SQLite, Firefox, and our small IMDB movie database

CS3200 Database design (fa18 s2)

https://northeastern-datalab.github.io/cs3200/

Version 9/6/2018

Overview

- This document covers 2 issues:
- How to install SQLite manager in Firefox browser:
  - SQLite is the most widely used database. For example, Firefox uses it to store your book marks. You are going to install a small tool that allows you to explicitly create and manage a database with Firefox.
- How to load the small IMDB movie database:
    - I posted a small file that contains subset of data from the IMDB movie website ("300 – Small IMDB - SQLite.sql"). You will upload these data into your local version of SQLite and then issues queries over the database.

1. Installing SQLite Manager in Firefox

SQLite & SQLite Manger

Background:
http://www.sqlite.org/about.html
http://en.wikipedia.org/wiki/SQLite

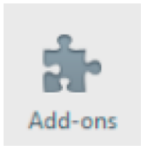
Firefox Plug-in:
https://addons.mozilla.org/en-us/firefox/addon/sqlite-manager/

How to install SQLite in Firefox

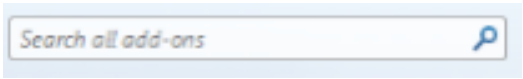
Download and install Firefox → Download and install SQLite Manager for Firefox → Download and connect to small IMDB withSQLite Manager

- Download Firefox from www.mozilla.org/firefox
- In newer versions of Firefox, you have to press "ALT" to see the "menu bar".

