18CSC206J – Software Engineering And Project Management LAB REPORT

Submitted by

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SRM INSTITUTE OF SCIENCE & TECHNOLOGY
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Certified to be the bonafide work done by Ananya Ravichandran of II Year / IV Sem B.Tech Degree course in the **Practical Software Engineering and Project Management 18CSC206J** in **SRM INSTITUTE OF SCIENCE & TECHNOLOGY,** Kattankulathur during the academic year 2021-2022

DATE : 27.6.2022

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ABSTRACT

E-learning fulfils the thirst of knowledge and offers online content that can be delivered for the learner at anywhere, anytime and any age through a wide range of e-learning solution while compared with traditional learning system. It also provides the rapid access to specific knowledge and information. With the rapid growth of voluminous information sources and the time constraint the learning methodology has changed. Learners obtain knowledge through e-Learning systems rather than manually teaching and learning. In this research paper proposes the e-learning management system with web services oriented frame work and SOA. This system supports the cross browser and fully integrated with different databases. This system focused around the several features namely Content Management, Content Protection, Learning Management, Delivery Management, Evaluation management, Access Control, etc., and mainly focused on integrated platform needed for e-learning and managements.

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1	AGILE METHODOLOGY	
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11	COLLABORATION DIAGRAM	
12	DESKTOP VIEW NAVIGATION BAR	
13	MOBILE VIEW HOME PAGE	
14	FOOTER VIEW	
15	CONTACT PAGE	

LIST OF ABBREVIATIONS

API	**APPLICATION PROGRAMMING INTERFACE**
HTML	**HYPER TEXT MARKUP LANGUAGE**
CSS	**CASCADING STYLES SHEET**
JS	**JAVASCRIPT**
RAM	**RANDOM ACCESS MEMORY**
UI	**USER INTERFACE**
UX	**USER EXPERIENCE**
IDE	**INTEGRATED DEVELOPMENT ENVIRONMENT**
RMM	**RISK MONITORING AND MANAGEMENT**
UML	**UNIFIED MODELING LANGUAGE**
JSON	**JAVASCRIPT OBJECT NOTATION**
ER	**ENTITY RELATION**
DFD	**DATA FLOW DIAGRAM**
HTTP	**HYPER TEXT TRANSFER PROTOCOL**
XML	**EXTENSIBLE MARKUP LANGUAGE**
AJAX	**ASYNCHRONOUS JAVASCRIPT AND XML**
DB	**DATA BASE**
CLI	**COMMAND LINE INTERFACE**
SQL	**STRUCTURED QUERY LANGUAGE**

CHAPTER-1
PROBLEM STATEMENT

E-LEARNING PLATFORM

Project Description:

ONE PAGE BUSINESS CASE TEMPLATE

DATE	21/03/2022
SUBMITTED BY	Ananya Ravichandran,Deepika Kumari,Kondreddy Bhanusree
TITLE / ROLE	E- learning platform

THE PROJECT

In bullet points, describe the problem this project aims to solve or the opportunity it aims to develop.

- ★ To meet the learning styles and needs of the students.
- ★ Enhance the quality of learning and teaching in schools and colleges.
- ★ Improve the efficiency and effectiveness for both educators and students.
- ★ Improve user accessibility and time flexibility in order to engage learners in the learning process.
- ★ To collaborate with a large number of people in order to create an active learning platform.

THE HISTORY

- ★ Direct instruction or traditional method is the most common form of instruction.This is the lecturing method of teaching. Many teachers use this teaching method almost exclusively, as it is considered the simplest, and you can cover large amounts of material in a short period of time.
- ★ However, this is not the most effective teaching method to reach all students. and with the current pandemic situation E-LEARNING has made tremendous changes in the lifestyle of education with a different method of approaching teaching.

In bullet points, describe the current situation.

LIMITATIONS

List what could prevent the success of the project, such as the need for expensive equipment, bad weather, lack of special training, etc.

- ★ **Inaccessible to others** :Nowadays,the internet is common everywhere in the world. Unfortunately, some have very limited access to the internet mainly in the rural areas. They have to go to internet cafes or use public Wi-Fis which is very inconvenient.
- ★ **Requires self-motivation and proper time management skills :**You're basically on your own in e-learning. You have to motivate yourself to study hard, take down notes, and gather more information.One should work on their time management skills to improve their productivity.
- ★ **Cheating is unavoidable** :E-learning includes assessment, just like in a regular classroom atmosphere. However, there are teachers or proctors to watch over you during exams. It's easy for online students to share answers knowing there's nobody watching.
- ★ **Create sense of isolation :** Online courses may create a sense of isolation and increase loneliness when excessive time is spent in the same online environment .

APPROACH

★ **Front end**: HTML5, CSS3, JavaScript
★ **Back end:** Python
★ **Database for Students:** MySQL, MongoDB

List what is needed to complete the project.

BENEFITS

In bullet points, list the benefits that this project will bring to the organization.

★ **Online learning is self-paced :** Students who study online can plan their own time schedule, without having to make personal sacrifices in order to meet the class attendance requirements of teachers and traditional universities. The research has demonstrated that self-paced learning leads to increased student satisfaction and reduced stress, resulting in improved learning outcomes for everyone involved. Some of the advantages of self-paced learning include efficiency, effectiveness, convenience, scalability, and reusability.

★ **E-Learning is student-centered** : Student-centered learning (SCL), also referred to as learner-centered education, is a modern learning method which aims to put the students in the center of focus, rather than the teachers. The reason why I listed it as an advantage of E-Learning is that student-centered learning goes hand in hand with E-Learning. Online learning is fundamentally student-centered, due to the easy implementation of student discussion boards and peer grading systems.

★ **No need for textbooks** : One big advantage of E-Learning is that it requires absolutely no textbooks from its students. All the learning materials can be accessed online, without restriction. Online learning materials can be retaken and updated an infinite amount of times, unlike textbooks which need to be reissued and rebought once again when they become obsolete.

★ **Individual learning styles** : E-Learning takes into consideration the differences of individual learners, and it allows students to practice their own individual learning styles. In other words, students are not always required to pass all unwanted courses in a curriculum and they can choose specific topics of interest to them. All students have different learning styles and there will never be a one-size-fits-all type of solution which will match all students at once. That is why individualistic learning methods are some of the greatest advantages of E-Learning.

★ **E-learning fully utilizes analytics** : With student data gained through E-Learning Analytics, educational institutions can improve their training materials and boost learning outcomes in various ways. For example, if we have data on student dropout rates, we can identify potential pitfalls in our learning materials and eliminate them. Afterward, we can gather new data and analyze whether our change was beneficial to our E-Learning outcomes or not. The value of data in education is immense, and its full potential is yet to be realized.

CHAPTER-2
STAKEHOLDERS & PROCESS MODELS

Selection of Methodology:

Agile Methodology

The meaning of Agile is swift or versatile."Agile process model" refers to a software development approach based on iterative development. Agile methods break tasks into smaller iterations, or parts do not directly involve long term planning. The project scope and requirements are laid down at the beginning of the development process. Plans regarding the number of iterations, the duration and the scope of each iteration are clearly defined in advance.

Each iteration is considered as a short time "frame" in the Agile process model, which typically lasts from one to four weeks. The division of the entire project into smaller parts helps to minimize the project risk and to reduce the overall project delivery time requirements. Each iteration involves a team working through a full software development life cycle including planning, requirements analysis, design, coding, and testing before a working product is demonstrated to the client.

Following are the phases in the Agile model are as follows:

1. Requirements gathering
2. Design the requirements
3. Construction/ iteration
4. Testing/ Quality assurance
5. Deployment
6. Feedback

Fig. Agile Model

Incorporate information to below table regarding stakeholders of the project [Make use of below examples]

Stakeholder Name	Activity/ Area /Phase	Interest	Influence	Priority (High/ Medium/ Low)
Investors	Funding	Provide capital to start the business and ensure it is invested in a correct way.	Low	6
Project Manager	Key stakeholder	leading role in planning, executing, monitoring, controlling the e-learning project	High	1
Technology Experts	Troubleshoot IT problems	managing technological based - programs, services and products	Med	5
Subject Matter Experts	Advisor / instructor.	Makes decisions about the content structure & sequences and make strategies that will support e-learning	High	3
Online Instructors	Guidance	Provide support to learners in the form of scheduled coaching sessions.	Med	2
Marketing Head	Crafting strategy	Devise strategies for all marketing teams including digital, advertising, creative & communications.	High	4
Resource Manager	Assigning	Allocate resources effectively based on the project budget.	Med	7
Corporate Learners	End Users	Provide feedback about the course and teaching methods.	Med	5

CHAPTER-3
IDENTIFYING REQUIREMENTS

System Requirements :

★ Personal Computers with Operating System : A desktop having Windows 10 , 11 with the latest version of Chrome, FireFox or Microsoft Edge or MAC OS with the latest version of Safari. (Eg : Pentium IV would be sufficient with at least 512 Megabytes of memory)

★ Computer Speed & Processor : One can use 4 GB of RAM but 8 GB is mostly preferred with Dual core Intel i3, i5, i7 or AMD Ryzen CPU. 128 GB harddrive will be required.

★ Screen Resolution : The course learning platform is designed for a minimum screen resolution of 1024x768. The content size will be 980x640 to ensure that all the content can fit in all supported browsers.

★ Microphones/Speakers/Headset : A microphone will let you participate in audio chats during the live classes or during doubt clearing sessions. It will also allow you to record audio files and post them as a part of your assignment in the
e-learning platform.

★ Internet Capability : The multimedia resources might require high- bandwidth internet access. A minimum of 512 Kbps is required for online courses using video conferencing.

