CSE2004 DBMS EPJ - Final Project Submission

Project On

A real Time e-Learning Website

Submitted By

Team Number – 09

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I - Help file

Software Used/ Required:

1) Frontend: HTML, CSS, BootStrap, JS
2) Backend: PHP, MySQL
3) Server: XAMPP

Connection String:

```php
$servername = 'localhost:3307';

$username = 'root';
$password = '';
$database = 'edusite';

$con = mysqli_connect($servername,$username,$password,$database);
```

Database Details:

No of tables as per normalized schema: 14

No of tables in the final project: 14

Frontend Details:

How many interface pages: 14

Type of Interface: Web Pages

Installation Guide

1) Download and Install XAMPP from the given link
   https://www.apachefriends.org/download.html
2) Once Installation is over run XAMPP Control Panel as ‘Run as Administrator’.
3) Follow the steps in the link to remove the Port errors

   https://www.youtube.com/watch?v=fgQeQeEGvLk

   https://www.youtube.com/watch?v=Avx2kB_K2-4

4) Extract the zip file.
5) Click on the Admin Button next MySQL in the XAMPP Control Panel and import the .sql file.
6) Now copy the extracted file to htdocs inthe location where u have downloaded XAMPP, for eg. D:/XAMPP/htdocs/.
7) Now open the browser and paste the following url.

   http://localhost/edusite/index.php

8) Sign up then sign in as an instructor to upload a course
9) Then go to Admin sign in with Admin ID = A0001 and Password = root_edusite
10) Go to permit courses to allow or deny the request of course upload.
11) If you have accepted the request then go to the student sign up.
12) After signing up, sign in and go to courses to enroll the courses.
13) Go to my courses to view them.
14) An example file is included with the project.

II – Phase I report

Data Collected: Courses from YouTube i.e., Title, author, links of the courses.

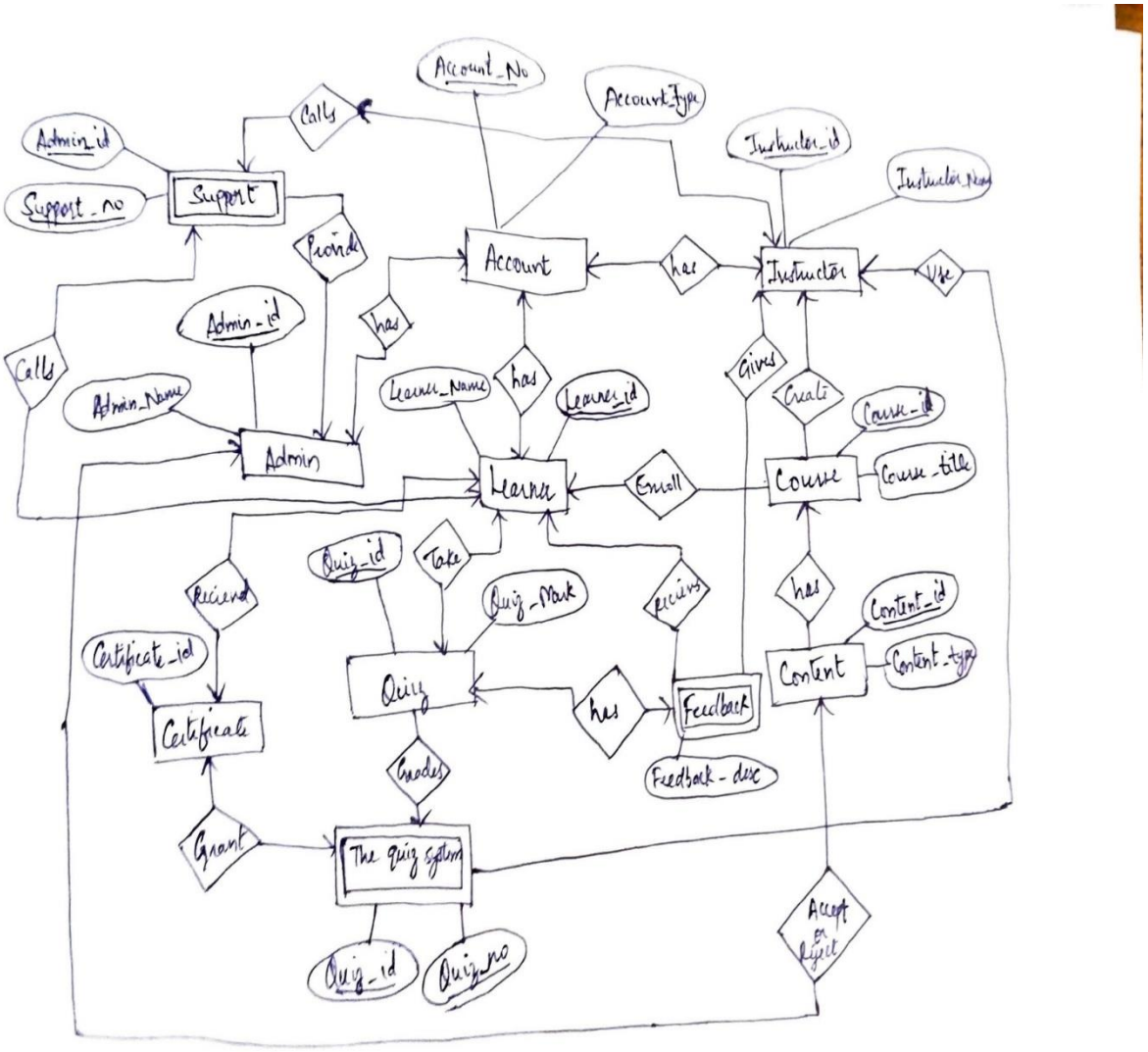
Title of the Course	Author of the Course	Link
Adobe Illustrator for Beginners	Envato Tuts+	https://www.youtube.com/watch?v=Ib8UBwu3yGA
Basics of Stock Market	CA Rachana Phadke Ranade	https://www.youtube.com/watch?v=Xn7KWR9EOGQ
Ethical Hacking	Edureka	https://www.youtube.com/watch?v=dz7Ntp7KQGA
Fundamentals of IT Crash Course	Geek's Lesson	https://www.youtube.com/watch?v=awLnur5Yt9o
Introduction to Anatomy & Physiology	CrashCourse	https://www.youtube.com/watch?v=uBGl2BujkPQ
Learn How to Use the Basic Tools in Adobe Illustrator	Envato Tuts+	https://www.youtube.com/watch?v=AshfNo-i8Ws

