Web Application

How to navigate DirectAdmin and phpMyAdmin

Creating a Database:
1. Log into the DirectAdmin dashboard using your UWin credentials at https://myweb.cs.uwindsor.ca:2222/
2. On the left-hand side hover the Control Panel icon and click **Account Manager** -> **MySQL Management**.
3. To create a new database, click **Create new Database**.
4. The creation menu will require you to input a "Database Name", "Database User", and "Database Password". By default, the "Database User" will be the same as the "Database Name" (change if you want).

Creating a Table for a Database:
1. To make changes and create tables for an existing database in your DirectAdmin account, click on **phpMyAdmin** on the right-hand side of the screen. You can also navigate to phpMyAdmin through **Account Manager** -> **MySQL Management** and click on the phpMyAdmin icon. Finally, you can also access it through the link with your UWin credentials. https://myweb.cs.uwindsor.ca/phpMyAdmin/index.php
2. On the left-hand side of the screen, you will see a list of your created databases. Click on a created database to modify it.
3. When no tables are available, a menu will request that you input a table "Name" and "Number of Columns". Click the **Go** button on the right to continue.
4. Input the values of the columns of the table and click the **Save** button to finish.
5. Alternatively, if you can write SQL statements to be executed under the **SQL** tab. You may also import SQL files under **Import** and clicking **Browse** or drag and drop the file.
6. If you are inserting dates through SQL statements it must be in MySql format "YYYY-MM-DD" eg. 1999-1-23 or 2021-12-21 (avoid two-digit years as it is ambiguous)
7. Importing the company schema should be done in the order of: company_schema, employeedata, deptdata, projectdata, worksondata, deptlocationdata, dependentdata

Accessing Domain Files:
1. Within the DirectAdmin Control Panel click **System Info & Files** -> **File Manager**
2. By default, you will have one domain available to you under the URL *userid*.myweb.cs.uwindsor.ca. Replace *userid* with your UWin ID.
3. Within "/public_html" is the files for the last domain created. This will access the last created domain. For specific domains go to /domains/(your domain)/public_html/

4. The default file for the domain is "index.html" which can be renamed with the extensions php and shtml

File Transferring

To upload files and folders to your site quickly, recommend using an SFTP client such as Bitvise SSH or FileZila.

1. After opening Bitvise SSH or FileZila, set your credentials as:
   - ▯ Host: *userid*.myweb.cs.uwindsor.ca (replace userid with your UWIN ID)
   - ▯ Port: 22
   - ▯ Username: your UWIN ID
   - ▯ For Bitvise set Initial method to password
2. Login, accept, and save any necessary popups.
3. Open a new SFTP window
4. Transfer your files to /domains/(your domain)/public_html
5. Move your 400-500.html files into …/app/templates/ folder

Your Website

To view your website use *userid*.myweb.cs.uwindsor.ca. This will be the root of your website

Your website is able to use such file extensions as php, phtml, js, html, and more. It also allows configurations such as .htaccess files for your server.

Using a ".env" is a safe way of protecting your database information. The file is where your connection information for the database is placed. With the template provided, add your DB_HOST, DB_USER, DB_NAME, and DB_PASSWORD that matches the database credentials created before.

For the simple site:

1. The 5 files should all be in the same folder and named: "index.php", "controller.php", "model.php", ".env", and "envLoader.php"
2. The index.php calls a POST or GET request to controller.php. Controller.php uses the model.php to call the SimpleDB class which makes the request to the database.
3. After retrieving the data, it is presented in index.php

For the complex site:

1. "index.php" is where the root of your site begins. Under the comment *Routes List* add the routes to your site which are then accessed by using {root of site}*/routename* where *routename* is the path set.
2. If the root directory of your project is not at "public_html" then you will need to provide the path from "public_html". Add the path to index.php file on line 11 (*uri_path* variable. E.g. full path is "home/user/public_html/complex" => add just "/complex" to line 11

The structure of the site revolves around templates (for viewing content), Controllers (for preforming actions), and Models (for integrating data). The Router is supplied routes in index.php that point to a template or a Controller. The Controller then uses models to supply data to a rendered template.

