

Practical 3

AIM:

Develop a Student Management System using ASP.NET Web Forms and ADO.NET that allows for efficient student data handling, secure session management, and a consistent user interface. The system must align with modular design principles and maintain data integrity through structured validation and efficient data access methods.

System Requirements

I. Student Enrollment Management Module

Design and implement a student enrollment form that captures essential student information and ensures proper validation for mandatory fields including:

- Student Name
- Roll Number
- Course
- Enrollment Date
- Email ID
- Mobile Number

Technical requirements:

- Implement ASP.NET validation controls (e.g., RequiredFieldValidator, RegularExpressionValidator) to enforce input correctness.
- Use Session State to temporarily store form data to handle navigation without losing entered information.
- Use ADO.NET DataSet for inserting and updating data.
- Use ADO.NET DataReader for fast, forward-only retrieval of student records for read-only views.
- Auto-generate a unique StudentID using a logic that combines timestamp and student initials to ensure uniqueness across entries.

II. Admin Dashboard for Student Data Management

Develop an admin panel using GridView for complete student data management, including functionalities for viewing, adding, editing, and deleting records.

Technical requirements:

- Populate GridView using DataReader for display operations and DataSet for data manipulation.
- Enable paging in GridView to manage large volumes of student records.
- Include editing and deleting capabilities with confirmation dialogs.

- Allow data filtering based on specific attributes such as Course or Enrollment Year using dropdowns or text inputs.

Code:

Enrollment.aspx:

```
<%@Page Title="Student Enrollment" Language="C#"
MasterPageFile="~/Master/Site1.Master" AutoEventWireup="true"
CodeBehind="Enrollment.aspx.cs" Inherits="Pra3.Pages.Enrollment" %>

<asp:Content ID="Content1" ContentPlaceHolderID="head" runat="server">

<asp:Content ID="Content2" ContentPlaceHolderID="ContentPlaceHolder1"
runat="server">

    <h2>Student Enrollment Form</h2>

    <table class="form-table">

        <tr>
            <td class="auto-style1">Student Name:</td>

            <td>
                <asp:TextBox ID="txtName" runat="server"></asp:TextBox>

                <asp:RequiredFieldValidator ID="rfvName" runat="server"
ControlToValidate="txtName" ErrorMessage="Required"
CssClass="error"></asp:RequiredFieldValidator>

            </td>
        </tr>

        <tr>

            <td>Roll Number:</td>

            <td>
                <asp:TextBox ID="txtRoll" runat="server"></asp:TextBox>

                <asp:RequiredFieldValidator ID="rfvRoll" runat="server"
ControlToValidate="txtRoll" ErrorMessage="Required" CssClass="error" />

            </td>
        </tr>
```

```

<tr>
  <td>Course:</td>

  <td>
    <asp:TextBox ID="txtCourse" runat="server"></asp:TextBox>

    <asp:RequiredFieldValidator ID="rfvCourse" runat="server"
ControlToValidate="txtCourse" ErrorMessage="Required" CssClass="error" />

  </td>
</tr>

<tr>
  <td>Enrollment Date:</td>
  <td>

    <asp:TextBox ID="txtDate" runat="server"></asp:TextBox>

    <asp:RequiredFieldValidator ID="rfvDate" runat="server"
ControlToValidate="txtDate" ErrorMessage="Required" CssClass="error" />

    <asp:RegularExpressionValidator ID="revDate" runat="server"
ControlToValidate="txtDate" ValidationExpression="^\d{4}-\d{2}-\d{2}$"
ErrorMessage="Format: YYYY-MM-DD"
CssClass="error"></asp:RegularExpressionValidator>

  </td>
</tr>

<tr>
  <td>Email ID:</td>
  <td>

    <asp:TextBox ID="txtEmail" runat="server"></asp:TextBox>

    <asp:RequiredFieldValidator ID="rfvEmail" runat="server"
ControlToValidate="txtEmail" ErrorMessage="Required" CssClass="error" />

    <asp:RegularExpressionValidator ID="revEmail" runat="server"
ControlToValidate="txtEmail"
ValidationExpression="^[^@\\s]+@[^@\\s]+\\.([^@\\s]+)$" ErrorMessage="Invalid
Email Address" CssClass="error" />

  </td>
</tr>

<tr>
  <td>Mobile Number:</td>
  <td>

    <asp:TextBox ID="txtMobile" runat="server"></asp:TextBox>

