

Problem Statement:

Consider the project database designed and implemented during previous semester i.e. Fall 2024. Its implementation was done using structured query language during previous semester. Try to recall major relations in your project database. You already have its report in printed form.

There is a need to implement a web based solution for above mentioned database. The web based solution must incorporate various functionalities of your project.

- (1) Registration of Student/Patient/Passenger/Customer, or whatever is applicable in your project.
- (2) Search facilities including partial matches
- (3) Any other project specific functionalities
- (4) Role based access control
- (5) Payment system (if required)

As a first step design above mentioned (i) to (v) user interfaces using paper and pencil.

Next write appropriate html for creating (i) to (v) user interface prototypes.

Create links for navigation among above pages.

Design a menu using list and styles.

Add help pages for user guidance.

Either use table for layout or may opt for flow based layout.

Test user interface prototypes in browser.

Experiment with style sheets.

Solution:**Home.aspx:**

```
<!DOCTYPE html>
<html>
<head>
  <title>Home - Grocery Store Management</title>
  <link rel="stylesheet" href="styles.css">
</head>
<body>
  <ul class="menu">
```

```
<li><a href="home.aspx">Home</a></li>
<li><a href="CustomerRegistration.aspx">Register</a></li>
<li><a href="ProductSearch.aspx">Search</a></li>
<li><a href="RoleAccess.aspx">Role Access</a></li>
<li><a href="Payment.aspx">Payment</a></li>
<li><a href="Help.aspx">Help</a></li>
</ul>
```

```
<h2>Welcome to Grocery Store Management System</h2>
```

```
<p>This is the homepage where you can access all the features of the
system.</p>
```

```
</body>
```

```
</html>
```

CustomerRegistration.aspx:

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<title>Customer Registration</title>
```

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

```
</head>
```

```
<body>
```

```
<ul class="menu">
```

```
<li><a href="home.aspx">Home </a></li>
```

```
<li><a href="CustomerRegistration.aspx">Register</a></li>
```

```
<li><a href="ProductSearch.aspx">Search</a></li>
```

```
<li><a href="RoleAccess.aspx">Role Access</a></li>
```

```
<li><a href="Payment.aspx">Payment</a></li>
```

```
<li><a href="Help.aspx">Help</a></li>
```

```
</ul>
```

```
<h2>Customer Registration</h2>
```

```
<form>
  <table>
    <tr><td>Full Name:</td><td><input type="text" /></td></tr>
    <tr><td>House:</td><td><input type="text" /></td></tr>
    <tr><td>Street:</td><td><input type="text" /></td></tr>
    <tr><td>City:</td><td><input type="text" /></td></tr>
    <tr><td>State:</td><td><input type="text" /></td></tr>
    <tr><td>Country:</td><td><input type="text" /></td></tr>
    <tr><td colspan="2" style="text-align:center;"><input type="submit"
value="Register" /></td></tr>
  </table>
</form>
</body>
</html>
```

ProductSearch.aspx:

```
<!DOCTYPE html>
<html>
<head>
  <title>Search Product</title>
  <link rel="stylesheet" href="styles.css">
</head>
<body>
  <ul class="menu">
    <li><a href="home.aspx">Home </a></li>
    <li><a href="CustomerRegistration.aspx">Register</a></li>
    <li><a href="ProductSearch.aspx">Search</a></li>
    <li><a href="RoleAccess.aspx">Role Access</a></li>
    <li><a href="Payment.aspx">Payment</a></li>
    <li><a href="Help.aspx">Help</a></li>
  </ul>
```

```
<h2>Search Products</h2>
<form>
  <table>
    <tr><td>Search:</td><td><input type="text" /></td></tr>
    <tr><td colspan="2" style="text-align:center;"><input type="submit"
value="Search" /></td></tr>
  </table>
</form>
</body>
</html>
```

Payment.aspx:

