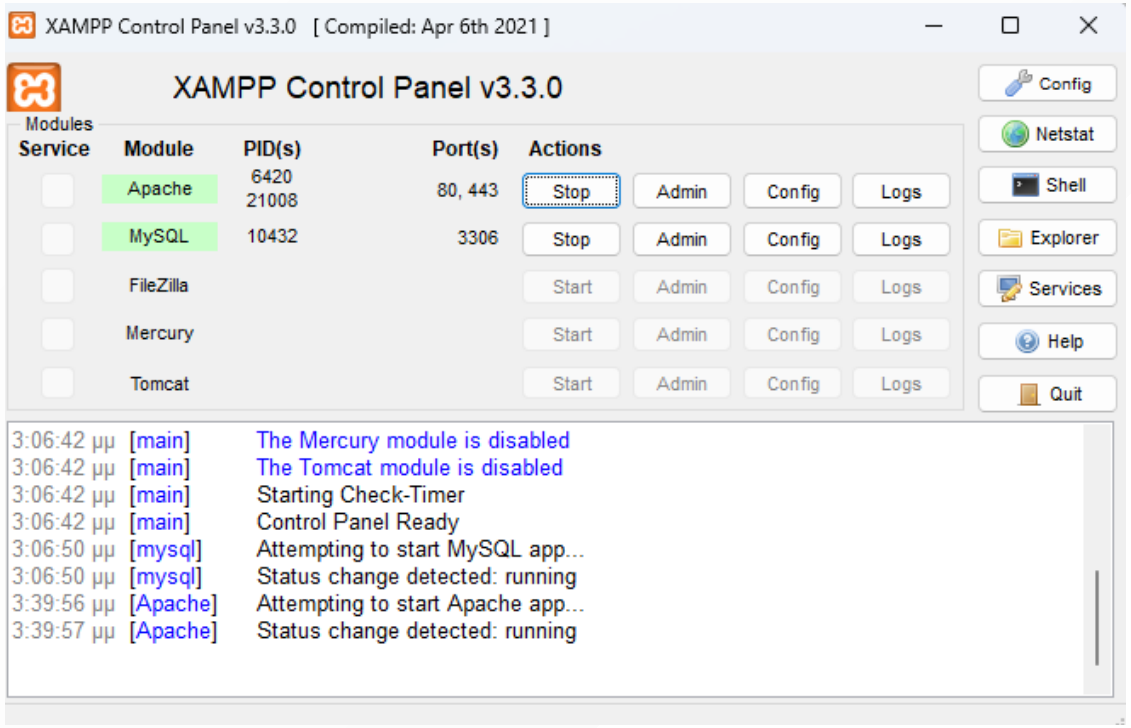
Connect & Install Lab schema

1. Lab Computer
    1. Navigate to https://github.com/jOOQ/sakila/tree/main/mysql-sakila-db
        - save files "mysql-sakila-schema.sql" and "mysql-sakila-insert-data.sql" to a folder e.g. c:\temp



Connect & Install Lab schema

1. Lab Computer
   2. Run XAMP and start "MYSQL" and "Apache"



Connect & Install Lab schema

1. Lab Computer
    3. Open CMD prompt and navigate to "C:\Program Files\MariaDB 10.5\bin"

```
c:
cd "C:\Program Files\MariaDB 10.5\bin"
```

Connect & Install Lab schema

1. Lab Computer
    4. run "myslq -u root -p"

```
C:\Program Files\MariaDB 10.5\bin>mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
```

Connect & Install Lab schema

1. Lab Computer
    5. run "source c:\temp\mysql-sakila-schema.sql"

```
MariaDB [(none)]> source c:\temp\mysql-sakila-schema.sql;
```