```

```

        <asp:RequiredFieldValidator ID="rfvMobile" runat="server"
ControlToValidate="txtMobile" ErrorMessage="Required" CssClass="error" />

        <asp:RegularExpressionValidator ID="revMobile" runat="server"
ControlToValidate="txtMobile" ValidationExpression="^\d{10}$"
ErrorMessage="10 digits only" CssClass="error" />

    </td>
</tr>

<tr>
    <td colspan="2">

        <asp:Button ID="btnSubmit" runat="server" Text="Enroll Student"
OnClick="btnSubmit_Click" />

    </td>
</tr>

<tr>
    <td colspan="2">

        <asp:Label ID="lblMessage" runat="server"
CssClass="success"></asp:Label>

    </td>
</tr>
</table>
</asp:Content>

```

Enrollment.aspx.cs:

```

using System;
using System.Collections.Generic;
using System.Configuration;
using System.Data;
using System.Data.SqlClient;
using System.Linq;
using System.Web;
using System.Web.UI;
using System.Web.UI.WebControls;
using System.Xml.Linq;

namespace Pra3.Pages
{
    public partial class Enrollment : System.Web.UI.Page
    {

```

```

string connStr =
ConfigurationManager.ConnectionStrings["MyDbConn"].ConnectionString;
protected void Page_Load(object sender, EventArgs e)
{

    if (Session["Username"] == null)
        Response.Redirect("~/Pages/Login.aspx");

    if (!IsPostBack && Session["FormData"] != null)
    {
        // Restore form data from session
        var data = (string[])Session["FormData"];
        txtName.Text = data[0];
        txtRoll.Text = data[1];
        txtCourse.Text = data[2];
        txtDate.Text = data[3];
        txtEmail.Text = data[4];
        txtMobile.Text = data[5];

    }

}

protected void btnSubmit_Click(object sender, EventArgs e)
{
    if(Page.IsValid)
    {
        // Store in session
        Session["FormData"] = new string[]

        {
            txtName.Text, txtRoll.Text, txtCourse.Text,
            txtDate.Text, txtEmail.Text, txtMobile.Text
        };

        string studentID = GenerateStudentID(txtName.Text);

        using (SqlConnection conn = new SqlConnection(connStr))
        {
            DataSet ds = new DataSet();
            SqlDataAdapter da = new SqlDataAdapter("select * from Students",
conn);

            SqlCommandBuilder cb= new SqlCommandBuilder(da);

            da.Fill(ds, "Students");

            DataRow newRow = ds.Tables["Students"].NewRow();

            newRow["StudentID"] = studentID;
            newRow["FullName"] = txtName.Text;

```

```

        newRow["RollNumber"] = txtRoll.Text;
        newRow["Course"] = txtCourse.Text;
        newRow["EnrollmentDate"] = DateTime.Parse(txtDate.Text);
        newRow["Email"] = txtEmail.Text;
        newRow["MobileNumber"] = txtMobile.Text;

        ds.Tables["Students"].Rows.Add(newRow);
        da.Update(ds, "Students");

    }

    lblMessage.Text = "Student enrolled successfully!";
    Session.Remove("FormData");
    ClearForm();

}

private string GenerateStudentID(string name)
{
    string initials = "";
    foreach(var part in name.Split(' '))
    {
        if (part.Length > 0) initials += part[0];
    }
    return initials.ToUpper() + DateTime.Now.ToString("yyyyMMddHHmmss");
}

private void ClearForm()
{
    txtName.Text = txtRoll.Text = txtCourse.Text = txtDate.Text = txtEmail.Text
= txtMobile.Text = "";
}

}
}

```

StudentDetails.aspx:

```

<%@ Page Title="Student Details" Language="C#"
MasterPageFile="~/Master/Site1.Master" AutoEventWireup="true"
CodeBehind="StudentDetails.aspx.cs" Inherits="Pra3.Pages.StudentDetails" %>

```

```

<asp:Content ID="Content2" ContentPlaceHolderID="ContentPlaceHolder1"
runat="server">

