

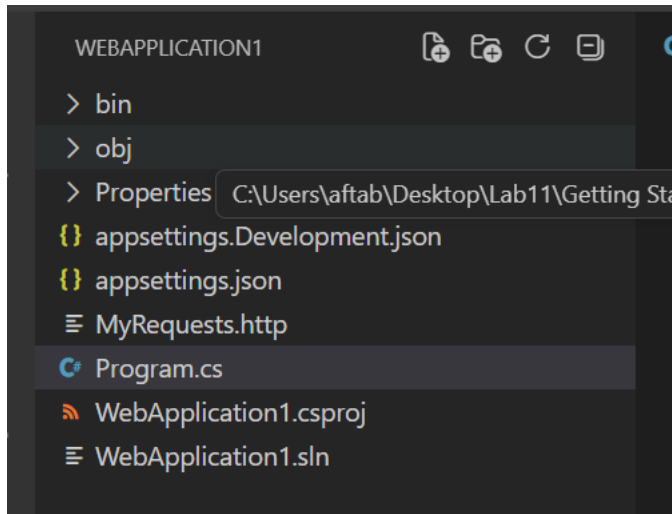
Name: Aftab Mehdi

BSCS 2023-27

IAD Lab 11 Report

Part 1: API Programming

VS Code Setup:



Program.cs

Code:

```
using Microsoft.Data.SqlClient;

var builder = WebApplication.CreateBuilder(args);
var app = builder.Build();

app.MapGet("/rcmnd/{id}", (int id) => // this is recommendation route for order
page
{

    List<int> products= new();

    string conStr="Data Source=FurnitureDB.mssql.somee.com;Initial
Catalog=FurnitureDB;User
id=aftabmehdi514_SQLLogin_1;Password=2czuxl4oz4;TrustServerCertificate=True;";

    using SqlConnection conn=new SqlConnection(conStr);

    conn.Open();
```

```

//for now lets show all products later we will do recommended only...

// string query="select * from product_t";

// lets make it acutal recommendation systemm
// What we gonna do is Lets grab all orders wehre this product is present
// then from those orders we will show other products that are infact
// being ordered together in same order
// lets try to build query
// Getting Orders where that product exist: select Order_Id from
order_line_t where product_id=1
// now all other products that are in this order but not this product
// string rcmndQuery="select product_id from order_line_t where order_id
in(select Order_Id from order_line_t where product_id=1) AND Product_Id <> 1 ";
// this will give some ids again and again instead of taking distincK
lets get advantage of this
// and try to show in order by frequencye.... using Verbatim String for
multiline
string rcmndFinalQuery=@"

select product_id, count(*) as prdscnts
from order_line_t
where order_id in (

select order_id from order_line_t
where product_id=@id

)
and product_id<>@id
group by product_id
order by prdscnts desc

";

SqlCommand cmd= new SqlCommand(rcmndFinalQuery,conn);
cmd.Parameters.AddWithValue("@id",id);
SqlDataReader dr= cmd.ExecuteReader();

```

```

while (dr.Read())
{
    products.Add(Convert.ToInt32(dr["Product_id"]));
}
return products;
});

// now lets make another end pointe
// now lets make end point to recomemnd products on customer dashboard
// this will receive customer id ...

app.MapGet("/dashboardRcmd/{cid}", (int cid) => // end point for dashboard
recommendations
{
    List <int> prods=new();

string conStr="Data Source=FurnitureDB.mssql.somee.com;Initial
Catalog=FurnitureDB;User
id=aftabmehdi514_SQLLogin_1;Password=2czuxl4oz4;TrustServerCertificate=True;";

    using SqlConnection conn=new SqlConnection(conStr);
    conn.Open();
    /* lets develop query step by step for filtereing...
    lets get custoemr state first
    string q1="select customer_State from customer_t where customer_id=3005";
    2nd step lets get all other custoemr of that state
    */
    /* string q2=@"select customer_id
    from customer_t
    where Customer_state='kr'
    And customer_id <> 1
    ";
    */
    // ok, so now finds products that thse customer bought
    // using q2 as inneer querye

    // need to take join

    /* string q3=@"
        select ol.Product_id
        from order_t o
        join order_line_t ol ON o.order_id=ol.order_id
        where o.customer_id in (q2)

