

```

-- Create QuizUser table
DROP TABLE IF EXISTS dbo.QuizUser;
CREATE TABLE dbo.QuizUser (
    userId INT IDENTITY(1,1) PRIMARY KEY,
    username NVARCHAR(50) NOT NULL UNIQUE,
    password NVARCHAR(100) NOT NULL,
    name NVARCHAR(100) NOT NULL,
    role NVARCHAR(20) NOT NULL CHECK (role IN
('Teacher','Student','Administrator'))
);

-- Insert sample users
INSERT INTO dbo.QuizUser (username, password, name, role) VALUES
('teacher1', 'teacher123', 'Alice Adams', 'Teacher'),
('student1', 'student123', 'Bob Brown', 'Student'),
('admin1', 'admin123', 'Carol Clark', 'Administrator');

-- Create Quiz table
DROP TABLE IF EXISTS dbo.Quiz;
CREATE TABLE dbo.Quiz (
    quizId INT IDENTITY(1,1) PRIMARY KEY,
    createdBy INT NOT NULL FOREIGN KEY REFERENCES dbo.QuizUser(userId),
    createdOn DATETIME NOT NULL DEFAULT GETDATE()
);

-- Create Question table
DROP TABLE IF EXISTS dbo.Question;
CREATE TABLE dbo.Question (
    questionId INT IDENTITY(1,1) PRIMARY KEY,
    quizId INT NOT NULL FOREIGN KEY REFERENCES dbo.Quiz(quizId),
    questionText NVARCHAR(1000) NOT NULL
);

-- Create OptionTable
DROP TABLE IF EXISTS dbo.OptionTable;
CREATE TABLE dbo.OptionTable (
    optionId INT IDENTITY(1,1) PRIMARY KEY,
    questionId INT NOT NULL FOREIGN KEY REFERENCES dbo.Question(questionId),
    optionText NVARCHAR(1000) NOT NULL,
    isCorrect BIT NOT NULL DEFAULT 0
);

```

```
-- Create Result table
DROP TABLE IF EXISTS dbo.Result;
CREATE TABLE dbo.Result (
    resultId INT IDENTITY(1,1) PRIMARY KEY,
    userId INT NOT NULL FOREIGN KEY REFERENCES dbo.QuizUser(userId),
    quizId INT NOT NULL FOREIGN KEY REFERENCES dbo.Quiz(quizId),
    score INT NOT NULL,
    takenOn DATETIME NOT NULL DEFAULT GETDATE()
);
```

```
<!-- Admin_Form.aspx -->
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```
<%@ Page Language="VB" AutoEventWireup="false" CodeFile="Admin_Form.aspx.vb"
Inherits="Lab_11_Admin_Form" %>
```

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

<head runat="server">
    <title>Administrator Panel</title>
</head>

<body>
    <form id="form1" runat="server">
        <h1>Administrator Panel</h1>
        <asp:Label runat="server" ID="lblUsers" Text=""></asp:Label>
        <asp:Button runat="server" ID="btnRefresh" Text="Refresh Users"
OnClick="btnRefresh_Click" />
        <asp:Table runat="server" ID="tblUsers" Border="1"></asp:Table>
    </form>
</body>

</html>
```

```
' Admin_Form.aspx.vb
```

```
Imports System.Data
Imports System.Data.SqlClient
Imports System.Configuration
Imports System.Web.UI.WebControls
```

```
Partial Class Lab_11_Admin_Form
    Inherits System.Web.UI.Page
```

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

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        ' Authorization check
        If Session("role") Is Nothing OrElse Session("role").ToString() <>
"Administrator" Then
            Response.Redirect("Default.aspx")
        End If
        BindUsers()
    End Sub

    Private Sub BindUsers()
        Dim constr As String =
ConfigurationManager.ConnectionStrings("RemotePatientMonitoringDB").ConnectionString
        Using con As New SqlConnection(constr)
            Using cmd As New SqlCommand("SELECT userId, username, role, name FROM
QuizUser", con)
                Using da As New SqlDataAdapter(cmd)
                    Dim dt As New DataTable()
                    da.Fill(dt)
                    ' Build table rows manually
                    tblUsers.Rows.Clear()
                    ' Header row
                    Dim headerRow As New TableRow()
                    For Each col As DataColumn In dt.Columns
                        Dim headerCell As New TableHeaderCell()
                        headerCell.Text = col.ColumnName
                        headerRow.Cells.Add(headerCell)
                    Next
                    tblUsers.Rows.Add(headerRow)
                    ' Data rows
                    For Each dr As DataRow In dt.Rows
                        Dim row As New TableRow()
                        For Each col As DataColumn In dt.Columns
                            Dim cell As New TableCell()
                            cell.Text = dr(col).ToString()
                            row.Cells.Add(cell)
                        Next
                        tblUsers.Rows.Add(row)
                    Next
                End Using
            End Using
        End Using
    End Sub

    Protected Sub btnRefresh_Click(sender As Object, e As EventArgs) Handles
btnRefresh.Click
        BindUsers()
    End Sub
End Class