```

```

    <h2>All Students (Read-only View)</h2>

```

```
<asp:GridView ID="gvStudents" runat="server"
AutoGenerateColumns="true"></asp:GridView>

</asp:Content>
```

StudentDetails.aspx.cs:

```
using System;
using System.Collections.Generic;
using System.Configuration;
using System.Data;
using System.Data.SqlClient;
using System.Linq;
using System.Web;
using System.Web.UI;
using System.Web.UI.WebControls;

namespace Pra3.Pages
{
    public partial class StudentDetails : System.Web.UI.Page
    {
        string connStr =
ConfigurationManager.ConnectionStrings["MyDbConn"].ConnectionString;
        protected void Page_Load(object sender, EventArgs e)
        {
            if (!IsPostBack)
            {
                LoadStudents();
            }
        }

        private void LoadStudents()
        {
            using (SqlConnection conn = new SqlConnection(connStr))
            {
                SqlCommand cmd = new SqlCommand("SELECT * FROM Students
ORDER BY EnrollmentDate DESC", conn);
                conn.Open();
                SqlDataReader dr = cmd.ExecuteReader();
                DataTable dt = new DataTable();
                dt.Load(dr);
                gvStudents.DataSource = dt;
                gvStudents.DataBind();
            }
        }
    }
}
```

AdminDashboard.aspx:

```

<%@ Page Title="Admin Dashboard" Language="C#"
MasterPageFile="~/Master/Site1.Master" AutoEventWireup="true"
CodeBehind="AdminDashboard.aspx.cs"
Inherits="Pra3.Pages.AdminDashboard" %>

<asp:Content ID="Content2" ContentPlaceHolderID="ContentPlaceHolder1"
runat="server">

    <h2>Admin Dashboard - Student Management</h2>

    <div class="filter-bar">

        Course:
        <asp:TextBox ID="txtFilterCourse" runat="server"></asp:TextBox>

        Year:
        <asp:TextBox ID="txtFilterYear" runat="server"></asp:TextBox>

        <asp:Button ID="btnFilter" runat="server" Text="Apply Filter"
OnClick="btnFilter_Click" />

        <asp:Button ID="btnClear" runat="server" Text="Clear"
OnClick="btnClear_Click" />

    </div>

    <asp:GridView ID="gvAdmin" runat="server" AutoGenerateColumns="False"
AllowPaging="True" PageSize="5"

        DataKeyNames="StudentID"
OnPageIndexChanging="gvAdmin_PageIndexChanging"
        OnRowEditing="gvAdmin_RowEditing"
OnRowCancelingEdit="gvAdmin_RowCancelingEdit"
        OnRowUpdating="gvAdmin_RowUpdating"
OnRowDeleting="gvAdmin_RowDeleting">

        <Columns>
            <asp:BoundField DataField="StudentID" HeaderText="ID" ReadOnly="True"
/>
            <asp:BoundField DataField="FullName" HeaderText="Name" />
            <asp:BoundField DataField="RollNumber" HeaderText="Roll No." />
            <asp:BoundField DataField="Course" HeaderText="Course" />
            <asp:BoundField DataField="EnrollmentDate" HeaderText="Enrollment
Date" DataFormatString="{0:yyyy-MM-dd}" />
            <asp:BoundField DataField="Email" HeaderText="Email" />
            <asp:BoundField DataField="MobileNumber" HeaderText="Mobile" />
            <asp:CommandField ShowEditButton="True" ShowDeleteButton="True" />

