E-Learning system

1. **For this system, (1) write at least 5 user requirements, (2) 5 system requirements, (3) specify functional and non-functional requirements (4) write two safety requirements**

❖ **User Requirements**

- Login/Logout
- Switches to Another Pages
- Tracking and Reporting
- View Materials
- Solve the Exam

❖ **System requirements**

System requirements are the required specifications a device must have in order to use certain hardware or software.

Software and hardware requirements

Here the required software and hardware will be discalced:

Software requirements

- The Software Requirements: We need a framework for the development of the application has been identified language (Asp.net , SQL, PHP, JS, CSS, and HTML)
- Visual studio 2010 software
- SQL Server

Hardware requirements:

- In our system, we needs a computer
- Domain & Hosting

❖ **Functional Requirements Instructor:**

- Login to the system.
- View levels and courses.
- View students that he teaches them.
- Add materials of specific course.
- Add Exam for a specific course.
- View Exam results.
- Logout **Student:**
- Login to the system.

- View his/her courses.
- View his/her Exam.
- Solve the Exam.
- View his/her result.
- View materials (videos or PDF Files).

Administrator:

- Login to the system.
- Add levels and courses Names.
- Add students.
- Management The System
- Logout

❖ **Non- Functional Requirements**

1. **Availability**

   1.1. The system should be available 24 Hours / day, except during maintenance.

1. **Portability**

   1.1. The system must be able to run on any browser and smart phones.

2. **Accessibility**

   2.1. The system is web-based, so internet access is required

3. **Usability**

   3.1. The system should be easy to use and to remember the steps they should follow.

4. **Performance**

   4.1. The response time should be acceptable.

5. **Maintainability**

❖ **Safety Requirements**

- That the database will be protected to ensure the security of all data and information in database
- Login to website by username and password
- Instructor only can add materials of specific course

2. Use appropriate development approach to build the systems? Explain why you select this particular approach?

❖ Waterfall Model

The waterfall model is a sequential development process, in which development is seen as flowing steadily downwards, Waterfall model steps explanation:

1) Requirement:

Requirement on this step we focus requirement data collecting from company and market. This level the most basic one on system live cycle .if requirement collecting is not good next stage also won't result maximal system.

2) Design:

Design on this step focuses on design here design is grouped as 4 which are:

- High level design like what programs are needed and how are they going to interact,
- Low level design (how the individual programs are going to work),
- Interface design (what are the interfaces going to look like) and   Data design (what data will be required).

3) Implementation:

Implementation is the realization of an application, or execution of a plan, idea, model, design, specification, standard, algorithm, implementation process has been continuation from where did we begin to implementation design that made to into program codes that be read by engine language.

Example: n computer science, an implementation is a realization of a technical specification or algorithm as a program, software component,

4) Verification:

Verification this step is system's checking process if system was walking normal and according to that expected **5) Maintenance:**

Maintenance can't be inevitably the system will need maintenance because systems have bug or because even corporate requirement and condition of market has change.

❖ Explain why you select this particular approach?

- Simple and easy to understand and use
- Easy to manage
- Each phase has specific deliverables and a review process.
- Phases are processed and completed one at a time.
- Works well for our small projects
- Clearly defined stages

- Well understood milestones.
- Easy to arrange tasks
- Process and results are well documented.

3. Draw use case diagrams and sequence diagrams for the design phase?
(The name of any entity should start with (M Letter)).