```

```

";
*/
// so final quere wiht parametrized customer id
string q4=@"

select ol.Product_id,count(*) as prods
from order_t o
JOIN Order_Line_t ol
ON o.Order_Id = ol.Order_Id

where o.customer_id in (

select customer_id

from customer_t

where customer_state in(
select customer_state from customer_t where
customer_id=@cid
)

and customer_id<>@cid
)
group by ol.Product_id
order by prods DESC

";

// string query2="select * from product_t";
SqlCommand cmd2 = new SqlCommand(q4,conn);
cmd2.Parameters.AddWithValue("@cid",cid);
SqlDataReader dr=cmd2.ExecuteReader();
while (dr.Read())
{
prods.Add(Convert.ToInt32(dr["Product_id"]));
}

return prods;
});

```

```

// Just for practise ignore for lab 11

app.MapGet("/", () => "Hello World! This is Aftab ");
app.MapGet("/Employees", () => new[]
{
    new Employee("emp1"),new Employee("emp2")
});

//app.MapGet("/users/{id}?", (int id,User user) => $"This what valsue i will give
back {id}");

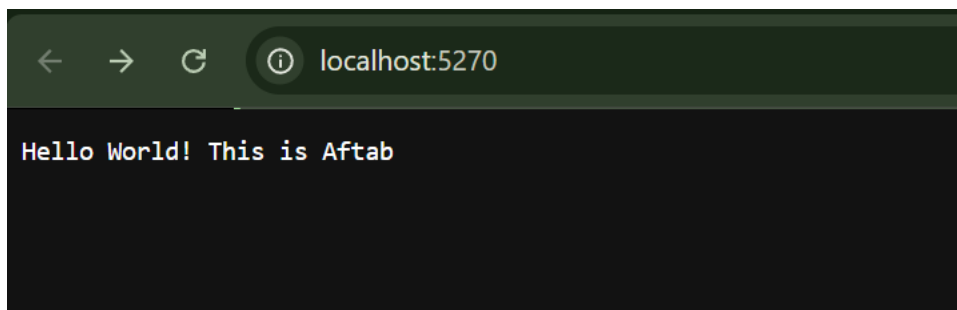
app.MapPost("/users/{id}",
(int id,User user) => $"receive this user naem {user.Name} wiht id {user.Id}"
);

app.Run();

record Employee(string Name);
record User(int Id, string Name);

```

Run Test:



Part 2: WebSite

1.Customer Dashboard

Aspx:

```
<%@ Page Language="VB" AutoEventWireup="false" CodeFile="CustomerDashboard.aspx.vb"
Inherits="CustomerDashboard" Async="true" %>
```

```
<!DOCTYPE html>
```

```
<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
  <title>Customer Dashboard</title>
  <style>
    body {
      font-family: Arial, sans-serif;
    }
    .header {
      background: black;
      color: white;
      padding: 10px;
      text-align: center;
    }
    .header a {
      color: white;
    }

    .main {
      display: flex;
      gap: 20px;
      margin-top: 20px;
      flex-wrap: wrap;
      border: 1px solid;
      border-radius: 8px;
      padding: 10px;
    }
    .allprodDiv {
      display: flex;
      gap: 20px;
      margin-top: 20px;
      flex-wrap: wrap;
      border: 1px solid;
      border-radius: 8px;
      padding: 10px;
    }
    .ItemButtons {
      margin-top: 20px;
    }
    .p1, .p2, .p3 {
      background-color: lightgrey;
      width: 12%;
      padding: 15px;
      text-align: center;
      border-radius: 5px;
    }
  </style>
</head>
<body>
```

```

    }
    #messagesDiv {
        margin-top: 20px;
        padding: 15px;
        border: 1px solid;
        border-radius: 8px;
    }
    #msgDiscDiv {
        display: flex;
        gap: 20px;
        margin-top: 20px;
    }
}
#discountDiv {
    margin-top: 20px;
    padding: 15px;
    border: 1px solid;
    border-radius: 8px;
}
.prodlink {
    text-decoration:none;
}
}

</style>
</head>
<body>
    <form id="form1" runat="server">
        <div>

<div class="header">
    Pine Valley Furniture |
    <a href="Search.aspx">Search </a> |
    <a href="About.aspx">About </a> |
    <a href="Help.aspx">Help </a> |
    <asp:Button id="LogOutButton" runat="server" Text="LogOut"
OnClick="LogOutButton_Click" />
</div>

<h2>Welcome Back Dear Customer! </h2>
<asp:Label id="idLabel" runat="server" Text=""></asp:Label>
<h2>Recommended Products</h2>

<div class="main" runat="server" id="main">
</div>
<div id="msgDiscDiv" runat="server">
    <div id="messagesDiv" runat="server">
        <h4 style="margin:2% 30%">Message Panel</h4>

    </div>

    <div id="discountDiv" runat="server">
        <h4 style="margin:2% 30%">Your Discounts</h4>
    </div>

</div>

<div id="discountDiv" runat="server">
    <h4 style="margin:2% 30%">Your Discounts</h4>
</div>

</div>
<h2>All Products</h2>

