Laboratory Exercise 2
Introduction to MariaDB

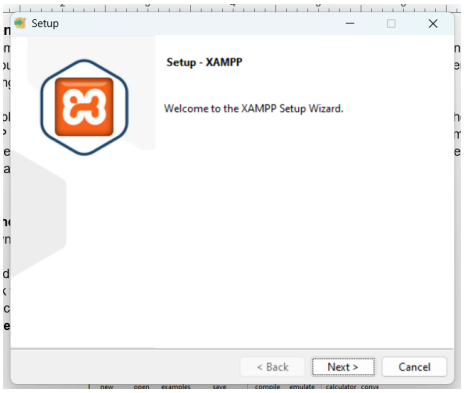
Objectives
At the end of the exercise, the students should be able to:
- Introduce themselves to the XAMPP web development environment.
- Familiarize themselves with backend web development.

Materials
- Windows PC (Intel Processor)
- Working internet connection
- Text editor/Notepad/Notepad++/IDE
- Paper & pen

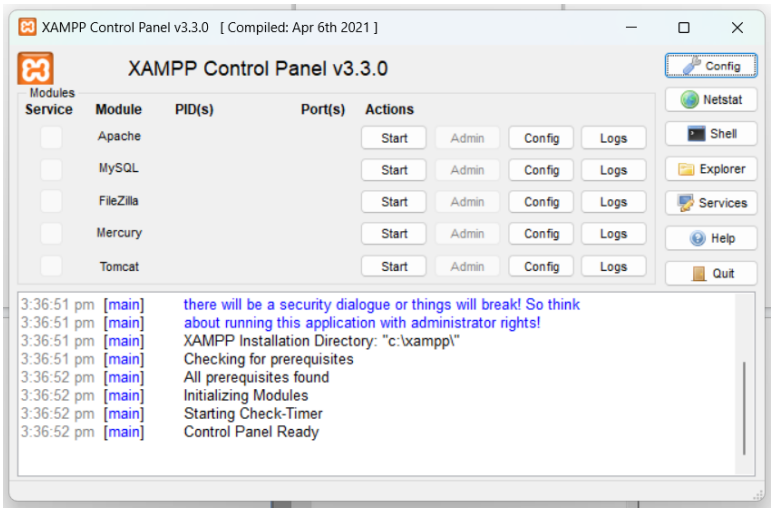
Basic Information
In software development, a server-client architecture allows the client application to request data and features from the server through the network–it can be within the LAN or the whole internet. Configuring a server is easy over LAN, but making your Server IP Address to the internet is a bit more tricky and expensive.

XAMPP is a cross-platform web solution package that ships Apache HTTP Server, MariaDB, and the interpreters for PHP (web backend) and PERL (scripting) programming languages, alongside other modules such as phpMyAdmin. XAMPP is not meant for production, but rather it is an environment for local web development. Once production-ready, systems are deployed to a dedicated server or to cloud services.

PART I. Getting Started
1. Go to **Apache Friends** > Downloads website.
    a. Download the latest version.



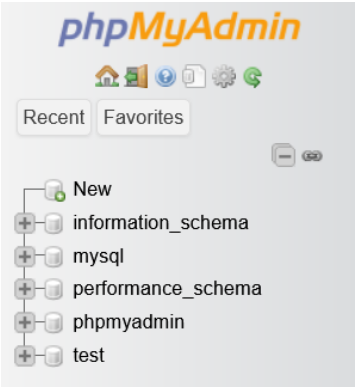
2. Run and complete the installation setup.
    - Once done, you may launch the **XAMPP Control Panel**.
    - Optionally, you may manually search for the **XAMPP Control Panel** application.



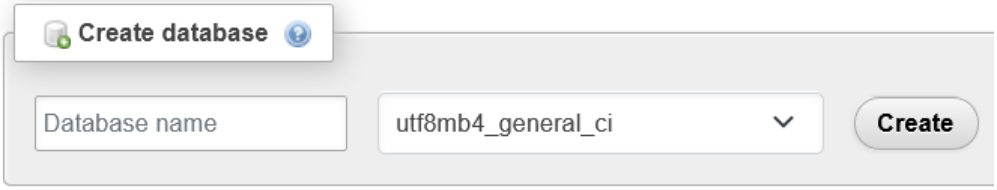
3. The XAMPP Control Panel will be displayed:
    a. Find the **Apache** Module and click its associated **Start** button.
    b. Find the **MySQL** Module and click its associated **Start** button.
    c. You may need to allow access to both public and private networks when prompted.