Use Case Diagrams

A use case is a methodology used in system analysis to identify, clarify, and organize system requirements.
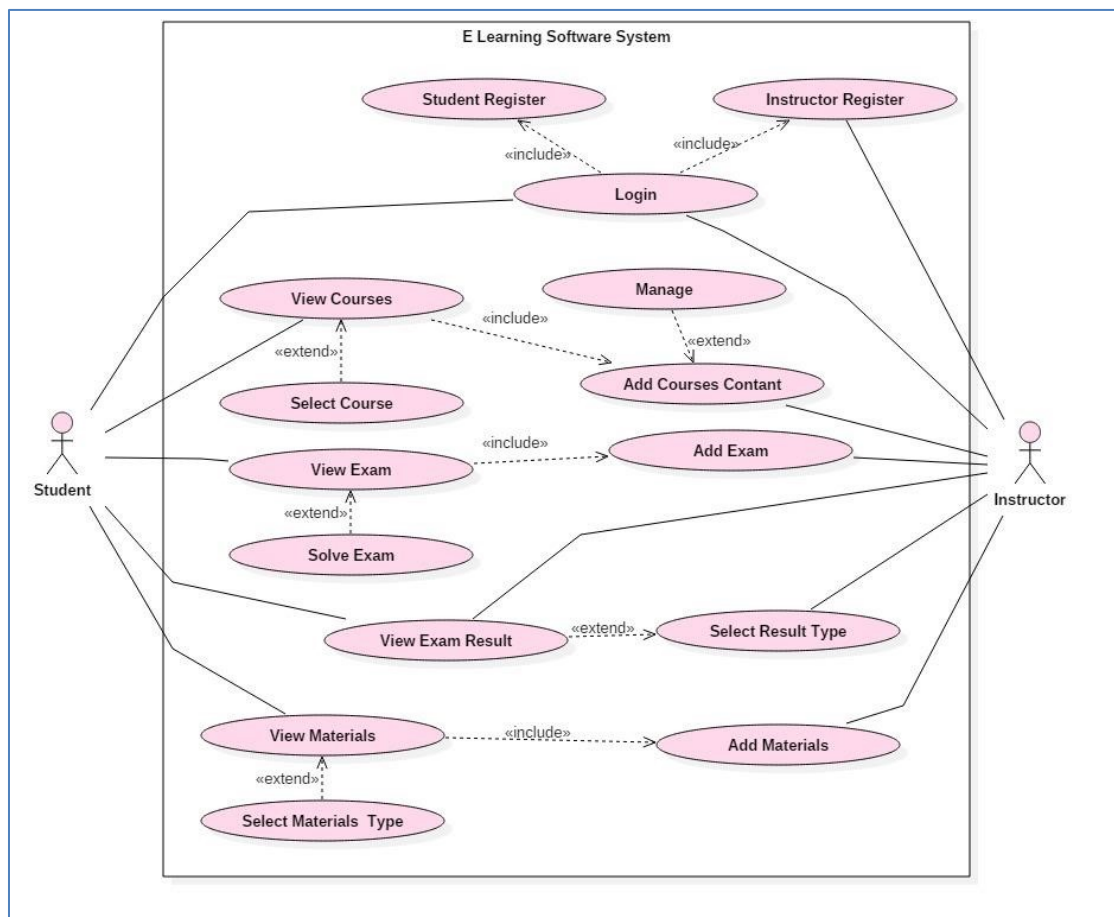

