# **COMP-1701 - Transferring Data to Databases**

## **Data Science & Machine Learning (DSML) - RRC Polytech**

Module A.1 - Database Server - Installation

Today, we will be downloading and installing the database server being used for the course and discussing some finer points of how developers should be configuring their computers.

MySQL

* *was developed in 1995 using C & C++*
* is/was a free/open-sourced SQL relational database server/engine
* currently owned by Oracle Corporation, as of 2009
* SQL, was initially called (and still spoken as) SEQUEL, many pronounce SQL by its call letters: S · Q · L … Structure Query Language
* and is widely used across the internet by even the most popular companies, whom have their own database servers

MariaDB

* was a result of the wide concerns with Oracle Corporation's purchase of MySQL as well as concerns with the Patriot Act
* the original developers of MySQL, made a fork of the existing latest version in 2009, and manage it as a community-developed and commercially available
* lead developer (Michael "Monty" Widenius) named the fork of MySQL after his daughter Maria
* is still being developed using C & C++, and now includes Perl and Bash
* maintains compatibility with MySQL functionality, though offers a wider variety of newer storage engines and NoSQL support with Apache Cassandra

Downloading MariaDB for Windows

Download from mariadb.org ONLY:

[**https://mariadb.org/download/**](https://mariadb.org/download/)

For the Windows install, ensure you select:

* MariaDB Server Version: ***select first non-RC version***
* Architecture: **x86\_64**
* Package Type: **MSI Package**
* then select **Download**

When the file is downloaded, REBOOT your computer. It is in your best interest to flush out the CPU and RAM memory caches prior to installing any program. Then return to the Downloads folder to start the install.

MariaDB Install

* Go to your **Downloads** folder and locate the ***mariadb-##.#.#-win64.msi*** file (should be top of the listing)

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***Digital Workflow Notes***:

Developers need their **file extensions visible** and **detail views enabled**, several files in database programs can have the same filename, without extensions visible, you may not know which file is which. Also **Detail** views ensure you can monitor file sizes and file dates. Especially important if your computer's hard drive has limited space. This download is less than 70MB, so it is relatively small for an installer.

Move this MSI file to your %USERPROFILE%/*Documents/RRCP/2023 Fall/COMP-1701/* folder.

**You should avoid working just out of your Downloads folder, you should have a course folder for all your classes in a term.**

**View** (tab) > **Show** (option) > **File name extensions** should be enabled (check mark on)

OnMac's **Finder** > **Preferences** > **Advanced** > **Show all filename extensions**

Return to the installer...

* Double click the ***mariadb-##.#.#-win64.msi*** file

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* Click **Next** on Welcome screen
* Click to accept the terms in the License Agreement

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* Click on Third party tools, and **Entire feature will be UNAVAILABLE**

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* Click on **MariaDB Server** > **Database instance** > **Browse** button on the right  
    
  This will allow you to change from the data location on your server, and this is typically done (for backup and security reasons) and something you would do in industry, moving the database files to another location on the server, rather than within its install directory.  
    
  Sizing your hard drive to 350-400 GB on your C: drive for installed programs and the operating system is a good practice. On a partitioned D: drive, with the remaining space of the drive, is where constantly changing files within common directories like Documents, Downloads, Pictures, Music, Videos, etc. folders within your user profile (these can be moved), and can even be moved into OneDrive if also configured to your D: drive (so each main user profile folder is backed up)  
    
  Common practice is to Partition your C drive, within Disk Manager. If you have a 1 TB drive, your C drive could be left with 400 GB, partition out a 600 GB D: drive where you could put your D:\\_data folder, so I copy the D:\\_data text here to the Browse screen (if you don’t have a D: drive partition, create the C:\\_data folder and add yourself as owner with full control (we will refer to this folder as the DATADIR).  
    
  On the Change destination folder screen, replace the C:\Program Files\ part with your DATADIR folder path.  
    
  Replace the space between MariaDB and ##.# (##.# is the current version), with an underscore as well, to be something like: MariaDB\_11.1 if 11.1 is the version. Not a good practice to have spaces in any web or data directory (on the web, we hyphenate, here we underscore).  
    
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  …so the file path is now **C:\\_data\MariaDB\_##.#\data\** or **D:\\_data\MariaDB\_##.#\data\** (referred to as the **DATADIR**)  
    
    
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* Click Ok then Click Next  
    
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* Also note that the Disk Usage button, will indicate the local drives you have partitioned and spaces available
* Always install this on a local drive, do not install on a USB stick or other external SD cards or SSD drives
* If you install several different databases on your system, use this D:\\_data folder you could have one for a different version of MariaDB, or another for MS SQL Server, another for PostgreSQL, and another for MongoDB (NoSQL)...keeping all your database data files in a common location (better for backup purposes)
* In the File Explorer, whether or not you have a partitioned drive, create a folder at the drive root C:\\_data or D:\\_data (you may need administrator rights to do this on the C: drive, so from your start menu right click on File Explorer and open as Administrator, later you can alter permissions for your user profile).
* Add a password for your root account, in industry, use a properly secure password, for this class you can use a simple password, such as your initials forward and backwards (4 characters)  
    
  ie: Mike Smith's could use mssm as the password (again, local dev practice only, never do this on a live production server, unless you want to be hacked).  
    
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* **Use UTF8 as default server's character set** should be checked on. Then click **Next**. Webpages and apps are all supposed to be UTF-8 compliant. This is something you check for within your databases and websites <meta> tags, to ensure you don’t have encoding issues.
* On Default Instance properties screen, you can leave the settings as is. If you have a MariaDB install on your computer, you could rename the Service Name to MariaDB\_##.# to whatever the ##.# version number is. Otherwise leave as is.
* **TCP** **Port 3306**, remember this, there are numerous internet ports you should remember, **80** for **http**, **443** for **https/ssl**, **22** for **SFTP/SSH**, **23** for **Telnet**, **25** for **SMTP**, **110** for **POP3**, **1433** for **Microsoft SQL Server**, etc.  
    
  Everything you connect to online (and in a local dev space) has an IP or Hostname, a Port, a Username, a Password, and one Path/Location/Object Name, everything. (Note: casual Internet Browsing uses an Anonymous user/password, until you authenticate to a particular site)

MariaDB Install Complete…**ALWAYS REBOOT!!!**

To properly install any software, you should reboot your computer **prior to** **installing it**, and again, **after installations**. Please do so now, rejoin class after your system is restarted.

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* Click **Install**

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* Click **Finish**
* **REBOOT COMPUTER ALWAYS prior to and after installs**

MariaDB Installation Results

In the next module, we are going take a tour on your system, so you can answer the following questions that must be engrained in every database administrator's knowledgebase:

* Where is the Database Server/Engine installed?
* Where is the DATADIR (Data Directory)?
* How do I know if the Database Server is running?
* Where are the current Database Server's Settings?
* Do we need to change the Settings?
* How do we change the Settings?
* How do I verify the Setting changes worked?
* What about backups?
* How do I connect to the Database Server?

As a database administrator, these questions must be memorized, you need to know what/where/how/why these are located or configured the way they need to be.

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