CMSC 508 Databases
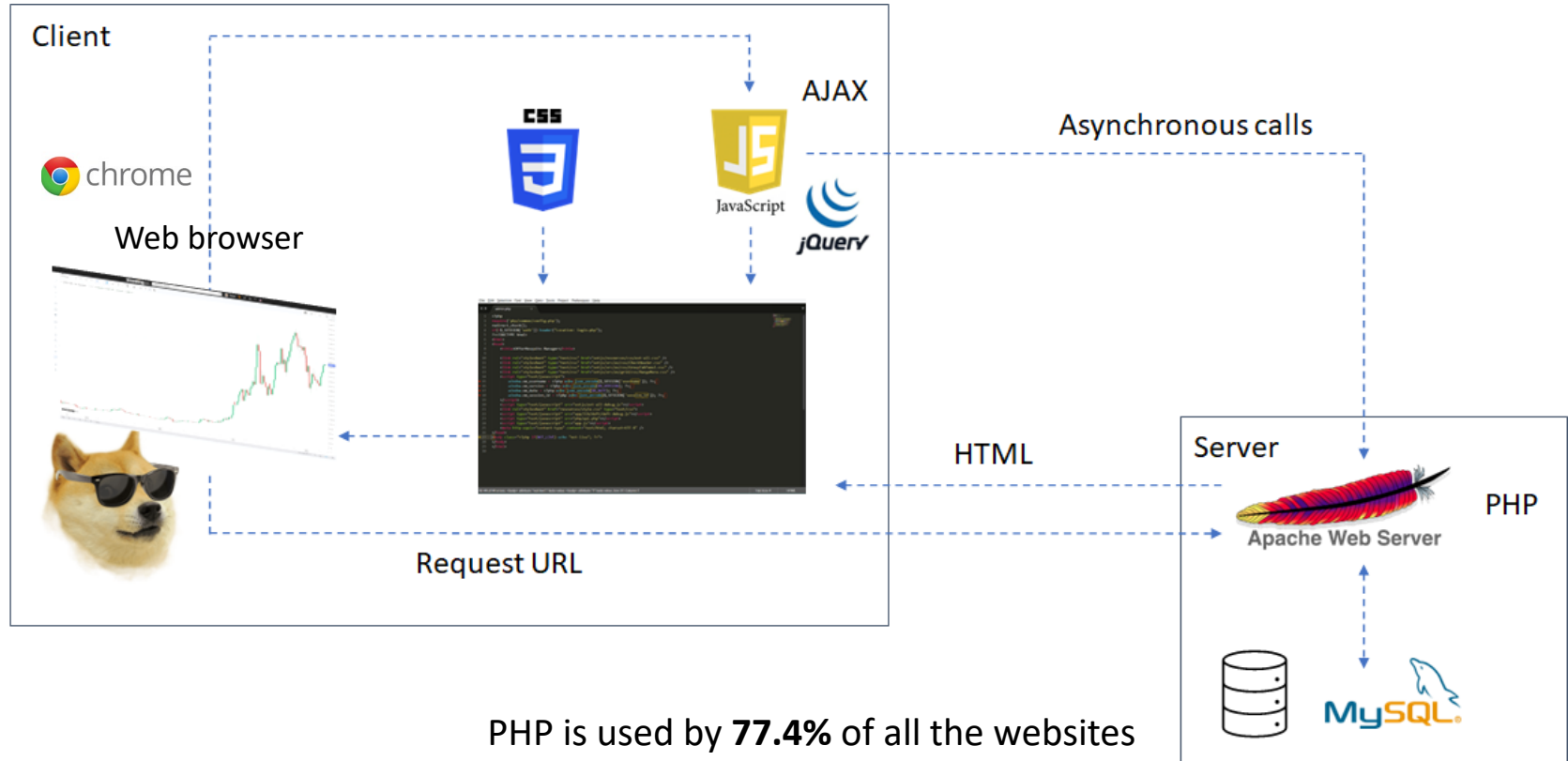
PHP + MySQL

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- Client – Server architecture

PHP is used by **77.4%** of all the websites

- Eclipse workspace with PHP

  - Download [Eclipse](#) installer and install IDE for **PHP Developers** (requires Java 17)

