**Step 15: Working on the Frontend**

Let’s go ahead and implement the frontend. Here we are going to create Navbar, add css and add Javascript to different pages. Let’s started.

**Create a Base Layout File**

This layout file is going to be extended by other files such **navbar.php** and **footer.php.** Also, its going to define the main content for the view files we’ve created so far.

***public/Layouts/layout.php***

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>My MVC Blog</title>

    <link rel="stylesheet" href="/css/styles.css">

    <!--Bootstrap Styles-->

    <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-T3c6CoIi6uLrA9TneNEoa7RxnatzjcDSCmG1MXxSR1GAsXEV/Dwwykc2MPK8M2HN" crossorigin="anonymous">

</head>

<body class="d-flex flex-column min-vh-100">

    <?php include BASE\_DIR . '/public/Layouts/navbar.php'; ?>

    <main class="flex-grow-1">

        <?php echo $content; ?>

    </main>

    <?php include BASE\_DIR . '/public/Layouts/footer.php'; ?>

</body>

</html>

<!--Bootstrap Js-->

<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dist/js/bootstrap.bundle.min.js" integrity="sha384-C6RzsynM9kWDrMNeT87bh95OGNyZPhcTNXj1NW7RuBCsyN/o0jlpcV8Qyq46cDfL" crossorigin="anonymous"></script>

<script src="/js/script.js"></script>

Go ahead and create the two files i.e ***public/Layouts/navbar.php*** and ***public/Layouts/footer.php***.

**Test it out *app/views/posts/index.php.***

Now to test this. You can Update one of the view files like the ***app/views/posts/index.php.***

<?php

// Generate the specific content for this page

ob\_start(); // Start output buffering

foreach ($posts as $post): ?>

        <div style="margin-bottom: 20px; margin-top: 20px;">

            <div>

                <h2><?php echo htmlspecialchars($post->title, ENT\_QUOTES); ?></h2>

                 <!-- Check if the post has an image and display it -->

                 <?php if ($post->image): ?>

                        <img src="/images/<?php echo htmlspecialchars($post->image, ENT\_QUOTES); ?>" alt="Post Image">

                    <?php endif; ?>

                <p><?php echo htmlspecialchars($post->content, ENT\_QUOTES); ?></p>

                <div>

                  <a href="/posts/show/<?php echo $post->id; ?>">View</a>

                </div>

            </div>

        </div>

    <?php endforeach; ?>

    <nav aria-label="Page navigation">

        <ul style="list-style: none; padding: 0;">

            <!--we loop through each page number-->

            <?php for ($i = 1; $i <= $totalPages; $i++): ?>

                <!--Check if the loop's current page number ($i, e.g., 3) is the same as the current page ($currentPage, 3)-->

                <!--If yes, then this is the current page, so we could style it differently if needed-->

                <li style="<?php echo $i == $currentPage ? 'font-weight: bold;' : ''; ?>">

                    <!-- returns the page full URL e.g., http://admin/posts?page=2 -->

                    <a href="/admin/posts?page=<?php echo $i; ?>"><?php echo $i; ?></a>

                </li>

            <?php endfor; ?>

        </ul>

    </nav>

</div>

<?php

$content = ob\_get\_clean(); // Store buffered content in $content

// Include the layout

include BASE\_DIR . '/public/Layouts/layout.php'; ?>

1. **ob\_start():** Begins buffering. After this call, any output (e.g., from **echo**, **print**, or direct HTML outside PHP tags) is stored in the buffer instead of being sent to the browser.
2. **Content Generation:** The **foreach** loop generates content based on **$posts**. This content is captured by the output buffer instead of being immediately displayed.
3. **$content = ob\_get\_clean();:** The generated content is retrieved from the buffer and assigned to the **$content** variable. The output buffer is then cleared and closed, preventing the generated content from being automatically sent to the browser.

**Update Navbar and Footer Files**

**Navbar.php**

Here we will update the navbar file with the code related to it. The code will have bootstrap styles for styling the navbar.