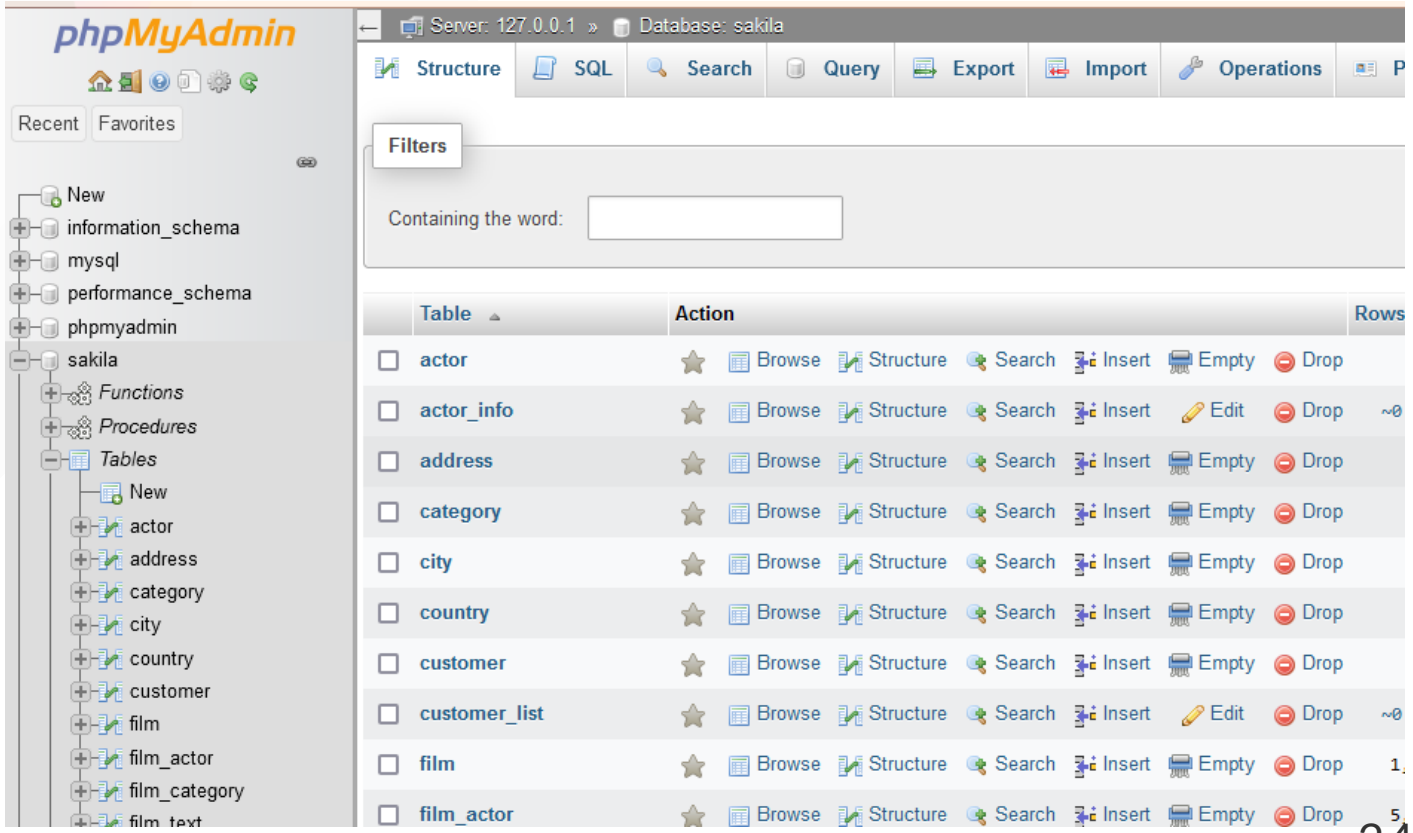
Connect & Install Lab schema

1. Lab Computer
    6. run "source c:\temp\mysql-sakila-insert-data.sql"

```
MariaDB [(none)]> source c:\temp\mysql-sakila-insert-data.sql;
```