★ Plug-ins : Some pre-installed software such as Microsoft Office (Word, Excel, PowerPoint, Publisher, Access) to create text documents and Adobe Acrobat (Professional) to view pdf files. Windows Media Player or flash player will be necessary for streaming video lectures.

Functional Requirements :

★ Learning models : Need to decide on the learning model which will be the best for E-Learning business requirements.

Instructor-led training: This type of training allows learners and instructors to interact and discuss the training material, either individually or in a group setting. Instructors may deliver training in a lecture or classroom format, or even virtually, using video conferencing tools.

★ Support of learning content: Training materials include DFs, docs, MP3s, MP4s, SCORM, AICC.

⋆ Analytics and reports: Training is about results.The benefit of an LMS is that it frees you from having to work with Excel spreadsheets and process performance data manually.

⋆ Talent Management: To improve skills in employees.It will be easy to search for an LMS with a skill management feature.

⋆ Gamification: By getting points and rewards for completed tasks learners become even more deeply involved in training and strive harder to succeed.

★ Stages of Certification: Learners get different level of certification based on the level they achieved and performance level.

Non-Functional Requirements

System- related non- functional requirements:

- ⋆ Performance efficiency: performance relative to the amount of resources used under stated conditions.
- ⋆ Time-behavior: degree to which the response and processing times and throughput rates of a system, when performing its functions, meet requirements.
- ⋆ Resource utilization: degree to which the amounts and types of resources used by a system, when performing its functions, meet requirements.
- ⋆ Capacity: degree to which the maximum limits of a system parameter meet requirements.
- ★ Compatibility: degree to which a system or component can exchange information with other systems or components, and/or perform its required functions, while sharing the same hardware or software environment.
- ★ Interoperability: degree to which two or more systems or components can exchange information and use the information that has been exchanged.
- ★ Usability: degree to which a system can be used by specified users to achieve specific goals with effectiveness, efficiency and satisfaction in a specified context of use.
- ★ Learnability: degree to which a system can be used by specified users to achieve specific goals of learning to use the product or system with effectiveness, efficiency, freedom from risk and satisfaction in a specified context of use.
- ★ Accessibility: degree to which a system can be used by people with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use.
- ★ Reliability: degree to which a system or component performs specific functions under specified conditions for a specified period of time.

★ Availability: degree to which a system or component is operational and accessible when required for use.

★ Fault tolerance: degree to which a system or component operates as intended despite the presence of hardware or software faults.

★ Recoverability: degree to which, in the event of an interruption or a failure, a system can recover the data directly affected and re-establish the desired state of the system.

★ Security: degree to which a system protects information and data so that persons or other products or systems have the degree of data access appropriate to their types and levels of authorization.

★ Non-repudiation: degree to which actions or events can be proven to have taken place, so that the events or actions cannot be repudiated later.

★ Accountability: degree to which the actions of an entity can be traced uniquely to the entity.

★ Authenticity: degree to which the identity of a subject or resource can be proved to be the one claimed.

★ Maintainability: degree of effectiveness and efficiency in which a system can be modified by the intended maintainers.

★ Reusability: degree to which an asset can be used in more than one system, or in building other assets.

★ Modifiability: degree to which a system can be effectively and efficiently modified without introducing defects or degrading existing product quality.

★ Testability degree: of effectiveness and efficiency in which test criteria can be established for a system or component and tests can be performed to determine whether those criteria have been met.

★ Portability: degree of effectiveness and efficiency in which a system or component can be transferred from one

Quality related non functional requirements

★ Economic risk mitigation: degree to which a system mitigates the potential risk to financial status, efficient operation, commercial property, reputation or other resources in the intended contexts of use.

★ Environmental risk mitigation: degree to which a system mitigates the potential risk to property or the environment in the intended contexts of use.

★ Context coverage: degree to which a system can be used with effectiveness, efficiency, freedom from risk and satisfaction in both specified contexts of use and in contexts beyond those initially explicitly identified.

★ Context completeness: degree to which a system can be used with effectiveness, efficiency, freedom from risk and satisfaction in all the specified contexts of use.

★ Flexibility: degree to which a system can be used with effectiveness, efficiency, freedom from risk and satisfaction in contexts beyond those initially specified in the requirements.

CHAPTER-4

PROJECT PLAN & EFFORT

1. Project Management Plan

Describe the key issues driving the project.

Focus Area	Details
Integration Management	Governance Framework Project Team Structure Roles & Responsibilities of Team Change Management (Change Control, Issue Management) Project Closure
Quality Management	Quality Assurance: Quality assurance will be managed including governance, roles and responsibilities, tools and techniques and reporting Quality Control: Specify the mechanisms to be used to measure and control the quality of the work products
Resource Management	Estimate and Manage the need People: People & Skills Required Finance: Budget Required Physical: Facilities, IT Infrastructure
Communication Management	Determine communication requirements, roles and responsibilities, tools and techniques. [Type of Communication, Schedule, Mechanism Recipient]
Risk Management	Identifying, analyzing, and prioritizing project risks

2. Estimation

2.1. Effort and Cost Estimation

Activity Description	Sub-Task	Sub-Task Description	Effort (in hours)	Cost in INR
Design the login interface for students and mentors	E1R1A1T1 (Effort-Requir e ment-Activity-Task)	Development Time for learning modules	3	8000
	E1R1A1T2	Integration of software and hardware	5	7000
	E1R1A1T3	Recording live sessions	3	1500
Deploying Educational Content (based on the data source)		Creation of Assignment modules	3	3000
		Test Modules (database maintaining test scores of an individual)	5	4000

Effort (hr)	Cost (INR)
1	500

2.2. Infrastructure/Resource Cost [CapEx]

< OneTime Infra requirements >

Infrastructure Requirement	Qty	Cost per qty	Cost per item
Support and maintenance cost	5	1000	5000
Hosting Costs	3	3000	9000
Deployment Costs	2	5000	10000

2.3 Maintenance and Support Cost [OpEx]

Category	Details	Qty	Cost per qty per annum	Cost per item
People	Network, System, Middleware and DB admin Developer , Support Consultant	3	2,000,000	6,000,000
Software	Operating System Database Middleware IDE	10	10000	100,000
Infrastructures	Server, Storage and Network	20	20000	400,000

3. Project Team Formation

3.1. Identification Team members

Name	Role	Responsibilities
Bhanu Sree	Key Business User (Product Owner)	Provide clear business and user requirements5000
Ananya	Project Manager	Manage the project
Palak Patel	Business Analyst	Discuss and Document Requirements
Deepika	Technical Lead	Design the end-to-end architecture
Shubhangi	UX Designer	Design the user experience
Anasua	Frontend Developer	Develop user interface
Srikanth	Backend Developer	Design, Develop and Unit Test Services/API/DB
Palak Rani	Cloud Architect	Design the cost effective, highly available and scalable architecture
Tiyasa kundu	Cloud Operations	Provision required Services
Anamika	Tester	Define Test Cases and Perform Testing

3.2. Responsibility Assignment Matrix

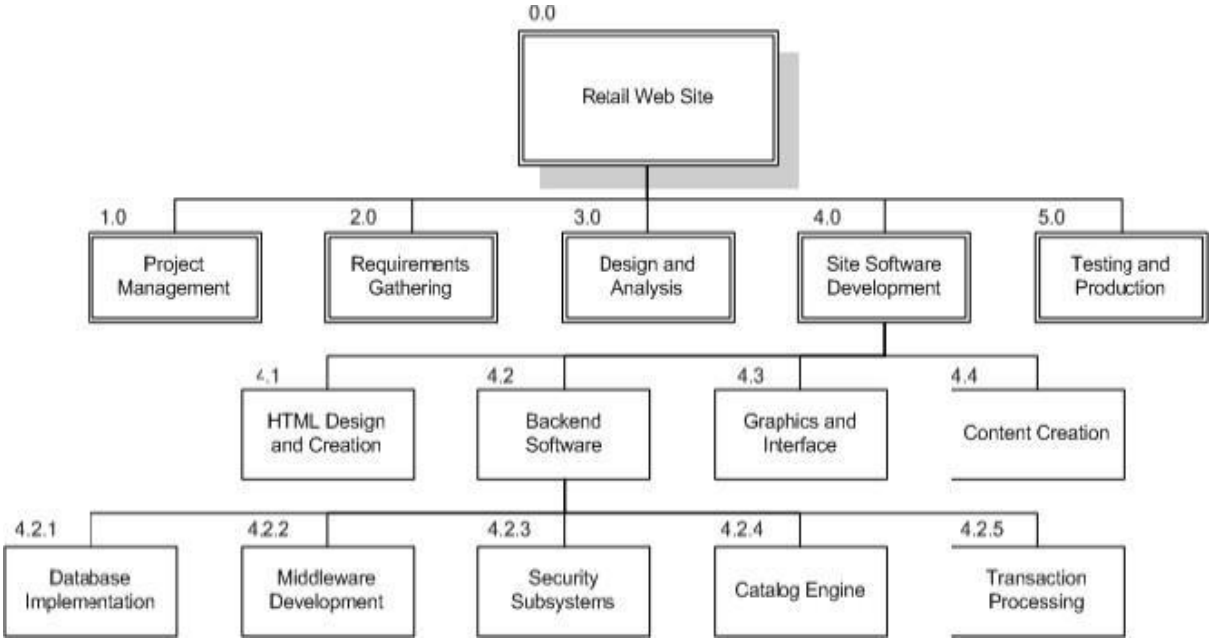
RACI Matrix	Team Members			
Activity	**Name (BA)**	**Name (Developer)**	**Name (Project Manager)**	**Key Business User**
Login Interface	Anamika	Anasua, Deepika	Ananya	Bhanu Sree
Learning modules	Shubhangi	Deepika	Ananya	Bhanu Sree