<header>

    <nav class="navbar navbar-expand-lg navbar-dark bg-dark">

      <!-- Logo on the left with some margin to push it to the right -->

        <a class="navbar-brand ms-3" href="/"> <!-- ms-3 for margin start -->

            <img src="/images/logo.jpeg" alt="Logo" style="height: 40px;"> <!-- Adjust logo size as needed -->

        </a>

        <!-- Toggler for mobile view -->

        <button class="navbar-toggler" type="button" data-bs-toggle="collapse" data-bs-target="#navbarNav" aria-controls="navbarNav" aria-expanded="false" aria-label="Toggle navigation">

            <span class="navbar-toggler-icon"></span>

        </button>

        <!-- Menu items -->

        <div class="collapse navbar-collapse justify-content-end" id="navbarNav">

            <ul class="navbar-nav">

                <li class="nav-item">

                    <a class="nav-link" href="/">Home</a>

                </li>

                <?php if (isLoggedIn()): ?>

                    <li class="nav-item">

                        <a class="nav-link" href="/users/logout">Logout</a>

                    </li>

                <?php else: ?>

                    <li class="nav-item">

                        <a class="nav-link" href="/users/login">Login</a>

                    </li>

                    <li class="nav-item">

                        <a class="nav-link" href="/users/register">Register</a>

                    </li>

                <?php endif; ?>

            </ul>

        </div>

         <!-- ms-auto class pushes the form to the right -->

        <div class="d-flex ms-auto">

            <form action="/search" method="GET" class="d-flex" required>

                <input type="text" name="query" class="form-control me-2" placeholder="Search...">

                <button type="submit" class="btn btn-outline-success me-2">Search</button>

            </form>

        </div>

        </nav>

    </header>

**Footer.php**

<footer class="bg-dark text-white text-center py-3 mt-auto">

        <p class="mb-0">&copy; <?php echo date('Y'); ?> My MVC BLOG</p>

</footer>

**Add Bootstrap Styles To The Frontend View Files.**

Let’s add bootstrap styles to the rest of the view files we’ve created so far.

***app/views/posts/index.php***

<?php

// Generate the specific content for this page

ob\_start(); // Start output buffering

foreach ($posts as $post):

    ?>

   <div class="container mt-4">

    <div class="row">

        <div class="col-md-8 offset-md-2">

            <div class="card">

                <h2 class="card-header"><?php echo htmlspecialchars($post->title, ENT\_QUOTES); ?></h2>

                <div class="card-body">

                <!-- Check if the post has an image and display it -->

                    <?php if ($post->image): ?>

                        <img src="/images/<?php echo htmlspecialchars($post->image, ENT\_QUOTES); ?>" alt="Post Image" class="img-fluid mb-3">

                    <?php endif; ?>

                    <p class="card-text"><?php echo htmlspecialchars($post->content, ENT\_QUOTES); ?></p>

                    <!-- Check if category data is available -->

                    <p class="card-text"><strong>Category:</strong> <?php echo $post->category\_name ? htmlspecialchars($post->category\_name, ENT\_QUOTES) : 'No category'; ?></p>

                    </div>

                    <div class="card-footer text-muted">

                        <a href="/posts/show/<?php echo $post->id; ?>" class="btn btn-primary">View</a>

                    </div>

                </div>

            </div>

        </div>

    <hr>

<?php endforeach ?>

<!-- Pagination Controls -->

<nav aria-label="Page navigation">

      <ul class="pagination">

          <?php for ($i = 1; $i <= $totalPages; $i++): ?>

              <li class="page-item <?php echo $i == $currentPage ? 'active' : ''; ?>">

                  <a class="page-link" href="/?page=<?php echo $i; ?>"><?php echo $i; ?></a>

              </li>

          <?php endfor; ?>

      </ul>

   </nav>

<?php

$content = ob\_get\_clean(); // Store buffered content in $content

// Include the layout

include BASE\_DIR . '/public/Layouts/layout.php'; ?>

***app/views/posts/show.php***

<?php

// Generate the specific content for this page

ob\_start(); // Start output buffering

    ?>

<!-- show.php -->

<div class="container mt-4 mb-5">

    <div class="card">

        <div class="card-header">

            <h2><?php echo htmlspecialchars($post->title, ENT\_QUOTES); ?></h2>

        </div>

        <div class="card-body">

            <?php if ($post->image): ?>

                <img src="/images/<?php echo htmlspecialchars($post->image, ENT\_QUOTES); ?>" alt="Post Image" class="img-fluid mb-3">