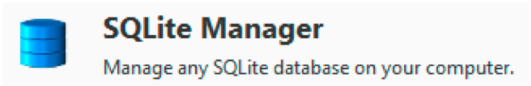
- Click on Add-ons



- Search for "SQLite" in the top right search bar

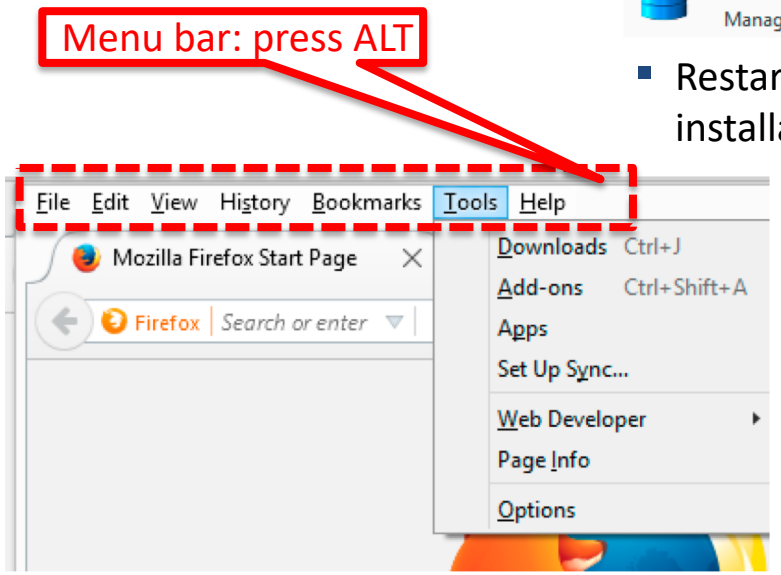


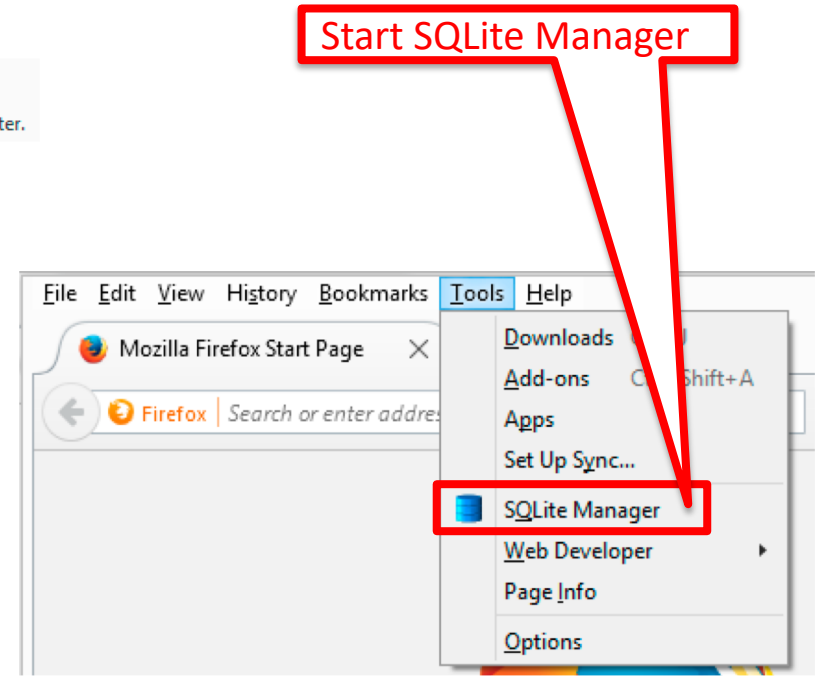
- Find and install SQLite Manager



- Restart Firefox when the installation is done

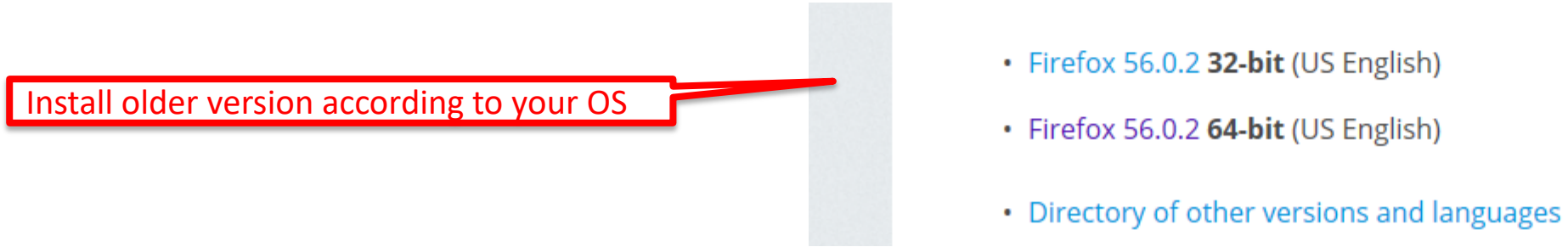
- Download the following file from our class website: "300 - Small_IMDB_for_SQLite.sql"
- Start SQLite Manger and follow the instructions on the following pages





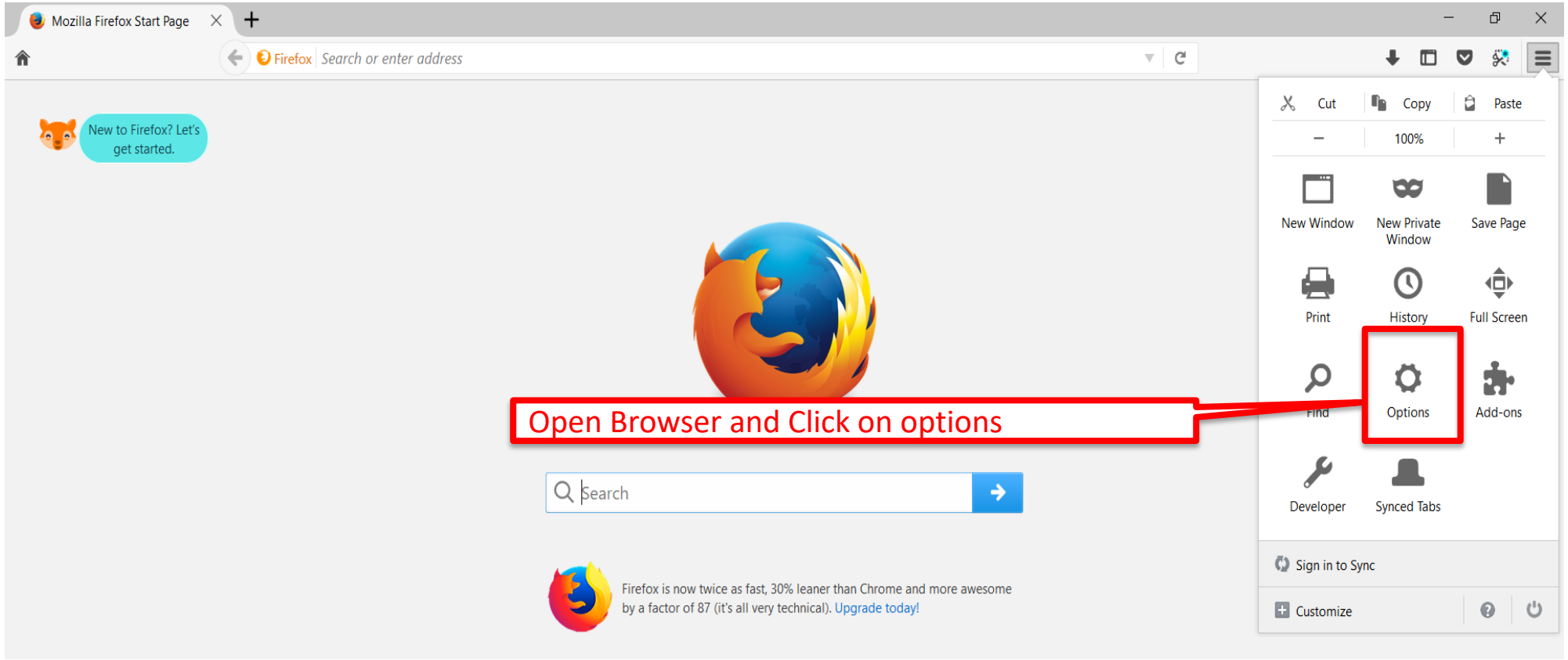
Installing older version of Firefox

- Firefox version 57 ("Quantum") has disabled some existing add-ons. We thus need to use an older version of Firefox (you can have multiple versions installed in parallel on your machine; use the older version only for class not for browsing the web; only one version can be open at a time)
- Download version "Firefox 56.0.2“ from https://support.mozilla.org/en-US/kb/install-older-version-of-firefox