CHAPTER 5

WORK BREAKDOWN STRUCTURE & RISK ANALYSIS

WORK BREAKDOWN STRUCTURE:

WBS(DIAGRAM)



0.0 E-learning Platform

1.0 Project Management

2.0 Requirements Gathering

3.0 Analysis & Design

4.0 Site Software Development

- 4.1 HTML Design and Creation
- 4.2 Backend Software
  - 4.2.1 Database Implementation
  - 4.2.2 Middleware Development
  - 4.2.3 Security Subsystems
  - 4.2.4 Catalog Engine
  - 4.2.5 Transaction Processing

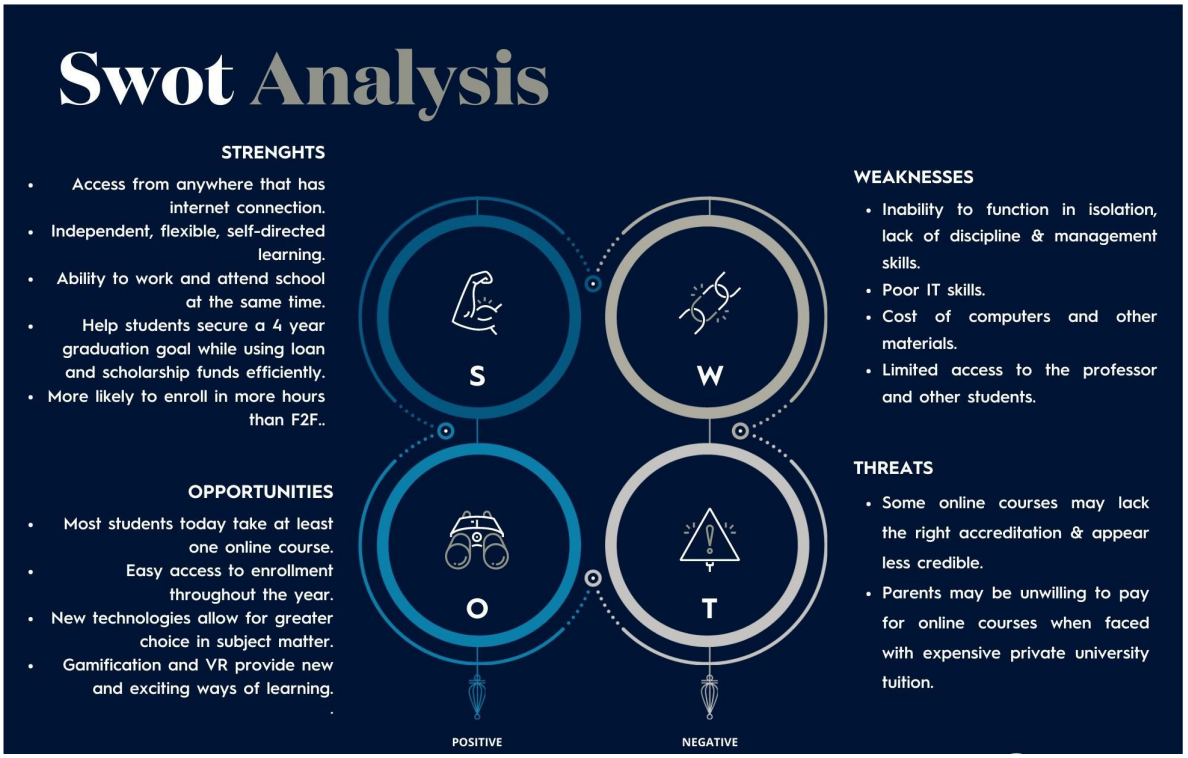
- 4.3 Graphics and Interface
- 4.4 Content Creation

5.0 Testing and Production

TIMELINE – GANTT CHART

ID	Task	Start	Finish	Duration	Progress	Priority
1	Analysis	2022-04-01	2022-04-10	8 d	88.9%	1
2	Requirement Meetings	2022-04-01	2022-04-04	4 d	100%	1
3	Communication with Stakeholders	2022-04-05	2022-04-08	2 d	95.5%	3
4	Document Current System	2022-04-09	2022-04-10	2 d	100%	3
5	Analysis Finished	2022-04-10	2022-04-10	1 d	0%	1
6	Design	2022-04-11	2022-04-05	18 d	14.9%	2
7	Design Database	2022-04-11	2022-04-17	5 d	62.4%	1
8	Software Design	2022-04-18	2022-04-25	6 d	0%	2
9	Interface Design	2022-04-26	2022-04-30	3 d	0%	4
10	Create Design Specifications	2022-04-26	2022-05-05	7 d	0%	2
11	Design Finished	2022-05-05	2022-05-05	1 d	0%	2
12	Development	2022-04-11	2022-05-09	22 d	22.5%	3
13	Develop System Module	2022-04-11	2022-04-26	12 d	41.2%	1
14	Integrate System Module	2022-04-29	2022-05-06	7 d	0%	1
15	Perform Initial Testing	2022-05-07	2022-05-09	3 d	0%	2
16	Development Finished	2022-05-09	2022-05-09	1 d	0%	3
17	Testing	2022-04-29	2022-05-20	17 d	29.4%	4
18	Perform System Testing	2022-04-29	2022-05-07	8 d	62.5%	3
19	Document Issues Found	2022-05-08	2022-05-15	6 d	0%	4
20	Correct Issues Found	2022-05-16	2022-05-20	3 d	0%	1
21	Testing Finished	2022-05-20	2022-05-20	1 d	0%	3
22	Implementation	2022-05-20	2022-05-10	15 d	0%	1
23	On-Site Installation	2022-05-20	2022-05-20	1 d	0%	5
24	Support Plan for the System	2022-05-20	2022-06-10	15 d	0%	4
25	Completion	2022-05-21	2022-06-03	9 d	0%	2
26	System Maintenance	2022-05-21	2022-06-03	9 d	0%	3
27	Evaluation	2022-05-21	2022-06-03	9 d	0%	1

RISK ANALYSIS – SWOT & RMMM

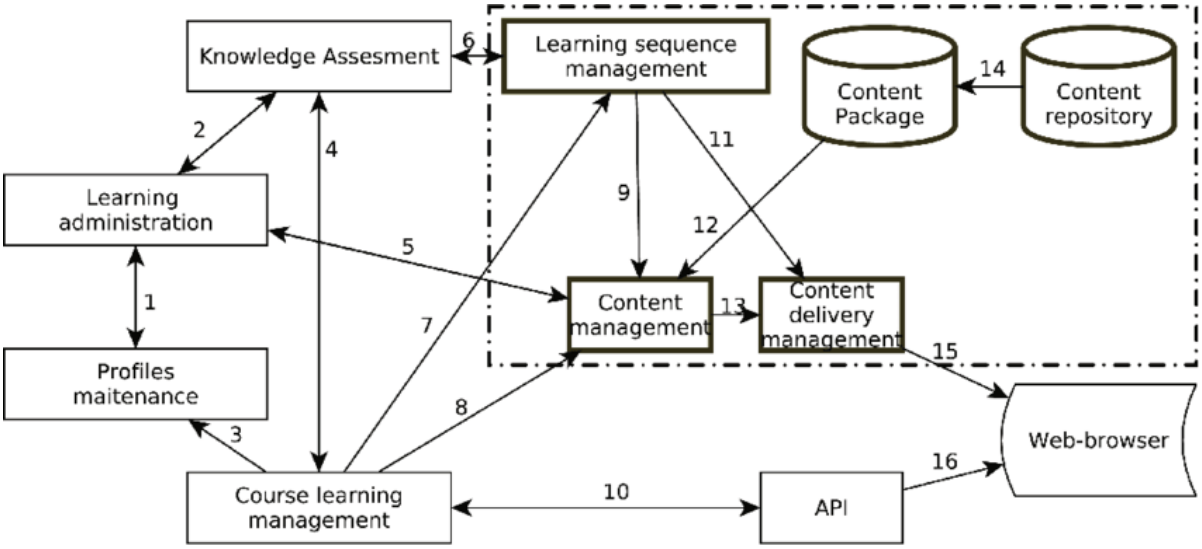


Risk Management Framework- Risks And Mitigation ...