```



```

        </Columns>

    </asp:GridView>
</asp:Content>

```

AdminDashboard.aspx.cs:

```

using System;
using System.Configuration;
using System.Data;
using System.Data.SqlClient;
using System.Web.UI.WebControls;

namespace Pra3.Pages
{
    public partial class AdminDashboard : System.Web.UI.Page
    {
        string connStr =
ConfigurationManager.ConnectionStrings["MyDbConn"].ConnectionString;

        protected void Page_Load(object sender, EventArgs e)
        {

            if (Session["Username"] == null || Session["Role"].ToString() != "Admin")
                Response.Redirect("~/Pages/Login.aspx");

            if (!IsPostBack)
                LoadGrid();
        }

        private void LoadGrid(string course = "", string year = "")
        {
            using (SqlConnection conn = new SqlConnection(connStr))
            {
                string query = "SELECT * FROM Students WHERE 1=1";
                if (!string.IsNullOrEmpty(course))
                    query += " AND Course LIKE @Course";
                if (!string.IsNullOrEmpty(year))
                    query += " AND YEAR(EnrollmentDate) = @Year";

                SqlCommand cmd = new SqlCommand(query, conn);
                if (!string.IsNullOrEmpty(course))
                    cmd.Parameters.AddWithValue("@Course", "%" + course + "%");
                if (!string.IsNullOrEmpty(year))
                    cmd.Parameters.AddWithValue("@Year", year);

                SqlDataAdapter da = new SqlDataAdapter(cmd);
                DataSet ds = new DataSet();
                da.Fill(ds);
                gvAdmin.DataSource = ds;
            }
        }
    }
}

```

```

        gvAdmin.DataBind();
    }
}

protected void btnFilter_Click(object sender, EventArgs e)
{
    LoadGrid(txtFilterCourse.Text.Trim(),txtFilterYear.Text.Trim());
}

protected void btnClear_Click(object sender, EventArgs e)
{
    txtFilterCourse.Text = txtFilterYear.Text = "";
    LoadGrid();
}

protected void gvAdmin_PageIndexChanging(object sender,
System.Web.UI.WebControls.GridViewPageEventArgs e)
{
    gvAdmin.PageIndex = e.NewPageIndex;
    LoadGrid(txtFilterCourse.Text.Trim(), txtFilterYear.Text.Trim());
}

protected void gvAdmin_RowEditing(object sender,
System.Web.UI.WebControls.GridViewEditEventArgs e)
{
    gvAdmin.EditIndex = e.NewEditIndex;
    LoadGrid(txtFilterCourse.Text.Trim(), txtFilterYear.Text.Trim());
}

protected void gvAdmin_RowCancelingEdit(object sender,
System.Web.UI.WebControls.GridViewCancelEditEventArgs e)
{
    gvAdmin.EditIndex = -1;
    LoadGrid(txtFilterCourse.Text.Trim(), txtFilterYear.Text.Trim());
}

protected void gvAdmin_RowUpdating(object sender,
System.Web.UI.WebControls.GridViewUpdateEventArgs e)
{
    GridViewRow row = gvAdmin.Rows[e.RowIndex];
    string studentID = gvAdmin.DataKeys[e.RowIndex].Value.ToString();
    string name =
((System.Web.UI.WebControls.TextBox)row.Cells[1].Controls[0]).Text;
    string roll =
((System.Web.UI.WebControls.TextBox)row.Cells[2].Controls[0]).Text;
    string course =
((System.Web.UI.WebControls.TextBox)row.Cells[3].Controls[0]).Text;
    string date =
((System.Web.UI.WebControls.TextBox)row.Cells[4].Controls[0]).Text;

```

```

        string email =
        ((System.Web.UI.WebControls.TextBox)row.Cells[5].Controls[0]).Text;
        string mobile =
        ((System.Web.UI.WebControls.TextBox)row.Cells[6].Controls[0]).Text;

        using (SqlConnection conn = new SqlConnection(connStr))
        {
            SqlDataAdapter da = new SqlDataAdapter("SELECT * FROM Students
WHERE StudentID=@StudentID", conn);
            da.SelectCommand.Parameters.AddWithValue("@StudentID", studentID);
            DataSet ds = new DataSet();
            da.Fill(ds, "Students");

            if (ds.Tables["Students"].Rows.Count > 0)
            {
                DataRow dr = ds.Tables["Students"].Rows[0];
                dr["FullName"] = name;
                dr["RollNumber"] = roll;
                dr["Course"] = course;
                dr["EnrollmentDate"] = DateTime.Parse(date);
                dr["Email"] = email;
                dr["MobileNumber"] = mobile;

                SqlCommandBuilder cb = new SqlCommandBuilder(da);
                da.Update(ds, "Students");
            }
        }

        gvAdmin.EditIndex = -1;
        LoadGrid(txtFilterCourse.Text.Trim(), txtFilterYear.Text.Trim());
    }

    protected void gvAdmin_RowDeleting(object sender,
System.Web.UI.WebControls.GridViewDeleteEventArgs e)
    {
        string studentID = gvAdmin.DataKeys[e.RowIndex].Value.ToString();
        using (SqlConnection conn = new SqlConnection(connStr))
        {
            SqlCommand cmd = new SqlCommand("DELETE FROM Students
WHERE StudentID=@StudentID", conn);
            cmd.Parameters.AddWithValue("@StudentID", studentID);
            conn.Open();
            cmd.ExecuteNonQuery();
        }
        LoadGrid(txtFilterCourse.Text.Trim(), txtFilterYear.Text.Trim());
    }
}
}
}