```

```

<div id="allProdDiv" runat="server" class="allprodDiv" >
</div>

</div>
</form>
</body>
</html>

```

Vb:

Recommendation Function:

```

Async Function showRcmdProds(conStr As String, id As Integer) As Task
    main.InnerHtml = ""
    Dim newConn As New SqlConnection
    newConn.ConnectionString = conStr
    Dim query As String = "select * from Product_t"
    Dim cmd As New SqlCommand
    cmd.Connection = newConn
    cmd.CommandText = query
    Try
        Dim url As String = "http://localhost:5270/dashboardRcmd/" & id

        'Dim client As New WebClient()
        'Dim result As String = client.DownloadString(url)
        'lets use more better approach non blocking

        Dim client As New HttpClient()
        Dim result As String = Await client.GetStringAsync(url)

        '    main.InnerHtml = result
        '    Response.Write(result)
        ' lets parse get data using jarry

        Dim idsArray As JArray = JArray.Parse(result)
        Dim singleProdDiv As String = ""
        newConn.Open()
        ' lets loop throught each item

        For Each item In idsArray

            Dim prodId As Integer = Convert.ToInt32(item)

```

```

' lets get product details

Dim qry As String = "SELECT * FROM Product_t WHERE Product_Id=@id"
Dim cmd3 As New SqlCommand(qry, newConn)

cmd3.Parameters.AddWithValue("@id", prodId)

Dim dr As SqlDataReader = cmd3.ExecuteReader()

While dr.Read()
    singleProdDiv &= ""
    singleProdDiv &= "<div class='p2'>"
    singleProdDiv &= "<div class=prodDtls>"
    singleProdDiv &= "<img src='Assets/p2.jpg' height='80px' width='80px'>"
    singleProdDiv &= "<br><b>Description:</b><br>"
    singleProdDiv &= dr("Product_Description").ToString()
    singleProdDiv &= "<br>"
    singleProdDiv &= "<b>Price:</b> "
    singleProdDiv &= dr("Standard_Price").ToString()
    singleProdDiv &= "</div>"
    singleProdDiv &= "<div class='ItemButtons'>"
    singleProdDiv &= "<a href='Order.aspx?ProductId=" & dr("Product_Id") &
" style='padding:8px 15px; background:black; color:white; text-decoration:none;
border-radius:4px;'>"
    singleProdDiv &= " Buy </a>"

    singleProdDiv &= "</div>"

    singleProdDiv &= "</div>"

End While

dr.Close()

Next
main.InnerHtml = singleProdDiv
newConn.Close()

Catch ex As Exception
    main.InnerHtml = "<b> Unable to load recommendations!"
End Try

End Function

```

Another new Function to show simply all products

```

Sub ShowProducts(conStr As String)
    Dim newConn As New SqlConnection
    newConn.ConnectionString = conStr
    Dim query As String = "select * from Product_t"
    Dim cmd As New SqlCommand
    cmd.Connection = newConn
    cmd.CommandText = query