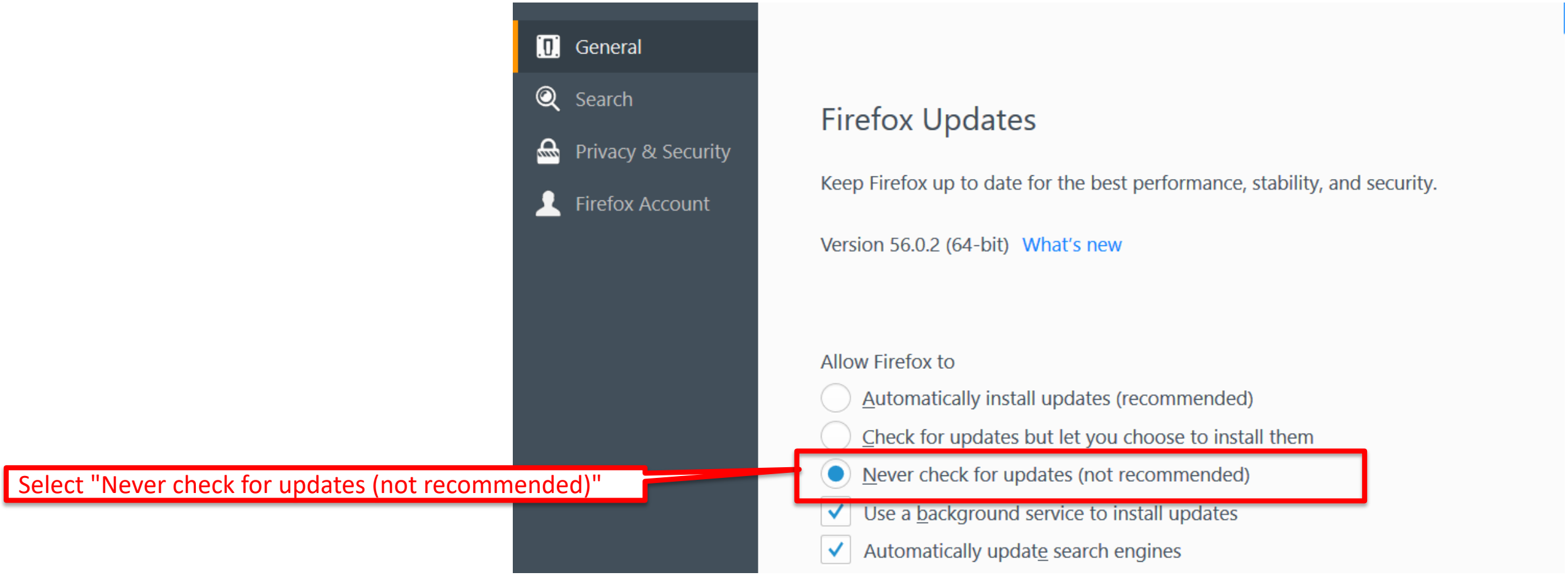


Disable Updates

- We need to prevent "auto-update" during the installation
- Turn off the WiFi/ Internet connection.
- Open old version of Firefox and go to Options.



- Scroll to Firefox Updates



- Close Firefox and turn Wifi back on.
- Install the plug-in

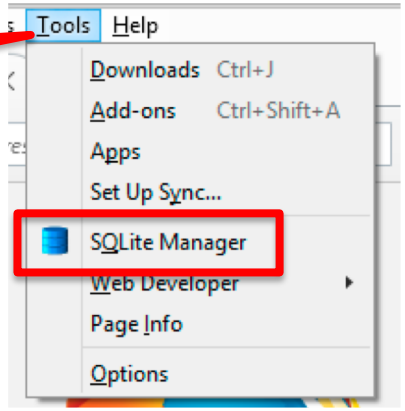
2. Loading the small IMDB movie database