```
<!DOCTYPE html>
<html>
<head>
  <title>Payment</title>
  <link rel="stylesheet" href="styles.css">
</head>
<body>
  <ul class="menu">
    <li><a href="home.aspx">Home </a></li>
    <li><a href="CustomerRegistration.aspx">Register</a></li>
    <li><a href="ProductSearch.aspx">Search</a></li>
    <li><a href="RoleAccess.aspx">Role Access</a></li>
    <li><a href="Payment.aspx">Payment</a></li>
    <li><a href="Help.aspx">Help</a></li>
  </ul>

  <h2>Make a Payment</h2>
  <form>
    <table>
      <tr><td>Amount:</td><td><input type="text" /></td></tr>
```

```
<tr><td>Payment Method:</td><td>
  <select>
    <option>Online</option>
    <option>Cash on Delivery</option>
  </select>
</td></tr>
<tr><td>Transaction ID:</td><td><input type="text" /></td></tr>
<tr><td colspan="2" style="text-align:center;"><input type="submit"
value="Pay" /></td></tr>
</table>
</form>
</body>
</html>
```

RoleAccess.aspx:

```
<!DOCTYPE html>
<html>
<head>
  <title>Role Access</title>
  <link rel="stylesheet" href="styles.css">
</head>
<body>
  <ul class="menu">
    <li><a href="home.aspx">Home</a></li>
    <li><a href="CustomerRegistration.aspx">Register</a></li>
    <li><a href="ProductSearch.aspx">Search</a></li>
    <li><a href="RoleAccess.aspx">Role Access</a></li>
    <li><a href="Payment.aspx">Payment</a></li>
    <li><a href="Help.aspx">Help</a></li>
  </ul>

  <h2>Login</h2>
```

```
<form>
  <table>
    <tr><td>Username:</td><td><input type="text" /></td></tr>
    <tr><td>Password:</td><td><input type="password" /></td></tr>
    <tr><td>Role:</td><td>
      <select>
        <option>Admin</option>
        <option>Customer</option>
        <option>Supplier</option>
      </select>
    </td></tr>
    <tr><td colspan="2" style="text-align:center;"><input type="submit"
value="Login" /></td></tr>
  </table>
</form>
</body>
</html>
```

Help.aspx:

```
<!DOCTYPE html>
<html>
<head>
  <title>Help</title>
  <link rel="stylesheet" href="styles.css">
</head>
<body>
  <ul class="menu">
    <li><a href="home.aspx">Home</a></li>
    <li><a href="CustomerRegistration.aspx">Register</a></li>
    <li><a href="ProductSearch.aspx">Search</a></li>
    <li><a href="RoleAccess.aspx">Role Access</a></li>
    <li><a href="Payment.aspx">Payment</a></li>
```

```
<li><a href="Help.aspx">Help</a></li>
</ul>

<h2>User Help</h2>

<p>Use the menu above to navigate between pages. You can register, login,
search for products, and make payments.</p>

<p>If you encounter issues, contact support@grocerystore.com</p>
</body>
</html>
```

Styles.css:

```
/* Reset and Box-Sizing for Consistency */
* {
  margin: 0;
  padding: 0;
  box-sizing: border-box;
}

/* Body Styles */
body {
  font-family: 'Segoe UI', Tahoma, Geneva, Verdana, sans-serif;
  background: linear-gradient(to right, #f8f9fa, #e0f7fa);
  color: #333;
  padding: 20px;
  line-height: 1.6;
  display: flex;
  flex-direction: column;
  align-items: center;
}

/* Heading Styles */
```

```
h1 {
  text-align: center;
  font-size: 2.5rem;
  color: #ff7043;
  margin-bottom: 20px;
  font-weight: 700;
}

h2 {
  color: #26a69a;
  font-size: 2rem;
  margin: 25px 0 15px;
  border-bottom: 2px solid #80cbc4;
  padding-bottom: 10px;
  font-weight: 600;
}

h3, h4 {
  color: #5c6bc0;
  font-size: 1.5rem;
  margin: 15px 0;
  font-weight: 600;
}

/* Global Navigation Menu */
ul.menu {
  list-style-type: none;
  display: flex;
  justify-content: center;
  gap: 15px;
```