```

```

Try
    newConn.Open()
    Dim dr As SqlDataReader = cmd.ExecuteReader()
    Dim singleProdDiv As String = ""
    While dr.Read()
        singleProdDiv &= ""
        ' singleProdDiv &= "<a href='Order.aspx?ProductId='" & dr("Product_Id")
& "' class='prodlink' >"
        singleProdDiv &= "<div class='p2'>"
        singleProdDiv &= "<div class=prodDtls>"
        singleProdDiv &= "<img src='Assets/p2.jpg' height='80px' width='80px'>"
        singleProdDiv &= "<br><b>Description:</b><br>"
        singleProdDiv &= dr("Product_Description").ToString()
        singleProdDiv &= "<br>"
        singleProdDiv &= "<b>Price:</b> "
        singleProdDiv &= dr("Standard_Price").ToString()
        singleProdDiv &= "</div>"
        singleProdDiv &= "<div class='ItemButtons'>"
        singleProdDiv &= "<a href='Order.aspx?ProductId=" & dr("Product_Id") &
"' style='padding:8px 15px; background:black; color:white; text-decoration:none;
border-radius:4px;'>"
        singleProdDiv &= " Buy </a>"

        singleProdDiv &= "</div>"

        singleProdDiv &= "</div>"
    End While
    allProdDiv.InnerHtml = singleProdDiv
    dr.Close()
    newConn.Close()
Catch ex As Exception
    main.InnerHtml = "<b>Error loading product " & ex.Message
    newConn.Close()
End Try

```

End Sub

Other Previous Code:

```

Imports System.Data.SqlClient
Imports System.Net (for web client)
Imports System.Net.Http
Imports System.Threading.Tasks
Imports Newtonsoft.Json.Linq

Partial Class CustomerDashboard
    Inherits BasePage

    Dim customerId As Integer = -1
    Private Async Sub CustomerDashboard_Load(sender As Object, e As EventArgs) Handles
Me.Load
        'When session will expire it will return the control to login page...
        If Session("UserId") Is Nothing Then
            Response.Redirect("LogIn.aspx", False) ' this 2nd argument is to for safety
from bcz Async operation is running Thread is killed instantlyThread was being aborted
exceptpion
        End Sub

```

```

        End If
        'Hosted DB connection String
        Dim conStr As String = "Data Source=FurnitureDB.mssql.somee.com;Initial
Catalog=FurnitureDB;User
id=aftabmehdi514_SQLLogin_1;Password=2czuxl4oz4;TrustServerCertificate=True;"
        ' Local DB connection string
        ' Dim conStr As String = "Data Source=MEHTABPC\SQLEXPRESS;Initial
Catalog=FurnitureDB;Persist Security Info=True;User ID=mehtab;Password=aftab"

        CheckPermission("ViewCustomerDashboard")

        Using conn As New SqlConnection(conStr)
            conn.Open()
            customerId = GetCustomerId(Session("UserId"), conn)
            ShowCustomerMessages(customerId, conn)
            ShowCustomerDiscounts(customerId, conn)
            ShowProducts(conStr)
            'showRcmdProds(conStr, customerId) lets make it async so that no black
appears before page load
            Await showRcmdProds(conStr, customerId)
        End Using

    End Sub

    Protected Sub LogOutButton_Click(sender As Object, e As EventArgs) Handles
LogOutButton.Click
        Session.Abandon()
        Response.Redirect("LogIn.aspx")

    End Sub

    Private Function GetCustomerId(userId As Integer, conn As SqlConnection) As Integer
        ' Response.Write("Custoemr Dashboard received user id : " & userId)
        ' we used isnull a better approach crash free..!
        Dim cmd As New SqlCommand("SELECT ISNULL(Customer_Id, -1) FROM Customer_t WHERE
UserId = @uid", conn)

        cmd.Parameters.AddWithValue("@uid", userId)
        ' making the result crash free....
        Dim result As Integer = -1
        Try
            result = cmd.ExecuteScalar()
        Catch
            result = -1
        End Try
        ' Response.Write("<br> found customer id " & result)
        idLabel.Text = "<h2>" & result & "</h2>"

        Return result

    End Function
    Protected Sub ShowCustomerMessages(customerId As Integer, conn As SqlConnection)

        Dim cmd As New SqlCommand("SELECT MessageText, CreatedDate FROM SegmentMessages
WHERE CustomerId = @customerId ORDER BY CreatedDate DESC", conn)
        cmd.Parameters.AddWithValue("@customerId", customerId)