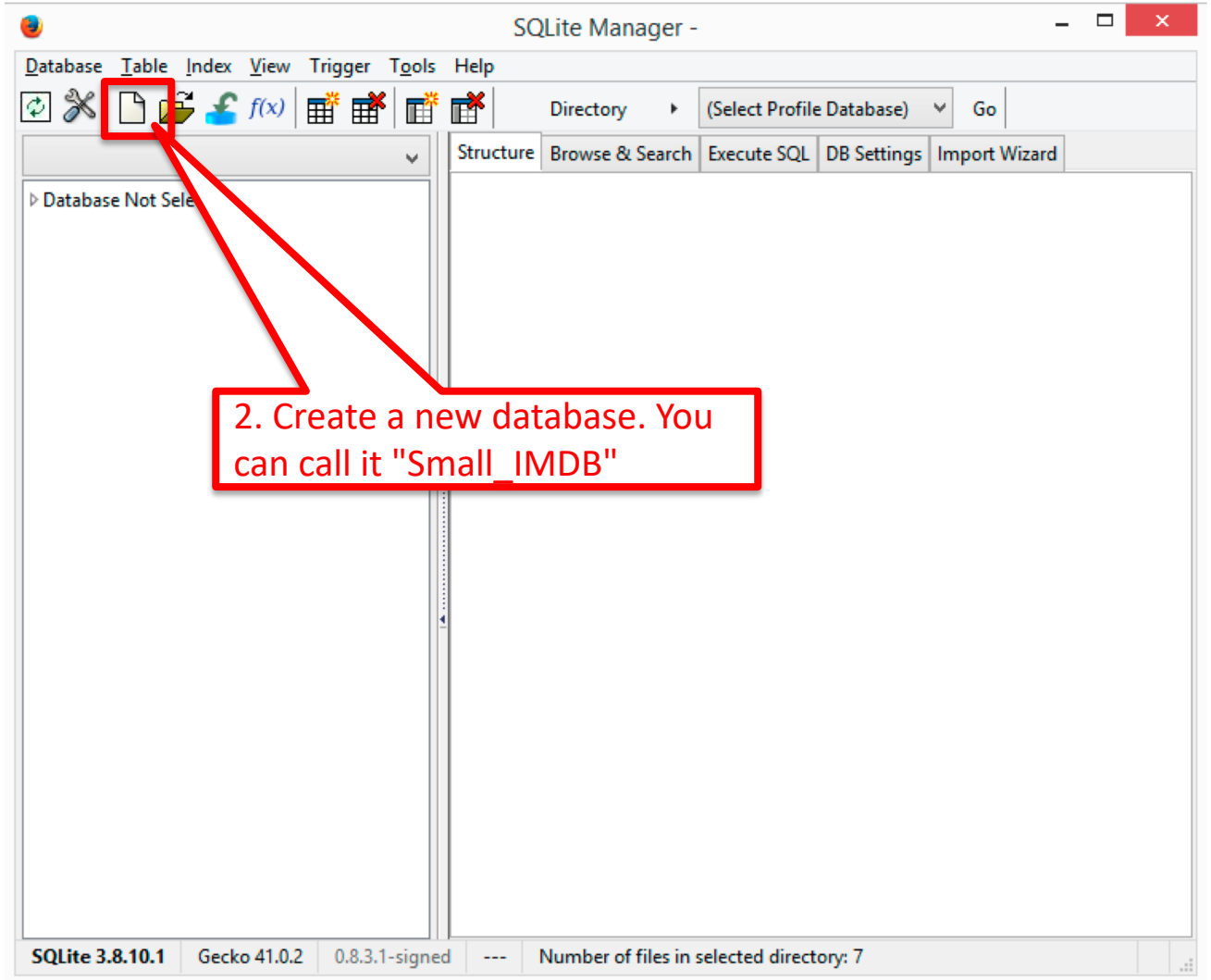
Download the small IMDB movie database

- Download the small IMDB movie database "300 – Small IMDB - SQLite.sql" from our shared folder (see resources) to your computer

Importing IMBD movie database (1/4)

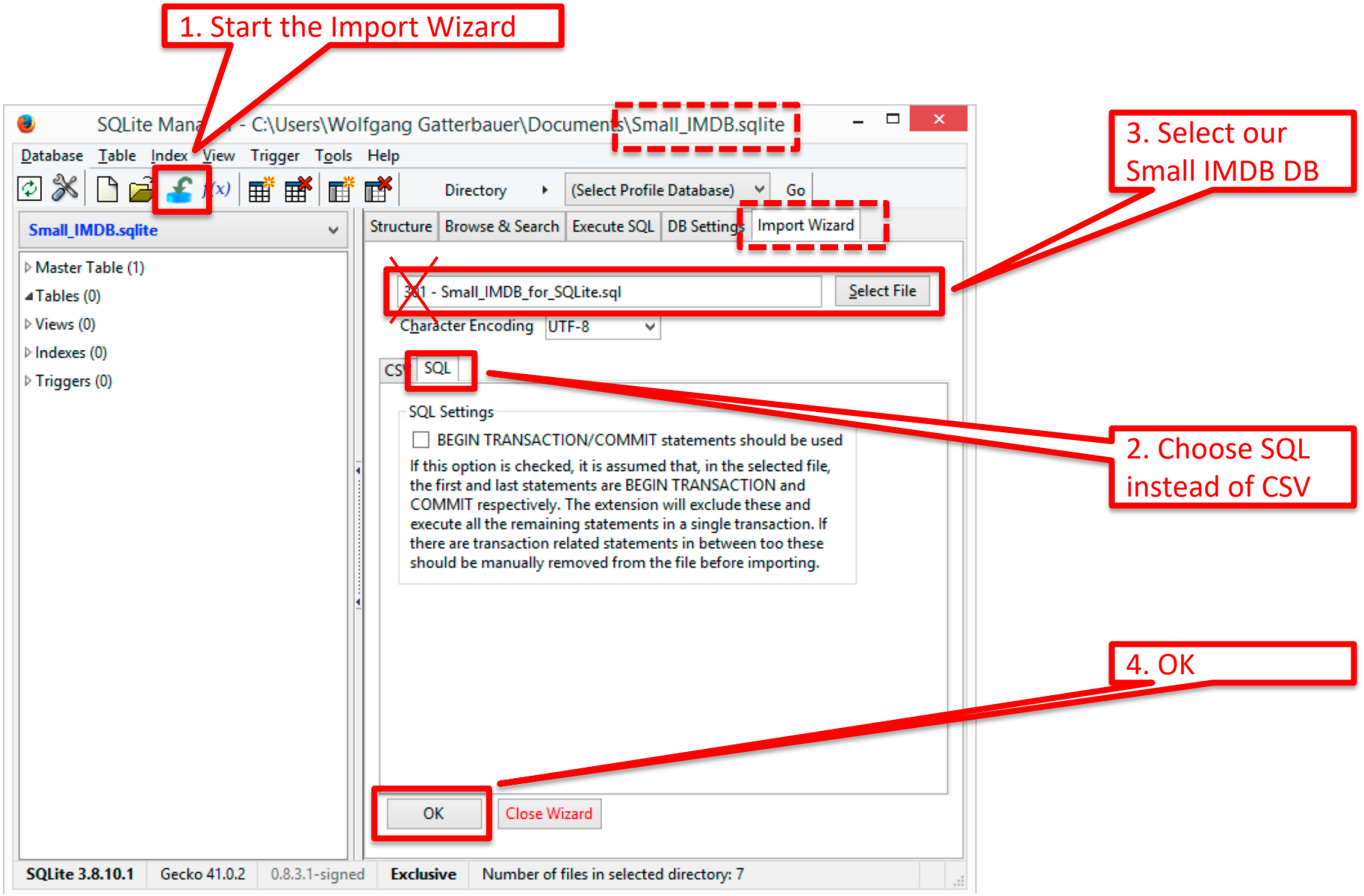
1. Start SQLite manager in Firefox under Tools (press "ALT" to see the menu bar)