```
padding: 12px;
background: #ffffff;
border-radius: 10px;
box-shadow: 0 2px 10px rgba(0, 0, 0, 0.1);
margin-bottom: 25px;
}
```

```
ul.menu li {
  position: relative;
}
```

```
ul.menu li a {
  text-decoration: none;
  color: #00796b;
  font-weight: 600;
  padding: 10px 20px;
  border-radius: 6px;
  transition: background 0.3s, transform 0.3s;
  display: block;
  background-color: #e0f2f1;
}
```

```
ul.menu li a:hover {
  background-color: #4db6ac;
  color: #fff;
  transform: scale(1.05);
}
```

```
/* Table Layout Styles */
```

```
table {
```

```
width: 100%;
max-width: 700px;
margin: 30px auto;
border-collapse: collapse;
background: #ffffff;
box-shadow: 0 4px 15px rgba(0, 0, 0, 0.1);
border-radius: 10px;
overflow: hidden;
}
```

```
table td {
padding: 12px;
border-bottom: 1px solid #eeeeee;
vertical-align: middle;
color: #555;
}
```

```
table tr:last-child td {
border-bottom: none;
}
```

```
td:first-child {
font-weight: bold;
width: 35%;
color: #333;
}
```

```
/* Form Elements */
input[type="text"],
input[type="password"],
```

```
input[type="email"],
input[type="number"],
select {
  width: 95%;
  padding: 10px;
  margin: 5px 0;
  border: 1px solid #b2dfdb;
  border-radius: 6px;
  background-color: #f9f9f9;
  transition: border-color 0.3s;
}
```

```
input[type="text"]:focus,
input[type="password"]:focus,
input[type="email"]:focus,
input[type="number"]:focus,
select:focus {
  border-color: #26a69a;
  outline: none;
}
```

/ Button Styles */*

```
asp\:button, input[type="submit"], button {
  padding: 12px 25px;
  background-color: #ff8a65;
  color: white;
  border: none;
  border-radius: 6px;
  font-weight: bold;
  cursor: pointer;
```

```
transition: background 0.3s, transform 0.3s;
display: inline-block;
}
```

```
asp\\:button:hover,
input[type="submit"]:hover,
button:hover {
    background-color: #f4511e;
    transform: scale(1.05);
}
```

```
/* Links */
```

```
a {
    color: #00796b;
    text-decoration: none;
    font-weight: 500;
}
```

```
a:hover {
    color: #004d40;
    text-decoration: underline;
}
```

```
/* Form Success/Error Messages */
```

```
.status {
    color: green;
    font-weight: bold;
    display: block;
    text-align: center;
    margin-bottom: 20px;
```

```
}
```

```
.error {  
  color: #e53935;  
  font-weight: bold;  
  display: block;  
  text-align: center;  
  margin-bottom: 20px;  
}
```

```
/* Responsive Design for Smaller Devices */
```

```
@media (max-width: 768px) {  
  ul.menu {  
    flex-direction: column;  
    align-items: center;  
  }
```

```
table {  
  width: 95%;  
}
```

```
input[type="text"],  
input[type="password"],  
input[type="email"],  
input[type="number"],  
select {  
  width: 100%;  
}  
}
```

Code Snippets:

```

Home.aspx  Help.aspx  Payment.aspx  RoleAccess.aspx  CustomerRegistration.aspx  ProductSearch.aspx
1  <!DOCTYPE html>
2  <html>
3  <head>
4    <title>Home - Grocery Store Management</title>
5    <link rel="stylesheet" href="styles.css">
6  </head>
7  <body>
8    <ul class="menu">
9      <li><a href="home.html">Home</a></li>
10     <li><a href="CustomerRegistration.aspx">Register</a></li>
11     <li><a href="ProductSearch.aspx">Search</a></li>
12     <li><a href="RoleAccess.aspx">Role Access</a></li>
13     <li><a href="Payment.aspx">Payment</a></li>
14     <li><a href="Help.aspx">Help</a></li>
15   </ul>
16
17   <h2>Welcome to Grocery Store Management System</h2>
18   <p>This is the homepage where you can access all the features of the system.</p>
19 </body>
20 </html>
21

```