Connect & Install Lab schema

1. Lab Computer
   7. Open browser and navigate to http://localhost/phpmyadmin/



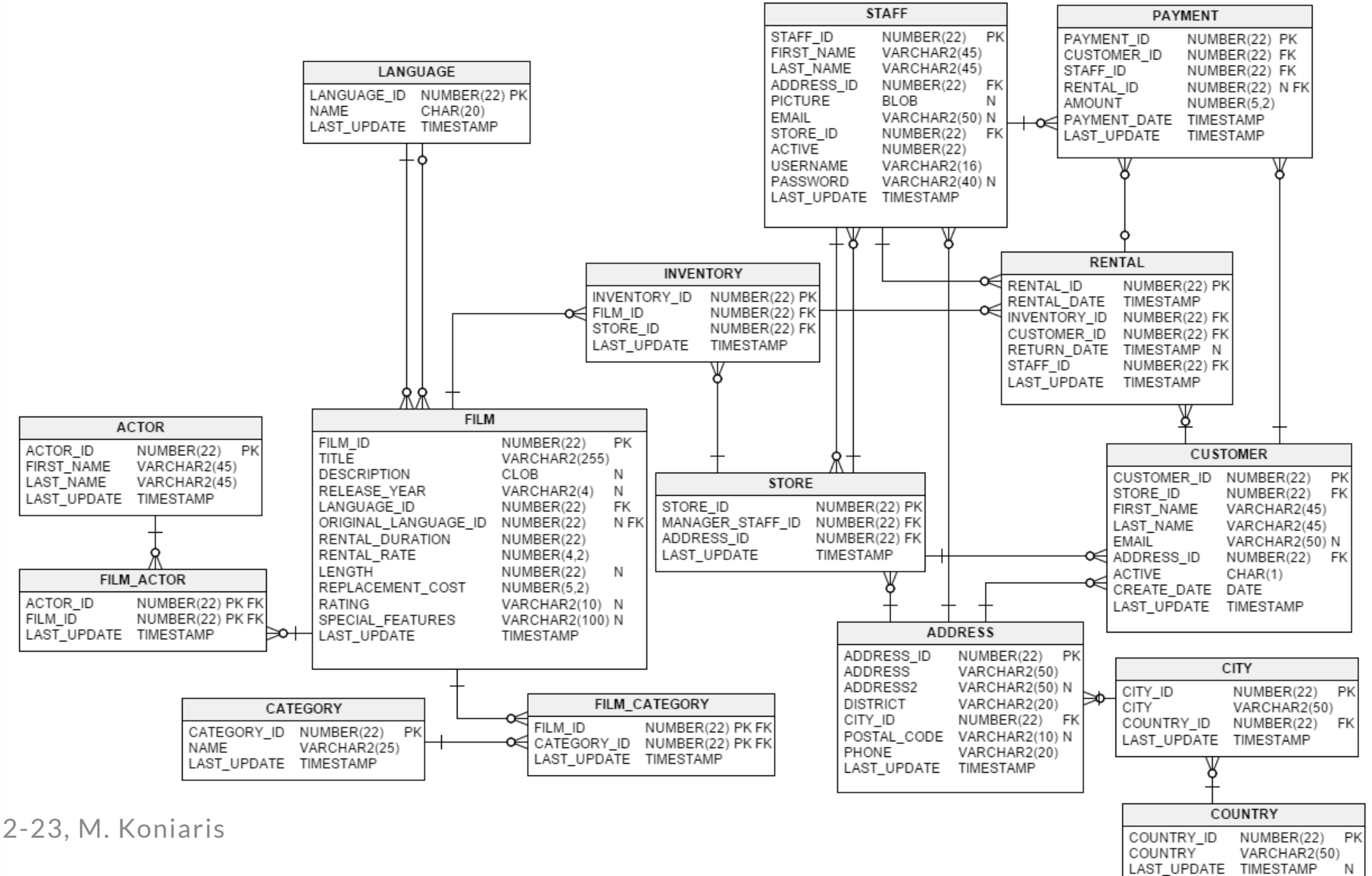
Connect & Install Lab schema

2. Your Computer
    - Same steps as above but in **Step 3** replace install path with yours e.g. "D:\dev_tools\xampp\mysql\bin"