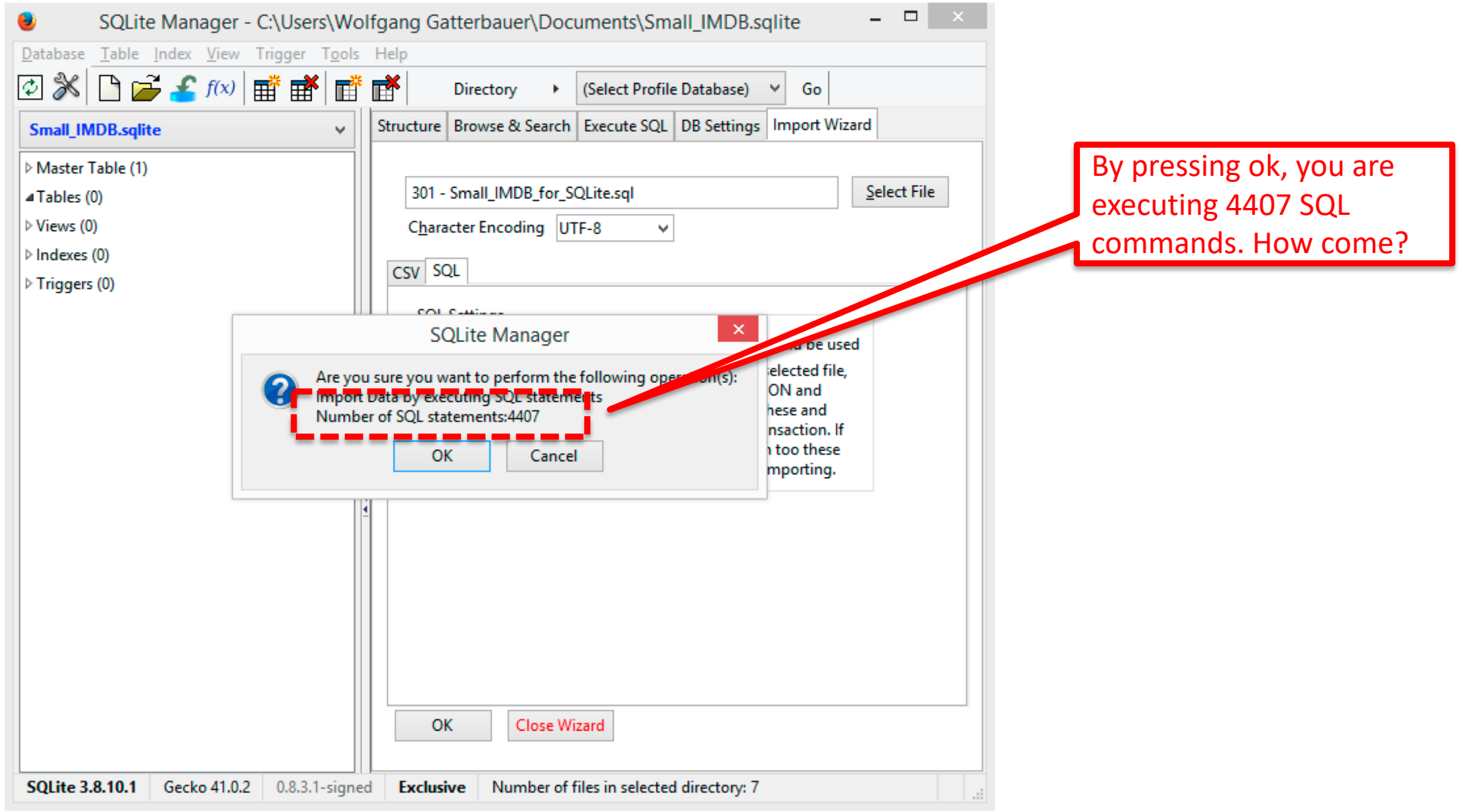


2. Create a new database. You can call it "Small_IMDB"

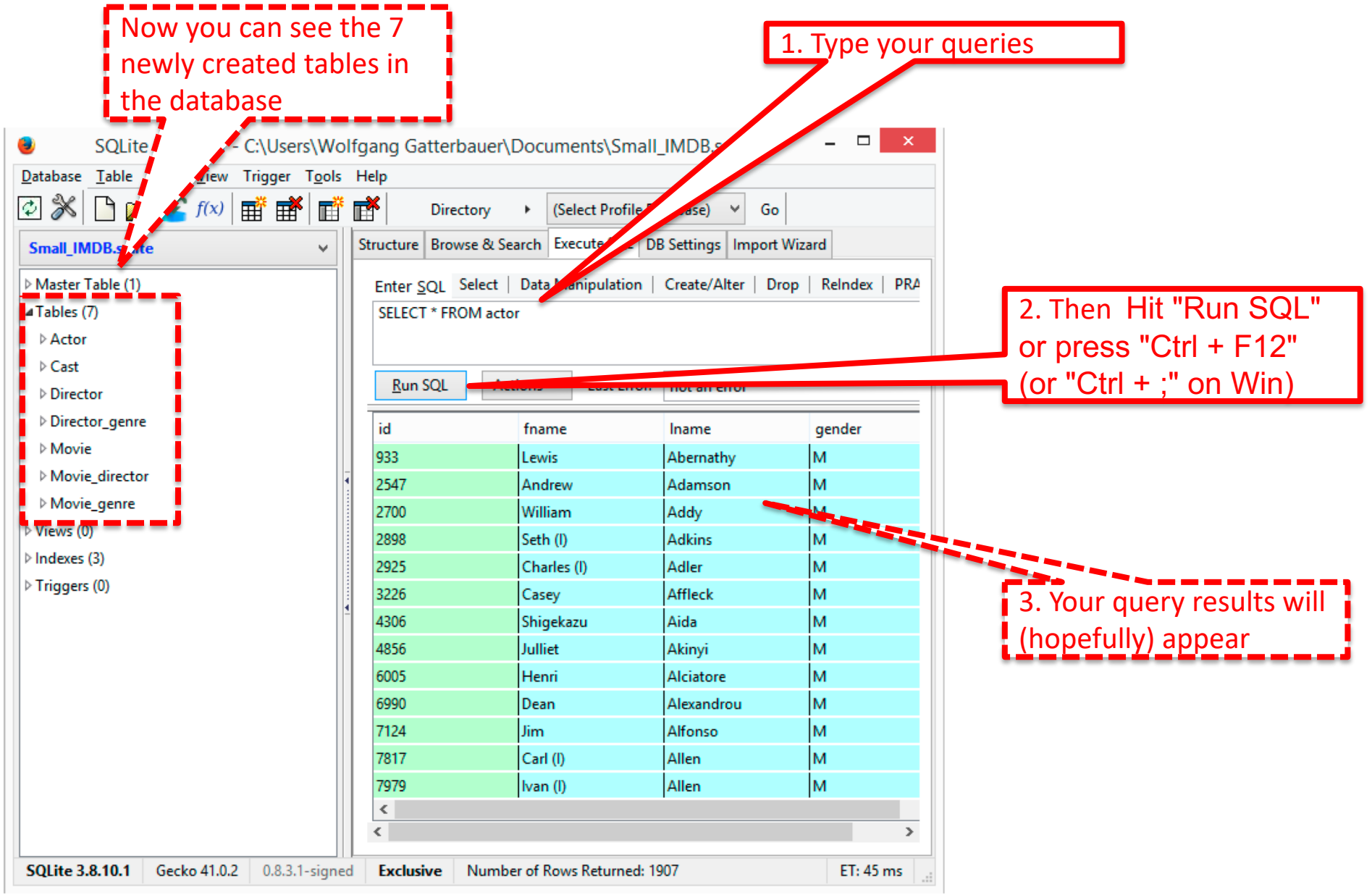
Importing IMBD movie database (2/4)



Importing IMBD movie database (3/4)



Importing IMBD movie database (4/4)



More Interesting IMDB queries

- Execute the following two queries below, just copy and paste to avoid syntax errors ("--" indicates a comment). Can you find alternative interesting queries?

```
-- Find all films which have "Bill" in the name
select * from movie
where name like '%Bill%';
```

```
-- Find all actors and their roles who played in a movie
-- with "Bill" in the name
select fname, lname, role, name
from movie, cast, actor
where movie.id = "cast".mid
and "cast".aid = actor.id
and movie.name like '%Bill%';
```

The table name "cast" requires quotation marks as it is a protected name in SQLite (but not in SQLserver)

Referential Integrity

Product

PName	Price	Category	Manufacturer
Gizmo	$19.99	Gadgets	GizmoWorks
Powergizmo	$29.99	Gadgets	GizmoWorks
SingleTouch	$149.99	Photography	Canon
MultiTouch	$203.99	Household	Hitachi

Company

CName	StockPrice	Country
GizmoWorks	25	USA
Canon	65	Japan
Hitachi	15	Japan

Simplified definition

Key constraint: minimal subset of the fields of a relation is a unique identier for a tuple.