  - Open Eclipse and create a new workspace

  - Create a project -> PHP -> Synchronized PHP Project

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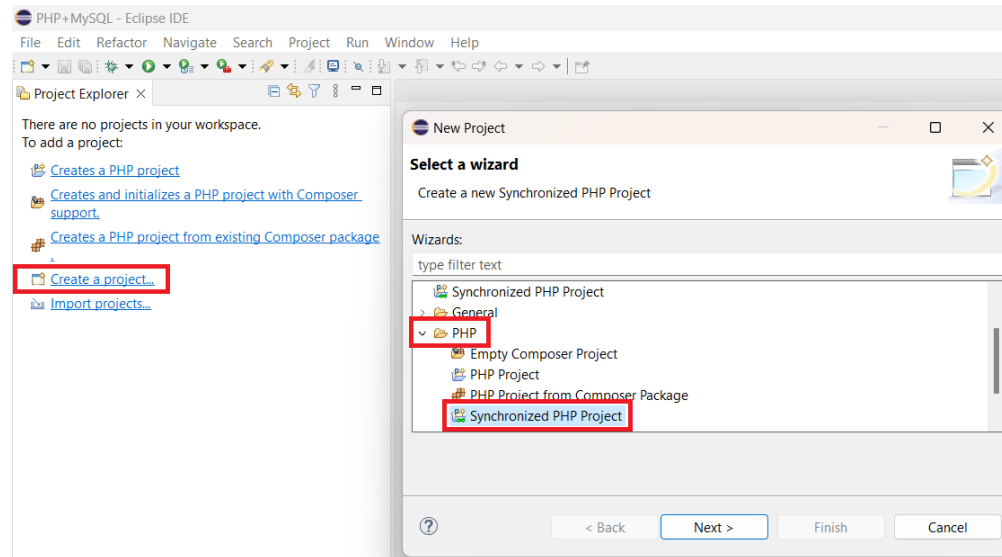
- Eclipse workspace with PHP

  - Provide a project name

  - Create a **new** connection to **cmsc508.com**

  - Use **your** class user/password and port **7822**

  - Select **your** **public_html** remote directory
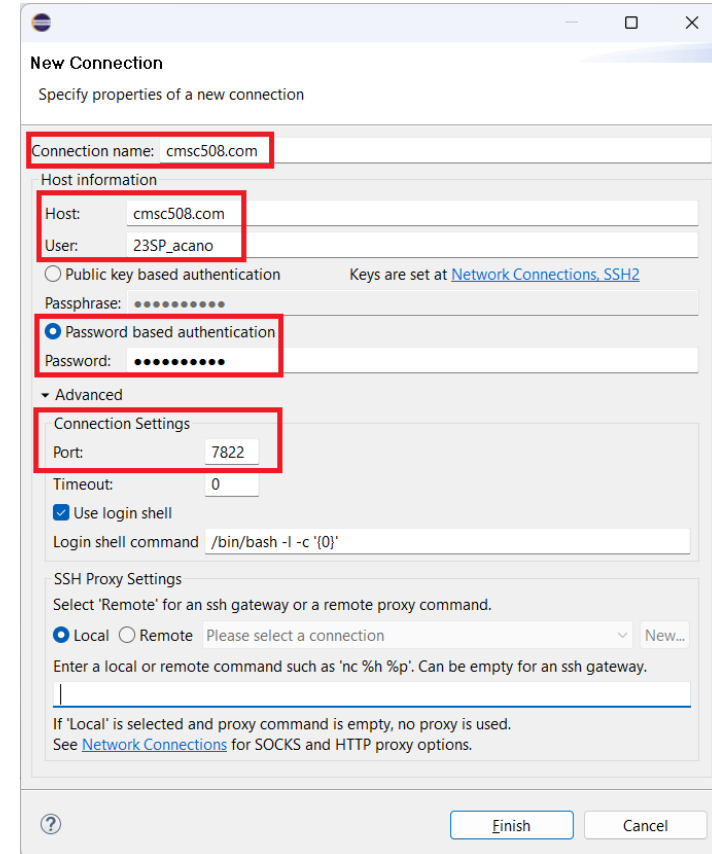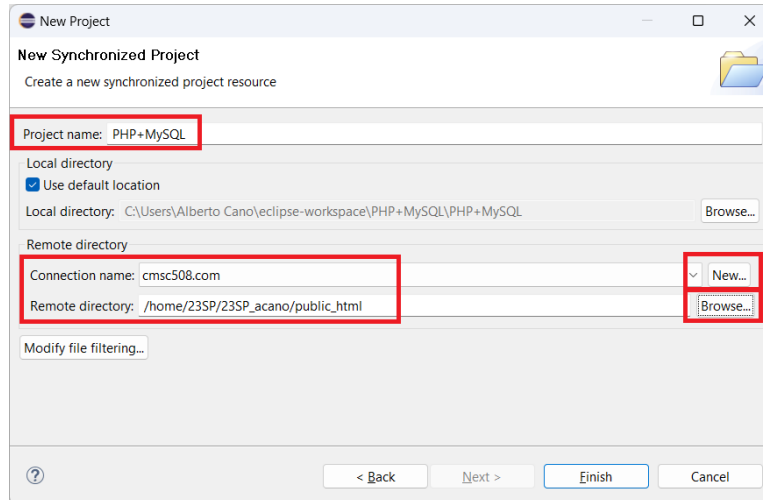
- Eclipse workspace with PHP