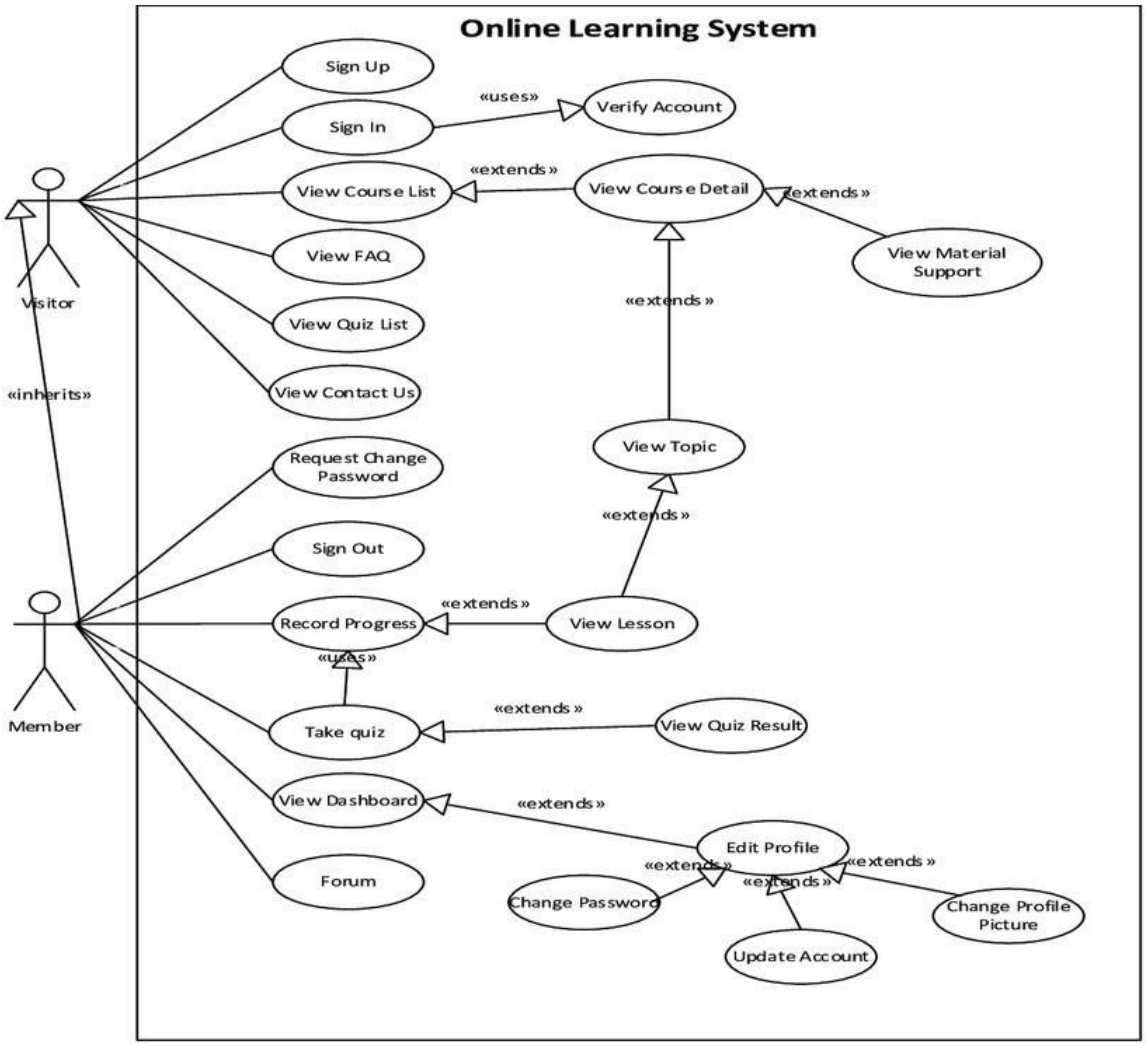
Response	Strategy	Examples
Avoid	Risk avoidance is a strategy where the project team takes action to remove the threat of the risk or protect from the impact	• Extending the schedule • Reducing/removing scope • Change the execution strategy
Transfer	Risk transference involves shifting or transferring the risk threat and impact to a third party. Rather transfer the responsibly and ownership	• Purchasing insurance • Performance bonds • Warranties • Contract issuance (lump sum
Mitigate	Risk mitigation is a strategy were by the project team takes a action to reduce the probability of the risk occurring. This does not risk or potential impact , but rather reduces the likelihood of it becoming real.	• Increasing testing • Changing suppliers to a more stable one • Reducing process complexity
Accept	Risk acceptance means the team acknowledges the risk and its potential impact, but decides not to take any preemptive action to prevent it. It is dealt with only if it occurs.	• Contingency reserve budgets • Management schedule float • Event contingency

CHAPTER 6
SYSTEM ARCHITECTURE, USE CASE AND CLASS DIAGRAM

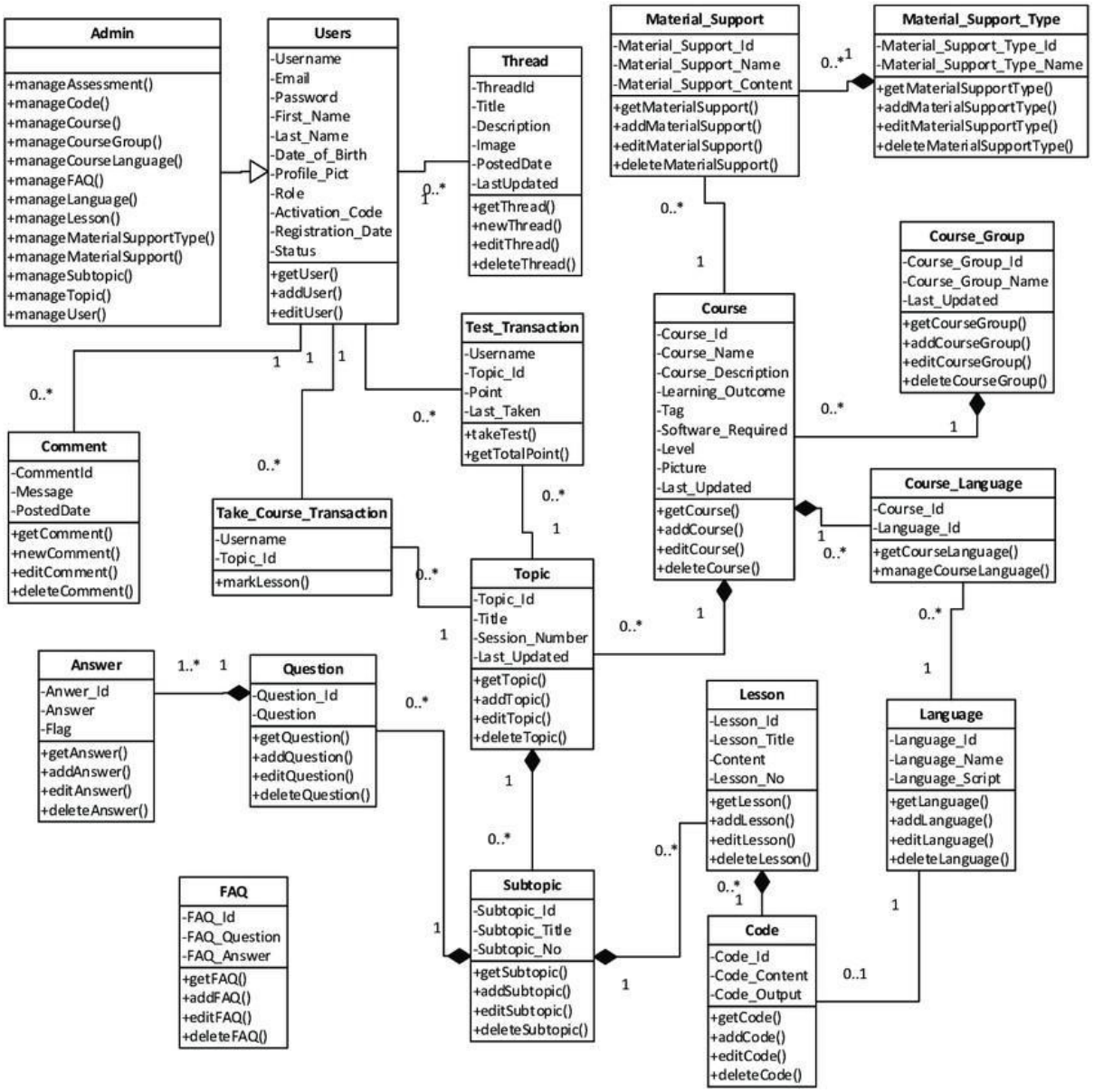
System Architecture:



Use case Diagram

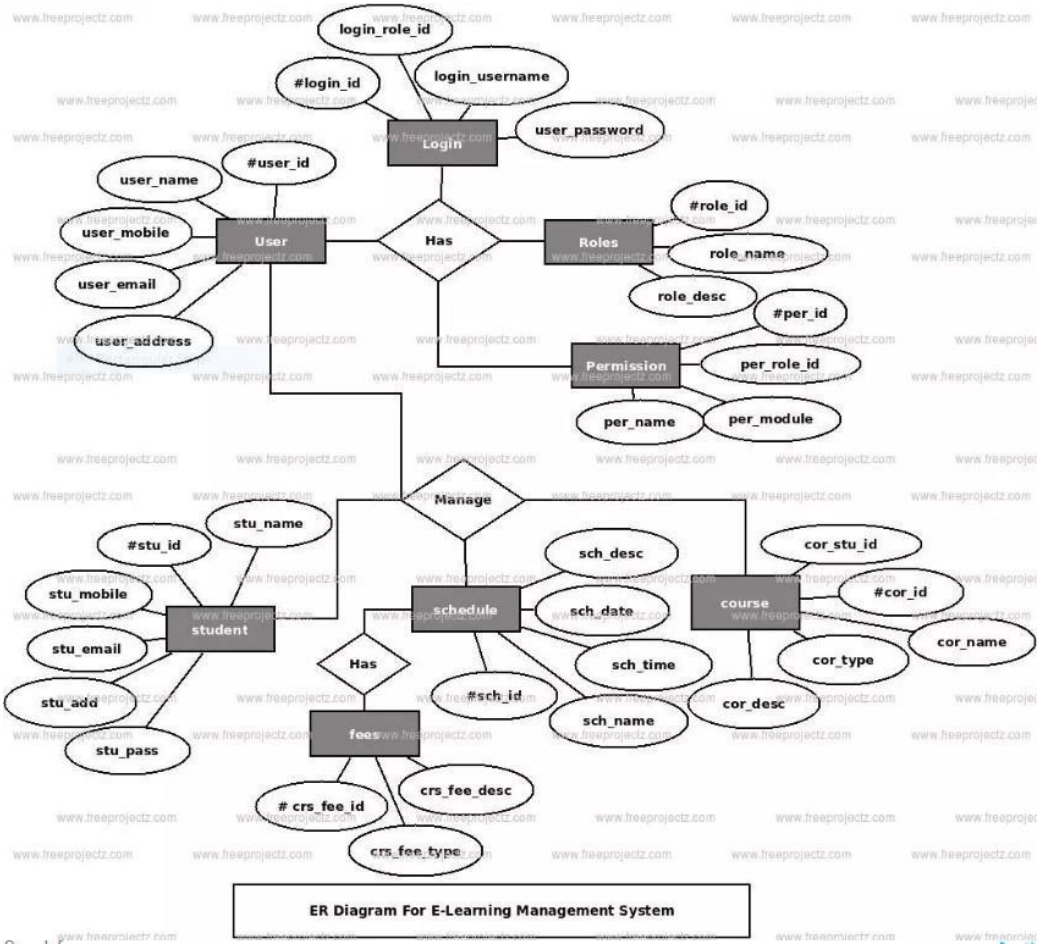


Class Diagram



CHAPTER 7
ENTITY RELATION DIAGRAM

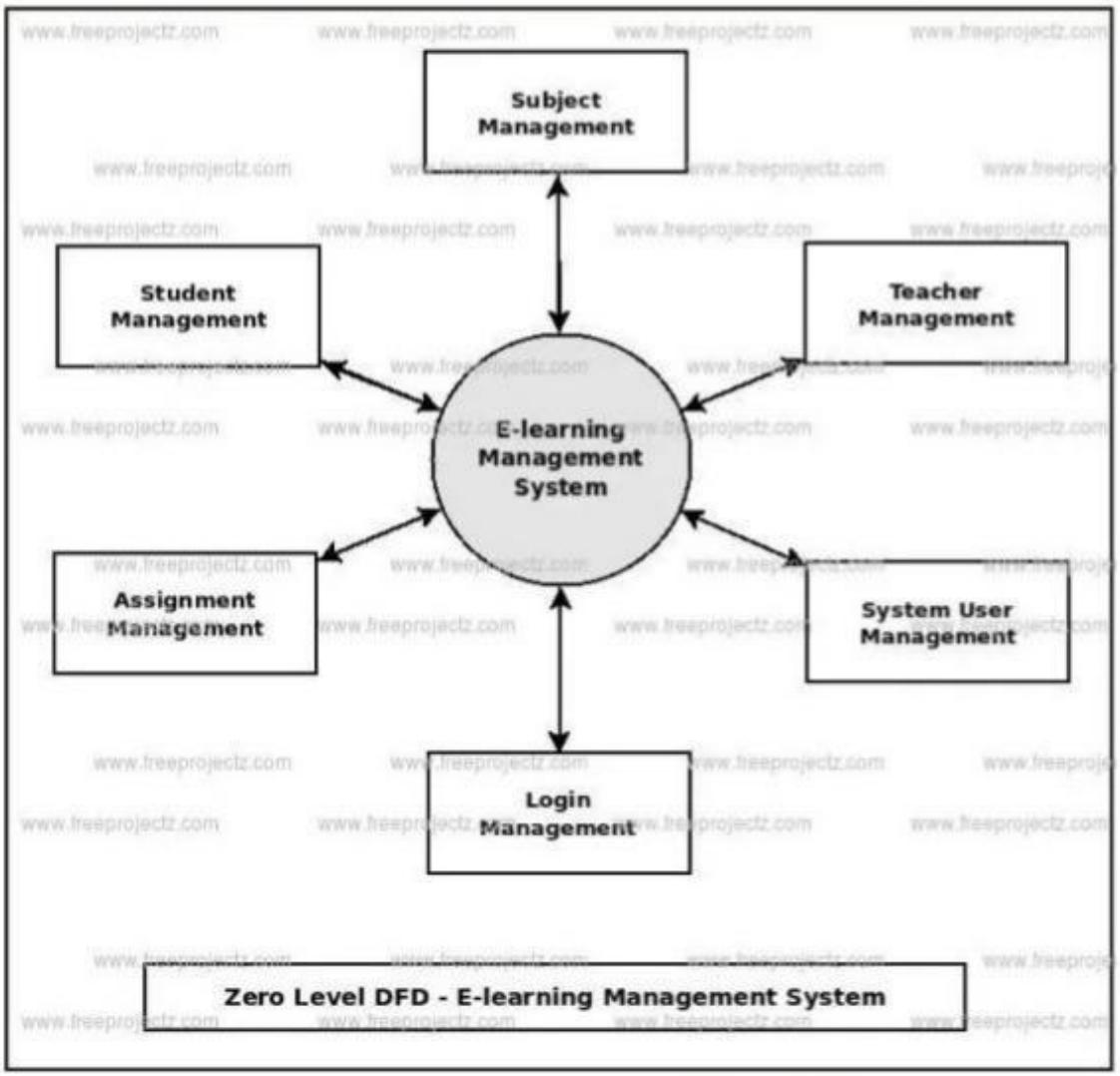
ENTITY RELATION DIAGRAM



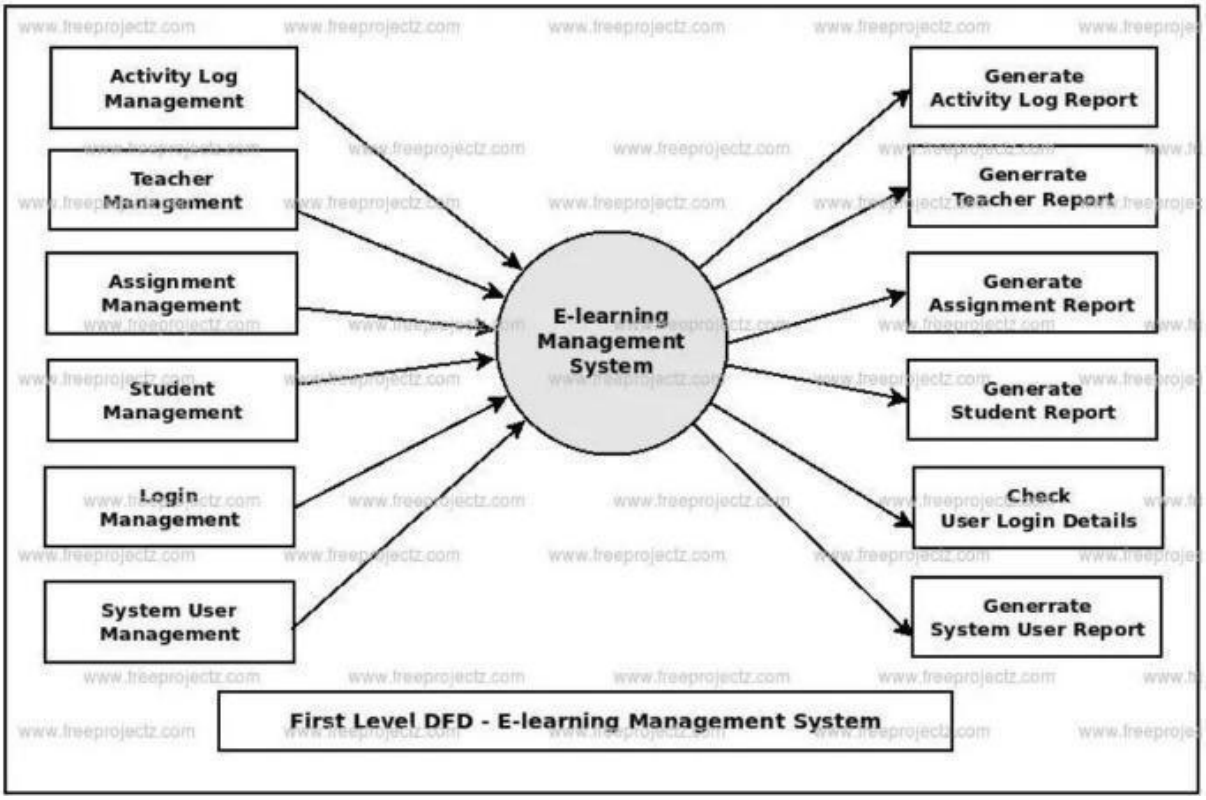
CHAPTER 8

DATA FLOW DIAGRAM

DFD Level 0:



DFD Level 1:

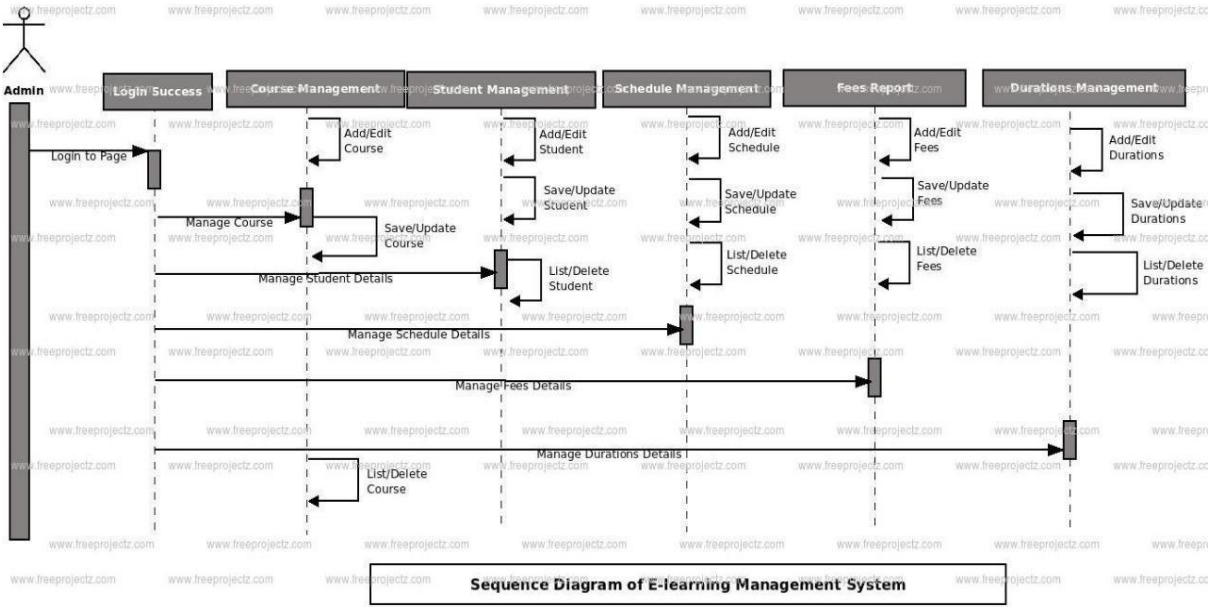

Activity Log Management
Teacher Management
Assignment Management
Student Management
Login Management
System User Management
E-learning Management System
Generate Activity Log Report
Generrate Teacher Report
Generate Assignment Report
Generate Student Report
Check User Login Details
Generrate System User Report
First Level DFD - E-learning Management System