```

Site1.Master:

```

<%@ Master Language="C#" AutoEventWireup="true"
CodeBehind="Site1.master.cs" Inherits="Pra3.Master.Site1" %>

<!DOCTYPE html>

<html>
<head runat="server">
    <title></title>
    <asp:ContentPlaceHolder ID="head" runat="server">
    </asp:ContentPlaceHolder>
</head>
<body>
    <form id="form1" runat="server">
        <div>
            <asp:ContentPlaceHolder ID="ContentPlaceHolder1" runat="server">
            </asp:ContentPlaceHolder>
        </div>
    </form>
</body>
</html>

```

Default.aspx.cs:

```

using System;
using System.Data.SqlClient;
using System.Configuration;

namespace Pra3.Pages
{
    public partial class Default : System.Web.UI.Page
    {
        readonly string connStr =
ConfigurationManager.ConnectionStrings["MyDbConn"].ConnectionString;

        protected void Page_Load(object sender, EventArgs e)
        {
            // Step 1: Check if there are any accounts at all
            if (!HasAnyAccount())
            {
                Response.Redirect("~/Pages/Registration.aspx");
                return;
            }

            // Step 2: If no one is logged in, go to login
            if (Session["Username"] == null)
            {

```

```

        Response.Redirect("~/Pages/Login.aspx");
        return;
    }

    lblUser.Text = Session["Username"].ToString();

    var roleObj = Session["Role"];
    if (roleObj == null)
    {
        Session.Clear();
        Response.Redirect("~/Pages/Login.aspx");
        return;
    }

    string role = roleObj.ToString();

    pnlStudent.Visible = string.Equals(role, "Student",
StringComparison.OrdinalIgnoreCase)
        || string.Equals(role, "Admin",
StringComparison.OrdinalIgnoreCase);

    pnlAdmin.Visible = string.Equals(role, "Admin",
StringComparison.OrdinalIgnoreCase);
    }

    private bool HasAnyAccount()
    {
        using (SqlConnection conn = new SqlConnection(connStr))
        using (SqlCommand cmd = new SqlCommand("SELECT COUNT(*) FROM
Person", conn))
        {
            conn.Open();
            int count = (int)cmd.ExecuteScalar();
            return count > 0;
        }
    }

    protected void btnLogout_Click(object sender, EventArgs e)
    {
        Session.Clear();
        Response.Redirect("~/Pages/Login.aspx");
    }
}
}