            <?php endif; ?>

            <p class="card-text"><?php echo htmlspecialchars($post->content, ENT\_QUOTES); ?></p>

        </div>

        <div class="card-footer ">

            <h3>Comments</h3>

            <?php foreach ($comments as $comment): ?>

                <div class="mb-2">

                    <p class="card-text"><?php echo htmlspecialchars($comment->content, ENT\_QUOTES); ?></p>

                </div>

            <?php endforeach; ?>

            <form action="/comments/store" method="post" class="mt-4">

                <div class="mb-3">

                    <label for="content" class="form-label">Content:</label>

                    <textarea id="content" name="content" class="form-control"></textarea>

                </div>

                <input type="hidden" name="post\_id" value="<?php echo $post->id; ?>">

                <button type="submit" class="btn btn-primary">Submit</button>

            </form>

        </div>

    </div>

</div>

<?php

$content = ob\_get\_clean(); // Store buffered content in $content

// Include the layout

include BASE\_DIR . '/public/Layouts/layout.php'; ?>

**Add Bootstrap Styles To The Backend View Files.**

***app/views/admin/posts/index.php***

<!--views/admin/posts/index.php-->

<?php

// Start output buffering

ob\_start();

?>

<!-- Display message -->

<?php if (isset($\_SESSION['message'])): ?>

        <div id="message" class="<?php echo strpos($\_SESSION['message'], 'error') !== false ? 'message-error' : 'message-success' ?> text-center">

            <?php

                echo $\_SESSION['message'];

                unset($\_SESSION['message']);

            ?>

        </div>

    <?php endif; ?>

<div class="container mt-4">

    <div class="row">

        <div class="col text-end">

            <!-- Create Post Button -->

            <a href="/admin/posts/create" class="btn btn-success me-2">Create New Post</a>

            <!-- Create Category Button -->

            <a href="/admin/categories/create" class="btn btn-success">Create Categories</a>

        </div>

    </div>

    <?php foreach ($posts as $post): ?>

        <div class="mb-3 mt-2 card">

            <div class="card-body">

                <h2 class="card-title"><?php echo htmlspecialchars($post->title, ENT\_QUOTES); ?></h2>

                <p class="card-text"><?php echo htmlspecialchars($post->content, ENT\_QUOTES); ?></p>

                <a href="/admin/posts/show/<?php echo $post->id; ?>" class="btn btn-info btn-sm">View</a>

                <a href="/admin/posts/edit/<?php echo $post->id; ?>" class="btn btn-warning btn-sm">Edit</a>

<!—Implement ajax here-->

                <button type="button" onclick="deletePost(<?php echo $post->id; ?>)" class="btn btn-danger btn-sm">Delete</button>

                </div>

                </div>

                <?php endforeach; ?>

                <!-- Pagination Controls -->

                <nav aria-label="Page navigation">

                    <ul class="pagination">

                    <!--we loop through each page number-->

                        <?php for ($i = 1; $i <= $totalPages; $i++): ?>

                            <!--Check if the loop's current page number ($i e.g 3) is the same as the current page ($currentPage 3)-->

                            <!--If yes, then this is the current page, so mark it as 'active'-->

                            <!--If no, then it's just a regular page-->

                            <li class="page-item <?php echo $i == $currentPage ? 'active' : ''; ?>">

                            <!-- returns the page full url e.g http://admin/posts/posts?page=2 -->

                                <a class="page-link" href="/admin/posts?page=<?php echo $i; ?>"><?php echo $i; ?></a>

                            </li>

                        <?php endfor; ?>

                    </ul>

                </nav>

            </div>

<?php

$content = ob\_get\_clean(); // Store buffered content in $content

// Include the layout

include BASE\_DIR . '/public/Layouts/layout.php'; ?>

<style>

.message-success {

color: green;

/\* other styling \*/

}

.message-error {

    color: red;

    background-color: #ffd6d6;

    padding: 10px;

    border: 1px solid red;

    margin-bottom: 20px;

}

</style>

**Implement Ajax To admin/posts View File**

The **deletePost** is a button that triggers an ajax request to confirm if one wants to really delete a post.