```

```
<!-- Default.aspx -->
```

```
<%@ Page Language="VB" AutoEventWireup="false" CodeFile="Default.aspx.vb"  
Inherits="Lab_11_Default" %>
```

```
    <!DOCTYPE html>  
  
    <html xmlns="http://www.w3.org/1999/xhtml">  
  
        <head runat="server">  
            <title>Quiz App</title>  
        </head>  
  
        <body>  
            <form id="form1" runat="server">  
                <div>  
                    <h1>Lab 11</h1>  
                    <h3>Problem Statement: </h3>  
                    <p>Create a Quiz Application.</p>  
                    <h3>Demonstration: </h3>  
                </div>  
                <asp:Label runat="server" Text="username"></asp:Label>  
                <input runat="server" id="username" />  
                <asp:Label runat="server" Text="password"></asp:Label>  
                <input runat="server" id="password" />  
                <asp:Button Text="Login" runat="server" ID="loginButton" OnClick="Login"  
/>  
                <div runat="server" ID="loginError"></div>  
            </form>  
        </body>  
  
    </html>
```

```
' Default.aspx.vb
```

```
Imports System.Data  
Imports System.Data.SqlClient  
Imports System.Configuration  
Partial Class Lab_11_Default  
    Inherits System.Web.UI.Page  
  
    Protected Sub Login(sender As Object, e As EventArgs) Handles loginButton.Click  
        Dim constr As String =  
ConfigurationManager.ConnectionStrings("RemotePatientMonitoringDB").ConnectionString  
        Dim con As New SqlConnection  
        con.ConnectionString = constr  
        Dim cmd As New SqlCommand  
        cmd.Connection = con  
        cmd.Parameters.AddWithValue("@username", username.Value)
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cmd.Parameters.AddWithValue("@password", password.Value)
cmd.CommandText = "SELECT userId, role, name"
cmd.CommandText &= " FROM QuizUser WHERE username=@username AND
password=@password"

Dim dr As SqlDataReader
Try
    con.Open()
    dr = cmd.ExecuteReader()
    If dr.HasRows Then
        dr.Read()
        Dim role As String = dr("role").ToString()
        Dim name As String = dr("name").ToString()
        Dim userId As String = dr("userId").ToString()

        Session("role") = role
        Session("userId") = userId
        Session("name") = name

        If role = "Teacher" Then
            Response.Redirect("Teacher_Form.aspx")
        ElseIf role = "Student" Then
            Response.Redirect("Student_Form.aspx")
        ElseIf role = "Administrator" Then
            Response.Redirect("Admin_Form.aspx")
        End If
    Else
        loginError.InnerHtml = "<p style='color:red'>Invalid username or
password</p>"
    End If
Catch ex As Exception
    loginError.InnerHtml = "<p style='color:red'>" & ex.Message & "</p>"
Finally
    con.Close()
    cmd.Dispose()
End Try
End Sub

End Class

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<!-- Student_Form.aspx -->

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```

<%@ Page Language="VB" AutoEventWireup="false" CodeFile="Student_Form.aspx.vb"
Inherits="Lab_11_Student_Form" %>

```

```

<!DOCTYPE html>

```

```

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

<head runat="server">
    <title></title>
</head>

<body>
    <form id="form1" runat="server">
        <div>
            <asp:Table runat="server" ID="tblQuiz" GridLines="Both" />
            <asp:Button runat="server" ID="submitQuiz" Text="Submit Quiz"
OnClick="submitQuiz_Click" />
        </div>
    </form>
</body>

</html>

