# Assignment 1: Web Programming Project

Name: Abdulgafur Adan

Reg No: C024/401419/2023

Course: BCS 2.2

Date: April 25, 2025

## Project Overview

This project involves developing a dynamic web application that allows users to register, log in, and submit forms, with data stored in a MySQL database. The application ensures security using encryption, hashing, and protection against SQL injection. Session management is implemented using cookies, and JavaScript is used for client-side form validation.

## Technologies Used

- Frontend: HTML, CSS, JavaScript

- Backend: PHP

- Database: MySQL

- Security: bcrypt (hashing), Prepared Statements

## Functional Implementation

1. User Registration: Users can sign up with a form. Passwords are hashed using bcrypt before storage.

2. Login System: Authentication checks hashed passwords. On success, a session is created using cookies.

3. Form Submission: Authenticated users can submit forms. Data is sanitized and stored securely.

4. Session Management: Sessions are maintained using PHP cookies to keep users logged in.

5. Client-side Validation: JavaScript checks all fields for validity before submission.

6. Security Measures: SQL injection is prevented using prepared statements. Passwords are hashed, and sensitive data is encrypted when needed.

## Sample Code Snippets

```
HTML Registration Form:
<form method='POST' action='register.php'>
  <input type='text' name='username' required />
  <input type='password' name='password' required />
  <button type='submit'>Register</button>
</form>
```

```
JavaScript Validation:
if (password.length < 8) {
  alert('Password must be at least 8 characters.');
}
```

```
PHP (Password Hashing):
$hashed = password_hash($_POST['password'], PASSWORD_BCRYPT);
```

```
PHP (Prepared Statement):
$stmt = $pdo->prepare('INSERT INTO users (username, password) VALUES (?, ?)');
$stmt->execute([$username, $hashed]);
```

## Conclusion

This project demonstrates the core principles of full-stack web development with a focus on security and user experience. It incorporates secure authentication, session control, and data protection while ensuring a responsive and functional user interface.