ADA UNIVERSITY

SCHOOL OF IT & ENGINEERING

Course: Object-Oriented Analysis & Design

HOMEWORK ASSIGNMENT

Project title: JAD-group-07: E-Learning Software

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Baku 2019

E-Learning System

[Design Documentation]

Contents

1. Introduction

The basic purpose of this document is to present the detailed Design of the E learning system. Student and Teacher are the main parts of this system. By building this system we will facilitate the student and the Tutors. Through this system the Student can learn academic courses. Teachers can easily upload the video lectures and can put the price of whole course. Student can also enroll by paying the amount of course and at the end of the Course they will be certified by the system and Approved by the teacher.

1.1 Purpose

The purpose of this document is to present the detail design and provide some design and development strategies. This Document will show the Logical view and all the development phase. This Document is produced by team to provide the better design for the E-Learning system. This document can be used by the developer to bring more advance changes to this system.

1.2 Scope

This document is intended for providing an abstract overview of Online Learning system and general overview of entire project. It will give the access to the student and the Teacher to share their important data and to do all activities between student and Teachers related to study safely. The scope of this document

- Implementation of Design Phase
- OOP design of the system
- Database Engineering
- UI design of the System
- Physical View of system

1.3 References

The user of this SDD may need the following documents for reference

SYSTEMS ANALYSIS & DESIGN an Object-Oriented Approach with UML 5th Edition

1.4 Overview

This document is written according to the standards for Software Design Documentation explained in “IEEE Recommended Practice for Software Design Documentation”. Sections 2

contains the Methodology we used to design the system. Section 3 contains the object-oriented code of the class Diagrams section 4 contains the UI prototype of the system section 5 have the ERD that elaborated the Database Engineering for the system and last phase describes the physical architecture of the document that how system will work in the real environment

2 Methodology

To build this system Design we have used the V & V Model. Where WE gathered requirements are performed testing in Every Phase.

Verification and Validation for class Design:

For every class we have created a java code. All the java classes are according to the class Diagram. All the functions and methods are implemented.

Verification and Validation for Use case:

The Sequence Diagrams are created for every use case. To achieve the consistency in the design phase we followed the sequence Diagram flow in out prototype flow.

2.1 Implementation of Design Model

There were three models in the choices to use to design this system**.**

- **Factoring**
- **Partition**
- **Layers**

The model we have used to design this system is defined below.

Implementation of Layer Model

While moving to the Design phase from the Analysis phase the layer model is used. The Implementation can clearly see in the Data Management Layer, UI layer and Physical Architecture Layer. By understanding the Layer model, we can understand the process better. Bu understanding the architecture model the deployment, UI and Data Management layer is designed. That helped us to understand the real environment of the system that where it will be use and how it will be structured to be used by the user. To successfully

evolve the analyses phase into the Design phase we understood the real environment of the system. That actually represents the MVC Architecture of system. The views will handle the output and the controllers like java code will handle the input of the system and will perform other activities like authenticating the user and perform his wanted tasks in the system. The architecture layer is clearly defined in the Deployment Diagram that how system will be configured in the working environment and how components and Devices will communicate to each other to function properly

3 Classes and Methods Design

All the classes and Methods Designed using the class Diagram. For every class there is a java file that is used to declare the classes and implement the functions in it. In the Diagram we have following classes:

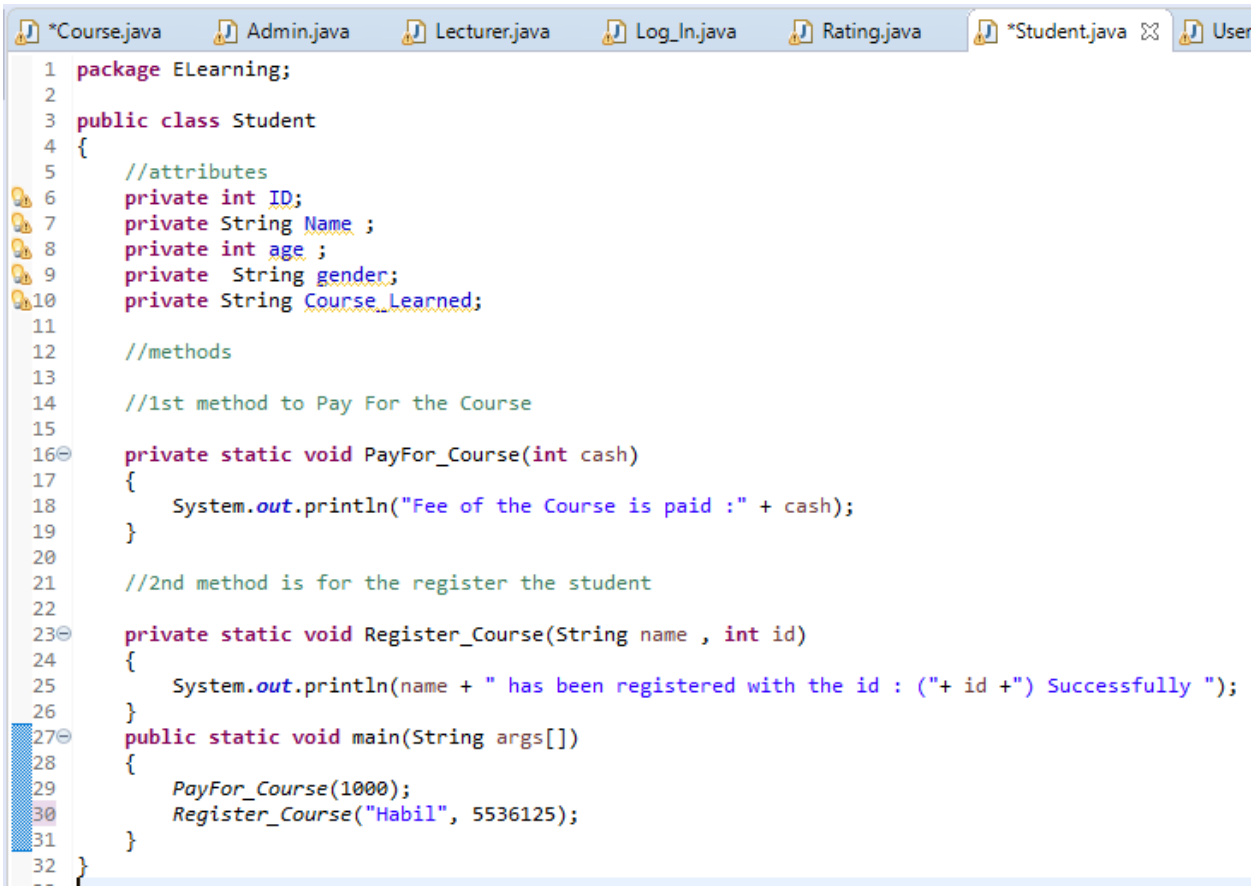
- Lecturer
- Student
- Admin
- Course
- Video
- Payment
- Ratings
- Log in
- User