  - Your code and your files are mapped to a URL

  - [Terrific tutorial](#) PHP + MySQL

  - Keep your code synchronized when multiple people work on the same project
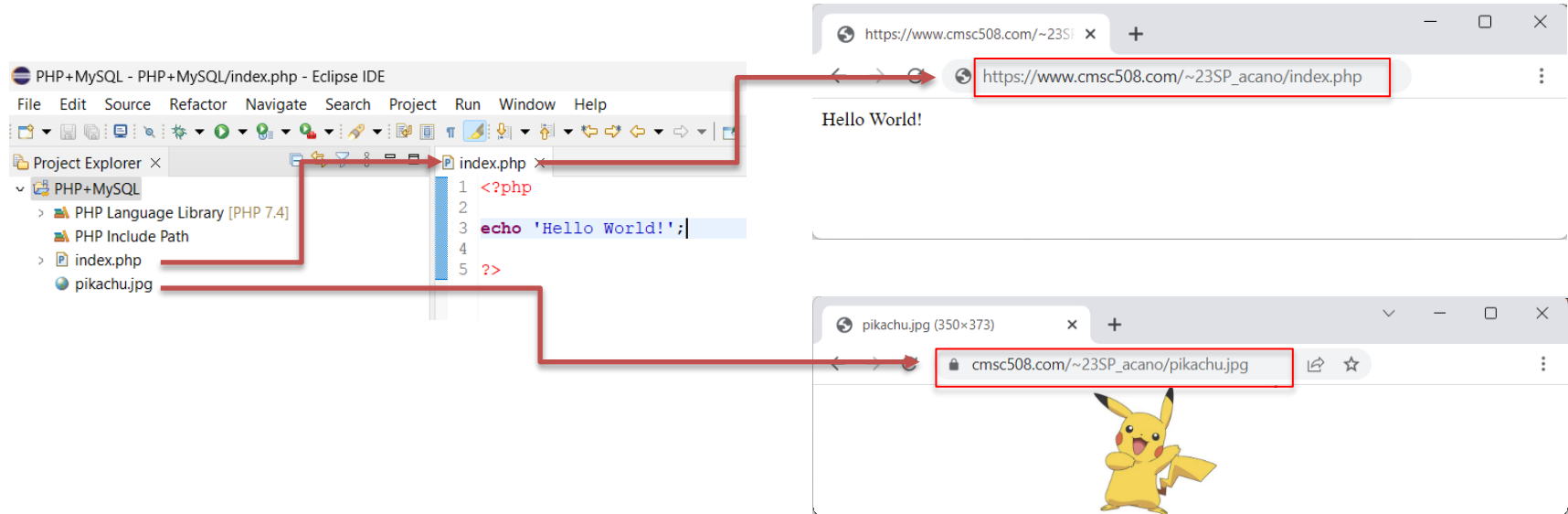
- What can PHP do?