```

Login.aspx.cs:

```
using System;
using System.Data.SqlClient;
using System.Configuration;

namespace Pra3.Pages
{
    public partial class Login : System.Web.UI.Page
    {
        // Connection string from Web.config
        readonly string connStr =
        ConfigurationManager.ConnectionStrings["MyDbConn"].ConnectionString;

        protected void Page_Load(object sender, EventArgs e)
        {
            if (!IsPostBack)
            {
                try
                {
                    using (SqlConnection conn = new SqlConnection(connStr))
                    using (SqlCommand cmd = new SqlCommand("SELECT COUNT(*)
FROM Person", conn))
                    {
                        conn.Open();
                        int count = (int)cmd.ExecuteScalar();

                        if (count == 0)
                        {
                            // No accounts at all → force to registration
                            Response.Redirect("~/Pages/Registration.aspx");
                            return;
                        }
                    }
                }
                catch (SqlException ex)
                {
                    lblMessage.Text = "Database error: " + ex.Message;
                }
            }
        }

        protected void btnLogin_Click(object sender, EventArgs e)
        {
            string username = txtUsername.Text.Trim();
            string password = txtPassword.Text.Trim();

            if (string.IsNullOrEmpty(username) || string.IsNullOrEmpty(password))
            {
                lblMessage.Text = "Enter username and password.";
            }
        }
    }
}
```

```

        return;
    }

    try
    {
        using (SqlConnection conn = new SqlConnection(connStr))
        {
            conn.Open();

            using (SqlCommand checkUserCmd = new SqlCommand(
                "SELECT COUNT(*) FROM Person WHERE Username = @u",
conn))
            {
                checkUserCmd.Parameters.AddWithValue("@u", username);
                int userCount = (int)checkUserCmd.ExecuteScalar();

                if (userCount == 0)
                {
                    lblMessage.Text = "User not found, redirecting to Registration
page...";

                    Response.Redirect("~/Pages/Registration.aspx");
                    return; // end here
                }
            }

            using (SqlCommand cmd = new SqlCommand(
                "SELECT UserID, Role FROM Person WHERE Username = @u
AND Password = @p", conn))
            {
                cmd.Parameters.AddWithValue("@u", username);
                cmd.Parameters.AddWithValue("@p", password);

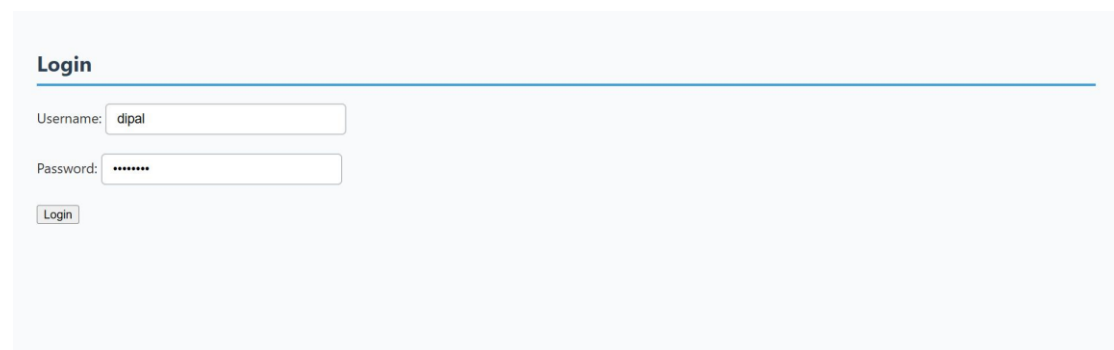
                using (SqlDataReader rdr = cmd.ExecuteReader())
                {
                    if (rdr.Read())
                    {
                        Session["Username"] = username;
                        Session["Role"] = rdr["Role"]?.ToString() ?? "Student";
                        Session["UserID"] = rdr["UserID"]?.ToString();

                        Response.Redirect("~/Pages/Default.aspx");
                    }
                    else
                    {
                        lblMessage.Text = "Invalid password.";
                    }
                }
            }
        }
    }
}

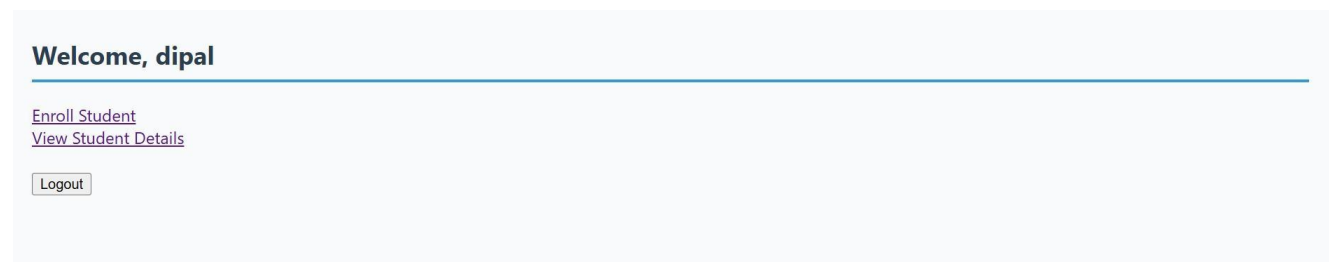
```

```
        catch (Exception ex)
        {
            lblMessage.Text = "Error: " + ex.Message;
        }
    }
}
```