So, on the ***public/js/script.js*** update it with this code.

***public/js/script.js***

// JavaScript delete functionality for admin posts

function deletePost(postId) {

if (confirm("Are you sure you want to delete this post?")) {

var xhr = new XMLHttpRequest();

xhr.open("POST", "/admin/posts/delete/" + postId, true);

xhr.setRequestHeader("Content-Type", "application/x-www-form-urlencoded");

xhr.onload = function() {

if (this.status === 200) {

// Handle success

location.reload(); // Reloads the current page

} else {

// Handle error

alert("Error deleting post.");

}

};

xhr.send("id=" + postId);

}

}

Finally update the ***AdminController.php*** with this method.

// Delete: Remove a post

    public function delete($id) {

        $this->ensureAdmin();

        $postDeleted = $this->model->deletePost($id);

            if ($postDeleted) {

                header('Location: /admin/posts');

            } else {

                die('Comment not found');

            }

        }

***app/views/admin/posts/create.php***

Let’s add the styling for the admin create file. Update the file as follows.

<!-- views/admin/posts/create.php -->

<?php

// Generate the specific content for this page

ob\_start(); // Start output buffering

?>

<!-- admin/posts/create.php -->

<div class="container mt-4 mb-5">

    <!-- View all Post Button -->

    <div class="mb-4 text-end">

        <a href="/admin/posts/" class="btn btn-success">View Posts</a>

    </div>

    <h1 class="mb-4">Create Post</h1>

    <?php if (isset($\_SESSION['form\_errors'])): ?>

        <div class="alert alert-danger">

            <?php foreach ($\_SESSION['form\_errors'] as $error): ?>

                <p><?php echo $error; ?></p>

            <?php endforeach; ?>

            <?php unset($\_SESSION['form\_errors']); ?>

        </div>

    <?php endif; ?>

    <form method="POST" action="/admin/posts/store" enctype="multipart/form-data">

        <div class="mb-3">

            <label for="title" class="form-label">Title:</label>

            <input type="text" id="title" name="title" class="form-control">

        </div>

        <div class="mb-3">

            <label for="content" class="form-label">Content:</label>

            <textarea id="content" name="content" class="form-control"></textarea>

        </div>

        <div class="mb-3">

            <label for="category\_id" class="form-label">Category:</label>

            <select id="category\_id" name="category\_id" class="form-select">

                <?php foreach ($categories as $category): ?>

                    <option value="<?php echo $category->id; ?>"><?php echo $category->name; ?></option>

                <?php endforeach; ?>

            </select>

        </div>

        <div class="mb-3">

            <label for="image" class="form-label">Image:</label>

            <input type="file" id="image" name="image" class="form-control">

        </div>

        <button type="submit" class="btn btn-primary">Create Post</button>

    </form>

</div>

<?php

$content = ob\_get\_clean(); // Store buffered content in $content

// Include the layout

include BASE\_DIR . '/public/Layouts/layout.php'; ?>

***app/views/admin/posts/show.php***

<?php

// Start output buffering

ob\_start();

?>

  <!-- Display message -->

<?php if (isset($\_SESSION['message'])): ?>

        <div id="message" class="<?php echo strpos($\_SESSION['message'], 'error') !== false ? 'message-error' : 'message-success' ?> text-center">

            <?php

                echo $\_SESSION['message'];

                unset($\_SESSION['message']);

            ?>

        </div>

    <?php endif; ?>

<div class="container mt-4">

    <!-- View all Post Button -->

    <div class="mb-4 text-end">

        <a href="/admin/posts/" class="btn btn-success">View Posts</a>

    </div>

    <h2><?php echo htmlspecialchars($post->title, ENT\_QUOTES); ?></h2>

    <!-- Check if the post has an image and display it -->

    <?php if ($post->image): ?>

        <img src="/images/<?php echo htmlspecialchars($post->image, ENT\_QUOTES); ?>" alt="Post Image" class="img-fluid mb-3" style="max-width: 200px;"> <!-- Small preview -->