  - PHP can generate dynamic page content

  - PHP can add, delete, modify data in your database

  - PHP can create, open, read, write, delete, and close files on the server

  - PHP can collect form data, send and receive cookies

  - PHP can be used to control user-access

- Why PHP?

  - PHP runs on all platforms and web servers

  - PHP supports a wide range of databases

  - PHP is easy to learn and runs efficiently on the server (PHP 7 and 8 are fast!)

  - PHP is free

- Basic PHP Syntax

  - HTML and PHP code can **interleave**

    ```html
    <html>
    <p>This is a static paragraph in HTML</p>

    <?php
    echo "<p>This is a paragraph dynamically generated by PHP on the server side</p>";
    ?>

    <p>This is another static paragraph in HTML</p>
    </html>
    ```

  - PHP **variables** are not strongly-typed

    ```php
    <?php
    $text = "Alberto";

    $a = 10;
    $b = 5;

    echo "<p>Hello $text. $a + $b = " . $a + $b . "</p>";
    ?>
    ```

- **Basic PHP Syntax**

  - PHP **conditional statements**

    ```php
    <?php
    $hour = date("H");

    if ($hour < "20") {
        echo "Have a good day!";
    } else {
        echo "Have a good night!";
    }
    ?>
    ```

  - PHP **for loops**

    ```php
    <?php
    for ($x = 1; $x <= 10; $x++) {
    echo "The number is: $x <br>";
    }
    ?>
    ```

■   Basic PHP Syntax

- PHP **functions**

```php
<?php
function sayHello($name) {
    echo "Hello $name<br>";
}

sayHello("Alberto");
?>
```

- PHP **arrays**

```php
<?php
$cars = array("Volvo", "BMW", "Toyota");
echo "I like " . $cars[0] . ", " . $cars[1] . " and " . $cars[2] . ".";
?>
```

- Connecting PHP to a MySQL database

```php
<?php

error_reporting(E_ALL);
ini_set('display_errors', 1);

$servername = "cmsc508.com";
$username = "23SP_yourVCUid";       // Replace yourVCUeid
$password = "23SP_yourVCUid";       // Replace yourVCUeid
$database = "23SP_yourVCUid_hr";    // Replace yourVCUeid

try {
    $conn = new PDO("mysql:host=$servername;dbname=$database", $username, $password);
    $conn->setAttribute(PDO::ATTR_ERRMODE, PDO::ERRMODE_EXCEPTION);
} catch (PDOException $e) {
    echo "Connection failed: " . $e->getMessage();
}

?>
```

- Retrieving data from a MySQL query

```php
<?php
$stmt = $conn->prepare("SELECT employee_id, first_name, last_name
                        FROM employees
                        ORDER BY first_name, last_name");
$stmt->execute();
?>

<table style='border: solid 1px black;'>
<thead>
    <tr>
        <th>ID</th>
        <th>First name</th>
        <th>Last name</th>
</tr>
</thead>
<tbody>

<?php
while ($row = $stmt->fetch()) {
    echo "<tr>
                <td>$row[employee_id]</td>
                <td>$row[first_name]</td>
                <td>$row[last_name]</td>
        </tr>";
}
?>

</tbody>
</table>
```

- PHP GET and POST

  - Read [tutorial](#) on using **GET** and **POST**

  - **GET** method: variables and values are provided in the URL

  page.php?employee_id=123

```php
$employee_id = $_GET["employee_id"];

$stmt = $conn->prepare("SELECT first_name, last_name
                        FROM employees
                        WHERE employee_id = " . $employee_id);    // NOT SAFE FOR SQL INJECTIONS!
$stmt->execute();
$row = $stmt->fetch();

echo "Employee $employee_id: $row[first_name] $row[last_name]";
```

- PHP GET and POST

  - Read [tutorial](#) on using **GET** and **POST**

  - **POST** method: variables and values are transmitted via HTTP headers

```php
$employee_id = $_POST["employee_id"];

$stmt = $conn->prepare("SELECT first_name, last_name
                        FROM employees
                        WHERE employee_id = " . $employee_id);
$stmt->execute();
$row = $stmt->fetch();

echo "Employee $employee_id: $row[first_name] $row[last_name]";


...


<form method='post'>
      <input name='employee_id' onchange='this.form.submit();'>
</form>
```

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