```

```

' Student_Form.aspx.vb

```

```

Imports System.Data
Imports System.Data.SqlClient
Imports System.Configuration
Imports System.Web.UI.WebControls

Partial Class Lab_11_Student_Form
    Inherits System.Web.UI.Page

    Protected quizId As Integer

    Protected Sub Page_Load(sender As Object, e As EventArgs) Handles Me.Load
        ' Authorization check
        If Session("role") Is Nothing OrElse Session("role").ToString() <> "Student"
Then
            Response.Redirect("Default.aspx")
        End If
        Dim constr As String =
ConfigurationManager.ConnectionStrings("RemotePatientMonitoringDB").ConnectionString
        If Not IsPostBack Then
            ' Load last quiz
            Using con As New SqlConnection(constr)
                con.Open()
                Using cmd As New SqlCommand("SELECT TOP 1 quizId FROM Quiz ORDER BY
createdOn DESC", con)
                    Dim result = cmd.ExecuteScalar()
                    If result IsNot Nothing Then

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        quizId = Convert.ToInt32(result)
        ViewState("quizId") = quizId
    Else
        Response.Write("No quiz available.")
        Return
    End If
End Using
End Using
Else
    quizId = Convert.ToInt32(ViewState("quizId"))
End If

' Recreate dynamic controls
Using con As New SqlConnection(constr)
    con.Open()
    Dim questions As New DataTable
    Using qCmd As New SqlCommand("SELECT q.questionId, q.questionText FROM
Question q WHERE q.quizId=@qId ORDER BY NEWID()", con)
        qCmd.Parameters.AddWithValue("@qId", quizId)
        Using da As New SqlDataAdapter(qCmd)
            da.Fill(questions)
        End Using
    End Using
    Dim opts As New DataTable
    Using oCmd As New SqlCommand("SELECT o.optionId, o.questionId,
o.optionText FROM OptionTable o", con)
        Using da As New SqlDataAdapter(oCmd)
            da.Fill(opts)
        End Using
    End Using
    tblQuiz.Rows.Clear()
    For Each row As DataRow In questions.Rows
        Dim qId As Integer = row("questionId")
        Dim qText As String = row("questionText").ToString()
        Dim qRow As New TableRow()
        Dim qCell As New TableCell()
        qCell.Text = qText
        qCell.ColumnSpan = 2
        qRow.Cells.Add(qCell)
        tblQuiz.Rows.Add(qRow)
        Dim drs = opts.Select("questionId=" & qId)
        For Each orow In drs
            Dim optRow As New TableRow()
            Dim cell1 As New TableCell()
            Dim opt As New RadioButton()
            opt.GroupName = qId.ToString()
            opt.ID = "opt" & orow("optionId").ToString()
            cell1.Controls.Add(opt)
            Dim cell2 As New TableCell()
            cell2.Text = orow("optionText").ToString()
            optRow.Cells.Add(cell1)
            optRow.Cells.Add(cell2)
            tblQuiz.Rows.Add(optRow)
        Next
    Next
End Using
End Sub

```

```

Protected Sub submitQuiz_Click(sender As Object, e As EventArgs) Handles
submitQuiz.Click
    If ViewState("quizId") Is Nothing Then
        Response.Write("Invalid quiz ID.")
        Return
    End If
    quizId = Convert.ToInt32(ViewState("quizId"))
    Dim score As Integer = 0
    Dim constr As String =
ConfigurationManager.ConnectionStrings("RemotePatientMonitoringDB").ConnectionString
    Using con As New SqlConnection(constr)
        con.Open()
        ' Loop through table rows
        For Each row As TableRow In tblQuiz.Rows
            If row.Cells.Count = 2 Then
                ' option row
                Dim cell1 As TableCell = row.Cells(0)
                For Each ctrl In cell1.Controls
                    If TypeOf ctrl Is RadioButton Then
                        Dim rb As RadioButton = CType(ctrl, RadioButton)
                        If rb.Checked Then
                            Dim optionId As Integer = CInt(rb.ID.Replace("opt",
""))
                            Using cmd As New SqlCommand("SELECT isCorrect FROM
OptionTable WHERE optionId=@optId", con)
                                cmd.Parameters.AddWithValue("@optId", optionId)
                                Dim isCorrect As Object = cmd.ExecuteScalar()
                                If Convert.ToBoolean(isCorrect) Then score += 1
                            End Using
                        End If
                    End If
                Next
            End If
        Next
        ' Save result
        Using resCmd As New SqlCommand("INSERT INTO Result(userId, quizId,
score, takenOn) VALUES (@u, @q, @s, GETDATE())", con)
            resCmd.Parameters.AddWithValue("@u", Session("userId"))
            resCmd.Parameters.AddWithValue("@q", quizId)
            resCmd.Parameters.AddWithValue("@s", score)
            resCmd.ExecuteNonQuery()
        End Using
        Response.Write("Your score is: " & score)
    End Using
End Sub
End Class