CHAPTER-9

DESIGN SEQUENCE AND

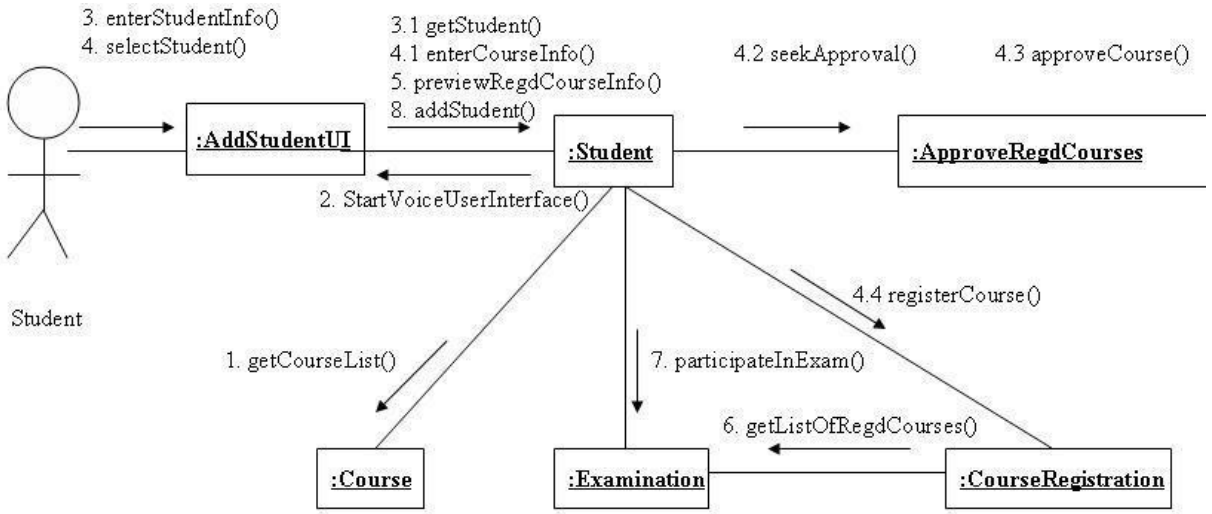
COLLABORATION DIAGRAM

Sequence Diagram



Sequence Diagram of E-learning Management System

Collaboration Diagram



CHAPTER-10

DEVELOPMENT OF TESTING

FRAMEWORK/USER INTERFERENCE

EXECUTIVE SUMMARY:

Project Scope: The aim of this project is to create a user friendly website to educate People. Through this platform, there are no leaps and bounds in the scheduling system rather , online learning creates a momentum of flexible academic scenario.Students, through the use of the internet, can easily study their programmes via a new instructional medium.

Test Plan:

Scope of Testing The scope of a test defines what areas of a customer's product are supposed to get tested, what functionalities to focus on,types the customer is interested in, and what areas or features should not be tested by any means.

Test Plan

Scope of Testing

Functional:

1. Effortless sign-up process for User
2. Details of every course, lecture, assignments and tests listed
3. User-friendly UI with course enrollment and navigation
4. Fair Estimate
5. Various Payment Gateways
6. Keeping details about the lectures, assignments and tests is delivered or not etc.
7. Storing the user information in the dashboard.

Non-Functional:

1. Load Testing 2. Security Testing 3. Performance Testing 4. Usability Testing
5. Accountability

Types of Testing, Methodology, Tools

Category	Methodology	Tools Required
Functional Requirements	Manual	Word Template ,UL Test
Security Testing	Automatic	Web security Framework
Web Application Testing	Manual	Chrome,VS code
Performance Testing	Automatic	Robotium

CHAPTER-11

TEST CASES AND REPORTING

TEST CASE:

FUNCTIONAL TEST CASES

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
Registration	Verify User Registration	Enter invalid email and password	1. User clicks on User Registration link 2. Enter the valid details on the text box 3. 3. Click Register button	User should not be taken to the next page for entering more user details	User should not be taken to the next page for entering more user details	Pass	Success
Login	Verify the login	Enter valid email and password	1. Enter User Name 2. Enter password 3. Click 'login'	User should be taken to the home page	User should be taken to the home page	Pass	Success
Search	Verify proper search	Enter valid search product	1. Enter product to search 2. Click 'Search'	The product should be visible to user	The product is not visible to user	Fail	Unsuccess
Course catalog	Verify course details	Click Course catalog	1. Click 'course catalog button'	Displays Course details	Displays Course details	Pass	Success
Select Course	Verify Course enrollment/registration	Accept proper course enrollment t info/ criteria to narrow down search for desired course.	1. Select subject type 2. Select course type 3. Click 'Enroll'	Displays course enrollment/registration details	Does not display course enrollment/registration details	Fail	Unsuccess

Notification	Verify notification	Get proper notification	1. Enroll into desired course 2. Check for notifications regarding lectures, assignments, updates and tests.	Displays notifications	Does not display notifications	Fail	Unsuccess
Payment	Verify payment	Enter proper payment details	1. Enter proper payment details 2. Click 'Pay'	Displays Payment details	Displays Payment details	Pass	Success
Online Support	Verify queries	Get proper questions /queries regarding desired topic/ usage of particular feature of platform	1. Enter questions/ queries to be asked via chat feature or FAQ feature. 2. Click 'Post query' or 'Ask a question' for help	Users must be assisted through a help desk for various system functions.	Users must be assisted through a help desk for various system functions.	Pass	Success

NON-FUNCTIONAL TEST CASES

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
1	Load Testing	Stress test the Code with load so that it doesn't crash	Load test the pages with a certain number of users as per server capability	Load is taken efficiently and does not slow down the code	Load is not taken efficiently and slows down the code too much	Fail	Unsuccess
2	Security Testing	Bug test the code for any bugs that can cause problems for the code	Code is thoroughly bug tested and verified	Bugs are not profound and the code is secure	Bugs are found and fixed immediately for security	Pass	Success
3	Performance Testing	Check the code on how efficiently it runs	Code is checked for any extra classes / parts to be removed	Extra classes are not found and code works at best efficiently	Extra parts of the code are found and are verified and removed	Pass	Success
4	Usability Testing and Accountability	Use the code from the users' perspective and check ease of use	Code is checked for any easier ways of use and changed for User experience	Code has very good user experience and is verified	Code has unnecessary parts that are changed immediately	Pass	Success

MANUAL TEST CASE REPORTING:

Testing manual was prepared and manual test cases were tested covering the given scope of all functional and non-functional requirements.

In non-functional requirements the time delay and performance can be improved to achieve excellence in the development of software.

Help from stakeholders to remove obstacles/constraints

Using paid and renowned web hosting service through the help of stakeholders can improve the performance, response time and reduce latency in the software.

Using a high speed network can also contribute to the enhancement of software.

Category	Progress Against Plan	Status
Functional Testing	Green	Completed
Non-Functional Testing	Amber	in-Progress

Functional	Test Case Coverage (%)	Status
Home Page	100%	Completed
Login/Signup	80%	In-Progress

CHAPTER - 12

ARCHITECTURE/DESIGN/FRAMEWORK/IMPLEMENTATION

IMPLEMENTATION :

CODE SNIPPET :-

HTML CODE :

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Erudite_Academy</title>
    <link rel="stylesheet" href="style.css">
    <link
href="https://fonts.googleapis.com/css2?family=Noto+Sans&family=Roboto:wght@400;500&family=Ubuntu:wght@400;500&display=swap" rel="stylesheet">



</head>
<body>
    <nav id="navbar">
        <div id="pic1">
            <img src="PIC_2.png" alt="Erudite_Academy.com">
        </div>
        <ul>
        <li class="item"> <a href="#">Home</a></li>
        <li class="item"> <a href="#">About Us</a></li>
        <li class="item"> <a href="#">Our Partners</a></li>
        <li class="item"> <a href="#">Contact Us</a></li>
        </ul>
    </nav>

    <section id="home">
        <h1 class="h-primary">Welcome to Erudite Academy</h1>
```

```
        <button class="btn">Join Classes Now</button>
    </section>



    <section class="services-container">
        <h1 class="h-primary c1">About Us</h1>
        <div id="services">
            <div class="box">
                <img src="img_1.png" alt="">
                <h2 class="h-secondary center"> Online Classes</h2>
                <p class="center"> Join our Live Sessions for class 1-12 and
get assistance on all subjects. Connect with our mentors to
                    in order to understand theories and concepts with visual
effect and make studies more interesting.
                </p>


        </div>

        <div class="box">
          <img src="img_2.png" alt="">
          <h2 class="h-secondary center">Study Materials</h2>
          <p class="center"> Get subject notes, question bank, previous
                year paper, practice papers and much more...for alltopics
on our website. Register yourself on our  portal and get
                access to our materials absolutely free for the first 12
months.
          </p>