```

```

Dim reader As SqlDataReader = cmd.ExecuteReader()

While reader.Read()
    ' Response.Write("<b><p>" & reader("MessageText").ToString() &
"</p></b><br>" & reader("CreatedDate").ToString() & "<hr>")
    messagesDiv.InnerHtml &= "<b>" & reader("MessageText").ToString() &
"</b><br>" & "<p>" & reader("CreatedDate").ToString() & "</p><hr>"
End While

'Dim reader As SqlDataReader = cmd.ExecuteReader()

' While reader.Read()
'Response.Write("<p>" & reader("Message").ToString() & "</p>")
'End While
reader.Close()

End Sub

Private Sub ShowCustomerDiscounts(customerId As Integer, conn As SqlConnection)
    ' Response.Write("show discounts received customer id as : " & customerId)
    Dim query As String = "Select DiscountPercent, Reason, StartDate, EndDate From
CustomerDiscounts WHERE CustomerId = @cid ORDER BY StartDate DESC"

    Dim cmd As New SqlCommand(query, conn)
    cmd.Parameters.AddWithValue("@cid", customerId)

    Dim reader As SqlDataReader = cmd.ExecuteReader()

    While reader.Read()

        Dim percent As Integer = reader("DiscountPercent")
        Dim reason As String = reader("Reason").ToString()
        Dim startD As Date = Convert.ToDateTime(reader("StartDate"))
        Dim endD As Date = Convert.ToDateTime(reader("EndDate"))

        Dim today As Date = Date.Now

        Dim status As String = ""
        Dim daysLeft As String = ""

        If today < startD Then
            status = "Upcoming"
            daysLeft = "Starts In " & (startD - today).Days & " days"

        ElseIf today >= startD And today <= endD Then
            status = "Active"
            daysLeft = "Expires In " & (endD - today).Days & " days"

        Else
            status = "Expired"
            daysLeft = "Expired"
        End If

        discountDiv.InnerHtml &= "<div style='border:1px solid gray; padding:10px;
margin:5px; border-radius:6px; '>"
        discountDiv.InnerHtml &= "<b>" & percent & "% OFF</b><br>"
        discountDiv.InnerHtml &= "Reason: " & reason & "<br>"
        discountDiv.InnerHtml &= "<b>" & status & "</b> | " & daysLeft
    End While
End Sub

```

```

discountDiv.InnerHtml &= "</div>"

End While

reader.Close()

End Sub

```

Screen Shot:

The screenshot shows a web page for Pine Valley Furniture. At the top, there is a navigation bar with the text "Pine Valley Furniture | Search | About | Help | 800.235.2352". Below this, a message says "Welcome Back Dear Customer!" followed by the number "3005".

The main content area is titled "Recommended Products" and features a grid of five product cards. Each card includes a small image, a description, and a price:

- Gaming Chair: Price: 450.00
- Office Table: Price: 600.00
- Bookshelf: Price: 300.00
- Wooden Cabinet: Price: 900.00
- Entertainment Center: Price: 650.00

Each product card has a "Buy" button at the bottom.

Below the product grid, there are two panels:

- Message Panel:** This message is being sent to premium customers! 4/30/2026 8:57:57 AM. Congratulations! On Becoming Most premium Customer of PVFC 4/19/2026 5:30:33 AM.
- Your Discounts:** 10% OFF Reason: Special Discount for Premium | Active | Expires in 19 days.

At the bottom, there is a section titled "All Products" with a grid of seven product cards, each with a "Buy" button:

- Price: 122.00
- Price: 1222.00
- Computer Desk: Price: 375.00
- Entertainment Center: Price: 650.00
- Writers Desk: Price: 325.00
- 8-Drawer Desk: Price: 750.00
- this is updated description: Price: 500.00

2.Order Page

```

Aspx: <%@ Page Language="VB" AutoEventWireup="false" CodeFile="Order.aspx.vb"
Inherits="Order" %>

```

```

<!DOCTYPE html>

```

```

<html xmlns="http://www.w3.org/1999/xhtml">

```

```

<head runat="server">

```

```

<title>Order Page</title>

```

```

<style>

```

```

body{

```

```

font-family:Arial;

```

```

}

```

```

.Container{

```

```

display:flex;