Identification of ER Components:

Entity	Type of Entity	Attributes	Type of attributes
Account	Strong	Account_Type, Account_ID	Single Valued
Learner	Strong	Learner_ID, Learner_Name	Single Valued
Instructor	Strong	Instructor_ID, Instructor_Name	Single Valued
Admin	Strong	Admin_ID, Admin_Name	Single Valued
Course	Strong	Course_ID, Course_Title	Single Valued
Content	Strong	Content_ID, Content_Type	Single Valued
Quiz	Strong	Quiz_ID, Quiz_Mark	Single Valued
Certificate	Strong	Certificate_ID	Single Valued
Quiz_System	Weak	Quiz_ID, Quiz_No	Single Valued
Support	Weak	Admin_ID, Support_No	Single Valued
Feedback	Weak	Feedback_desc	Single Valued

Relation	Relation Type	Relation Between
has	Strong	Admin & Account, Learner & Account, Instructor & Account, Course & Content, Quiz & Feedback
Receives	Strong	Learner & Feedback, Certificate & Learner
Gives	Strong	Instructor & Feedback
Take	Strong	Learner & Quiz
Use	Strong	Instructor & Quiz System
Grades	Strong	Quiz System & Quiz
Grants	Strong	Quiz System & Certificate
Provides	Strong	Admin & Support
Calls	Strong	Learner & Support, Instructor & Support
Enroll	Strong	Learner & Course
Create	Strong	Instructor & Course
Accept/Reject	Strong	Content & Admin

ER Diagram:


Account_No
Account_Type
Calls
Admin_id
Support
Support_no
Instructor_id
Instructor_Name
Provide
Account
has
Instructor
Use
Admin_id
has
Calls
Admin_Name
Learner_Name
has
Learner_id
Gives
Create
Course_id
Admin
Learner
Enroll
Course
Course_title
Quiz_id
Take
Quiz_Mark
recieves
has
Content_id
Recieved
Certificate_id
Quiz
has
Feedback
Content
Content_type
Certificate
Grades
Feedback_desc
Grant
The quiz system
Accept or Reject
Quiz_id
Quiz_no