      </div>

      <div class="box">
      <img src="img_3.png" alt="">
      <h2 class="h-secondary center">Assignments</h2>
      <p class="center"> Solve all the problems and Assignments given to you
by our mentors and becoame an A+ grader in your classroom.
        </p>
```

```
      </div>
    </section>

    <div id="services">
        <div class="box">
        <img src="img_4.png" alt="">
        <h2 class="h-secondary center">Doubt Solving</h2>
         <p class="center"> Having trouble in solving your homework and
project???... Now get 24/7 guidance on all subject matters by
             our mentors. Register yourself for the doubt solving sessions
quickly.
        </p>


    </div>

    <div class="box">
      <img src="img_5.png" alt="">
      <h2 class="h-secondary center">Regular Class Tests</h2>
      <p class="center"> Prepare for your examinations by attending weekly
class tests prepared by your faculty. After completing the
            test, your scores will be made available on your portal. Top
performers in the test will receive free goodies.
      </p>


  </div>

  <div class="box">
  <img src="img_6.png" alt="">
  <h2 class="h-secondary center">User Manual</h2>
  <p class="center"> Read the given user manual regarding all the services
provided by us. Login in to our portal today to enjoy the
            benefits of online teaching.
    </p>


  </div>
</section>
```

```
</section>


</div>
</div>
 </section>

 <section id="client-section">
     <h1 class="h-primary c1">Our Partners</h1>
     <div id="clients">
         <div class="client-item">
          <img src="img_10.png" alt="Our Clients">
         </div>
         <div class="client-item">
            <img src="img_8.png" alt="Our Clients">
         </div>

     <div class="client-item">
        <img src="img_9.png" alt="Our Clients">
    </div>
     </div>
 </section>
  <section id="contact">
     <h1 class="h-primary c1">Contact Us</h1>
     <div id="contact-box">
         <form action="">
             <div class="form-group">
                 <label for="name">Name: </label>
                 <input type="text" name="name" id="name" placeholder="Enter
your name">
             </div>

             <div class="form-group">
                <label for="email">Email Id: </label>
                <input type="email" name="name" id="email" placeholder="Enter
your email id">
             </div>
            <div class="form-group">
                <label for="phone">Mobile Number: </label>
                <input type="phone" name="name" id="phone" placeholder="Enter
your mobile number">
```

```
            </div>

            <div class="form-group">
                <label for="message">Message: </label>
                <textarea name="message" id="message" cols="30"
rows="10"></textarea>
            </div>
        </form>
    </div>
 </section>

<footer>
<div class="center">
    Copyright &copy; www.Erudite_Academy.com. All rights reserved.
</div>
</footer>

</body>
</html>
```

CSS CODE :

```
*{
    margin: 0;
    padding: 0;
}



:root{
    --navbar-height: 59px;
}

#navbar{
    display: flex;
    align-items: center;
    position: relative;
    top: 0px;
```

```
}

#pic1{
    margin: 10px 35px;
}

#pic1 img{
    height : 56px;
    margin : 13px 15px;

}



#navbar ul{
    display: flex;
}

#navbar::before{
    content: "";
    background-color: black;
    position: absolute;
    top: 0px;
    left: 0px;
    height: 100%;
    width: 100%;
    z-index: -1;
}

#navbar ul li{
    list-style: none;
    font-size: 1.3rem;
}

#navbar ul li a{
    color: white;
    display: block;
    padding: 3px 22px;
    border-radius: 20px;
    text-decoration: none;
```

```
}

#navbar ul li a:hover{
    color: yellow;
    background-color: rgb(5, 5, 5);

}

#home{
    display: flex;
    flex-direction: column;
    padding: 3px 200px;
    height: 650px;
    justify-content: center;
    align-items: center;
}

#home::before{
    content: "";
    background: url('../PIC_1.jpg') no-repeat center center/cover;
    position: absolute;
    top: 0px;
    left: 0px;
    height: 80%;
    width: 100%;
    z-index: -1;
    opacity: 0.89;
}

#home.h1{
    color: black;
    text-align: center;
    font-size: 3.5rem;
    font-family: 'Noto Sans', sans-serif;
}

/* services*/
```

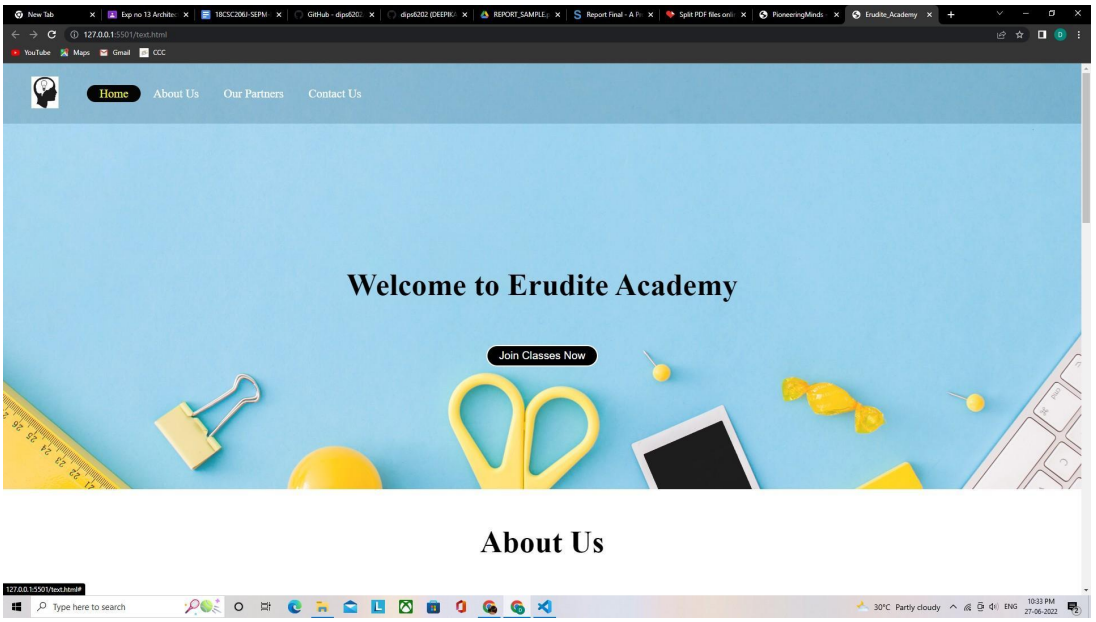
```css
#services{
    margin: 30px;
    display: flex;
}

#services .box{
    border: 5px solid yellow;
    padding: 34px;
    margin: 3px 6px;
    border-radius: 29px;
    background: rgb(10, 10, 6);

}

#services .box img{
    height: 120px;
    margin: auto;
    display: block;
}



#client-section{
    position: relative;
    height: 344px;
}

#client-section::before{
    content: "";
    position: absolute;
    background: url('../bg1.jpg') no-repeat center center/cover;
    width: 100%;
    height: 200%;
    z-index: -1;
    opacity: 0.89;;
}

#clients{
  display: flex;
  justify-content: center;
```

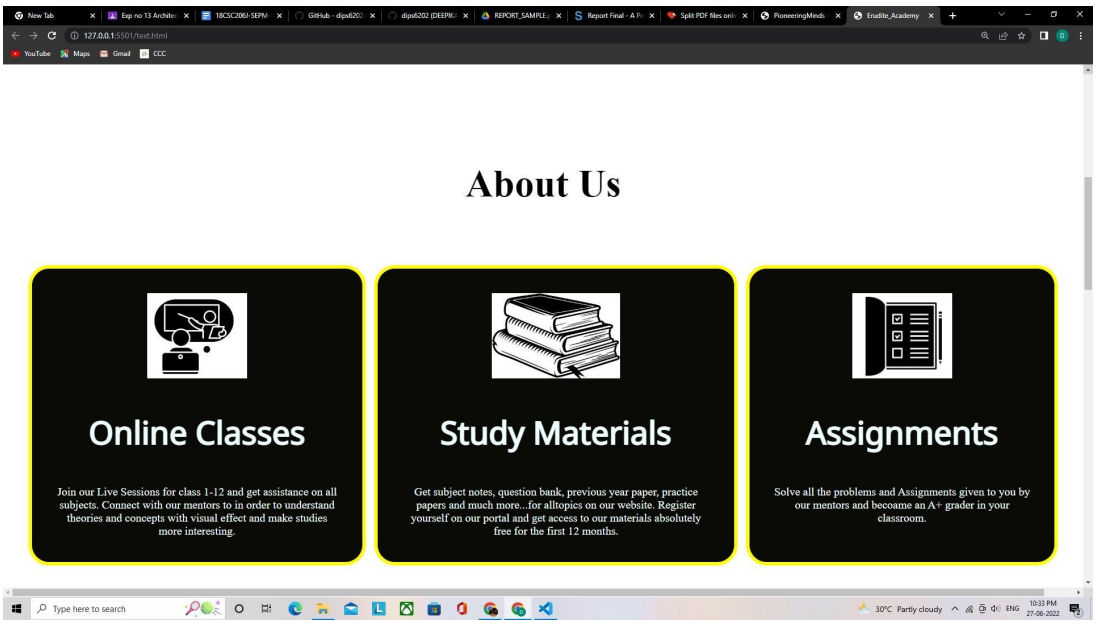
```
  align-items: center;

}

.client-item{
    padding: 34px;
}

#client img{
 height: 60px;
}

#contact{
    position: relative;
}

#contact::before{
    content:"";
    position: absolute;
    width: 100%;
    height: 100%;
    z-index: -1;
    opacity: 0.7;
    background: rgb(240, 241, 241);
}

#contact-box{
    display: flex;
    justify-content: center;
    align-items: center;
    padding-bottom: 34px;
}