3. Routes are added by calling $app->router->add(); It takes a URL path (*routename*) and a method. The method is a two-element array with the 0 index being the Controller or template file to use and 1 index being the controller method to use (get, post, update, or delete)
4. When making a new Controller, extend the \general\Controller class and create a method corresponding to the action to want to use. At the end of the method call $this->render() which takes the template name (not extension) and parameters.
5. A template is any html or phtml file added to /app/templates/. By default, there is main.phtml and 400-500 files. Main.phtml is the layout file for your header and footer. The parameters you passed into the render method become the variables available in the view.
6. To access the database, it is best to create a model the describes an entity in the database. Extend the \general\Model whereby you can have access to the Query object. The new model should contain a list of attributes related to the database and a primary key to use.
7. For instance if you want to get a single Employee you can create an Employee object and use $employee = Employee::find(*id*); with the employee id/ssn.
8. A model can find, findAll, load data to it, and save.
9. Using the $this->query Object you can create more complex methods. Query object can select, insert, update, and delete. Constructing a statement can be done by connecting methods together. An example execution for SQL statement SELECT * FROM *table* WHERE *attribute* = *value;*
   $this->query->setType('collection');
   $data = $this->query->where(*attribute,* value)->select('*');
10. You can opt to using $this->query->raw($sql, $params), to pass a PDO style SQL statement.

Database Tools

SQL Developer

Setup:

Local Download – Go to https://www.oracle.com/tools/downloads/sqldev-downloads.html and download the appropriate file for your PC. Sign in (Or create a new account) to complete the download. After download is complete, extract folder to a location on your PC. Open the folder and run "sqldeveloper"

NoMachine -   Login to noMachine. Right click anywhere on the desktop screen. Click "Open in Terminal". Do not access it through "/Application/Programming/" at this time. Run command "*sqldeveloper*". When prompted with providing the full path to the JDK type use "/usr/lib/jvm/oracle-java8-jdk-amd64".

Connecting:

To connect to your database on CS servers:

1. Under connections click on the green plus button or double click connections
2. For the connection details use

- Connection Name: cs01
- Username: your UWindsor
- Password: your password
- Hostname: oracle.cs.wuindsor.ca
- Port: 1521
- SID: cs01

Usage

You can access different database objects by navigating to the left under connections and opening the dropdown menu of your database cs01.

- If you ever want to inject SQL directly to the database, click on the SQL button and select the database to use.
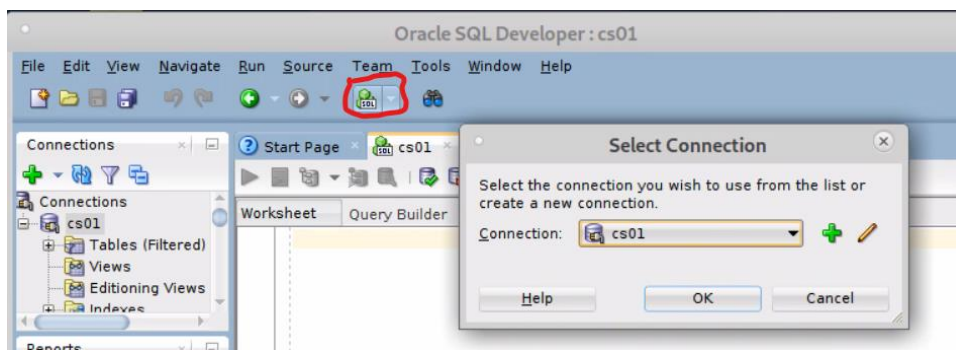
- Double clicking any table under the "Tables" tab will open the details for that table. From here we can edit/view all aspects of the table such as its structure (columns), constraints, and data.
- Views can be created by right clicking the "Views" folder and selecting "New View". From here you can edit the SQL Query and test to see if it works.
- PL/SQL statements can be either utilized in the "Procedures" or "Functions" tabs.
- Procedures can be created under the "Procedures" tab by right-clicking and selecting "New Procedure". Add parameters by clicking the green plus button. Edit the parameters with the correct information and click "Ok" once finished.
- A menu will open where you can further edit the PL/SQL statement and run the code. Clicking to the left of a statement's line (area below the pin button) will toggle breakpoints to aid in debugging code. You can further use the "Error", "Profiles", and other tabs within the menu to aid in debugging or other information.
- Any procedure can be later accessed under the "Procedure" dropdown menu under "Connections". By right-clicking on a procedure we can run the procedure with input values.
- Functions are created in a similar fashion to Procedures but will require a return type.
- To use a procedure or function, simply address it using the same name in whatever you are using.

Microsoft Access

This method for connecting to the CS server is unsecure and my cause issues for students

Setup:

If you have yet to download Microsoft 365 use the following instructions. Open MS Access and click Blank database or import one yourself by using External Data -> New Data Source and choosing the appropriate method.