Minimization of ER Diagram:

Learner_Acct(Learner_ID, Learner_Name)

Admin_Acct(Admin_ID, Admin_Name)

Inst_Acct(Inst_ID, Inst_Name)

Course_Create(Course_ID, Inst_ID(FK), Course_Title)

Course_Content(Content_ID, Course_ID(FK), Content_Type)

Course_Enroll(Course_ID(FK), Learner_ID(FK))

Support(Admin_ID(FK), Support_No)

Quiz_Create(Quiz_ID, Max_Marks, Pass_Mark)

Quiz_Take(Quiz ID(FK), Learner_ID(FK), Quiz_Marks)

Quiz_Feedback(Quiz_No, Quiz_ID(FK), Inst_ID(FK), Learner_ID(FK), Feedback_Desc)

Grant_Certificate(Learner_ID(FK), Certificate_ID, Course_Title(FK))

III – Phase II report

CHANGES MADE:

In table Course_Create even Inst_ID is also made a primary key.

In table Grant_Certificate Course_Title was a mistake which is converted to Course_ID.

Added Accept_or_Reject table.

Phase II

Normalization:

Normalization is a process of organizing the data in database to avoid data redundancy, insertion anomaly, update anomaly & deletion anomaly. It can be obtained by reducing them to the normal forms.

The most commonly used normal forms are:

- First Normal Form (1NF)
- Second Normal Form (2NF)
- Third Normal Form (3NF)
- Boyce – Codd Normal Form (BCNF)

Table for Normalization:

For e.g., consider the Course_Content table:

Course_Content(Content_ID, Course_ID, Content_Type)

Course_ID	Content_ID	Content_Type
C001	CON1	Video
C001	CON2	Text
C001	CON3	Quiz
C002	CON1	Video
C002	CON2	Text
C002	CON3	Quiz

Functional Dependencies:

Course_ID → Content_Type
Content_ID → Content_Type

First Normal Form (1NF)

As per the rule of first normal form, an attribute (column) of a table cannot hold multiple values. It should hold only atomic values.

As all the attributes are atomic, the table is in First Normal Form.

Second Normal Form (2NF)

For a table to be in the Second Normal Form,

- It should be in the First Normal form.
- And, it should not have Partial Dependency.

Since one course can have multiple contents and every content type has an ID there exists an 'Partial Key Dependency'.

The above table is decomposed into:

Content(Content_ID, Content_Type)

Content_ID	Content_Type
CON1	Video
CON2	Text
CON3	Quiz

Course_Content(Course_ID,Content_ID)

Course_ID	Content_ID
C001	CON1
C001	CON2
C001	CON3
C002	CON1
C002	CON2
C002	CON3

The decomposition is lossless, while joining the original table can be obtained.

Third Normal Form (3NF)

For the table to be in the Third Normal Form,

- It should be in the Second Normal Form.
- And, it should not have Transitive Dependency.

As there is no transitive dependency in the decomposed table Content and Course_Content they are already in the Third Normal Form.

Boyce – Codd Normal Form (BCNF)

Boyce - Codd Normal Form is a higher version of the Third Normal form. This form deals with certain type of anomaly that is not handled by 3NF. A 3NF table which does not have multiple overlapping candidate keys is said to be in BCNF. For a table to be in BCNF, following conditions must be satisfied:

- R must be in 3rd Normal Form
- And, for each functional dependency (X → Y), X should be a super Key.

After decomposition there exists only one functional dependency, i.e., Content_ID → Content_Type and Content_ID is the super key, therefore, the given table is in Boyce – Codd Normal Form.