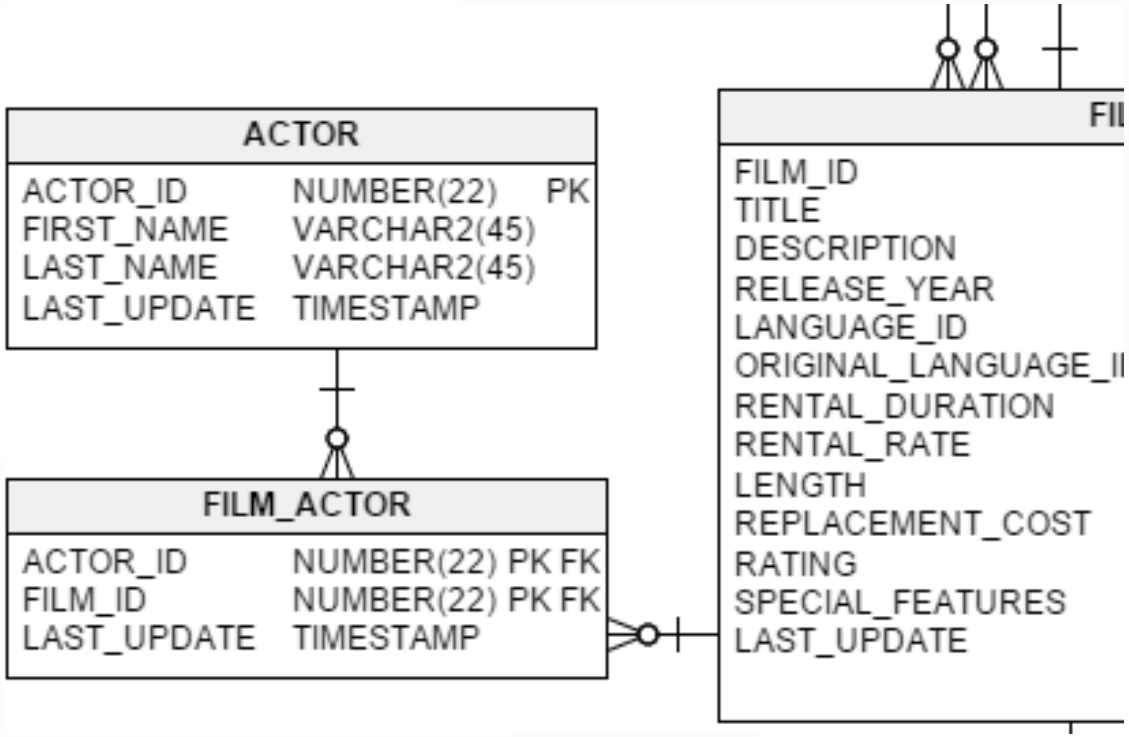
The Sakila Database

Table Name	Definition
film	A movie that has been released and can be rented
actor	A person who acts in films
customer	A person who watches films
category	A genre of films
payment	A rental of a film by a customer
language	A language spoken by the actors of a film
film_actor	An actor in a film
inventory	A film available for rental