Lecturer.Java

*Course.java | Lecturer.java | Log_In.java | Rating.java | *Student.java

```
1  package ELearning;
2
3  public class Lecturer
4  {
5      //attributes
6      private String experience ;
7      private int ID;
8      private static String Name;
9      private byte number_of_Courses;
10
11     //constructor
12     public Lecturer()
13     {
14         Name = "User";
15     }
16
17     //methods
18
19     //method one of the RecievePayment
20     private static void RecievePayment(int cash, String NameOf_Reciever)
21     {
22         if(NameOf_Reciever == Name)
23         {
24             System.out.println("cash Paid to  : " + cash);
25         }
26     }
27
28     //method 2 of the setting the user name
29     private static void setName(String name)
30     {
31         Lecturer.Name = name;
32         System.out.println("Name has been Updated to : " + Lecturer.Name );
33
34     }
35
36     //method 3 of the View Student
37     private static void ViewStudent(String name)
38     {
39         System.out.println(name);
40     }
41
42     public static void main (String args[])
43     {
44         RecievePayment(3000,"User");
45         setName("Musadiq");
46         ViewStudent("Students");
47
48     }
49 }
50
```

Student.Java




```java
package ELearning;

public class Student
{
    //attributes
    private int ID;
    private String Name ;
    private int age ;
    private  String gender;
    private String Course_Learned;

    //methods

    //1st method to Pay For the Course

    private static void PayFor_Course(int cash)
    {
        System.out.println("Fee of the Course is paid :" + cash);
    }

    //2nd method is for the register the student

    private static void Register_Course(String name , int id)
    {
        System.out.println(name + " has been registered with the id : ("+ id +") Successfully ");
    }
    public static void main(String args[])
    {
        PayFor_Course(1000);
        Register_Course("Habil", 5536125);
    }
}
```

Log in.Java

*Course.java | Admin.java | Lecturer.java | Log_In.java | Rating.java | Stud

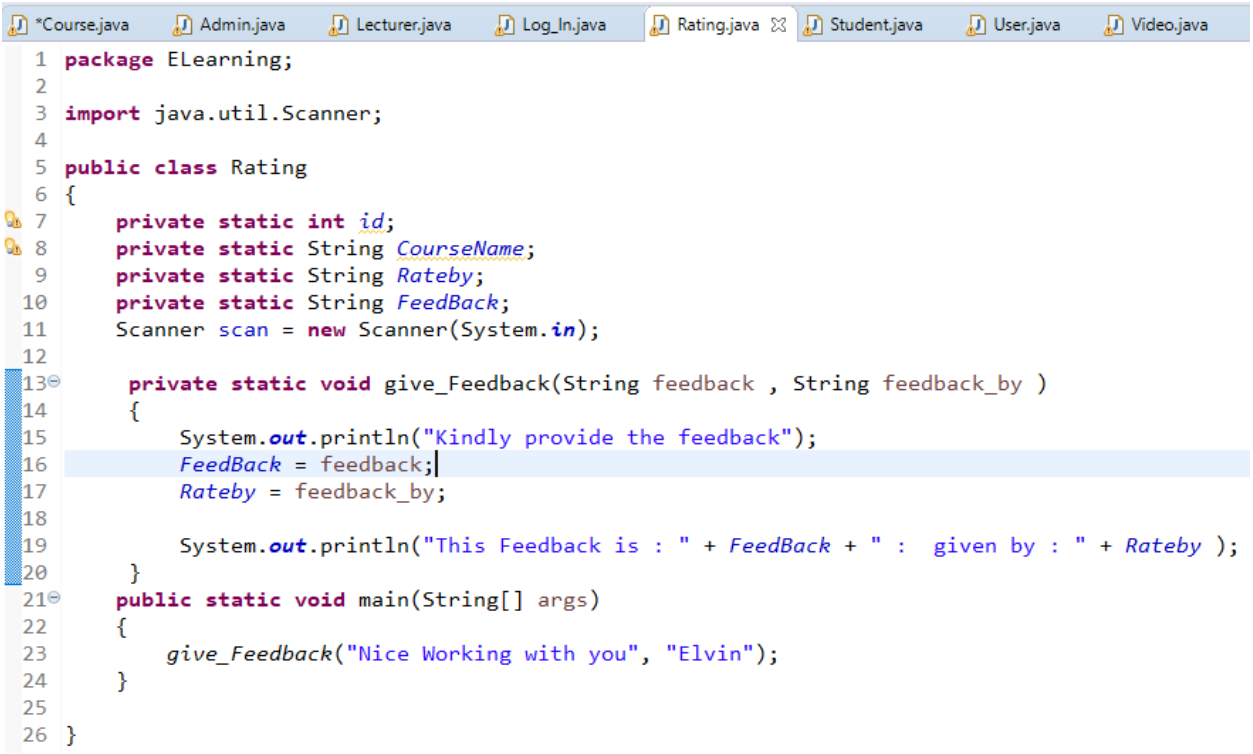
```java
package ELearning;

public class Log_In
{
    //attributes
    private int id;
    private static String userName;
    private static String password;

    //constructor for the default values setting
    Log_In()
    {
        this.id = 5536125;
        this.userName = "Musadiq";
        this.password = "i love animals";

    }
    //methods

    //1st method authetication of theuserName and the passward
     private static void user_Authentication(String userName, String Passward)
     {
         if(userName == Log_In.userName || Passward == Log_In.password)
         {
             System.out.println("Authenticated User ");
         }
         else
         {
             System.out.println("Sorry wrong  Passward and userName");
         }
     }

     public static void main(String args[])
     {
         Log_In log = new Log_In();
         user_Authentication("Musadiq","i love animals" );
     }
}
```

Video.Java

*Course.java | Admin.java | Lecturer.java | Log_In.java | Rating.java | Student.java | User.java