Final Schemas:

Learner_Acct(Learner_ID, Learner_Name)

Admin_Acct(Admin_ID, Admin_Name)

Inst_Acct(Inst_ID, Inst_Name)

Course(Course_ID, Course_Title)

Course_Create(Course_ID, Inst_ID)

Course_Enroll(Course_ID, Learner_ID)

Content(Content_ID, Content_Type)

Course_Content(Course_ID, Content_ID)

Support(Admin_ID, Support_No)

Quiz_Create(Quiz_ID, Max_Marks, Pass_Mark)

Quiz_Take(Quiz ID, Learner_ID, Quiz_Marks)

Quiz_Feedback(Quiz_No, Quiz_ID, Inst_ID, Learner_ID, Feedback_Desc)

Grant_Certificate(Learner_ID, Certificate_ID, Course_ID)

Accept_or_Reject(Admin_ID, Course_ID, Content_ID, Permit)

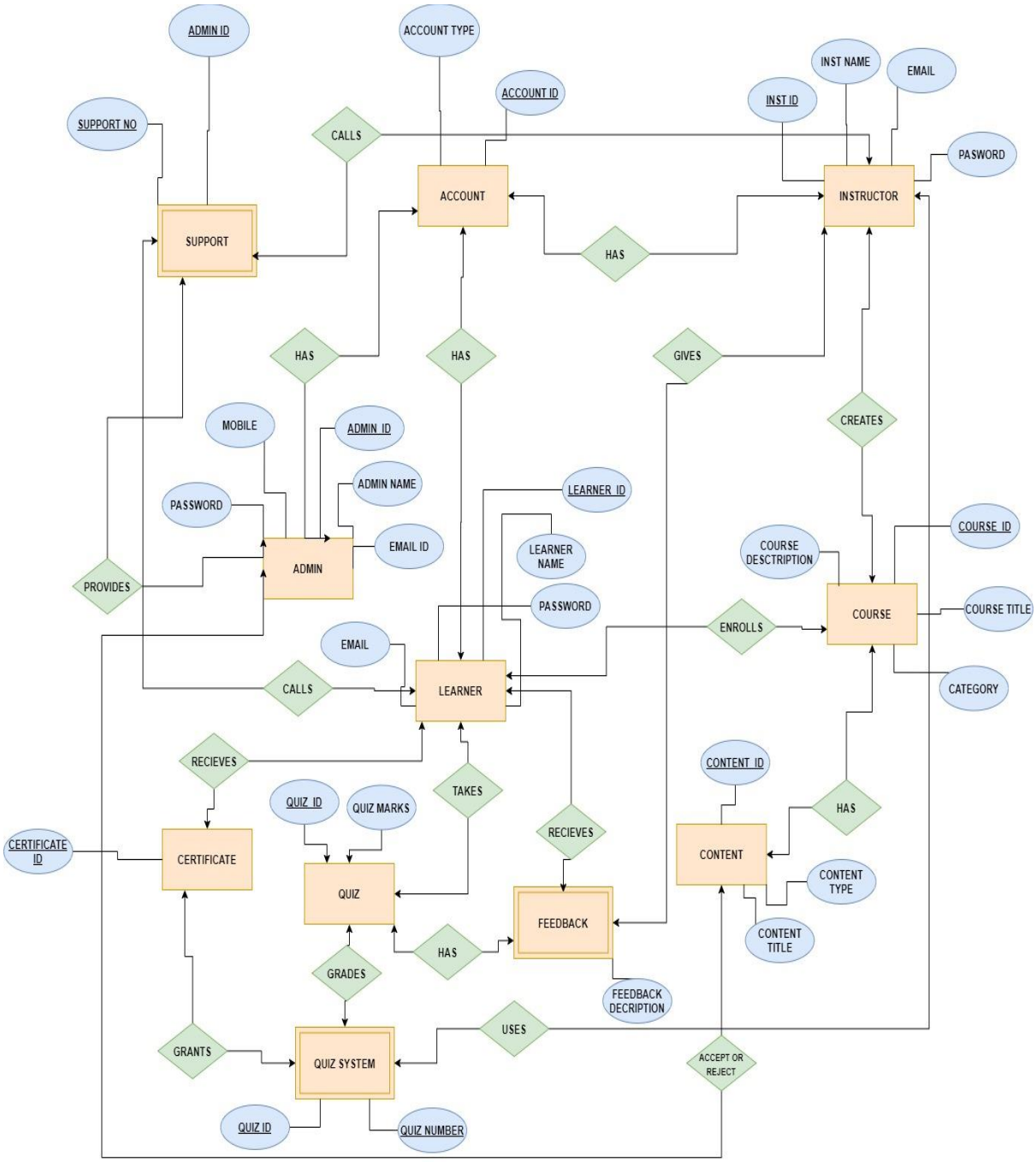
IV – Phase III report

CHANGES MADE:

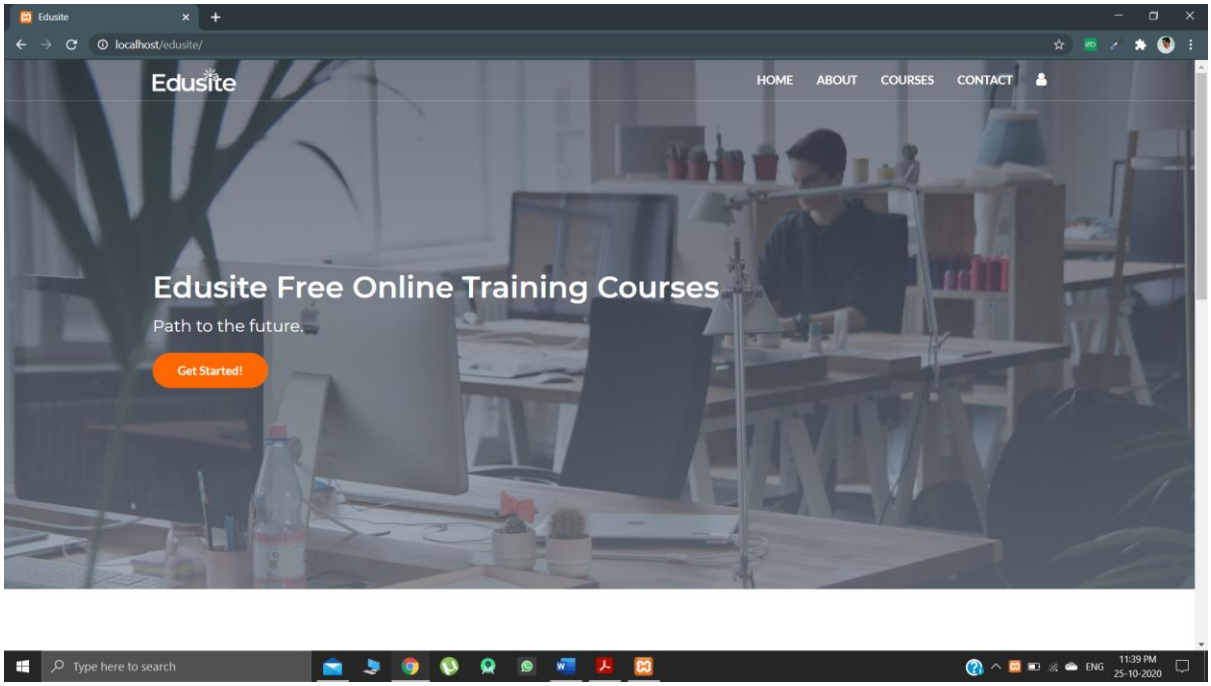
Improved Design

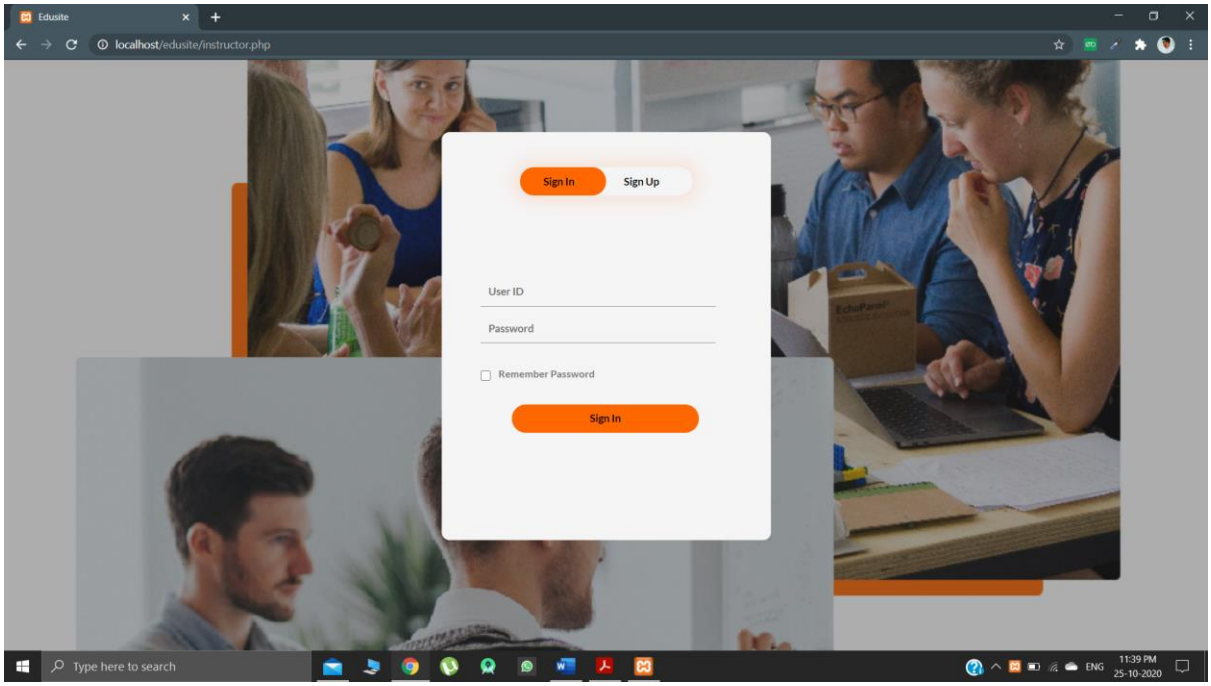