Lab schema Explaination

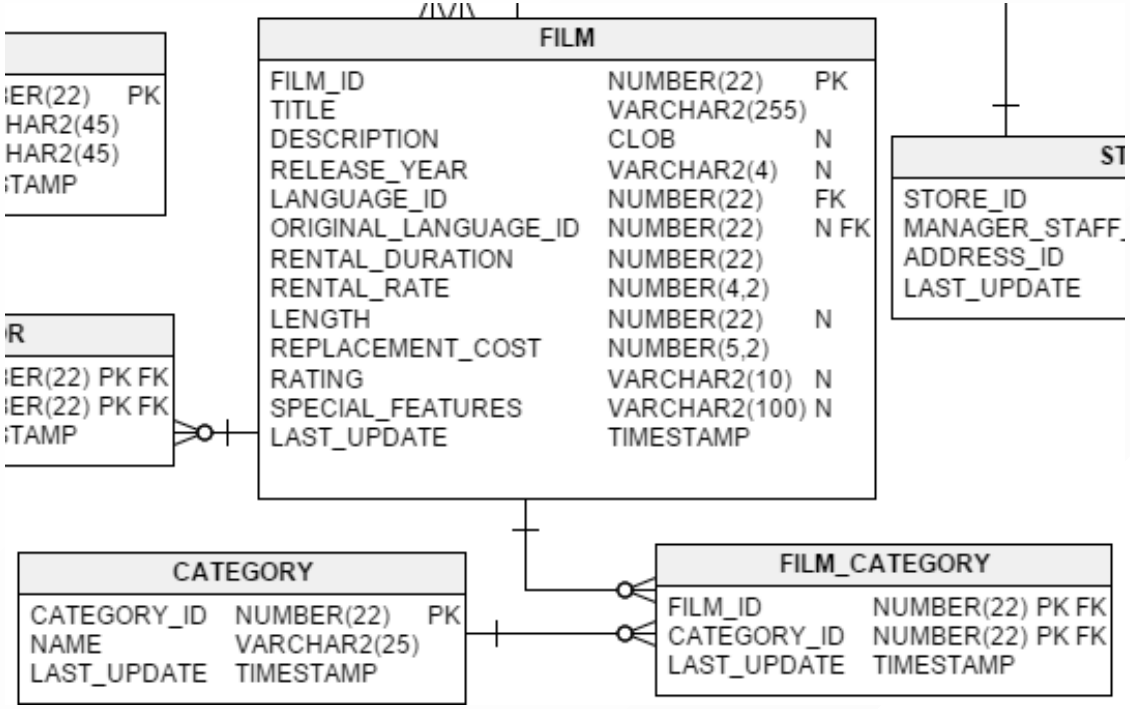


Actors



- Ο πίνακας **actor** περιέχει πληροφορίες για τους ηθοποιούς και συνενώνεται με τον πίνακα film μέσω του film_actor.
  - actor_id (πρωτεύον κλειδί)
  - first_name
  - last_name
- Ο πίνακας **film_actor** υποστηρίζει τις σχέσεις μεταξύ ηθοποιών και ταινιών.
  - actor_id
  - film_id

Category



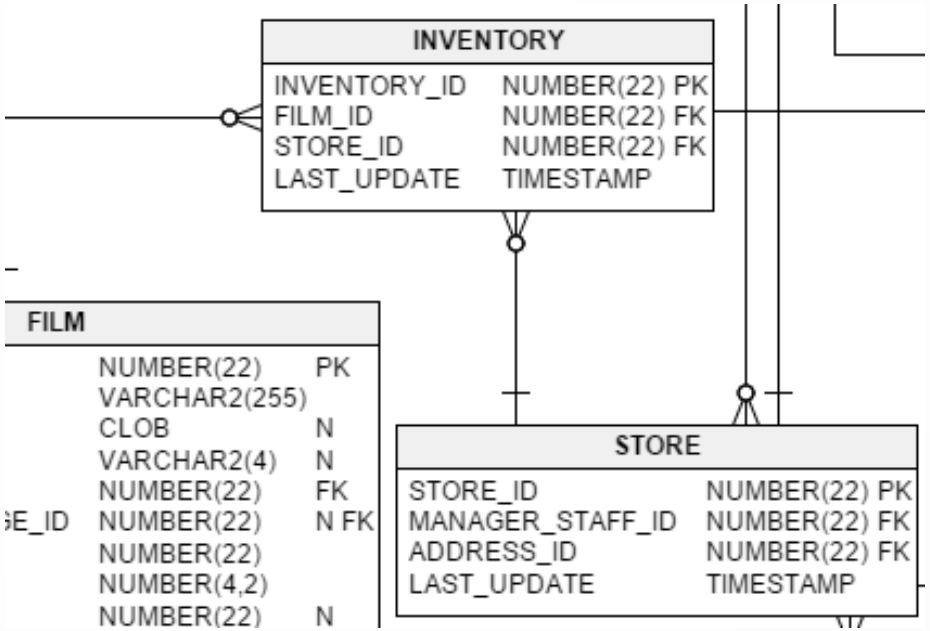
- Ο πίνακας **category** περιέχει τις κατηγορίες στις οποίες ανήκουν οι ταινίες.
  - category_id (πρωτεύον κλειδί – ενώνεται με τον πίνακα film μέσω του film_category)
  - name
- Ο πίνακας **film_category** υποστηρίζει τις σχέσεις μεταξύ ταινιών και κατηγοριών ταινιών. Ο πίνακας αναφέρεται στις ταινίες και τις κατηγορίες ταινιών χρησιμοποιώντας ξένα κλειδιά.
  - film_id
  - category_id