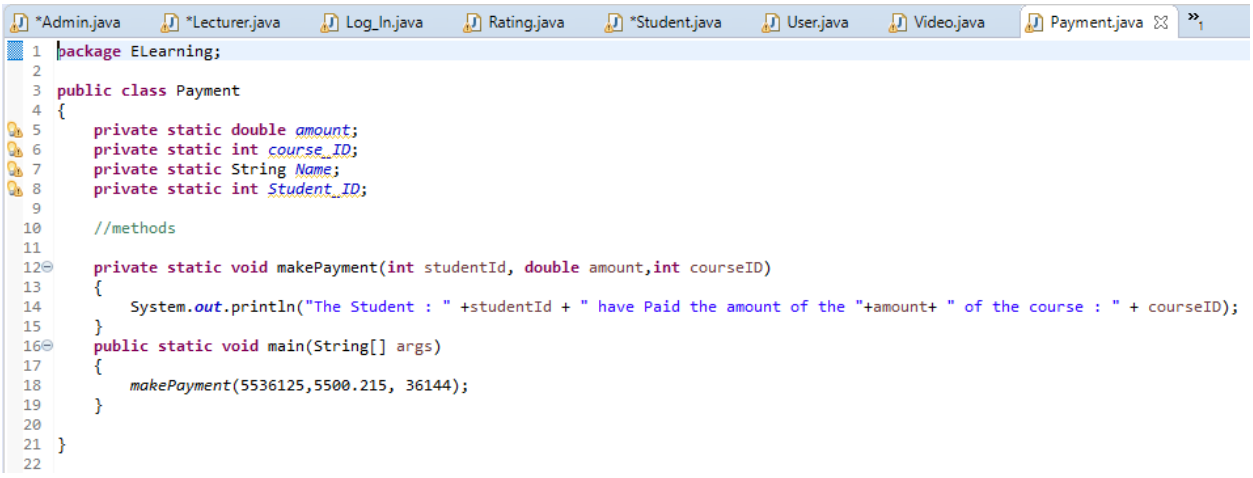
```
1  package ELearning;
2
3  public class Video
4  {
5      private static byte studentId;
6      private static byte ID;
7      private static String Name;
8      private static String UploadedBy;
9
10     //methods
11
12     //uploading video information
13     private static void UploadVideo(String VideoTitle ,String Name)
14     {
15         System.out.println("This Video : " + VideoTitle + "Is Uploaded By "+ Name);
16     }
17
18     //deleted indformation
19
20     private static void deletedVideo(String Deleted_Video_Name)
21     {
22         System.out.println("This Video of title " + Deleted_Video_Name +"Is deleted Successfully");
23     }
24
25     //edit the video
26
27     private static void editVideo_Info(String videoName)
28     {
29         System.out.println("The Video Name : "+ videoName + " Edited");
30     }
31
32     //main  class
33
34     public static void main(String args[])
35     {
36         UploadVideo("Hello World", Name);
37         deletedVideo("Musadiq Aliyev");
38         editVideo_Info("How to design");
39     }
```

Rating.Java



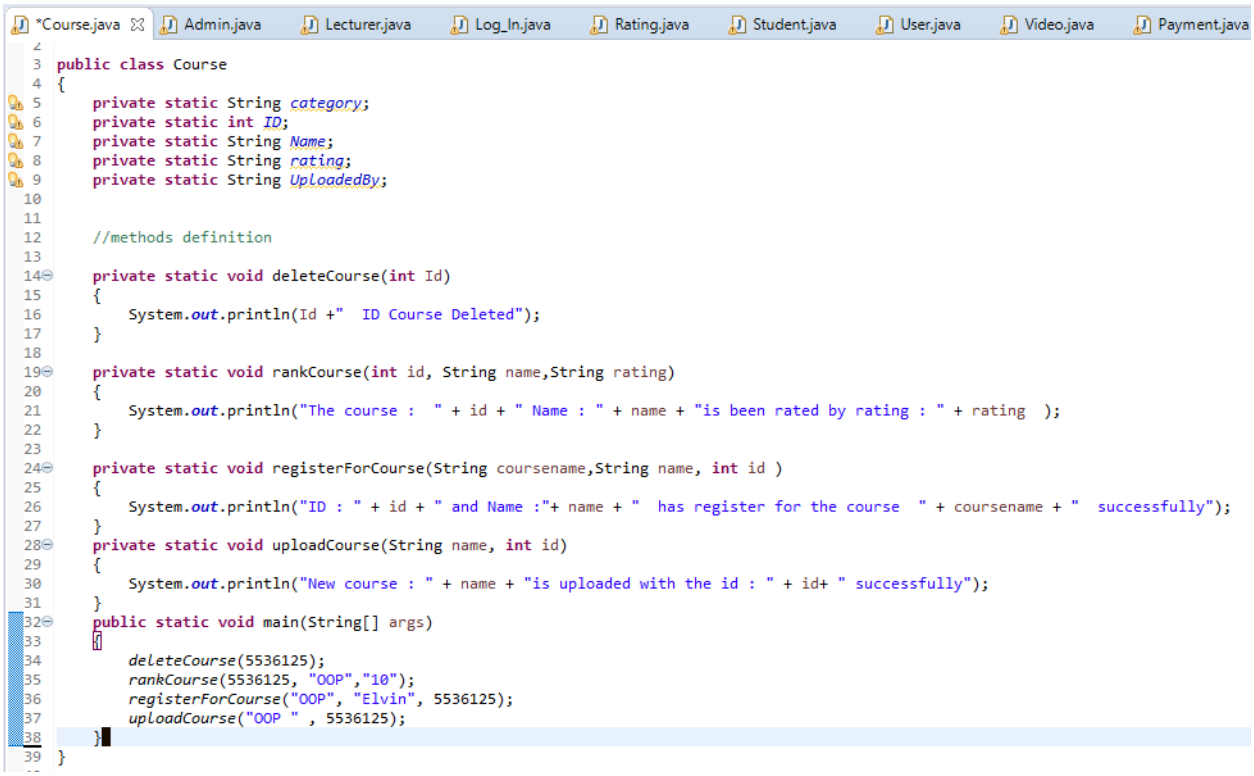

```java
package ELearning;

import java.util.Scanner;

public class Rating
{
    private static int id;
    private static String CourseName;
    private static String Rateby;
    private static String FeedBack;
    Scanner scan = new Scanner(System.in);

     private static void give_Feedback(String feedback , String feedback_by )
     {
         System.out.println("Kindly provide the feedback");
         FeedBack = feedback;
         Rateby = feedback_by;

         System.out.println("This Feedback is : " + FeedBack + " :  given by : " + Rateby );
     }
    public static void main(String[] args)
    {
        give_Feedback("Nice Working with you", "Elvin");
    }

}
```