```

```

        gap:20px;
        flex-direction:row;
    }

    .ProdDetailsDiv{
        border:1px solid #ccc;
        padding:20px;
        width:250px;
    }

    .RcmndContainer{
        display:flex;
        gap:15px;
        flex-wrap:wrap;
        flex-direction:row;
        align-items:flex-start;
    }

    .RcmndProd{
        border:1px solid #ccc;
        padding:15px;
        width:220px;
        border-radius:10px;
    }
    .prodlink{
        text-decoration:none;
        color:black;
    }
        .prodlink:hover {
            background-color:lightgrey;
        }

</style>

</head>
<body>
    <form id="form1" runat="server">
        <div>

<h2>Product Details</h2>
        <div class="Container">
            <div class="ProdDetailsDiv">

                <br /><br />

                Product Description:
                <asp:Label ID="lblProdDescrip" runat="server" Text=""></asp:Label>

                <br />
                Product Price:
                <asp:Label runat="server" ID="lblProdPrice" Text=""></asp:Label><br /><br />

            </div>

        </div>

        <h3>Recommended Products</h3><br />
        <div class="RcmndContainer" runat="server" ID="RcmndContainer">

<!-- <asp:Label runat="server" ID="lblRcmnd"></asp:Label>-->

```

```
</div>
```

```
<hr />
```

```
<hr />
```

```
Order Quantity:  
<input type="number" value="1" min="1"><br><br>
```

```
Delivery Charges: $5<br>  
Final Order Price: $30<br><br>
```

```
<a href="Payment.html">  
  <button>Place Order</button>  
</a>
```

```
<hr>
```

```
<h3>Order Details</h3>
```

```
Product Name: <br>  
Customer Name: <br>  
Customer Address: <br>  
Final Order Cost: <br>
```

```
      </div>  
    </form>  
</body>  
</html>
```

Vb:

Recommendation Function

```
Sub LoadProductDetails(prodId As Integer)  
  Dim query As String = "Select * from Product_t where Product_id=@p"  
  
  conn.ConnectionString = conStr  
  
  Dim cmd As New SqlCommand(query, conn)  
  cmd.Parameters.AddWithValue("@p", prodId)
```

```

Try
    conn.Open()
    Dim dr As SqlDataReader = cmd.ExecuteReader()

    While dr.Read()
        lblProdDescrip.Text = dr("Product_Description")
        lblProdPrice.Text = dr("Standard_Price")

    End While
    dr.Close()
    conn.Close()
Catch ex As Exception
    Response.Write(ex.Message)
    conn.Close()
End Try

End Sub

Sub LoadRcmnds(prodId As Integer)

    Try

        Dim url As String = "http://localhost:5270/rcmnd/" & prodId

        Dim client As New WebClient() ' no async...
        Dim result As String = client.DownloadString(url)

        Dim arr As JArray = JArray.Parse(result) ' we are using jarray defined in as
imported above in newtonsoft.json namespace

        ' Response.Write(arr)

        ' now we can loop through easilty

        Dim prodDiv As String = ""
        conn.Open()
        For Each item In arr
            Dim div As String = ""

            ' lblRcmd.Text &= item("productId").ToString
            'lblRcmd.Text &= "<br>"
            'lets get recommended product id

            Dim productId As Integer = Convert.ToInt32(item)

            ' now lets retrieve infromation of each product

            Dim query As String = "SELECT Product_Description, Standard_Price FROM
Product_t WHERE Product_id=@id"

            Dim cmd As New SqlCommand(query, conn)

            cmd.Parameters.AddWithValue("@id", productId)

            Dim dr As SqlDataReader = cmd.ExecuteReader()

```

```

        While dr.Read()
            div &= "<a href='Order.aspx?ProductId=" & productId & " '
class='prodlink'> "
            div &= " <div Class='RcmdProd' > "
            div &= "<img src='Assets/p2.jpg' height='80px' width='80px'>"
            div &= "<br><b>Description:</b><br>"
            div &= dr("Product_Description").ToString()

            div &= "<br>"

            div &= "<b>Price:</b> "
            div &= dr("Standard_Price").ToString()

            div &= "</div></a>"

        End While
        RcmdContainer.InnerHtml &= div

```

```

        dr.Close()
    Next

    conn.Close()
    Catch ex As Exception
        RcmdContainer.InnerHtml = "Recommendations Not Available!"
    End Try

```

End Sub

Other Code :

```

Imports Newtonsoft.Json.Linq
Imports System.Data.SqlClient
Imports System.Net

```

```

Partial Class Order
    Inherits BasePage
    Dim conStr As String =
    ConfigurationManager.ConnectionStrings("FurnitureDB").ConnectionString
    Dim conn As New SqlConnection