Foreign key: must match field in a relational table that matches a candidate key of another table

Gizmo	$14.99	Gadgets	Hitachi

... violates Key constraint

SuperTouch	$249.99	Computer	NewCom

... violates Foreign Key constraint

Database import: with SQL statements

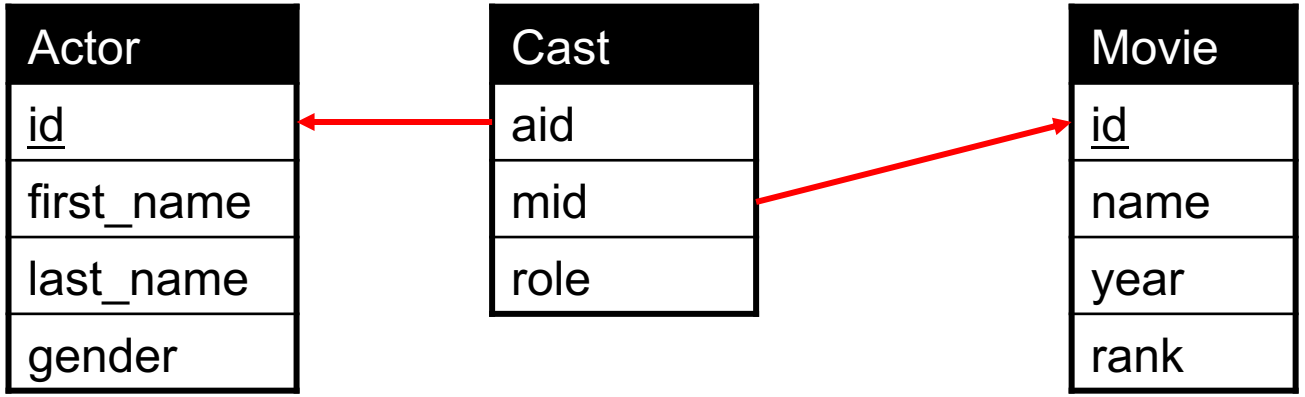
Small_IMDB_for_SQLite.sql

```
-- Explicit SQL statements to create a small IMDB database in SQL lite
-- Note that the single quote character (') needs to be shown as ('') instead of (\') as in MySQL

-- Table structure for table `actors`
DROP TABLE IF EXISTS `actors`;
CREATE TABLE `actors` (
  `id` int(11) NOT NULL default '0',
  `first_name` varchar(100) default NULL,
  `last_name` varchar(100) default NULL,
  `gender` char(1) default NULL,
  PRIMARY KEY  (`id`)
);

-- Dumping data for table `actors`
INSERT INTO `actors` VALUES (933,'Lewis','Abernathy','M');
insert into 'actors' values (2547,'Andrew','Adamson','M');
insert into 'actors' values (2700,'William','Addy','M');
insert into 'actors' values (2898,'Seth (I)','Adkins','M');
insert into 'actors' values (2925,'Charles (I)','Adler','M');
insert into 'actors' values (3226,'Casey','Affleck','M');
insert into 'actors' values (4306,'Shigekazu','Aida','M');
insert into 'actors' values (4856,'Julliet','Akinyi','M');
```

Database import: with SQL statements

```
-- Table structure for table `movies_directors`
DROP TABLE IF EXISTS `movies_directors`;
CREATE TABLE `movies_directors` (
  `director_id` int(11) default NULL,
  `movie_id` int(11) default NULL,
  FOREIGN KEY(director_id) REFERENCES directors(id),
  FOREIGN KEY(movie_id) REFERENCES movies(id)
);

-- Dumping data for table `movies_directors`
INSERT INTO `movies_directors` VALUES (11652,10920);
insert into 'movies_directors' values (44291,17173);
insert into 'movies_directors' values (35573,18979);
insert into 'movies_directors' values (58201,30959);
insert into 'movies_directors' values (28395,46169);
insert into 'movies_directors' values (15092,109093);
insert into 'movies_directors' values (15093,109093);
```

What is the schema of this simplified Movie Database?