Payment.Java



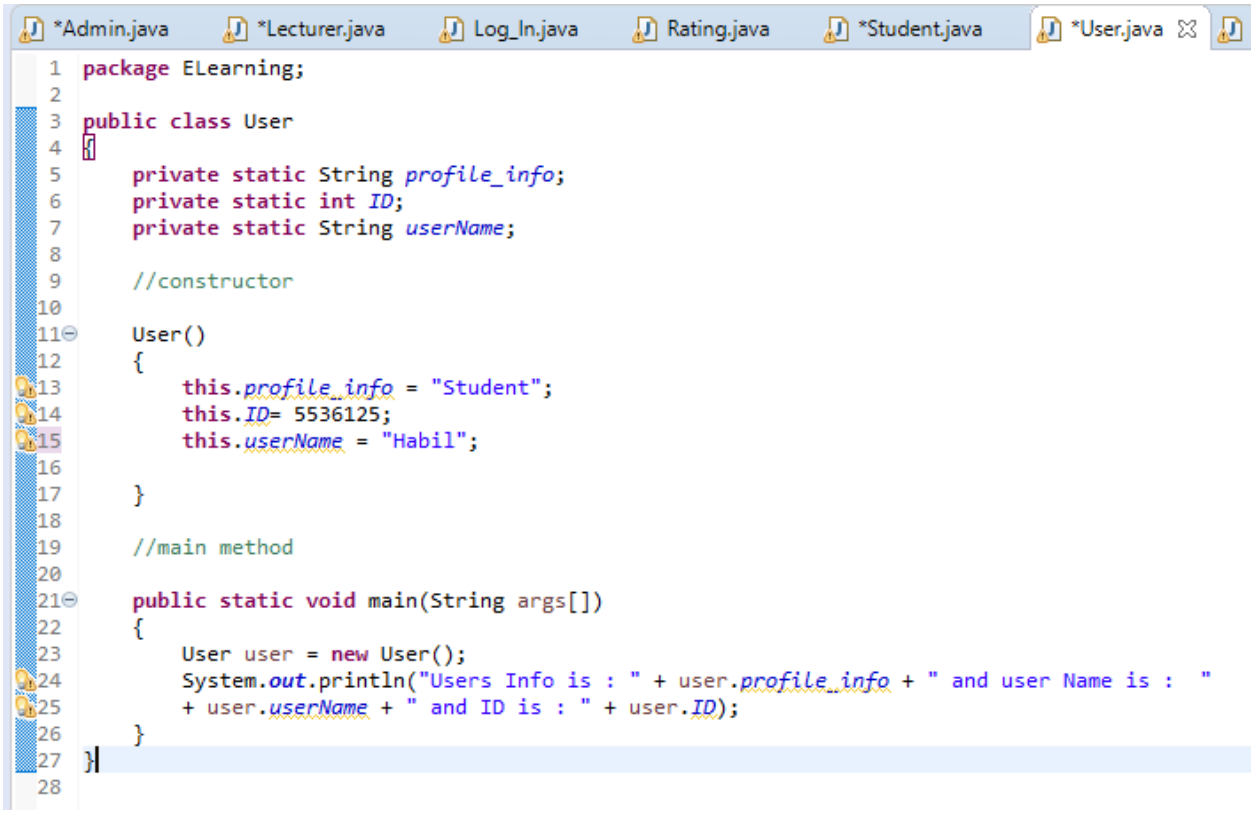

```java
package ELearning;

public class Payment
{
    private static double amount;
    private static int course_ID;
    private static String Name;
    private static int Student_ID;

    //methods

    private static void makePayment(int studentId, double amount,int courseID)
    {
        System.out.println("The Student : " +studentId + " have Paid the amount of the "+amount+ " of the course : " + courseID);
    }
    public static void main(String[] args)
    {
        makePayment(5536125,5500.215, 36144);
    }

}
```

Course.java



```
*Course.java  Admin.java  Lecturer.java  Log_In.java  Rating.java  Student.java  User.java  Video.java  Payment.java

public class Course
{
    private static String category;
    private static int ID;
    private static String Name;
    private static String rating;
    private static String UploadedBy;


    //methods definition

    private static void deleteCourse(int Id)
    {
        System.out.println(Id +"  ID Course Deleted");
    }

    private static void rankCourse(int id, String name,String rating)
    {
        System.out.println("The course :  " + id + " Name : " + name + "is been rated by rating : " + rating  );
    }

    private static void registerForCourse(String coursename,String name, int id )
    {
        System.out.println("ID : " + id + " and Name :"+ name + "  has register for the course  " + coursename + "  successfully");
    }
    private static void uploadCourse(String name, int id)
    {
        System.out.println("New course : " + name + "is uploaded with the id : " + id+ " successfully");
    }
    public static void main(String[] args)
    {
        deleteCourse(5536125);
        rankCourse(5536125, "OOP","10");
        registerForCourse("OOP", "Elvin", 5536125);
        uploadCourse("OOP " , 5536125);
    }
}
```

User.java



```
*Admin.java  *Lecturer.java  Log_In.java  Rating.java  *Student.java  *User.java

package ELearning;

public class User
{
    private static String profile_info;
    private static int ID;
    private static String userName;

    //constructor

    User()
    {
        this.profile_info = "Student";
        this.ID= 5536125;
        this.userName = "Habil";

    }

    //main method

    public static void main(String args[])
    {
        User user = new User();
        System.out.println("Users Info is : " + user.profile_info + " and user Name is :  "
        + user.userName + " and ID is : " + user.ID);
    }
}
```

Admin.java

*Course.java | *Admin.java | *Lecturer.java | Log_In.java | Rating.java | *Student.java