```

```

    Private Sub Order_Load(sender As Object, e As EventArgs) Handles Me.Load

```

```

        CheckPermission("ViewOrder")

        conn.ConnectionString = conStr
        If Not IsPostBack Then

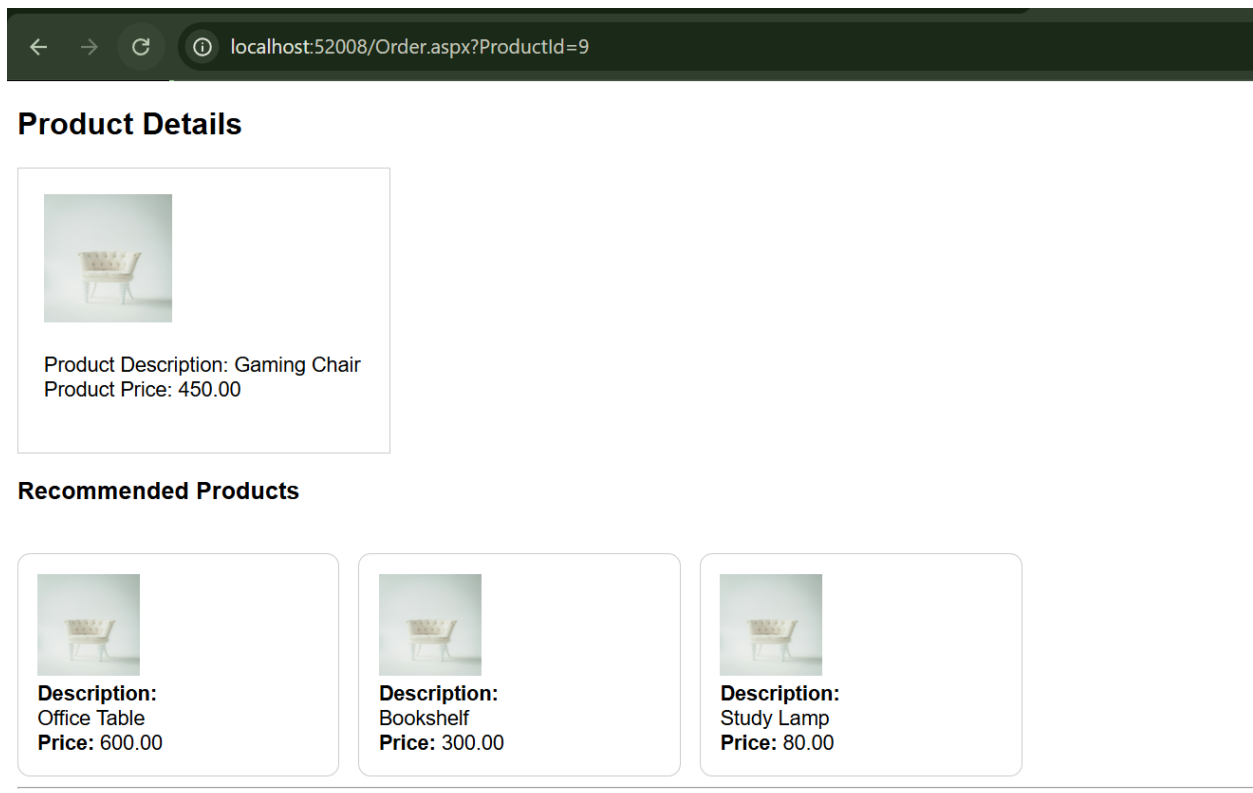
            Dim prodId As Integer
            If Not Integer.TryParse(Request.QueryString("ProductId"), prodId) Then
                Response.Redirect("CustomerDashboard.aspx")
            Exit Sub
            End If

```

```
'Dim prodId As Integer = 2
LoadProductDetails(prodId)
LoadRcmnds(prodId)
End If
```


End Sub

Screen shot:




The screenshot shows a web browser window with the address bar displaying `localhost:52008/Order.aspx?ProductId=9`. The page content is as follows:

Product Details




Product Description: Gaming Chair
Product Price: 450.00


Recommended Products



Description:
Office Table
Price: 600.00



Description:
Bookshelf
Price: 300.00



Description:
Study Lamp
Price: 80.00