    <?php endif; ?>

    <p><?php echo htmlspecialchars($post->content, ENT\_QUOTES); ?></p>

    <h3>Comments</h3>

    <?php foreach ($comments as $comment): ?>

        <div class="mb-2">

            <p><?php echo htmlspecialchars($comment->content, ENT\_QUOTES); ?></p>

            <a href="/admin/comments/edit/<?php echo $comment->id; ?>" class="btn btn-warning btn-sm">Edit</a>

            <button onclick="deleteComment(<?php echo $comment->id; ?>)" class="btn btn-danger btn-sm">Delete</button>

        </div>

    <?php endforeach; ?>

        </div>

<?php

$content = ob\_get\_clean(); // Store buffered content in $content

// Include the layout

include BASE\_DIR . '/public/Layouts/layout.php'; ?>

<style>

.message-success {

color: green;

/\* other styling \*/

}

.message-error {

    color: red;

    background-color: #ffd6d6;

    padding: 10px;

    border: 1px solid red;

    margin-bottom: 20px;

}

</style>

The **deleteComment** button onClick is a ajax request. Let’s modify the following files.

***public/js/script.js***

// JavaScript delete functionality for comments

function deleteComment(commentId) {

if (confirm("Are you sure you want to delete this comment?")) {

var xhr = new XMLHttpRequest();

xhr.open("POST", "/admin/comments/delete/" + commentId, true);

xhr.setRequestHeader("Content-Type", "application/x-www-form-urlencoded");

xhr.onload = function() {

if (this.status === 200) {

// Handle success - remove the comment from the page or reload

location.reload();

} else {

alert("Error deleting comment.");

}

};

xhr.send("id=" + commentId);

}

}

***app/views/admin/posts/edit.php***

Let’s style edit view in the admin/posts directory. Apply the following bootstrap

<!--views/admin/posts/edit.php-->

<?php

// Generate the specific content for this page

ob\_start(); // Start output buffering

?>

<div class="container mt-4">

    <?php if ($post === null): ?>

        <div class="alert alert-warning">Post not found</div>

        <?php return; ?>

    <?php endif; ?>

    <?php if (isset($\_SESSION['form\_errors'])): ?>

        <div class="alert alert-danger">

            <?php foreach ($\_SESSION['form\_errors'] as $error): ?>

                <p><?php echo $error; ?></p>

            <?php endforeach; ?>

            <?php unset($\_SESSION['form\_errors']); ?>

        </div>

    <?php endif; ?>

    <form method="POST" action="/admin/posts/update/<?php echo $post->id ?>" enctype="multipart/form-data" class="mb-3">

        <input type="hidden" name="id" value="<?php echo $post->id ?>">

        <div class="mb-3">

            <label for="title" class="form-label">Title</label>

            <input type="text" id="title" name="title" value="<?php echo htmlspecialchars($post->title, ENT\_QUOTES); ?>" class="form-control">

        </div>

        <div class="mb-3">

            <label for="content" class="form-label">Content</label>

            <textarea id="content" name="content" class="form-control"><?php echo htmlspecialchars($post->content, ENT\_QUOTES); ?></textarea>

        </div>

        <div class="mb-3">

            <label for="image" class="form-label">Image</label>

            <input type="file" id="image" name="image" class="form-control">

            <?php if (!empty($post->image)): ?>

            <img src="/images/<?php echo htmlspecialchars($post->image, ENT\_QUOTES); ?>" alt="Post Image" class="img-fluid mt-2" style="max-width: 200px;">

            <?php endif; ?>

        </div>

        <div class="mb-3">

            <label for="category\_id" class="form-label">Category:</label>

            <select id="category\_id" name="category\_id" class="form-select">

            <?php foreach ($categories as $category): ?>

            <option value="<?php echo $category->id; ?>" <?php echo $category->id == $post->category\_id ? 'selected' : ''; ?>>

            <?php echo $category->name; ?>

            </option>

            <?php endforeach; ?>

            </select>

        </div>

        <button type="submit" class="btn btn-primary">Update Post</button>

        </form>

    </div>

<?php

$content = ob\_get\_clean(); // Store buffered content in $content

// Include the layout

include BASE\_DIR . '/public/Layouts/layout.php'; ?>

**Add Login and Register Bootstrap Styles**

Let’s add the CSS styles for the login and registration files.