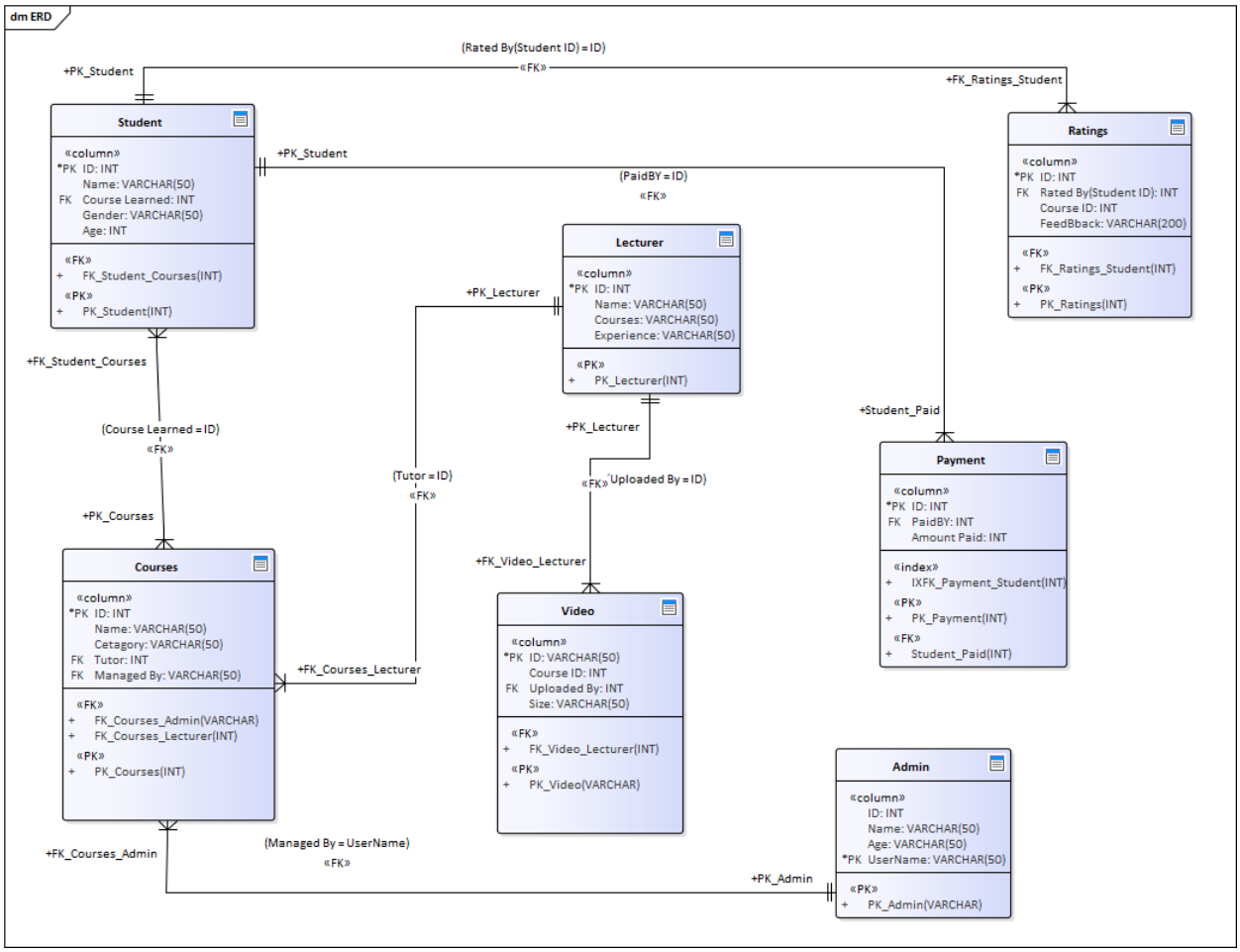
```
1  package ELearning;
2
3  public class Admin
4  {
5      private static int user_id;
6      private static String name;
7      private static String userName;
8      private static int age;
9
10     //methods for the admin to perform the certain tasks
11     private static void setName(String username)
12     {
13         System.out.println("The user name has been set to : " + username );
14         userName = username;
15     }
16
17     private static void deleteData(int id)
18     {
19         System.out.println("The required data against id:  " + id + "  has been deleted");
20
21     }
22     private static void getName()
23     {
24         System.out.println("The name of the user is " + userName);
25     }
26
27     public static void main(String args[])
28     {
29         setName("Elvin");
30         deleteData(5536125);
31         getName();
32     }
33
34 }
```

These are the classes Implemented Using Java Programming Language. We preferred Java because it is especially Object-oriented programming Language where classes are easy to build and we can easily define the relations among them. Class Diagram define the possible attributes and methods for different classes. Class Diagram is defined in the Part 1 document. The possible functions and attributes are implemented using java.

4 Data Management Layer

The Data management Layer is all about managing the data in the Database where your system has data and you are going to save it in the Database. To do this activity Database Engineering is an important activity we have done the Database Engineering and defined the entire possible table with the primary key and foreign keys. There also exists all the possible relations among each table.

ERD for E learning System



5 User Interface Layer

The user interface layer is created using the Axure Prototyping software.

Axure is great prototyping software to design the high-fidelity prototypes easily.

We tried following concepts to create a great design for this system.

- **Layout:** We created a great Layout for the User.
- **Content Awareness**: Content Awareness is great where user can clearly define the
- **Aesthetics:** The design is great created using the great color combination
- **User Experience:** We hope the user experience will be great.
- **Consistency:** there exists the consistency in the design.
- **Minimal User Effort:** We tried to minimize the user effort to possible point.

Usability:

System will do the tasks which are intended to do the user's tasks. Learning courses and navigating to the website. User can perform all the activities to learn from this system**.**

Reliability:

The system is reliable it will secure user's data and will provide any type of security which needed to perform all the tasks.

Memorability:

The newly build system is memorable user can easily navigate to the website once he learned to do. He will not have to learn again and again to do the activities related to this system.

Learnability:

The system is easy to learn user wsill not find any difficulty learning this system. By reading and understanding user can learn himself how to use this system.

