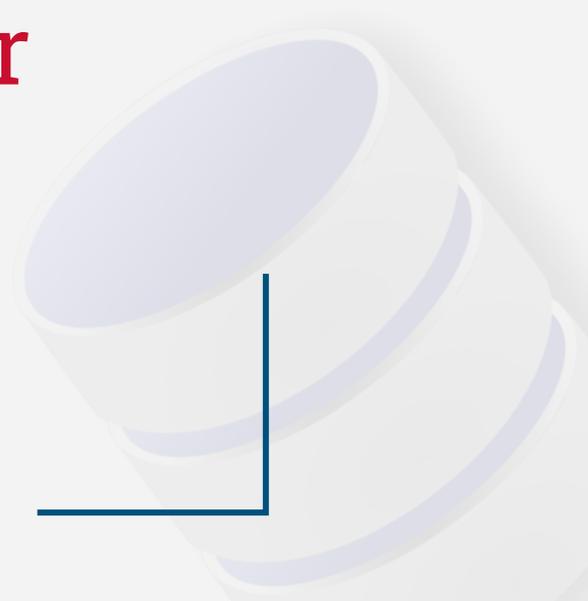CS 3200 - Fall 2024

MySQL w/ Docker

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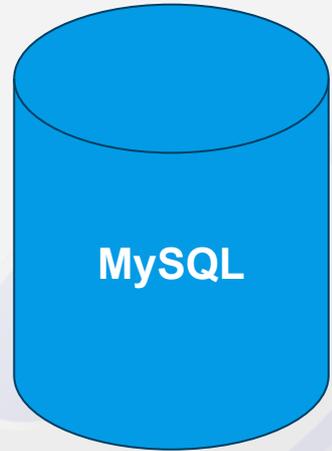Northeastern University

What is MySQL?

- Most popular open source relational DBMS
- Currently developed, distributed, and supported by Oracle (but still open source)
- Fast, reliable, scalable
- (Typically) deployed in a client/server setup
  - but there is an embedded version
- MariaDB is a fork of MySQL by original MySQL devs… released under GNU GPL.

Client/Server Model of MySQL

Client

The Network/Internet

MySQL

Server

During Software Dev…

In a typical project scenario, the dev might need to have an instance of MySQL running 'locally' on their machine…

Options:
- Direct Install
- Prepackaged executable (like XAMPP, etc)
- Containerization or VM

MySQL Server

Enter…. Docker!

- [Docker](#) is a containerization platform
- Allows one to package software into standardized units
  - eases development, shipment, and deployment
- Container is similar to, but not exactly the same as, a *virtual machine*
- Very widely used in industry
- We'll be using Docker Desktop
  - It is a **one click install** of the Docker Engine, Docker CLI, Docker Compose, and some other tools

Docker Image vs Container

- Docker Image
    - an executable, read-only template containing instructions needed to create a container
    - a snapshot or blueprint of the libraries and dependencies required for a container to run
    - Shareable and portable
- Docker Container
    - a runtime environment containing _all necessary components_ such as code, dependencies, and libraries _needed to run a specific application_ (like MySQL)
- Docker Hub
    - a container registry service - IOW gives you access to an incredible number of images and you can store your own.

Setting Up MySQL in Docker

Let's Get Started - 1

- Create a folder for class materials (you may already have)
  - On your Desktop is fine.
  - You need to be able to find it easily
- Download > this < zip file into the folder you made in Step 1, then fully unzip it. You should then see a file named **northwind.sql**.

Let's Get Started - 2

- Make sure Docker is running.
  - If not, start it.
  - You should see a little *whale* icon in your status menu (Mac) or system tray (windows).If it isn't, start it.

- The Docker Desktop UI should launch when you start Docker. If it does not, right click on the whale icon in sys tray/status menu and choose **"Go to the Dashboard"**
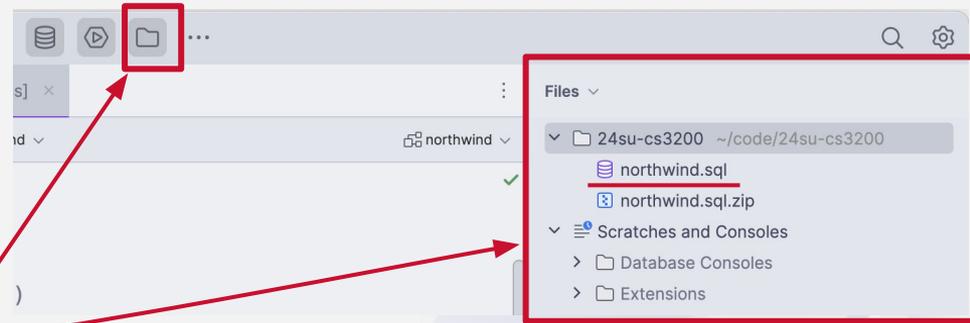
Loading a SQL Script File into MySQL

SQL Script File

- A SQL Script file contains a sequence of SQL commands intended to be executed in a Database / DB Server.
- Let's Load the Northwind Database into MySQL. The script file is **northwind.sql**.
- Make sure the File pane is open in DataGrip
  - If not, click the folder icon at the top of the window.
- Open northwind.sql by double clicking on it.

Run the SQL Script File

- Right click inside the script file (center pane) and choose **Run 'Northwind.sql'** (don't choose *Execute*). This displays the Edit Configuration Modal show at right.
- Under **Target data source / schema**, click the +. In the dropdown, double-click the name of the data source you created previously.
  - If your data source has a different name than mine, that data source name will be populated in the Target data source box.
  - It will say \<unknown\> as you see in the screenshot, and that is OK. It is because this script file is actually created a database as well as populating it.
- Click Run.
  - You should then see the results of the file running in the output pane at the bottom of the window.