Fig1: Use Case Diagrams

Sequence Diagram

A sequence diagram simply depicts interaction between objects in a sequential order i.e. the order in which these interactions take place. We can also use the terms event diagrams or event scenarios to refer to a sequence diagram
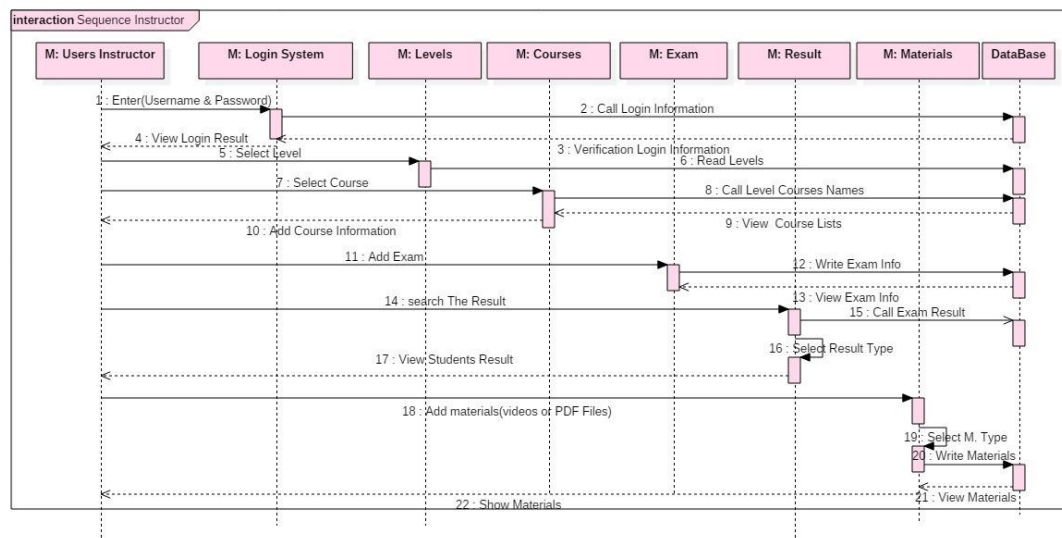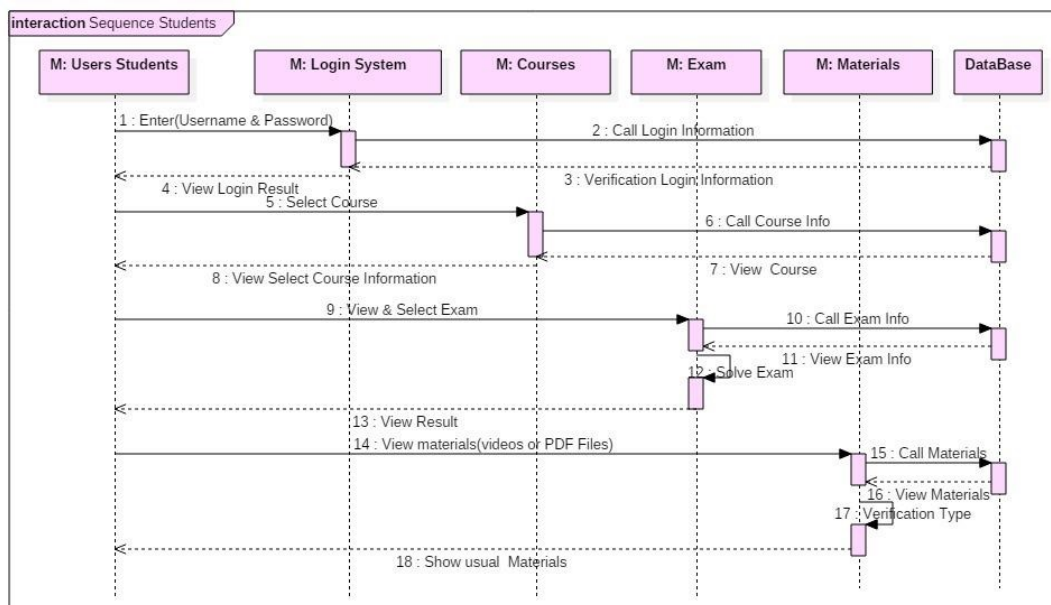

Fig2: Instructor sequence diagram

Fig3: Student sequence diagram

4. Implement part of the system and consider Code convention

Registration Code

```vb
Imports System.IO
Imports System.Data.SqlClient
Imports System.Web.Configuration
Partial Class _Default
    Inherits System.Web.UI.Page
    Private ConctionDB As String =
WebConfigurationManager.ConnectionStrings("Online_LearningConnectionString").Co
nnectionString
    Protected Sub Button1_Click(ByVal sender As Object, ByVal e As
System.EventArgs) Handles Button1.Click
        If StudentName.Text = "" Or Student_No.Text = "" Then
            MsgBox("PLZ Enter Student Name and Student No",
MsgBoxStyle.Critical, "Elearning")
            Return
        End If
        Dim AddStudent As String
        AddStudent = "INSERT INTO Students ("
        AddStudent &= "Name,Student_No,Level,Telephone,Email) "
        AddStudent &= "VALUES ("
        AddStudent &= "@Name,@Student_No,@Level,@Telephone,@Email)"
        Dim Conection As New SqlConnection(ConctionDB)        Dim commond
As New SqlCommand(AddStudent, Conection)
commond.Parameters.AddWithValue("@Name", Me.StudentName.Text)
commond.Parameters.AddWithValue("@Student_No", Me.Student_No.Text)
commond.Parameters.AddWithValue("@Level", Me.Levelst.Text)
commond.Parameters.AddWithValue("@Telephone", Me.Telephone.Text)
commond.Parameters.AddWithValue("@Email", Me.Email.Text)
        Dim added_Student As Integer = 0
        Try
            Conection.Open()
            added_Student = commond.ExecuteNonQuery()
            Messg.Text = added_Student.ToString() & "Created a New Student"
        Catch Err As Exception
            Messg.Text = "Error to save new Student"
            Messg.Text &= Err.Message
        Finally
            Conection.Close()
        End Try
    End Sub
End Class
```