```

```

<!-- Teacher_Form.aspx -->

<%@ Page Language="VB" AutoEventWireup="false" CodeFile="Teacher_Form.aspx.vb"
Inherits="Lab_11_Teacher_Form" %>

    <!DOCTYPE html>

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

    <head runat="server">
        <title></title>
    </head>

    <body>
        <form id="form1" runat="server">
            <h1>Create a Quiz</h1>
            <div runat="server" id="questions">
                </div>
            <asp:Button runat="server" Text="+ Add a question" ID="addQuestion" />
            <asp:Button runat="server" Text="Create Quiz" ID="createQuiz" />

        </form>
    </body>

</html>

```

```

' Teacher_Form.aspx.vb

Imports System.Data.SqlClient
Imports System.Diagnostics
Imports System.Configuration
Imports System.Data

Partial Class Lab_11_Teacher_Form
    Inherits System.Web.UI.Page

    Dim questionNumber As Integer

    Protected Sub _Default_Load(sender As Object, e As EventArgs) Handles Me.Load
        ' Authorization check
        If Session("role") Is Nothing OrElse Session("role").ToString() <> "Teacher"
Then
            Response.Redirect("Default.aspx")
        End If

        If (Me.ViewState("questionNumber") IsNot Nothing) Then
            questionNumber = Me.ViewState("questionNumber")

```

```

Else
    questionNumber = 1
End If
End Sub

Protected Sub Add_Question() Handles addQuestion.Click
    questions.InnerHtml &= "<div>" &
        "<p>Question " & questionNumber.ToString() & " :</p>" &
        "<input type='text' name='question' " & questionNumber.ToString() & " "
/><br/>"
    For optionNumber As Integer = 1 To 4
        questions.InnerHtml &= "<p>Option " & optionNumber.ToString() & " :</p>"
&
        "<input type='text' name='option' " & questionNumber.ToString() & "_"
& optionNumber.ToString() & " " /><br/>"
    Next
    questions.InnerHtml &= "<p>Correct Option (1-4):</p>" &
        "<input type='text' name='correct' " & questionNumber.ToString() & " "
/><br/>"
    questions.InnerHtml &= "</div>"
    questionNumber += 1
End Sub

Protected Sub Create_Quiz() Handles createQuiz.Click
    Dim constr As String =
ConfigurationManager.ConnectionStrings("RemotePatientMonitoringDB").ConnectionString
    Using con As New SqlConnection(constr)
        Using cmd As New SqlCommand()
            cmd.Connection = con
            cmd.CommandText = "INSERT INTO Quiz(createdBy) VALUES (@userId);
SELECT SCOPE_IDENTITY();"
            cmd.Parameters.AddWithValue("@userId", Session("userId"))
            Try
                con.Open()
                Dim quizId As Integer = Convert.ToInt32(cmd.ExecuteScalar())
                ' Save each question and options
                Dim totalQuestions As Integer = questionNumber - 1
                For i As Integer = 1 To totalQuestions
                    Dim qText As String = Request.Form("question" & i)
                    Using qCmd As New SqlCommand("INSERT INTO Question(quizId,
questionText) VALUES (@quizId, @question); SELECT SCOPE_IDENTITY();", con)
                        qCmd.Parameters.AddWithValue("@quizId", quizId)
                        qCmd.Parameters.AddWithValue("@question", qText)
                        Dim questionId As Integer =
Convert.ToInt32(qCmd.ExecuteScalar())
                        ' Insert options
                        For j As Integer = 1 To 4
                            Dim optText As String = Request.Form("option" & i &
"_" & j)
                            Dim isCorrect As Boolean = (Request.Form("correct" &
i) = j.ToString())
                            Using oCmd As New SqlCommand("INSERT INTO
OptionTable(questionId, optionText, isCorrect) VALUES (@qId, @optText, @isCorrect)",
con)
                                oCmd.Parameters.AddWithValue("@qId", questionId)
                                oCmd.Parameters.AddWithValue("@optText",
optText)

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isCorrect)
                                oCmd.Parameters.AddWithValue("@isCorrect",
                                oCmd.ExecuteNonQuery()
                                End Using
                            Next
                        End Using
                    Next
                Catch ex As Exception
                    Response.Write(ex.Message)
                End Try
            End Using
        End Using
    End Sub

    Protected Sub _Default_PreRender(sender As Object, e As EventArgs) Handles
Me.PreRender
        Me.ViewState.Add("questionNumber", questionNumber)
        Page.RegisterRequiresViewStateEncryption()
    End Sub
End Class

```