***app/views/users/login.php***

<?php

// Generate the specific content for this page

ob\_start(); // Start output buffering

?>

<!-- Display message -->

<?php if (isset($\_SESSION['message'])): ?>

        <div id="message" class="<?php echo strpos($\_SESSION['message'], 'error') !== false ? 'message-error' : 'message-success' ?> text-center">

            <?php

                echo $\_SESSION['message'];

                unset($\_SESSION['message']);

            ?>

        </div>

    <?php endif; ?>

    <div class="container mt-5">

    <div class="row">

        <div class="col-md-6 offset-md-3">

            <div class="card">

                <div class="card-body">

                    <h4 class="card-title text-center">Login</h4>

                    <!-- Login form -->

                    <form method="POST" action="/users/authenticate">

                        <div class="mb-3">

                            <label for="username" class="form-label">Username</label>

                            <input type="text" id="username" name="username" class="form-control">

                        </div>

                        <div class="mb-3">

                            <label for="password" class="form-label">Password</label>

                            <input type="password" id="password" name="password" class="form-control">

                        </div>

                        <div class="d-grid gap-2">

                            <button type="submit" class="btn btn-primary btn-block">Login</button>

                        </div>

                            </form>

                                <div class="text-center mt-3">

                                <a href="/users/register">Not a member? Create Account</a>

                        </div>

                     </div>

                </div>

            </div>

        </div>

    </div>

<?php

$content = ob\_get\_clean(); // Store buffered content in $content

// Include the layout

include BASE\_DIR . '/public/Layouts/layout.php'; ?>

<style>

.message-success {

color: green;

/\* other styling \*/

}

.message-error {

    color: red;

    background-color: #ffd6d6;

    padding: 10px;

    border: 1px solid red;

    margin-bottom: 20px;

}

</style>

***app/views/users/register.php***

<?php

// Generate the specific content for this page

ob\_start(); // Start output buffering

?>

<?php if (isset($\_SESSION['message'])): ?>

        <div id="message" class="<?php echo strpos($\_SESSION['message'], 'error') !== false ? 'message-error' : 'message-success' ?> text-center">

            <?php

                echo $\_SESSION['message'];

                unset($\_SESSION['message']);

            ?>

        </div>

    <?php endif; ?>

<div class="container mt-5">

    <div class="row">

        <div class="col-md-6 offset-md-3">

            <div class="card">

                <div class="card-body">

                    <h4 class="card-title text-center">Register</h4>

                    <!-- Registration form -->

                    <form method="POST" action="/users/store">

                        <div class="mb-3">

                            <label for="username" class="form-label">Username</label>

                            <input type="text" id="username" name="username" class="form-control">

                        </div>

                        <div class="mb-3">

                            <label for="password" class="form-label">Password</label>

                            <input type="password" id="password" name="password" class="form-control">

                        </div>

                        <div class="d-grid gap-2">

                            <button type="submit" class="btn btn-primary">Register</button>

                        </div>

                    </form>

                    <div class="text-center mt-3">

                        <a href="/users/login">Already have an account? Login</a>

                    </div>

                </div>

            </div>

        </div>

    </div>

</div>

<?php

$content = ob\_get\_clean(); // Store buffered content in $content

// Include the layout

include BASE\_DIR . '/public/Layouts/layout.php'; ?>

<style>

.message-success {

color: green;

/\* other styling \*/

}

.message-error {

    color: red;

    background-color: #ffd6d6;

    padding: 10px;

    border: 1px solid red;

    margin-bottom: 20px;

}

</style>

**Hide PHP Alert Messages**

Let’s add a Javascript code to hide the alert messages that pops up when someone registers or trys to register by filling partly the form or in full. Here is the Javascript code.