The schema describes the structure of a database,
i.e. tables, attributes, integrity constraints

Tables Attributes

Actor(id, first_name, last_name, gender)
Cast(aid, mid, role)
Movie(id, name, year, rank)

Integrity Constraints (primary keys can also be shown byunderlining)

Actor.id, **Movie**.id = primary keys of the corresponding tables
Cast.aid = foreign key to **Actor**.id
Cast.mid = foreign keys to **Movie**.id

More details on the small IMDB schema

The data in this database is from the IMDB website. Our small IMDB movie database consists of 7 tables with the following schema:

ACTOR (id, fname, lname, gender)

MOVIE (id, name, year)

DIRECTOR (id, fname, lname)

CAST (aid, mid, role)

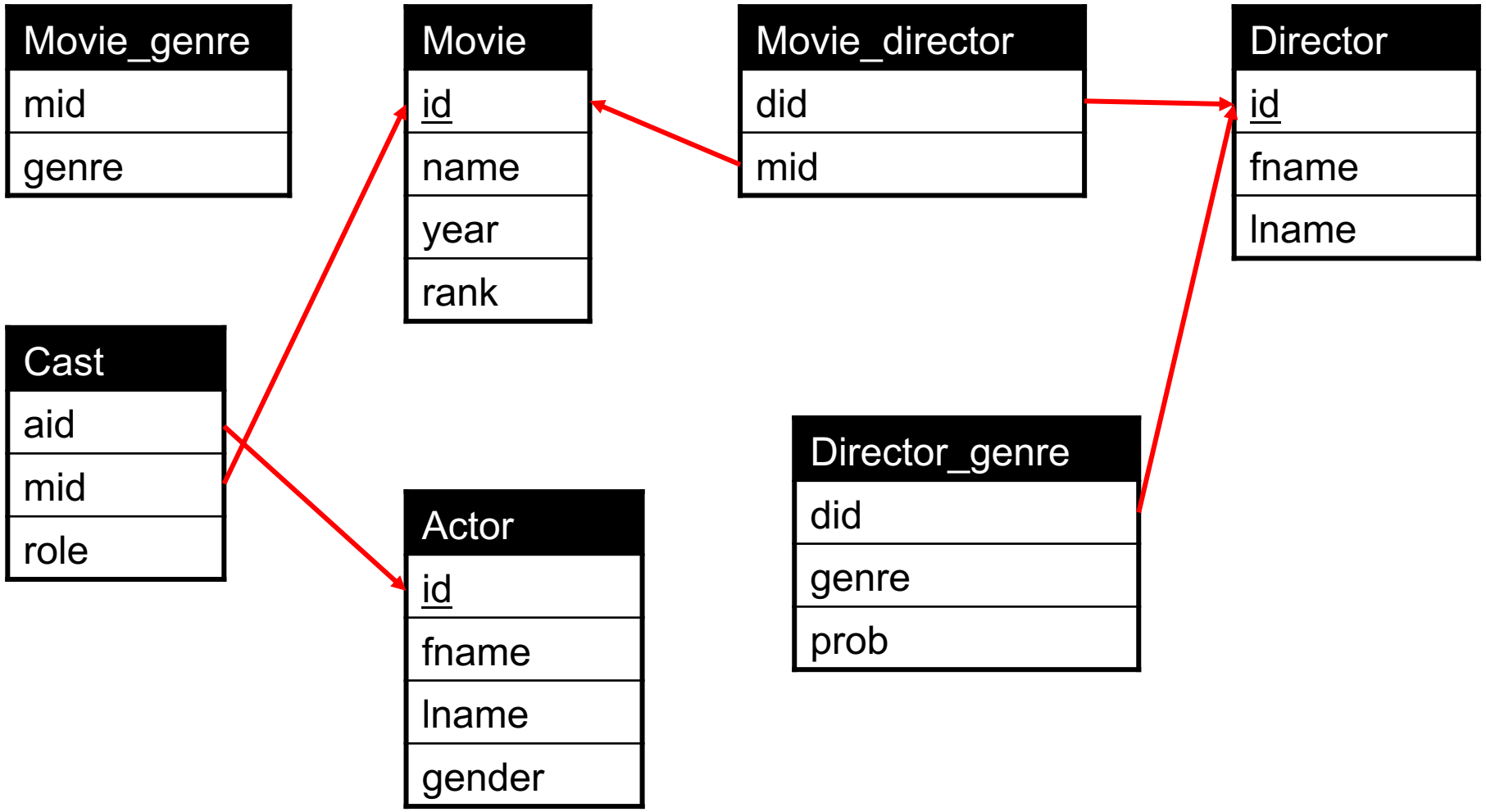
MOVIE_DIRECTOR (did, mid)

MOVIE_GENRE (mid, genre)

DIRECTOR_GENRE (did, genre,prob)

The data we use for this class is only a small subset of the large IMDB movie database, thus you may not be able to find all your favorite movies. But you will find some Quentin Tarantino movies. How many?

Small IMDB Movie Database: Schema



Small IMDB Movie Database: Example Tuples

Actor

id	fname	lname	gender
933	Lewis	Abernathy	M
2547	Andrew	Adamson	M
...	...	...	...

Director

id	fname	lname
429	Andrew	Adamson
2931	Darren	Aronofsky
...	...	...

Director_genre

did	genre	prob
429	Adventure	0.75
429	Music	0.25
...	...	...

Movie

id	name	year	rank
10920	Aliens	1986	8.2
17173	Animal House	1978	7.5
...	...	...	...

Movie_director

did	mid
11652	10920
44291	17173
...	...

Movie_genre

mid	genre
10920	Sci-Fi
10920	Action
...	...

Cast

aid	mid	role
16844	10920	Lydecker
36641	10920	Russ Jorden
...	...	...