PART II. Manual Database Definition

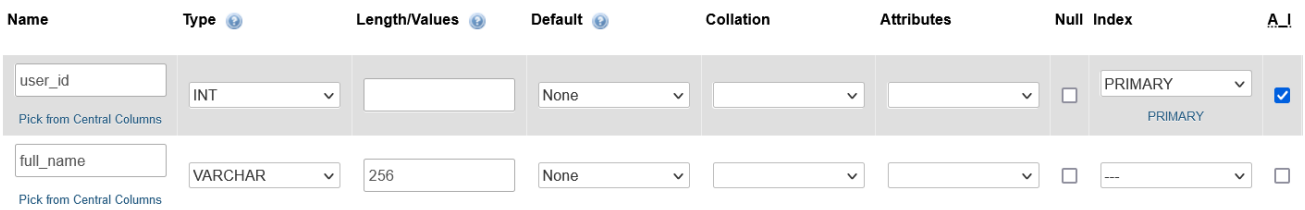
1. In the **XAMPP Control Panel**, click the **Admin** button of the MySQL Module.
    a. Or, open your browser and go to "http://localhost/phpmyadmin/" webpage.



2. On the left sidebar, click the **New** link.



3. Under the **Create Database** card group:
    a. Type "**ecommerce**" and click the **Create** button.
4. If the database is still empty, find the **Create Table** card group:
    a. Create a "**user**" table with "**11**" columns.
    d. Click the **Create** button.



5. Convert the **user** entity (as shown below) into a table.
    a. For the **user_id** column, set it to **PRIMARY KEY** (**Index** Dropdown) and **AUTO_INCREMENT** (**A_I** Checkbox).
    b. For the **created_at** column, set **CURRENT_TIMESTAMP** as default value.

user		
PK	user_id	INT
	full_name	VARCHAR(256)
	email	VARCHAR(256)
	phone_number	VARCHAR(12)
	username	VARCHAR(16)
	password	VARCHAR(512)
	profile_img_url	VARCHAR(1024)
	address	VARCHAR(1024)
	account_type	INT
	created_at	DATETIME
	last_login	DATETIME

6. Scroll down and click the **Preview** icon.
    a. Write the generated SQL command below:
    b. _____
    c. _____
    d. _____
    e. _____
    f. _____
    g. _____
    h. _____
    i. _____
    j. _____
    k. _____
    e. Click the **Close** button.
7. Click the **Save** icon.

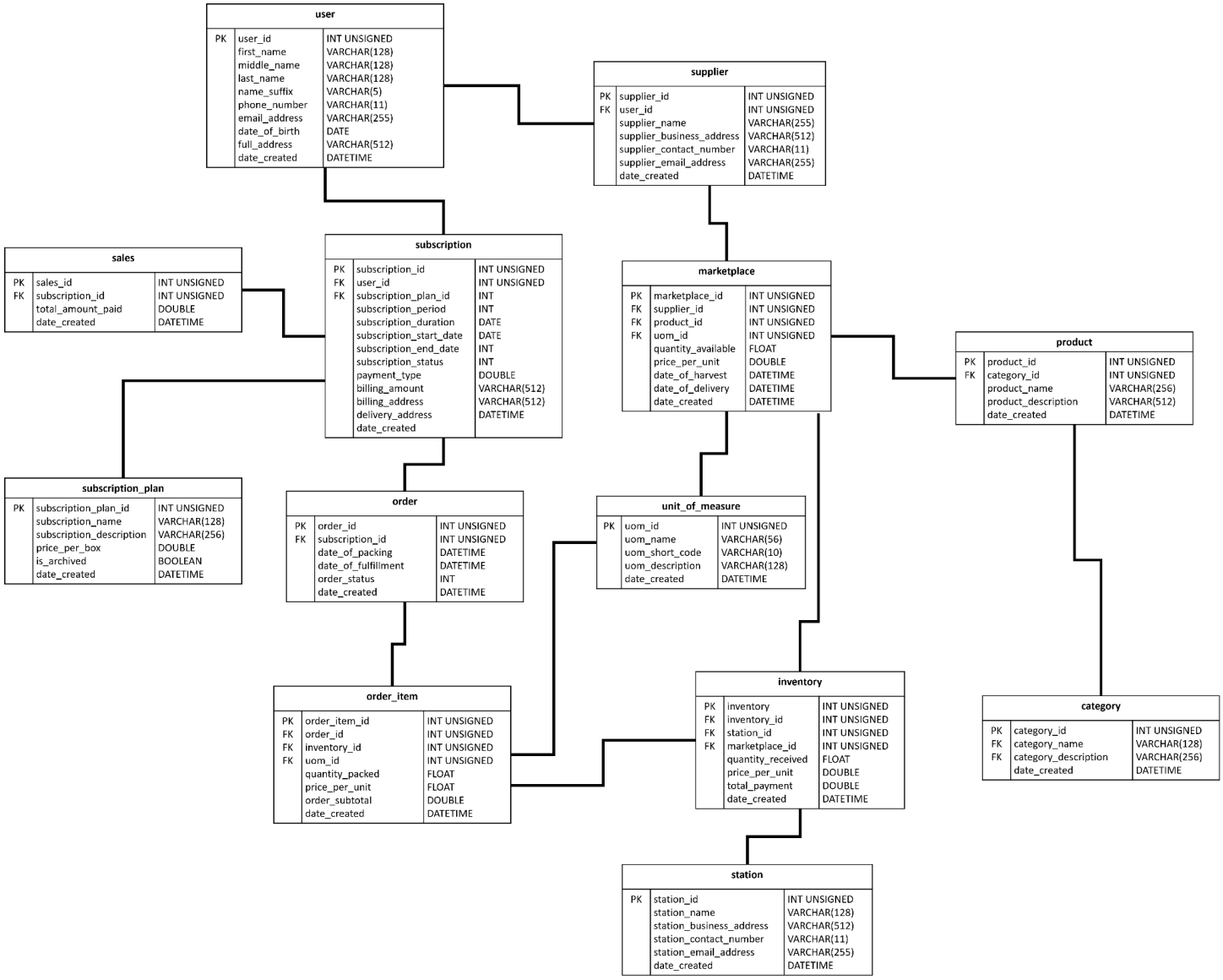
PART II. Programmatic Database Definition.