Login Code:

```vb
Imports System.IO
Imports System.Data.SqlClient
Imports System.Web.Configuration
Partial Class Account_Login
    Inherits System.Web.UI.Page
    Private ConctionDB As String =
WebConfigurationManager.ConnectionStrings("Online_LearningConnectionString").Co
nnectionString
    Protected Sub Button1_Click(ByVal sender As Object, ByVal e As
System.EventArgs) Handles Button1.Click
If Me.Uname.Text = "" Or Me.Pword.Text = "" Then
```

```vb
            MsgBox("PLZ Enter Username and Password", MsgBoxStyle.Critical,
"Elearning")
            Return

        Else
        End If


        Dim SearchDB As String = "SELECT * FROM Users    WHERE Username like'" &
Uname.Text & "' and Password like '" & Pword.Text & "'"
        Dim Conection As New SqlConnection(ConctionDB)
        Dim readdata As SqlDataReader
        Dim commond As New SqlCommand(SearchDB, Conection)
Conection.Open()
        readdata = commond.ExecuteReader()
If readdata.Read() Then
            userid.Text = readdata("Users_ID").ToString
Name.Text = readdata("Name").ToString
            Username.Text = readdata("Username").ToString
            Password.Text = readdata("Password").ToString
            Type.Text = readdata("Type").ToString
            Session("User_ID") = userid.Text
            Session("Name") = Name.Text
            Session("type") = Type.Text
        Else
            MsgBox("Please sure your username and password is correct",
MsgBoxStyle.Critical, "elearning")
            Exit Sub
End If
readdata.Close()
Conection.Close()


        If Val(Uname.Text) = Val(Username.Text) And Val(Pword.Text) =
Val(Password.Text) Then
            Response.Redirect("Home.aspx")
        End If


    End Sub
End Class
```

5. Use Junit to test your system

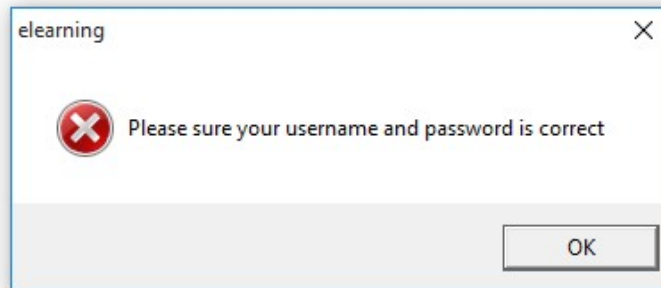### Login Test (wrong username & Password)

Login Test (Enter username & Password)
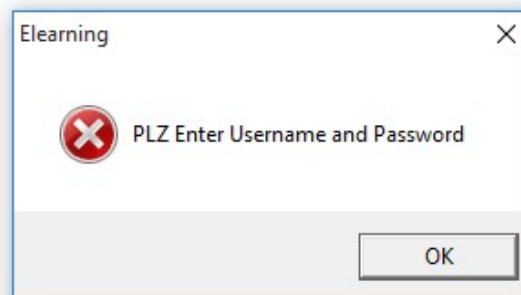
Student Registration test (enter student data)

Students Registration:

Student Name	
Student No	
Level	Level1 ▾
Telephone	
Email	

Add Student

Elearning ✕

❌ PLZ Enter Student Name and Student No

OK

Student Registration test (enter student No)Text Validation – Text mode= Number

Students Registration:

Student Name	tamer
Student No	⬍
Level	Level1 ▾
Telephone	
Email	

Add Student