Lab Report-04

Web Engineering Lab

Course Code: CSE416

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Experiment Title: Database-Driven Web Application Development with PHP and MySQL

2. Objective

- To understand and apply basic PHP syntax in building a dynamic web application.
- To implement CRUD operations (Create, Read, Update, Delete) using PHP and MySQL.
- To design a book management system for adding, storing, and viewing books.

2. Equipment and Software Used

Sl. No.	Equipment / Software	Description
1	Laptop / PC	Device used for coding and testing the web application
2	XAMPP (Apache + MySQL + PHP)	Local server environment
3	PHP 8.x	Server-side scripting language
4	MySQL	Database system for storing book records
5	Visual Studio Code	IDE used for writing PHP & HTML code
6	Google Chrome	Browser for running and testing application

4. Theory

- PHP (Hypertext Preprocessor) is a server-side scripting language used for creating dynamic web applications.
- MySQL is a relational database management system used with PHP to store and retrieve data.
- CRUD operations represent the four basic functions of database applications:
    - Create – Insert records into the database
    - Read – Retrieve and display records
    - Update – Modify existing records
    - Delete – Remove records

4. Procedure

Step	Description
1	Create a MySQL database named **book** and table new_books with fields (id, title, author, genre, description, best_selling, created_at).
2	Write **book.php** to provide a form for adding a new book into the database.
3	Write **bookInsert.php** as an alternative book entry form with basic validation.
4	Write **view.php** to display all stored books in a tabular format.
5	Connect PHP files to the MySQL database using mysqli functions.
6	Test the application by adding new books and verifying entries in the database.

5. Code Snippets

(i) Database Connection (db.php)

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

$conn = mysqli_connect($servername, $username, $password, $dbname);

if (!$conn) {
    die("Connection failed: " . mysqli_connect_error());
}
?>
```

(ii) Create Operation (create.php)

```php
<?php include 'db.php'; ?>
<form method="POST">
    Name: <input type="text" name="name">
    Email: <input type="text" name="email">
    <button type="submit" name="save">Save</button>
</form>

<?php
if (isset($_POST['save'])) {
    $name = $_POST['name'];
    $email = $_POST['email'];
    $sql = "INSERT INTO students (name, email) VALUES ('$name', '$email')";
    if (mysqli_query($conn, $sql)) {
        echo "Record inserted successfully!";
    }
}
?>
```

(iii) Read Operation (read.php)

```php
<?php include 'db.php'; ?>
<h2>Student Records</h2>
<table border="1">
<tr><th>ID</th><th>Name</th><th>Email</th></tr>
<?php
$result = mysqli_query($conn, "SELECT * FROM students");
while ($row = mysqli_fetch_assoc($result)) {
    echo "<tr>
            <td>".$row['id']."</td>
            <td>".$row['name']."</td>
            <td>".$row['email']."</td>
          </tr>";
}
?>
</table>
```

(iv) Update Operation (update.php)

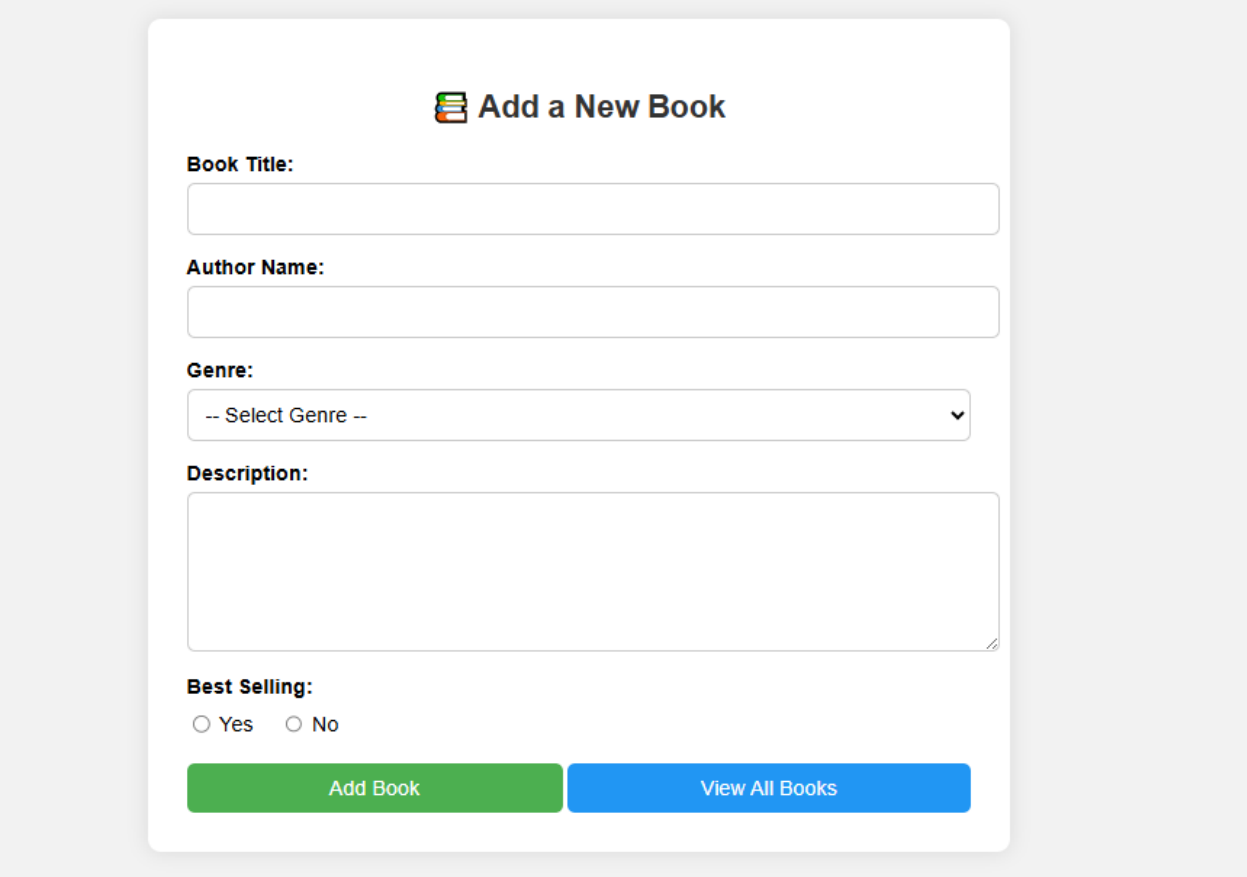
```php
<?php include 'db.php'; ?>
<form method="POST">
    ID: <input type="text" name="id"><br>
    New Name: <input type="text" name="name"><br>
    New Email: <input type="text" name="email"><br>
    <button type="submit" name="update">Update</button>
</form>