1. Locate the installation directory of **XAMPP** and open the **htdocs** folder.
    a. Typical it is stored in: **C:\xampp\htdocs**
2. Create a **farmbox** folder inside **htdocs**.
3. In the **farmbox** folder, create an **access.php** file.
4. Recreate the sample code below in the **access.php** file.

```php
<?php
    $servername = "localhost";
    $username = "root";
    $password = "";

    $db_name = "farmbox";

    function create_table($mysqli, $command) {
        if ($mysqli->query($command) === FALSE) {
              $db_state = 0;
              echo "Error creating table: " . $conn->error;
        }
    }

```

```php
    $db_state = 1;
    $mysqli = new mysqli($servername, $username, $password);
    if ($mysqli->connect_error) {
        $db_state = 0;
        echo "Connection failed: " . $mysqli->connect_error;
    }

    if ($db_state == 1) {
        $mysqli = new mysqli($servername, $username, $password);
        if ($mysqli->connect_error) {
              $db_state = 0;
              echo "Connection failed: " . $mysqli->connect_error;
        }

        # Create new Database
        $command = "CREATE DATABASE IF NOT EXISTS $db_name;";
        if ($mysqli->query($command) === FALSE) {
              $db_state = 0;
              echo "Error creating database: " . $mysqli->error;
        }
    }

    if ($db_state == 1) {
        $mysqli = new mysqli($servername, $username, $password, $db_name);

        # Create new Tables
        $command =  "CREATE TABLE IF NOT EXISTS `user` (" .
                  "`user_id` INT UNSIGNED NOT NULL PRIMARY KEY AUTO_INCREMENT, " .
                  "`first_name` VARCHAR(128) NOT NULL, " .
                  "`middle_name` VARCHAR(128), " .
                  "`last_name` VARCHAR(128) NOT NULL, " .
                  "`name_suffix` VARCHAR(128), " .
                  "`username` VARCHAR(16), " .
                  "`password` VARCHAR(128), " .
                  "`email_address` VARCHAR(255), " .
                  "`mobile_number` VARCHAR(11), " .
                  "`date_of_birth` DATE, " .
                  "`full_address` VARCHAR(512), " .
                  "`date_created` DATETIME NOT NULL DEFAULT CURRENT_TIMESTAMP);";
        create_table($mysqli, $command);

        $command =  "CREATE TABLE IF NOT EXISTS `subscription` (" .
                  "`subscription_id` INT UNSIGNED NOT NULL PRIMARY KEY AUTO_INCREMENT, " .
                  "`user_id` INT UNSIGNED NOT NULL, " .
                  # COMPLETE THE CODE
                 "CONSTRAINT fk_user_order FOREIGN KEY (`user_id`) REFERENCES `user`(`user_id`));";
        #
        create_table($mysqli, $command);
    }

    $mysqli->close();
?>
```

5. Complete the **access.php** file using the ERD found below.



6. Once completed, create another **index.php** file.
    a. Type the following code and save the file.

```
<?php
    require "access.php";
?>
```

7. Open a new tab in the browser and type "**localhost/farmbox**" in the browser omnibox.
    a. Click the **ENTER** key to load the website.
8. Go back to the "**http://localhost/phpmyadmin**" tab and refresh the page.
9. Observe if the new tables are now reflected under the **farmbox** database.