```

Home.aspx  Help.aspx  Payment.aspx  RoleAccess.aspx  CustomerRegistration.aspx  ProductSearch.aspx
1  <!DOCTYPE html>
2  <html>
3  <head>
4    <title>Customer Registration</title>
5    <link rel="stylesheet" href="styles.css">
6  </head>
7  <body>
8    <ul class="menu">
9      <li><a href="home.aspx">Home</a></li>
10     <li><a href="CustomerRegistration.aspx">Register</a></li>
11     <li><a href="ProductSearch.aspx">Search</a></li>
12     <li><a href="RoleAccess.aspx">Role Access</a></li>
13     <li><a href="Payment.aspx">Payment</a></li>
14     <li><a href="Help.aspx">Help</a></li>
15   </ul>
16
17   <h2>Customer Registration</h2>
18   <form>
19     <table>
20       <tr><td>Full Name:</td><td><input type="text" /></td></tr>
21       <tr><td>House:</td><td><input type="text" /></td></tr>
22       <tr><td>Street:</td><td><input type="text" /></td></tr>
23       <tr><td>City:</td><td><input type="text" /></td></tr>
24       <tr><td>State:</td><td><input type="text" /></td></tr>
25       <tr><td>Country:</td><td><input type="text" /></td></tr>
26       <tr><td colspan="2" style="text-align:center;"><input type="submit" value="Register" /></td></tr>
27     </table>
28   </form>
29 </body>
30 </html>
31

```

```

Home.aspx Help.aspx Payment.aspx RoleAccess.aspx CustomerRegistration.aspx ProductSearch.aspx
1 <!DOCTYPE html>
2 <html>
3 <head>
4 <title>Search Product</title>
5 <link rel="stylesheet" href="styles.css">
6 </head>
7 <body>
8 <ul class="menu">
9 <li><a href="home.html">Home</a></li>
10 <li><a href="CustomerRegistration.aspx">Register</a></li>
11 <li><a href="ProductSearch.aspx">Search</a></li>
12 <li><a href="RoleAccess.aspx">Role Access</a></li>
13 <li><a href="Payment.aspx">Payment</a></li>
14 <li><a href="Help.aspx">Help</a></li>
15 </ul>
16
17 <h2>Search Products</h2>
18 <form>
19 <table>
20 <tr><td>Search:</td><td><input type="text" /></td></tr>
21 <tr><td colspan="2" style="text-align:center;"><input type="submit" value="Search" /></td></tr>
22 </table>
23 </form>
24 </body>
25 </html>
26

```

```

Home.aspx Help.aspx Payment.aspx RoleAccess.aspx CustomerRegistration.aspx ProductSearch.aspx
1 <!DOCTYPE html>
2 <html>
3 <head>
4 <title>Payment</title>
5 <link rel="stylesheet" href="styles.css">
6 </head>
7 <body>
8 <ul class="menu">
9 <li><a href="home.aspx">Home</a></li>
10 <li><a href="CustomerRegistration.aspx">Register</a></li>
11 <li><a href="ProductSearch.aspx">Search</a></li>
12 <li><a href="RoleAccess.aspx">Role Access</a></li>
13 <li><a href="Payment.aspx">Payment</a></li>
14 <li><a href="Help.aspx">Help</a></li>
15 </ul>
16
17 <h2>Make a Payment</h2>
18 <form>
19 <table>
20 <tr><td>Amount:</td><td><input type="text" /></td></tr>
21 <tr><td>Payment Method:</td><td>
22 <select>
23 <option>Online</option>
24 <option>Cash on Delivery</option>
25 </select>
26 </td></tr>
27 <tr><td>Transaction ID:</td><td><input type="text" /></td></tr>
28 <tr><td colspan="2" style="text-align:center;"><input type="submit" value="Pay" /></td></tr>
29 </table>
30 </form>
31 </body>
32 </html>
33

```