Add it to the ***public/js/script.js***

// JavaScript Timeout functionality for admin posts

document.addEventListener('DOMContentLoaded', function() {

    // console.log("DOM fully loaded and parsed");

    setTimeout(function() {

        var messageElement = document.getElementById('message');

        console.log("Looking for message element", messageElement);

        if (messageElement) {

            messageElement.style.display = 'none';

        }

    }, 5000); // Hide the message after 5 seconds

});

**Add Styles To Category View Files**

***app/views/admin/categories/create.php***

<?php

// Generate the specific content for this page

ob\_start(); // Start output buffering

    ?>

<div class="container mt-4">

    <!-- View Category Button -->

    <div class="mb-4 text-end">

        <a href="/admin/categories/" class="btn btn-success">View Categories</a>

    </div>

    <form method="POST" action="/admin/categories/store" class="mb-3">

        <div class="mb-3">

            <label for="name" class="form-label">Category Name</label>

            <input type="text" id="name" name="name" class="form-control" required>

        </div>

        <button type="submit" class="btn btn-primary">Create Category</button>

    </form>

</div>

<?php

$content = ob\_get\_clean(); // Store buffered content in $content

// Include the layout

include BASE\_DIR . '/public/Layouts/layout.php'; ?>

***app/views/admin/categories/edit.php***

<?php

// Generate the specific content for this page

ob\_start(); // Start output buffering

    ?>

<div class="container mt-4">

    <form method="POST" action="/admin/categories/update/<?php echo $category->id; ?>" class="mb-3">

        <input type="hidden" name="id" value="<?php echo $category->id; ?>">

        <div class="mb-3">

            <label for="name" class="form-label">Name:</label>

            <input type="text" id="name" name="name" value="<?php echo htmlspecialchars($category->name, ENT\_QUOTES); ?>" class="form-control" required>

        </div>

        <!-- Add more input fields for other category properties... -->

        <button type="submit" class="btn btn-primary">Update</button>

    </form>

</div>

<?php

$content = ob\_get\_clean(); // Store buffered content in $content

// Include the layout

include BASE\_DIR . '/public/Layouts/layout.php'; ?>

***app/views/admin/categories/index.php***

<?php

// Generate the specific content for this page

ob\_start(); // Start output buffering

    ?>

    <div class="container mt-4">

      <div class="row">

        <div class="col text-end">

            <!-- Create Post Button -->

            <a href="/admin/categories/create" class="btn btn-success me-2">Create Category</a>

            <!-- Create Category Button -->

            <a href="/admin/posts/" class="btn btn-success">View Posts</a>

        </div>

    </div>

    <h2 class="card-title">Categories</h2>

    <?php foreach ($categories as $category): ?>

        <div class="mb-3 mt-2 card">

          <div class="card-body">

            <p class="card-text"><?php echo htmlspecialchars($category->name, ENT\_QUOTES); ?></p>

                <a href="/admin/categories/edit/<?php echo $category->id; ?>" class="btn btn-warning btn-sm">Edit</a>

                <a href="/admin/categories/posts/<?php echo $category->id; ?>" class="btn btn-warning btn-sm">View Post</a>

                <form method="POST" action="/admin/categories/delete/<?php echo $category->id ?>" class="d-inline">

                    <button type="button" onclick="deleteCategory(<?php echo $category->id ?>)" class="btn btn-danger btn-sm">Delete</button>

                </form>

            </div>

        </div>

        <?php endforeach; ?>

    </div>

<?php

$content = ob\_get\_clean(); // Store buffered content in $content

// Include the layout

include BASE\_DIR . '/public/Layouts/layout.php';

?>

**Add Ajax Delete Confirmation For Category**

Just as we did for admin/posts and comments. I mean adding ajax for delete confirmation. I have added a similar functionality in the above file. Add this Javascript code in script.js file

***public/js/script.js***

// JavaScript delete functionality for categories

function deleteCategory(categoryId) {

    if (confirm("Are you sure you want to delete this category?")) {

        var xhr = new XMLHttpRequest();

        xhr.open("POST", "/admin/categories/delete/" + categoryId, true);

        xhr.setRequestHeader("Content-Type", "application/x-www-form-urlencoded");

        xhr.onload = function() {

            if (this.status === 200) {

                // Handle success - remove the category from the page or reload

                location.reload();

            } else {

                alert("Error deleting category.");

            }

        };

        xhr.send("id=" + categoryId);