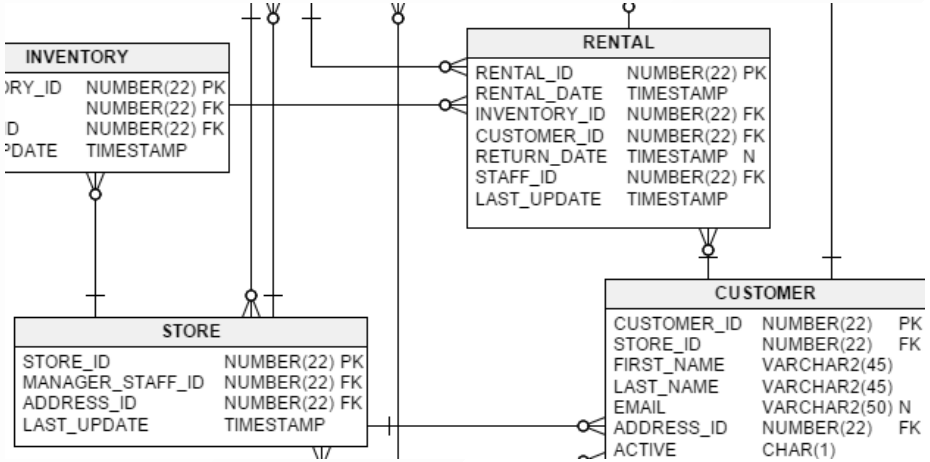
Film

FILM		
FILM_ID	NUMBER(22)	PK
TITLE	VARCHAR2(255)	
DESCRIPTION	CLOB	N
RELEASE_YEAR	VARCHAR2(4)	N
LANGUAGE_ID	NUMBER(22)	FK
ORIGINAL_LANGUAGE_ID	NUMBER(22)	N FK
RENTAL_DURATION	NUMBER(22)	
RENTAL_RATE	NUMBER(4,2)	
LENGTH	NUMBER(22)	N
REPLACEMENT_COST	NUMBER(5,2)	
RATING	VARCHAR2(10)	N
SPECIAL_FEATURES	VARCHAR2(100)	N
LAST_UPDATE	TIMESTAMP	