```

Home.aspx Help.aspx Payment.aspx RoleAccess.aspx CustomerRegistration.aspx ProductSearch.aspx
1 <!DOCTYPE html>
2 <html>
3 <head>
4 <title>Role Access</title>
5 <link rel="stylesheet" href="styles.css">
6 </head>
7 <body>
8 <ul class="menu">
9 <li><a href="home.html">Home</a></li>
10 <li><a href="CustomerRegistration.aspx">Register</a></li>
11 <li><a href="ProductSearch.aspx">Search</a></li>
12 <li><a href="RoleAccess.aspx">Role Access</a></li>
13 <li><a href="Payment.aspx">Payment</a></li>
14 <li><a href="Help.aspx">Help</a></li>
15 </ul>
16
17 <h2>Login</h2>
18 <form>
19 <table>
20 <tr><td>Username:</td><td><input type="text" /></td></tr>
21 <tr><td>Password:</td><td><input type="password" /></td></tr>
22 <tr><td>Role:</td><td>
23 <select>
24 <option>Admin</option>
25 <option>Customer</option>
26 <option>Supplier</option>
27 </select>
28 </td></tr>
29 <tr><td colspan="2" style="text-align:center;"><input type="submit" value="Login" /></td></tr>
30 </table>
31 </form>
32 </body>
33 </html>