    }

}

***app/views/admin/categories/posts.php***

<!-- admin/categories/posts.php -->

<?php

// Generate the specific content for this page

ob\_start(); // Start output buffering

?>

<div class="container mt-4">

    <h2 class="mb-3">Posts in Category: <?php echo htmlspecialchars($category->name, ENT\_QUOTES); ?></h2>

    <?php if (!empty($posts)): ?>

        <div class="list-group">

            <?php foreach ($posts as $post): ?>

                <div class="list-group-item list-group-item-action">

                    <h3 class="h5"><?php echo htmlspecialchars($post->title, ENT\_QUOTES); ?></h3>

                    <p><?php echo htmlspecialchars($post->content, ENT\_QUOTES); ?></p>

                    <!-- Add links for edit, delete, view, etc. here -->

                    <a href="/admin/posts/edit/<?php echo $post->id; ?>" class="btn btn-primary btn-sm">Edit</a>

                    <button type="button" onclick="deletePost(<?php echo $post->id; ?>)" class="btn btn-danger btn-sm">Delete</button>

                    <a href="/admin/posts/show/<?php echo $post->id; ?>" class="btn btn-secondary btn-sm">View</a>

                </div>

            <?php endforeach; ?>

        </div>

    <?php else: ?>

        <p class="alert alert-info">No posts found in this category.</p>

    <?php endif; ?>

</div>

<?php

$content = ob\_get\_clean(); // Store buffered content in $content

// Include the layout

include BASE\_DIR . '/public/Layouts/layout.php'; ?>

**Add Bootstrap Styles For Comments**

***app/views/admin/comments/edit.php***

<?php

if (!$comment) {

    echo "<div class='alert alert-warning' role='alert'>Comment not found</div>";

    return;

}

?>

<?php

// Generate the specific content for this page

ob\_start(); // Start output buffering

    ?>

<div class="container mt-3">

    <form method="POST" action="/admin/comments/update/<?php echo $comment->id; ?>" class="needs-validation" novalidate>

        <input type="hidden" name="id" value="<?php echo $comment->id; ?>">

        <input type="hidden" name="post\_id" value="<?php echo $comment->post\_id; ?>">

        <div class="mb-3">

            <label for="content" class="form-label">Comment Content</label>

            <textarea id="content" name="content" class="form-control" required><?php echo htmlspecialchars($comment->content, ENT\_QUOTES); ?></textarea>

            <div class="invalid-feedback">

                Please enter a comment content.

            </div>

        </div>

        <button type="submit" class="btn btn-primary">Update Comment</button>

    </form>

</div>

<?php

$content = ob\_get\_clean(); // Store buffered content in $content

// Include the layout

include BASE\_DIR . '/public/Layouts/layout.php';

?>

**Add A Styles File For Basic styling**

Let’s create a ***public/css/styles.css*** for adding basic styles to our MVC blog. Here is how to go about it.

***public/css/styles.css***

body, html {

height: 100%;

}

main {

flex: 1;

}

header nav {

display: flex;

justify-content: space-between;

align-items: center;

}

header nav ul {

list-style: none;

display: flex;

margin: 0;

padding: 0;

}

header nav ul li {

margin-left: 20px; /\* Spacing between menu items \*/

}

.message-success {

color: green;

/\* other styling \*/

}

.message-error {

color: red;

background-color: #ffd6d6;

padding: 10px;

border: 1px solid red;

margin-bottom: 20px;

}

.form-errors {

color: red;

background-color: #ffd6d6;

padding: 10px;

border: 1px solid red;

margin-bottom: 20px;

}

**Update Your *public/Layouts/layout.php* File**

<link rel="stylesheet" href="/css/styles.css">

**Add Code To The 404.php File**

***app/views/404.php***

<?php

// Start output buffering to capture the 404 message

ob\_start();

?>

<div class="container mt-4">

    <div class="text-center">

        <h1 class="display-1">404</h1>

        <p class="lead">Oops! The page you are looking for cannot be found.</p>

        <p>It might have been removed, had its name changed, or is temporarily unavailable.</p>

        <a href="/" class="btn btn-primary">Go to Homepage</a>

    </div>

</div>

<?php

// End buffering and store the content in $content

$content = ob\_get\_clean();

// Include the layout, which uses $content

include BASE\_DIR . '/public/Layouts/layout.php';

?>