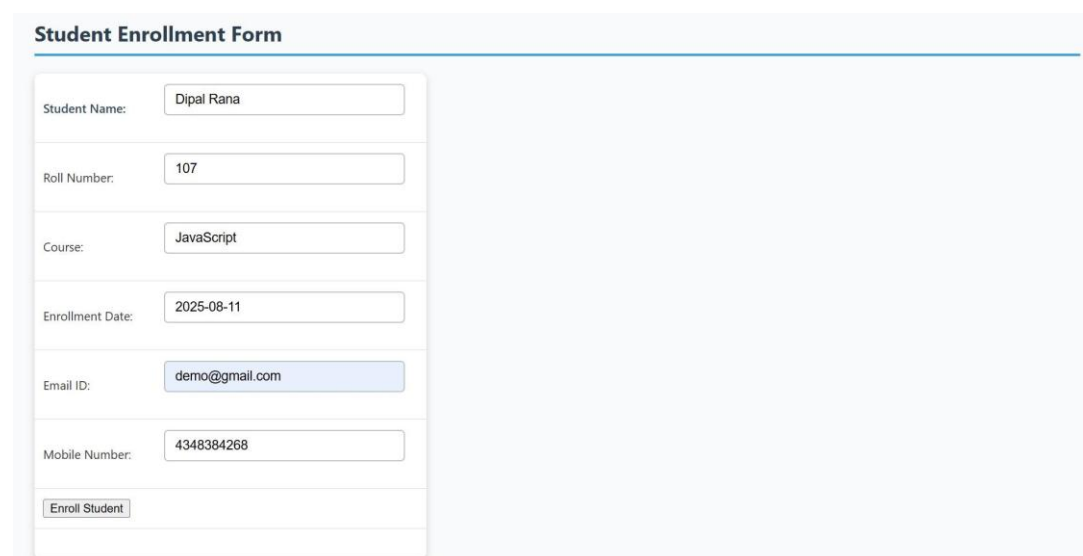
Output:



The screenshot shows a web page titled "Login". It features a form with two input fields: "Username:" containing the text "dipal" and "Password:" containing seven asterisks. Below the password field is a "Login" button.



The screenshot shows a web page titled "Welcome, dipal". Below the title, there are two links: "Enroll Student" and "View Student Details". At the bottom of the page is a "Logout" button.



The screenshot shows a web page titled "Student Enrollment Form". It contains a form with several input fields: "Student Name:" with "Dipal Rana", "Roll Number:" with "107", "Course:" with "JavaScript", "Enrollment Date:" with "2025-08-11", "Email ID:" with "demo@gmail.com", and "Mobile Number:" with "4348384268". At the bottom of the form is an "Enroll Student" button.

All Students (Read-only View)

ID	StudentID	FullName	RollNumber	Course	EnrollmentDate	Email	MobileNumber	CreatedAt
4	DR20250810193029	Dipal Rana	18	JavaScript	8/11/2025 12:00:00 AM	demo@gmail.com	4348384268	8/10/2025 7:30:29 PM
1	D20250810163706	Dipal	107	JavaScript	11/21/2005 12:00:00 AM	abc@gmail.com	1234567890	8/10/2025 4:37:07 PM
2	N20250810165004	Neel	1	Python	1/18/2000 12:00:00 AM	abc@gmail.com	1234567890	8/10/2025 4:50:04 PM

Admin Dashboard - Student Management

Course: Year:

ID	Name	Roll No.	Course	Enrollment Date	Email	Mobile	
D20250810163706	Dipal	107	JS	2005-11-21	abc@gmail.com	1234567890	Edit Delete
N20250810165004	Neel	1	Python	2000-01-18	abc@gmail.com	1234567890	Edit Delete
DR20250810193029	Dipal Rana	18	JavaScript	2025-08-11	demo@gmail.com	4348384268	Edit Delete

Admin Dashboard - Student Management

Course: Year:

ID	Name	Roll No.	Course	Enrollment Date	Email	Mobile	
D20250810163706	Dipal	107	JS	2005-11-21	abc@gmail.com	1234567890	Edit Delete