To connect to the database created on the CS servers you will need to first install the necessary tools:

- Follow the steps to install Global Protect VPN. You must be connected to the campus network in order to connect to the CS server.
- Oracle ODBC driver - Choose your operating system and download the Basic package (or lite) and the ODBC driver package.
- Once downloaded extract the basic package zip file to a location of your choosing. Extract the ODBC package into it and (if on Windows) run the odbc_install.exe as Administrator.
- In the folder create a path for your "tnsnames.ora" file. By default, Oracle will use {path}\network\admin so create this is your folder and add the "tnsnames.ora" file. E.g. C:\oracle\client\network\admin\tnsnames.ora
- You will need to configure an environment PATH to your folder. For Windows go to your Start menu and type in "Edit the system environment variables" and enter. Click on "Environment Variables".
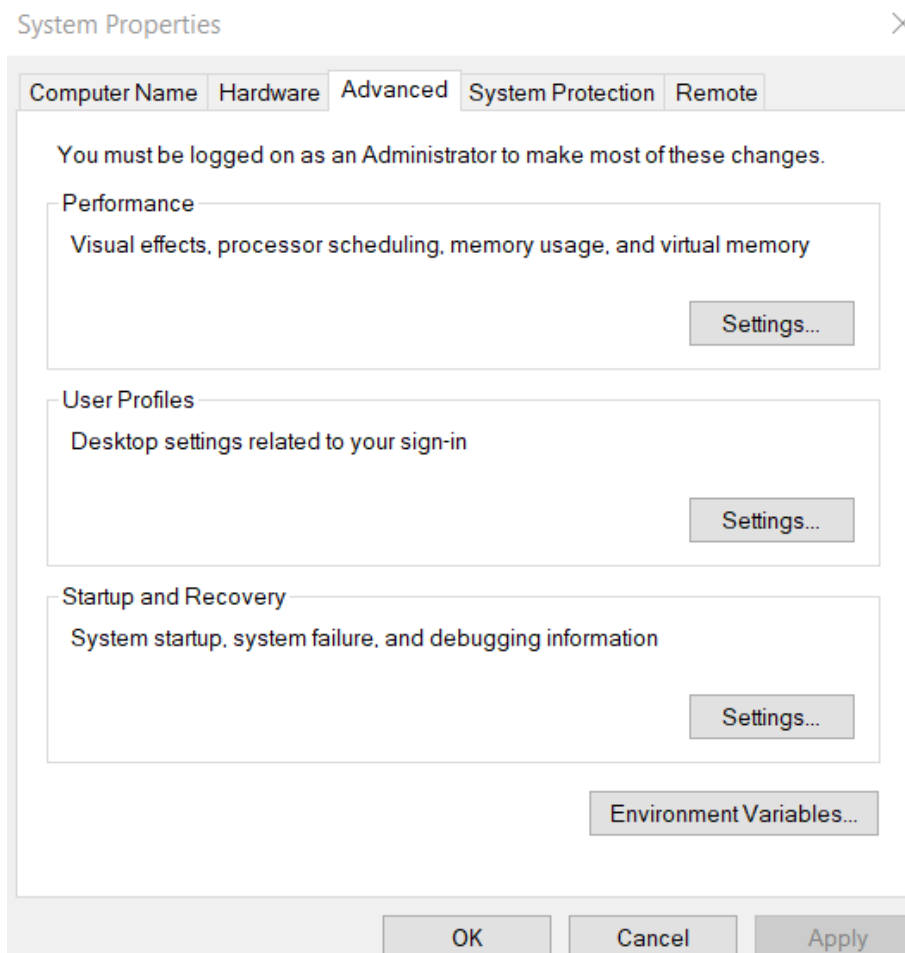
Under System Variables find and edit PATH variable name. Click New and paste the full path to your folder and hit Ok.