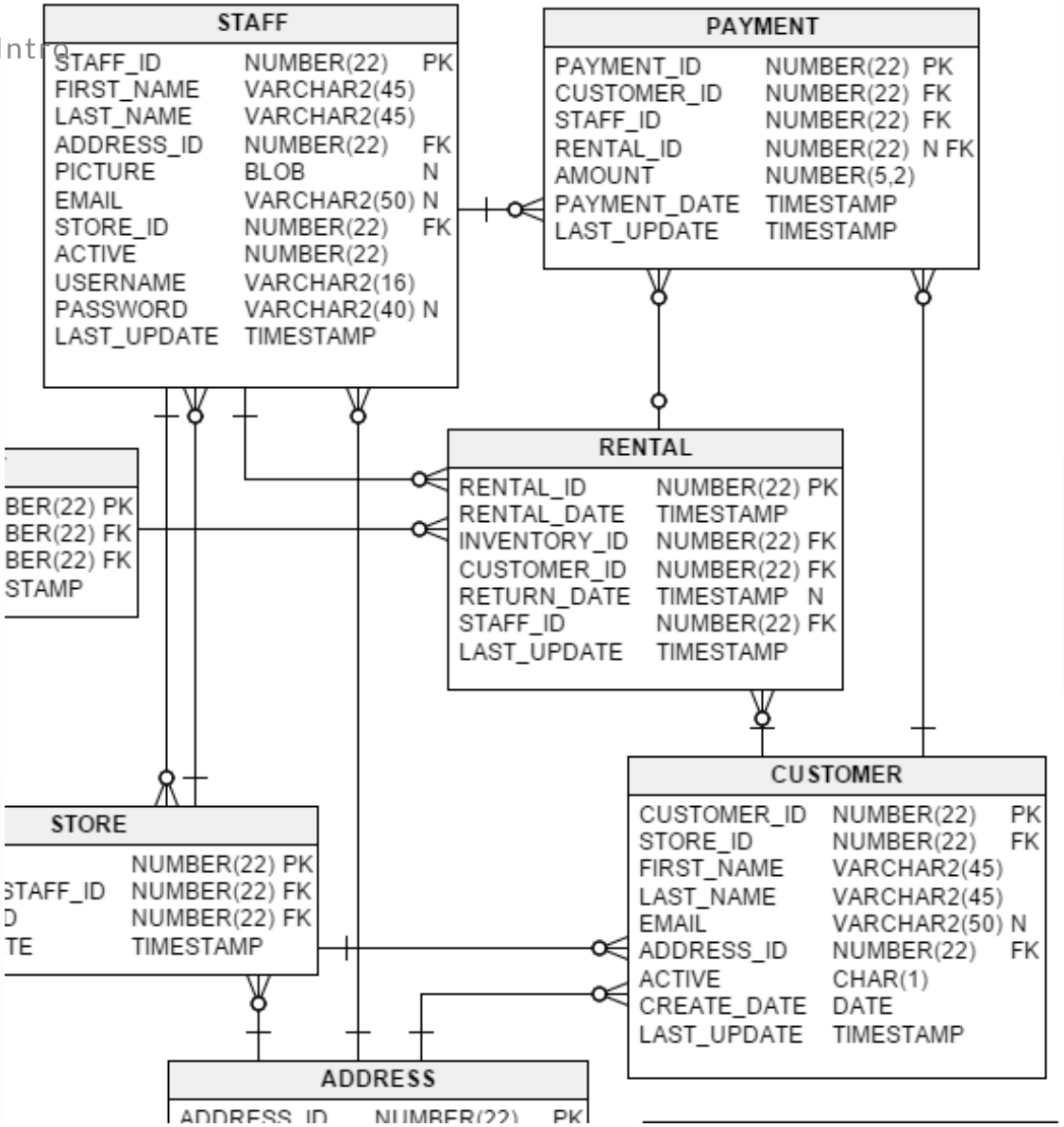
- Ο πίνακας film περιέχει όλες τις ταινίες που έχουν τα καταστήματα. Τα πραγματικά αντίγραφα βρίσκονται στο πίνακα inventory.
  - film_id (πρωτεύον κλειδί)
  - title
  - description
  - release_year
  - language_id
  - original_language_id
  - rental_duration
  - rental_rate
  - length
  - replacement_cost
  - rating (G, PG, PG-13, R, ή NC-17)
  - special_features (Trailers, Commentaries, Deleted Scenes, Behind the Scenes)

inventory/ rental





- Ο πίνακας **inventory** περιέχει κάθε αντίγραφο μιας ταινίας σε κάθε κατάστημα. Χρησιμοποιεί ξένα κλειδιά και σχετίζεται με τον πίνακα rental και τον πίνακα store.
  - inventory_id (πρωτεύον κλειδί)
  - film_id
  - store_id
- Ο πίνακας **rental** περιέχει κάθε ενοικίαση που έχει γίνει για κάθε στοιχείο του πίνακα inventory και δείχνει τους πίνακες inventory, customer και staff.
  - rental_id (πρωτεύον κλειδί)
  - rental_date
  - inventory_id
  - customer_id
  - return_date



- Ο πίνακας **customer** περιέχει τους πελάτες και αναφέρεται στους πίνακες rental και payment και ενώνεται με τους πίνακες address και store χρησιμοποιώντας ένα ξένο κλειδί.
  - customer_id (πρωτεύον κλειδί)
  - store_id
  - first_name
  - last_name
  - address_id
  - active
- Ο πίνακας **payment** περιέχει κάθε πληρωμή που έχει γίνει από ένα πελάτη και δείχνει τους πίνακες customer, staff και rental.
  - payment_id (πρωτεύον κλειδί)
  - customer_id
  - staff_id
  - rental_id
  - amount

Wrap Up

1. [x] `Διαδικαστικά`
2. [x] `DBMS Installation`
3. [x] `Lab schema Installation`
4. [x] `Lab schema Explaination`

Wrap Up

Next time make sure 😟

Installation	Status
DBMS	✅
DBMS Clients	✅
Web Dev Stack	✅
sample lab schema	✅

Απορίες https://discord.gg/g3fFxWVPfD 😱