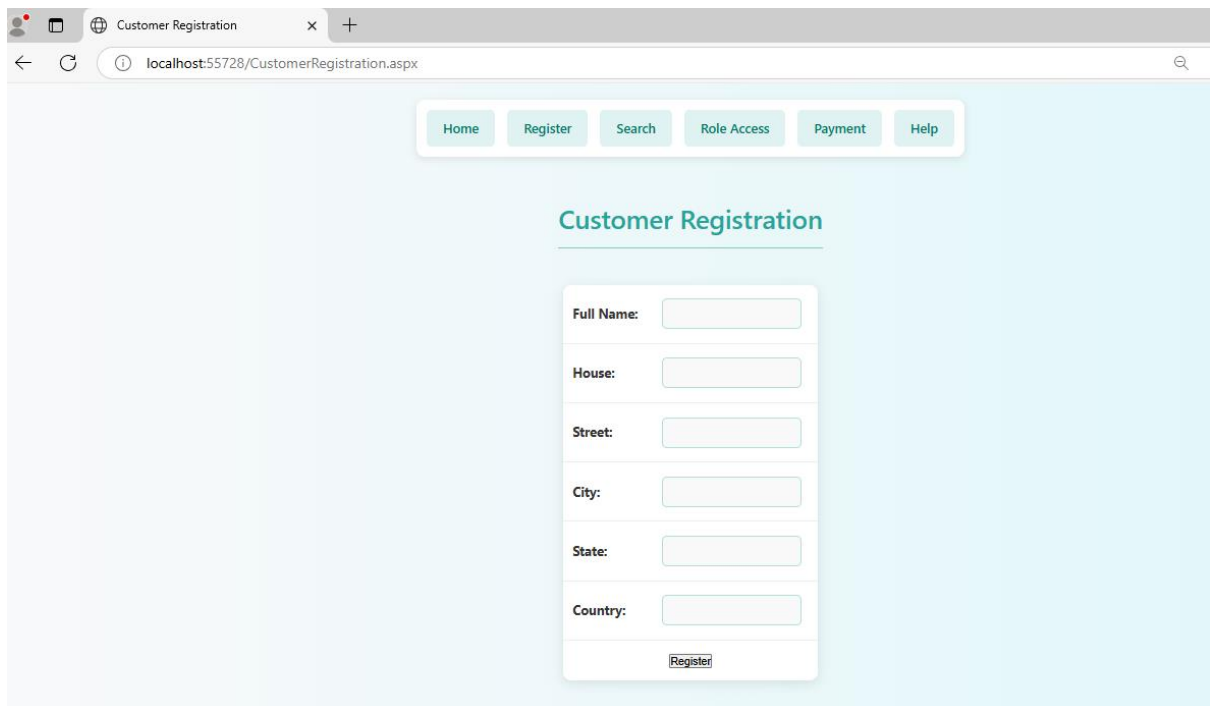
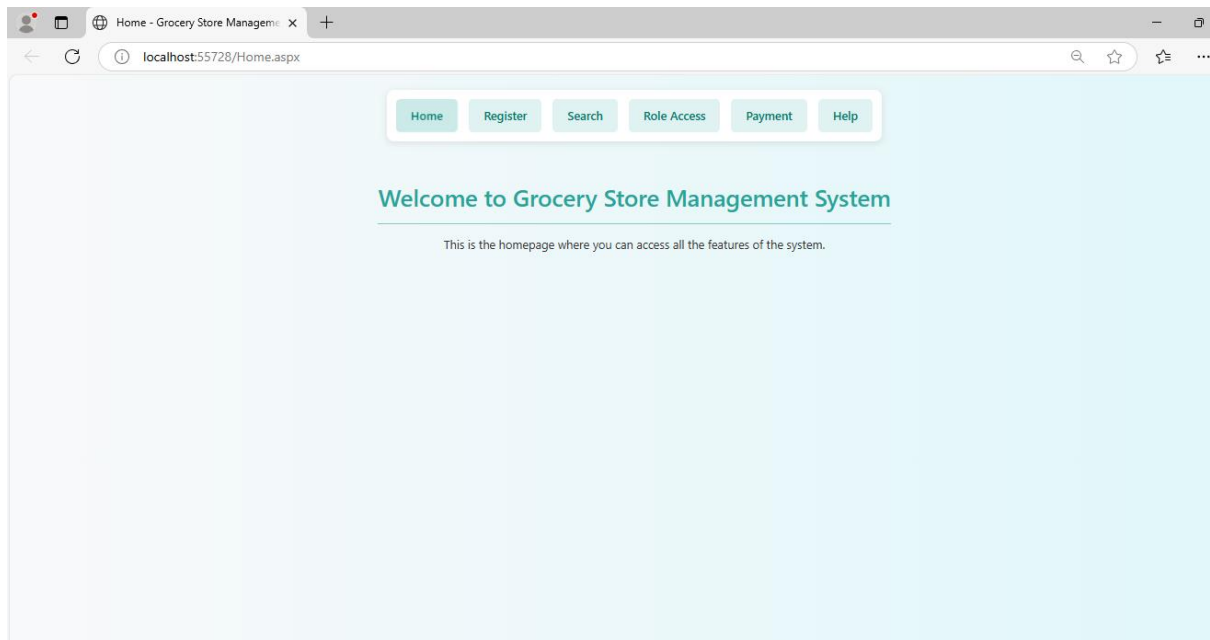