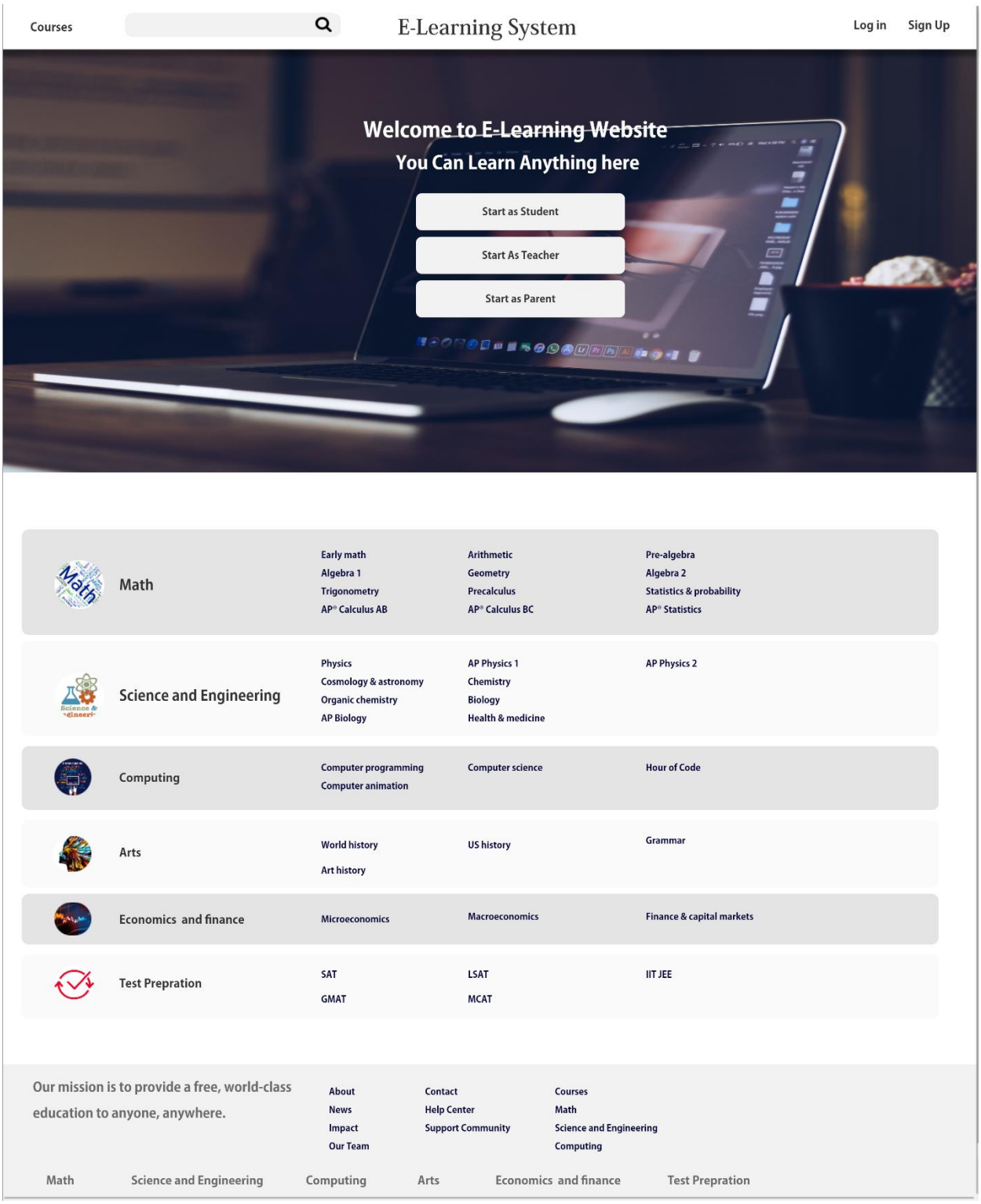
Security:

The system needs to log client's information of registration such as IP address and time for security purpose. Password should encrypt and store in the database. The System is fully secure and provides full comfort zone to user to use this system. All the Information is secure to store in the Database and it will be a agreement for user that his/her information will not be shared.

Maintainability:

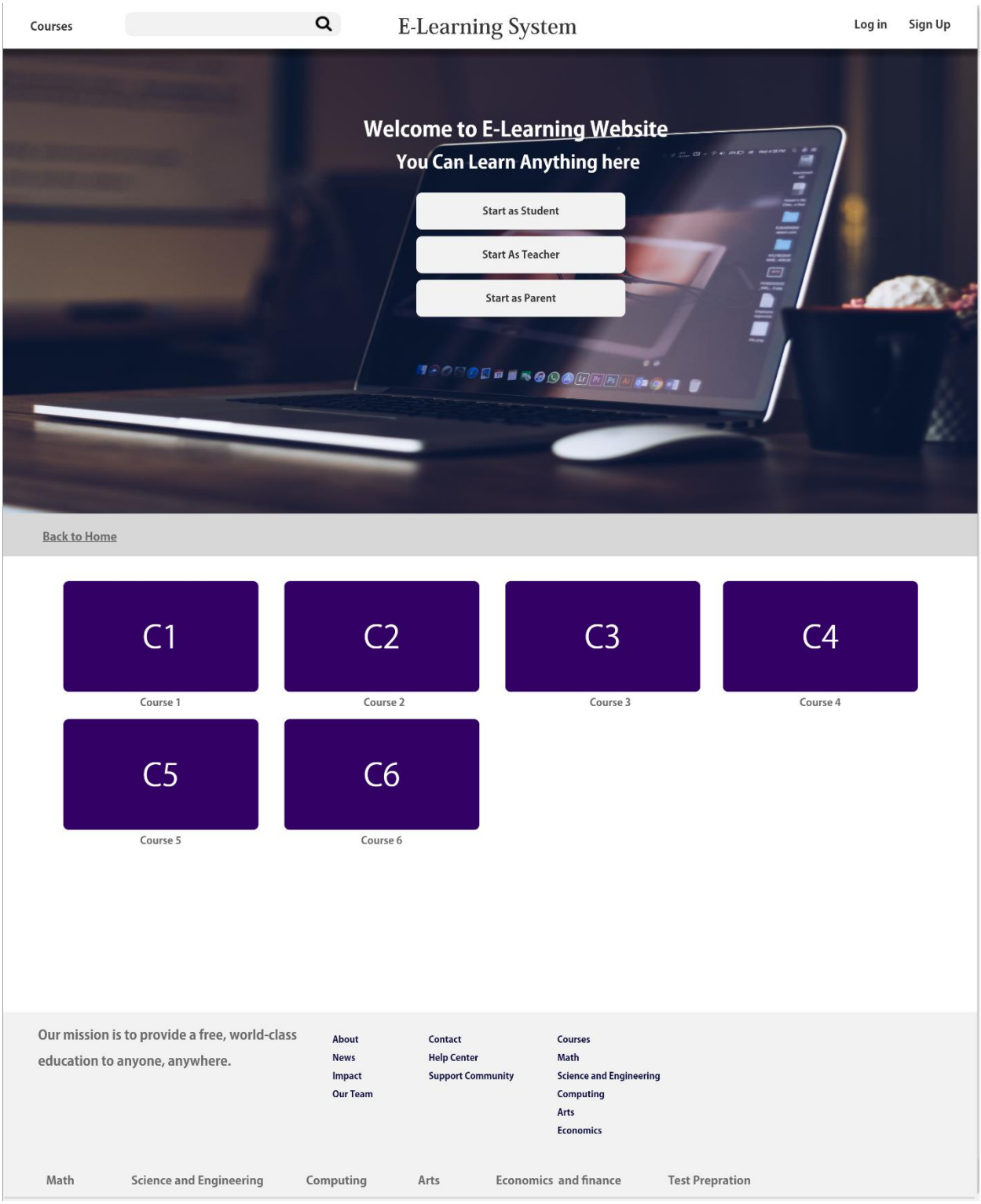
The System is build using Easy techniques of coding the maintainability can be achieved because it is not difficult to read the code any require changes after the Deployment will be made easily.