<?php
if (isset($_POST['update'])) {
    $id = $_POST['id'];
    $name = $_POST['name'];
    $email = $_POST['email'];
    $sql = "UPDATE students SET name='$name', email='$email' WHERE id=$id";
    if (mysqli_query($conn, $sql)) {
        echo "Record updated successfully!";
    }
}
?>
```

(v) Delete Operation (delete.php)

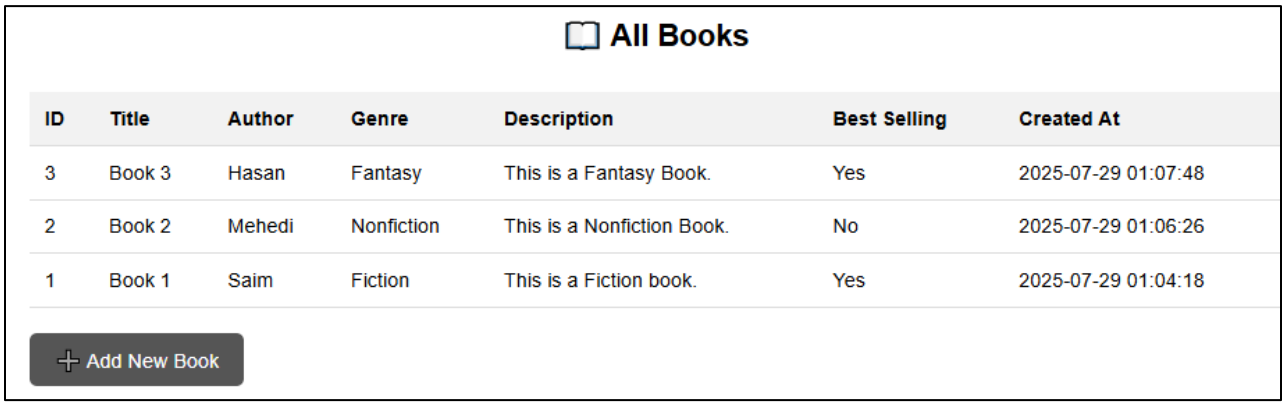
```php
<?php include 'db.php'; ?>
<form method="POST">
    ID: <input type="text" name="id"><br>
    <button type="submit" name="delete">Delete</button>
</form>

<?php
if (isset($_POST['delete'])) {
    $id = $_POST['id'];
    $sql = "DELETE FROM students WHERE id=$id";
    if (mysqli_query($conn, $sql)) {
        echo "Record deleted successfully!";
    }
}
?>
```

7. Output Snippets [Full code]

Book Entry Form (book.php)



Book Table (view.php)



8. Result

- Successfully created a database-driven web application using PHP and MySQL.
- Implemented book insertion and viewing functionality.
- Validations ensure required fields are not left empty.

9. Conclusion

This lab demonstrated how PHP can interact with MySQL to develop dynamic, data-driven web applications. CRUD operations form the foundation of any real-world database application.

10. References

- PHP Official Documentation – https://www.php.net/docs.php
- MySQL Documentation – https://dev.mysql.com/doc/
- W3Schools PHP Tutorial – https://www.w3schools.com/php/