```

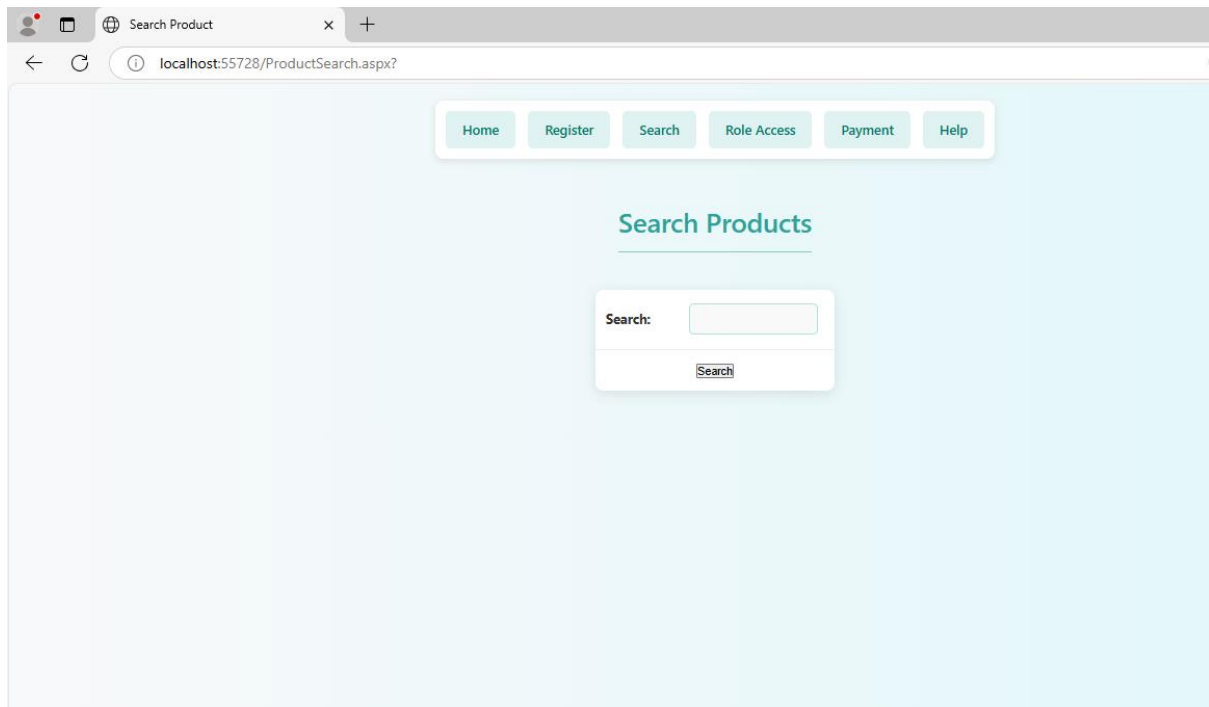
```