Table decomposition

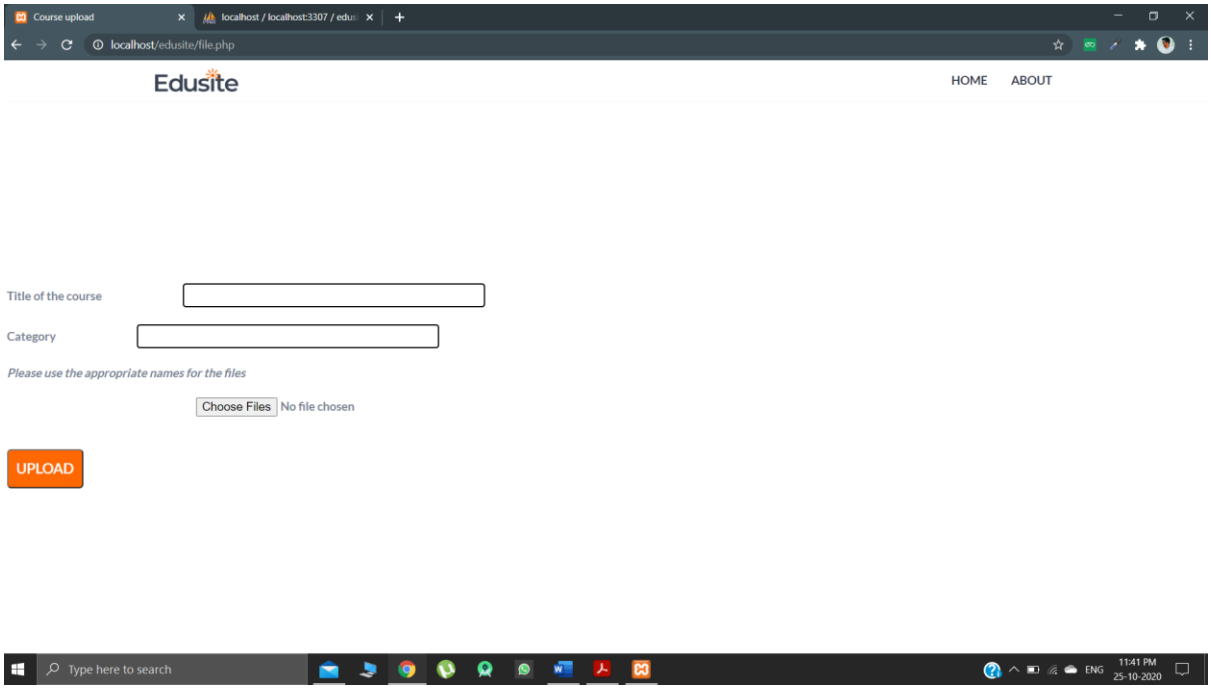
ER Diagram:

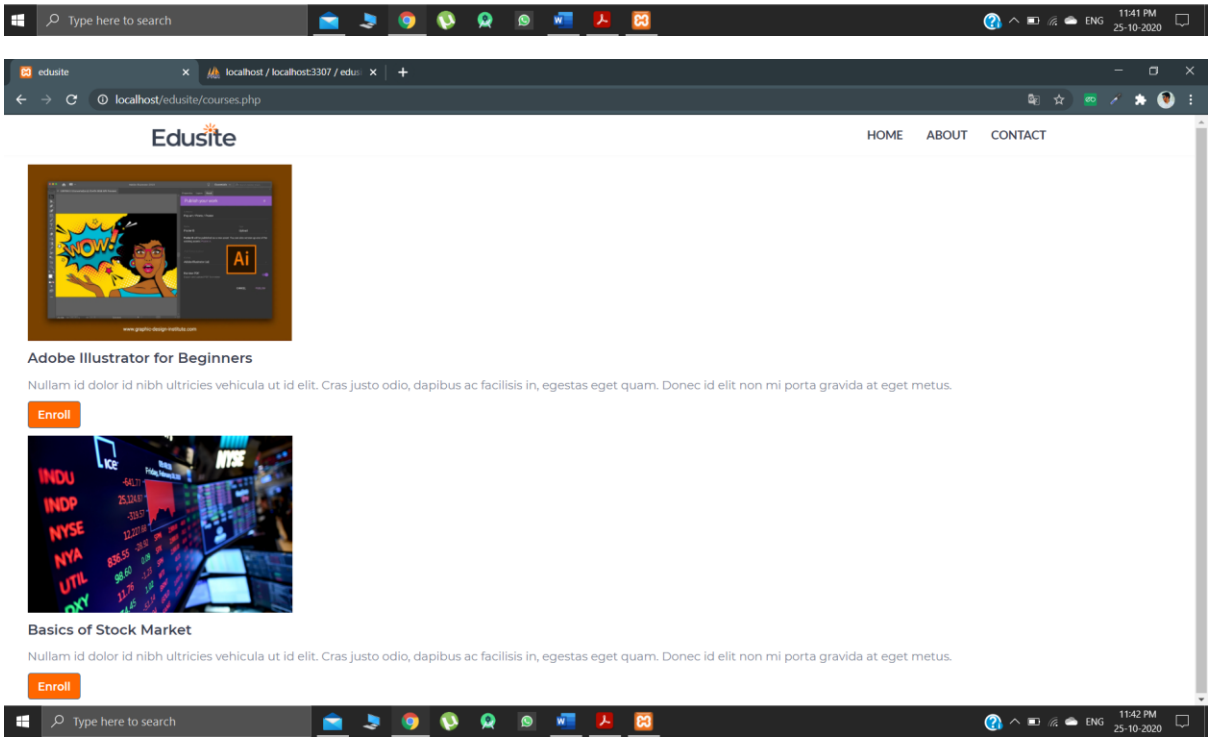


Screen Shots:






Course upload
localhost / localhost:3307 / edus
localhost/edusite/file.php
Edusite
HOME
ABOUT
Title of the course
Category
Please use the appropriate names for the files
Choose Files
No file chosen
UPLOAD


edusite
localhost / localhost:3307 / edus
localhost/edusite/courses.php
Edusite
HOME
ABOUT
CONTACT
Adobe Illustrator for Beginners
Nullam id dolor id nibh ultricies vehicula ut id elit. Cras justo odio, dapibus ac facilisis in, egestas eget quam. Donec id elit non mi porta gravida at eget metus.
Enroll
Basics of Stock Market
Nullam id dolor id nibh ultricies vehicula ut id elit. Cras justo odio, dapibus ac facilisis in, egestas eget quam. Donec id elit non mi porta gravida at eget metus.
Enroll

Learning Experience

We learnt something new within and outside the subject. Learnt about designing, database management and how dynamic websites work. We learned basics of HTML, CSS, JS, Bootstrap and PHP apart from using RDBMS Software. Also learnt how to make a user-friendly website so it becomes a convenience for the end user. This project is our first fully functional project.

We learnt how to use servers to try project on local system and how database stores data for future use. We learnt how to store images and videos in the database. We learnt the importance of the backend, and how useful it can be to store data efficiently as well as in an organised manner.

Overall, it was fun, challenging and a wonderful experience which taught us that there is a lot more to learn. This project has enhanced our skills and motivated us to develop more projects in the coming future.