Home Page:

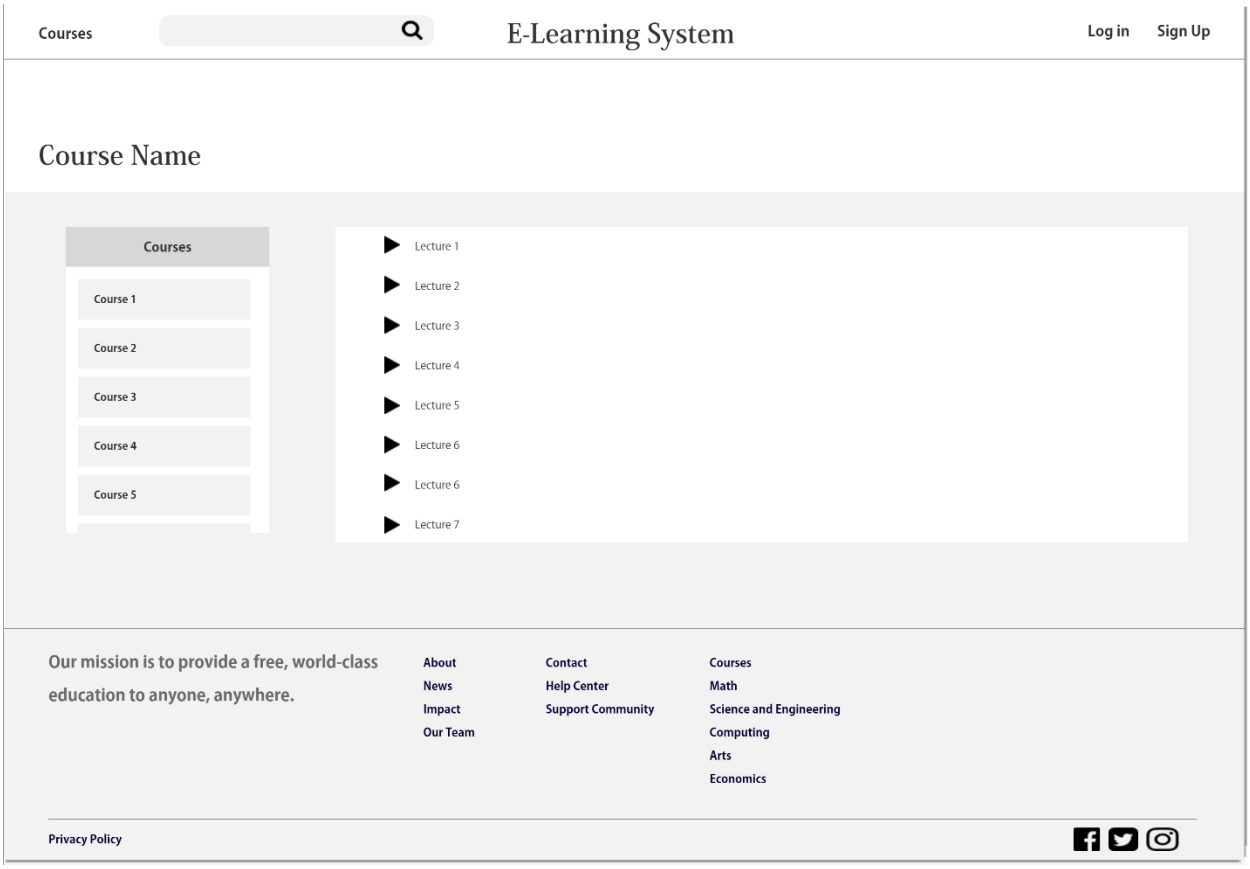

Courses
E-Learning System
Log in
Sign Up
Welcome to E-Learning Website
You Can Learn Anything here
Start as Student
Start As Teacher
Start as Parent
Math
Early math
Algebra 1
Trigonometry
AP® Calculus AB
Arithmetic
Geometry
Precalculus
AP® Calculus BC
Pre-algebra
Algebra 2
Statistics & probability
AP® Statistics
Science and Engineering
Physics
Cosmology & astronomy
Organic chemistry
AP Biology
AP Physics 1
Chemistry
Biology
Health & medicine
AP Physics 2
Computing
Computer programming
Computer animation
Computer science
Hour of Code
Arts
World history
Art history
US history
Grammar
Economics and finance
Microeconomics
Macroeconomics
Finance & capital markets
Test Prepration
SAT
GMAT
LSAT
MCAT
IIT JEE
Our mission is to provide a free, world-class education to anyone, anywhere.
About
News
Impact
Our Team
Contact
Help Center
Support Community
Courses
Math
Science and Engineering
Computing
Math
Science and Engineering
Computing
Arts
Economics and finance
Test Prepration

Courses page:

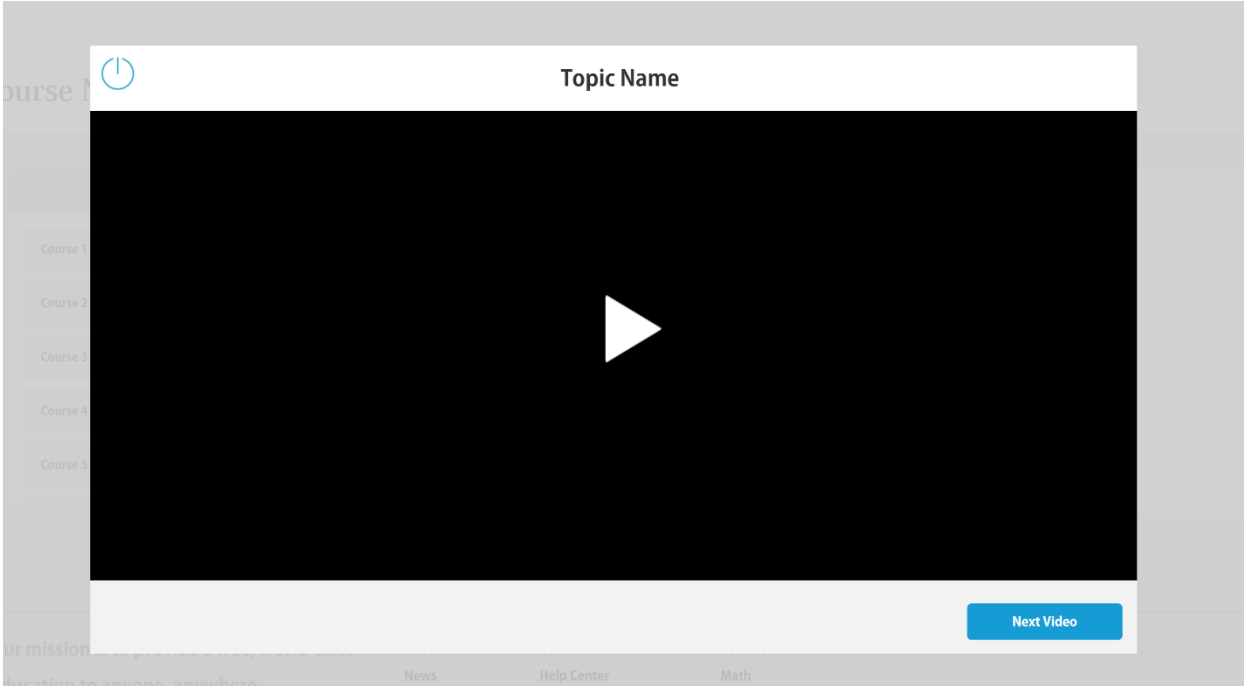
By clicking on



By clicking on the any course, it will take the user to the Lectures page



By clicking on the lecture, it will play the video of lecture



6 Physical Architecture Layer

This phase will show that how this system will work in an environment where user can use it.

Architecture:

There is three-tier architecture for this web application. Where user will use the system and system will have web browser and browser will contact to server for website and that website will use the database server that contains our database.

Environment:

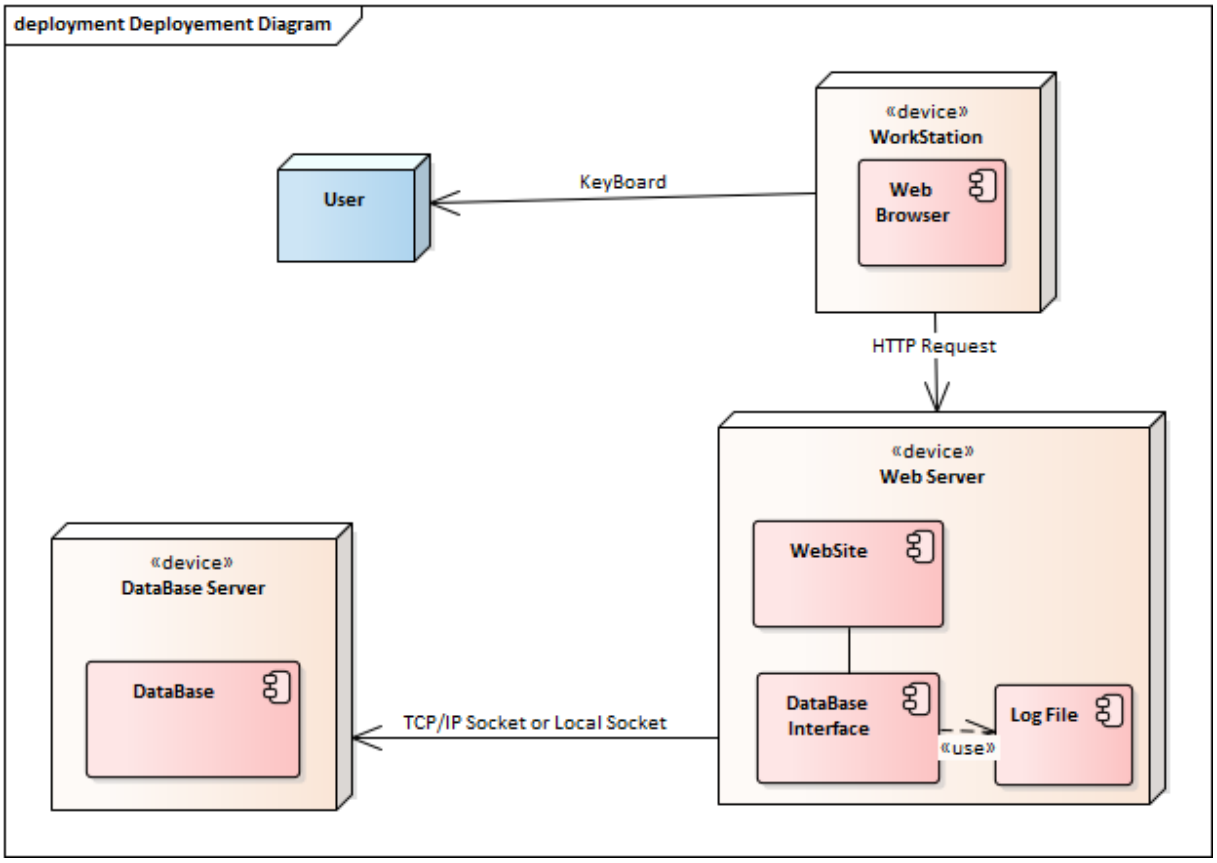
The Desktop should have browser and the operating system does not matters. By using the Browser of Mobile, iPad, and Desktop the user can access this system using a stable internet Connection.

Application Type:

The Application is a web Application and can be accessed using the Internet Connection. User can access it from any device.

The Deployment Diagram will clear Everything About system Environment.

1.1. The Deployment Diagram



(Using Chapter 11)