Home.aspx Help.aspx Payment.aspx RoleAccess.aspx CustomerRegistration.aspx ProductSearch.aspx
1 <!DOCTYPE html>
2 <html>
3 <head>
4 <title>Help</title>
5 <link rel="stylesheet" href="styles.css">
6 </head>
7 <body>
8 <ul class="menu">
9 <li><a href="home.aspx">Home</a></li>
10 <li><a href="CustomerRegistration.aspx">Register</a></li>
11 <li><a href="ProductSearch.aspx">Search</a></li>
12 <li><a href="RoleAccess.aspx">Role Access</a></li>
13 <li><a href="Payment.aspx">Payment</a></li>
14 <li><a href="Help.aspx">Help</a></li>
15 </ul>
16
17 <h2>User Help</h2>
18 <p>Use the menu above to navigate between pages. You can register, login, search for products, and make payments.</p>
19 <p>If you encounter issues, contact support@grocerystore.com</p>
20 </body>
21 </html>
22

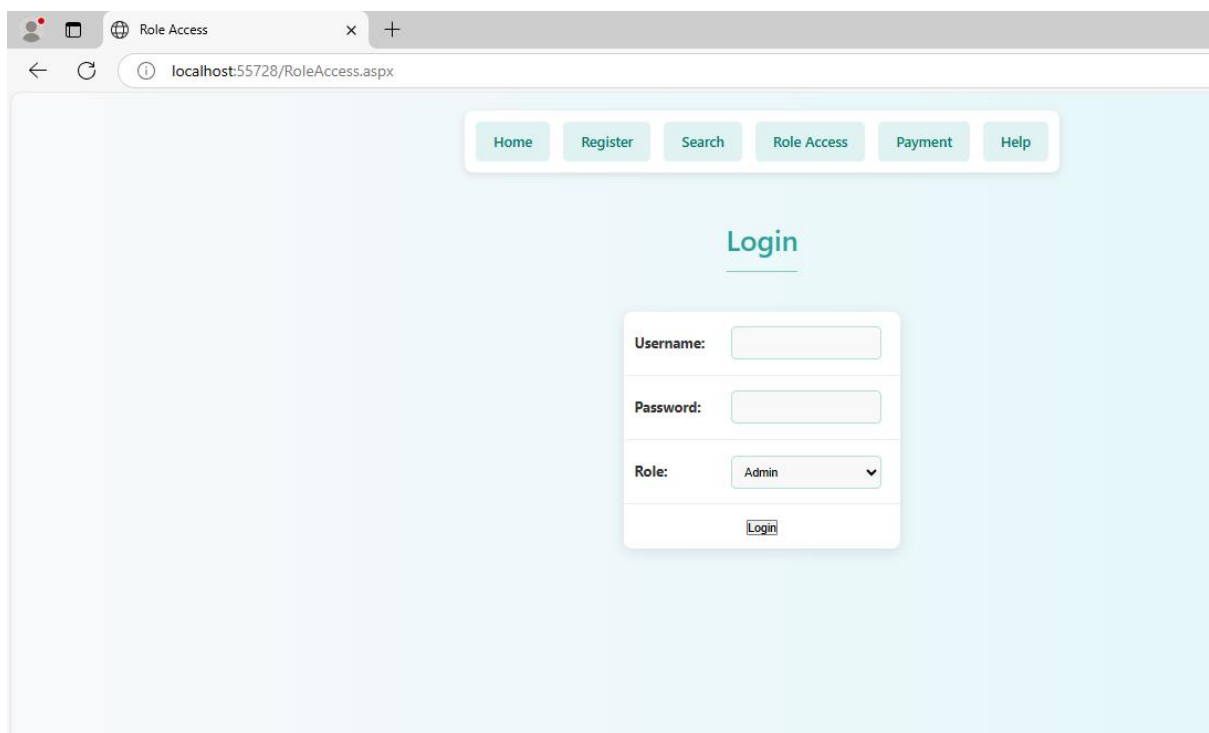
```

Opening in the browser:





The screenshot shows a web browser window with the title "Search Product". The address bar displays "localhost:55728/ProductSearch.aspx?". The page features a navigation bar with buttons for "Home", "Register", "Search", "Role Access", "Payment", and "Help". The main heading is "Search Products". Below the heading is a search form with a label "Search:" and a text input field. A "Search" button is located at the bottom of the form.



The screenshot shows a web browser window with the title "Role Access". The address bar displays "localhost:55728/RoleAccess.aspx". The page features a navigation bar with buttons for "Home", "Register", "Search", "Role Access", "Payment", and "Help". The main heading is "Login". Below the heading is a login form with three fields: "Username:" with a text input, "Password:" with a text input, and "Role:" with a dropdown menu showing "Admin". A "Login" button is located at the bottom of the form.

The top screenshot shows a web browser window with the address bar displaying 'localhost:55728/Payment.aspx'. The page has a navigation menu with buttons: Home, Register, Search, Role Access, Payment, and Help. The main heading is 'Make a Payment'. Below it is a form with three fields: 'Amount:' with a text input, 'Payment Method:' with a dropdown menu showing 'Online', and 'Transaction ID:' with a text input. A 'Pay' button is at the bottom of the form.

The bottom screenshot shows a web browser window with the address bar displaying 'localhost:55728/Help.aspx'. The page has the same navigation menu. The main heading is 'User Help'. Below it is a paragraph of text: 'Use the menu above to navigate between pages. You can register, login, search for products, and make payments. If you encounter issues, contact support@grocerystore.com'.

Problem 2: In order to further extend the scope of project you are advised to think over, how business intelligence can be incorporated in above system. You may consider the following two requirements of business intelligence:

- i) Try to apply segmentation analysis in your system?

Segmentation Analysis:

Segmentation analysis divides customers or products into groups based on specific characteristics, enabling targeted marketing and decision-making.

- **Customer Segmentation:** Group customers based on behavior (e.g., frequent shoppers, big spenders, budget shoppers).
- **Product Segmentation:** Categorize products by sales performance (e.g., top sellers, seasonal products, slow movers).
- **Implementation:** Use SQL queries to analyze data and create segments for better targeting and inventory management.

ii) How user profiling can be added?

User profiling collects and analyzes data on individual customers to tailor the shopping experience.

- **Customer Profiles:** Store demographic and behavioral data (e.g., age, gender, preferred categories).
- **Personalized Recommendations:** Suggest products based on user preferences and past behavior.
- **Engagement Tracking:** Monitor user activity (e.g., purchase frequency, last login) to enhance customer interaction.
- **Implementation:** Use SQL tables to store and analyze customer data, providing insights for targeted actions.