- To verify that the driver is correctly installed go to Control Panel -> Administrative Tools and click on "ODBC Data Sources". Under Drivers you should see the Oracle in instant_19_11 driver
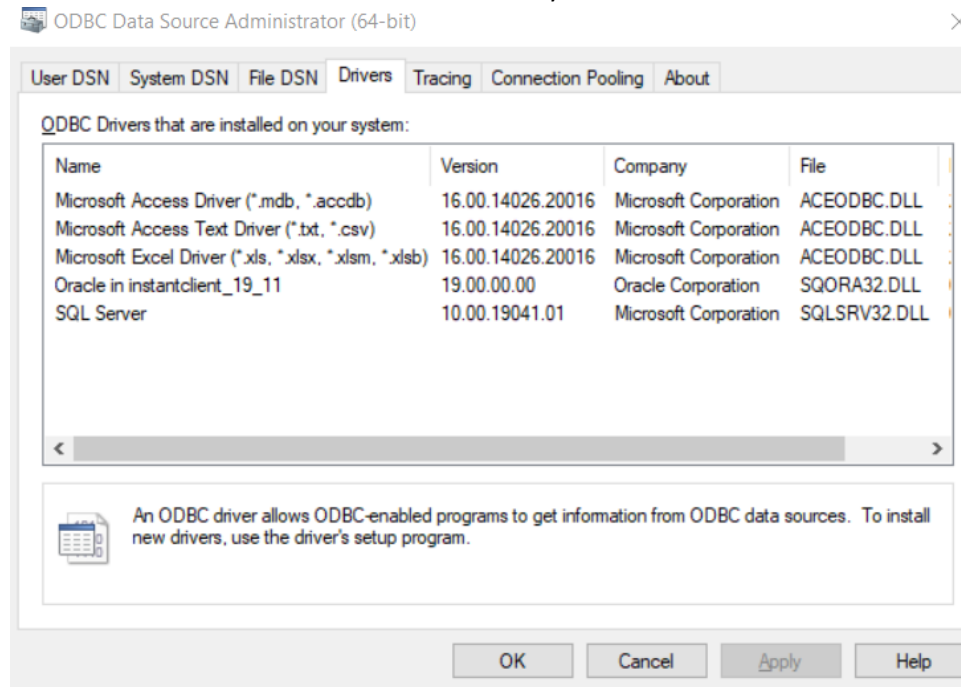
- Go to the "User DSN" tab and click "Add"
- Select the Oracle driver and input the information below
  - Data Source Name: {Any name. E.g. cs01}
  - Description: {Any description. E.g. CS database connection}
  - TNS Service Name: CSUWIN
  - User ID: {Your UWindsor user id}

- Once completed test the connection and click Ok

Connecting:

Open MS Access with a new or existing database

1. Click on **External Data** -> **New Data Source** -> **From Other Sources** -> **ODBC Database**
2. Choose the source of your destination
   - From here you can choose to import the tables or link to the tables. Linking the tables will cause edits to the database on the CS Server while importing will not.
3. Select **Machine Data Source** and choose the data source created during setup (E.g. cs01). Enter your Password and click Ok.
4. Once the Import Objects screen is displayed (will take a few moments) scroll down to the tables created on the CS Server. They will be prefixed with your UWindsor user id (E.g. USERID.SALESREP).
5. Select all tables you would like to use and click Ok. Be sure not to click on any other tables as this could cause you issues.

Creating and linking a table from Access to the CS database for some reason can cause privilege issues when accessing it through sqlplus but not sqldeveloper.

Usage:

Queries – A Query can be created through **Create** -> **Query Wizard/Design**. At the bottom right-hand corner or top-left of the **Design** menu, you can switch between SQL/Design view. In the Design view, you can drag tables to use in the query. For each table you can select the fields to select for. At the bottom you can see the fields selected, and create criteria for the selected field (WHERE statements).

Relationships view - By default when importing tables from the CS server, tables will not show their relationships. To add relationships to the database got to **Database Tools** -> **Relationships**. On the right-hand side drag and drop all the tables the need relationships connected to them. For each table click and drag the field that to would like to link to the field you would like to like to. A menu will appear to adjust any settings for the relationship. When you are finished adjusting the settings click "Create". These relationships will be known throughout the database features.

MS Access Forms for end-user design

Troubleshooting

If you have trouble logging into DirectAdmin, try resetting your password using http://cs.uwindsor.ca/password and then clearing your cache and cookies.

If you are unable to view your sites, make sure that your index.php file is directly in the /public_html directory or you have correctly defined the path in the index.php file.

If your form is not submitting properly then check the path to your controller is correct in template.php. Check that your table and tuple values in controller.php are equivalent to the database created in phpMyAdmin. Make sure that the credentials in .env match with your database created in DirectAdmin. Use the error message provided after submitting to your database to determine further errors.

A good way of checking variables throughout your site is using 'var_dump()' command. Use it as the following for better readability.
```
 echo '<pre>';var_dump($data);echo '</pre>';
```

NoMachine installtion help https://help.cs.uwindsor.ca/mediawiki/index.php/NoMachine

In NoMachine, SQL Developer can be found under Applications/Programming but is easiest to access through the command prompt using the command *sqldeveloper*. If you have trouble scrolling down, try using the arrow keys. If the issue persists, try a combination of arrow keys, scrolling, and moving your pointer to the bottom of the list.

For further help with SQL Developer check out https://docs.oracle.com/cd/E12151_01/doc.150/e12152/intro.htm#RPTUG10100

When connecting through MS Access make sure that:
- Your VPN is connected to the campus network
- Oracle drivers are correctly installed

- Your "tnsnames.ora" file is in "{path to oracle instant client}\network\admin\" folder
- There is a PATH variable pointing to the path of your oracle instant client