#contact-box input,#contact-box textarea{
    width: 100%;
    padding: 9px 20px;
    border-radius: 9px;
    font-size: 1.1rem;
}
```

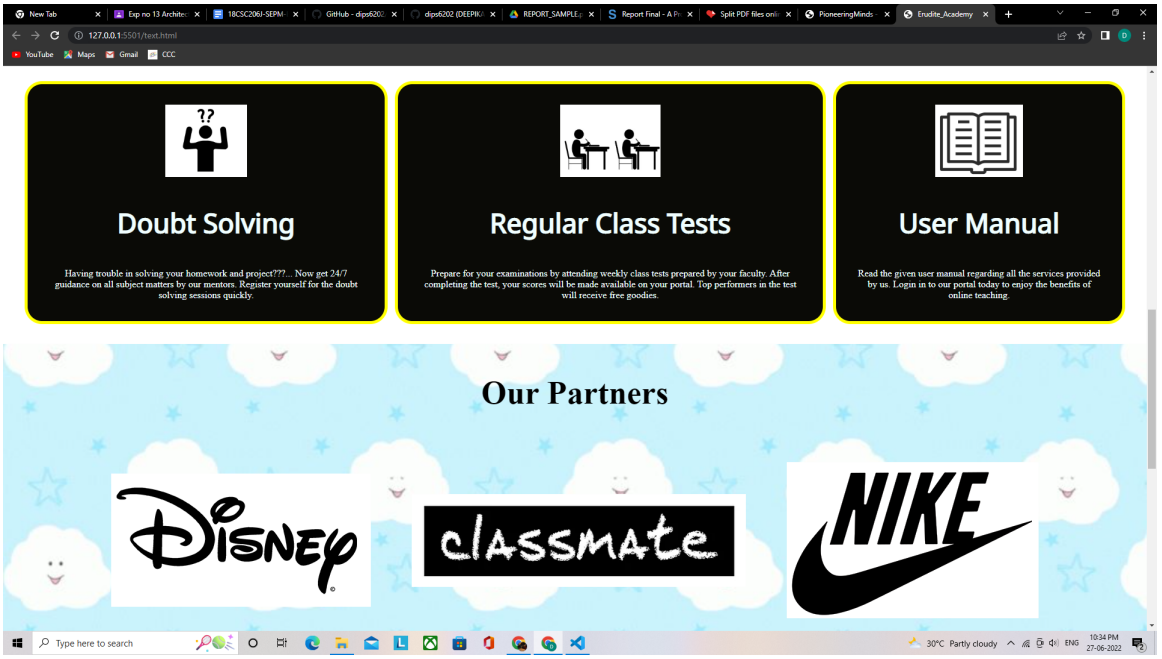
```css
#contact-box form{
    width: 40%;
}

#contact-box label{
    font-size: 1.5rem;
    font-family: 'Noto Sans', sans-serif;

}

footer{
    background: black;
    color: white;
    padding: 10px 20px;
}

.h-primary{
    font-size: 3.4rem;
    padding: 50px;

}

.h-secondary{
    font-size: 2.8rem;
    padding: 45px;
    font-family: 'Noto Sans', sans-serif;
    color:azure

}

.btn{
    padding: 6px 20px;
    border: 2px solid white;
    background-color: black;
    color: white;
    margin: 25px;
    font-size: 1.2rem;
    border-radius: 20px;
    cursor: pointer;
```

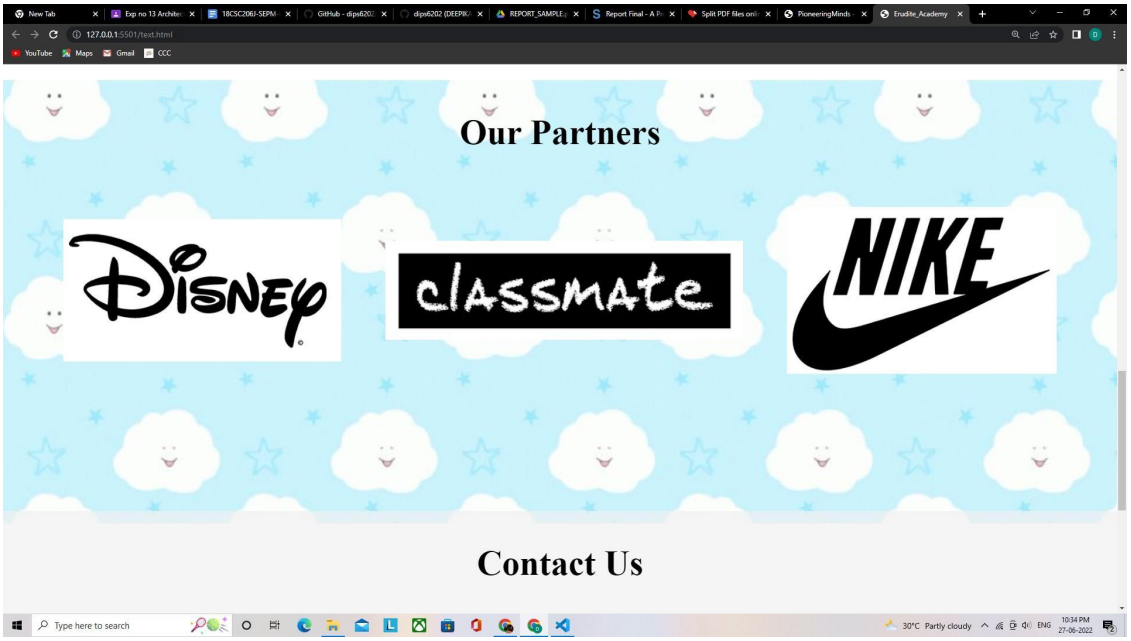
```
}


.center{
    text-align: center;
    color: azure;
}


.c1{
    text-align: center;
}
```

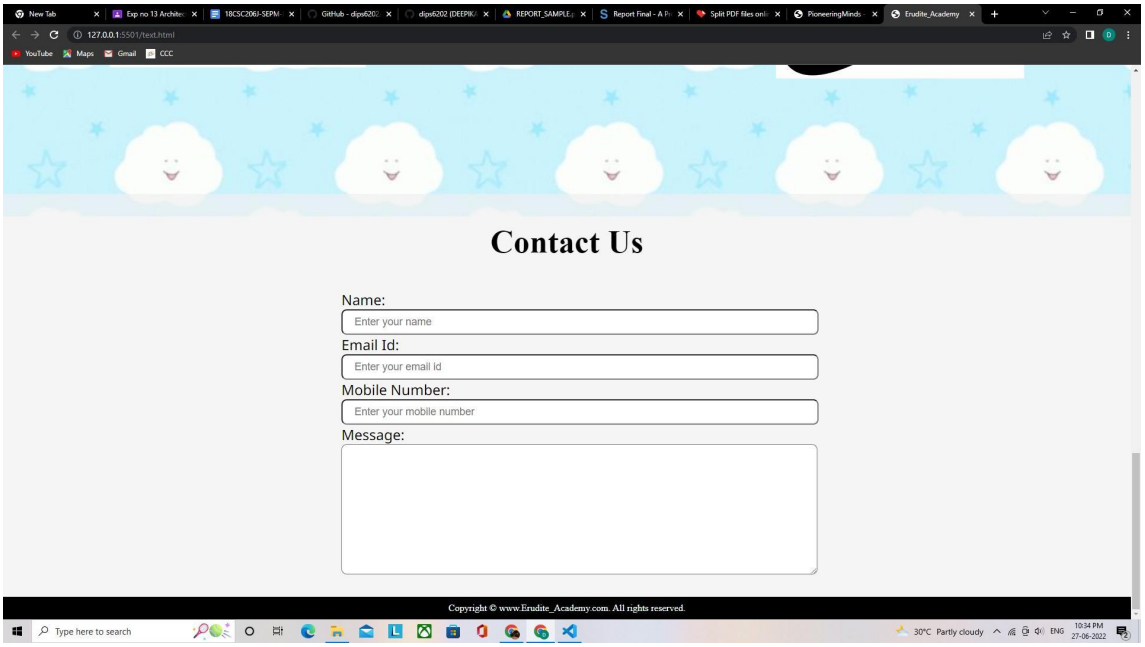
SCREENSHOTS :






127.0.0.1:5501/text.html
Doubt Solving
Having trouble in solving your homework and project??... Now get 24/7 guidance on all subject matters by our mentors. Register yourself for the doubt solving sessions quickly.
Regular Class Tests
Prepare for your examinations by attending weekly class tests prepared by your faculty. After completing the test, your scores will be made available on your portal. Top performers in the test will receive free goodies.
User Manual
Read the given user manual regarding all the services provided by us. Login in to our portal today to enjoy the benefits of online teaching.
Our Partners
DISNEY
classmate
NIKE
Type here to search
30°C Partly cloudy
ENG
10:34 PM
27-06-2022


127.0.0.1:5501/text.html
Our Partners
DISNEY
classmate
NIKE
Contact Us
Type here to search
30°C Partly cloudy
ENG
10:34 PM
27-06-2022


Contact Us
Name:
Enter your name
Email Id:
Enter your email id
Mobile Number:
Enter your mobile number
Message:
Copyright © www.Erudite_Academy.com. All rights reserved.

CONCLUSION

In our project work, an attempt has been made to develop an e-learning platform. An e-learning platform will act as a webspace or portal for educational content and resources that will offer a student everything they need in one place : lectures, resources, opportunities to meet and chat with other students, and more. It will also be an excellent way for the student and the teacher to monitor student progress.

To develop this project, we have faced many problems but we tried our best to develop this project. Our supervisor helped us a lot by giving his valuable opinion, decision and time.

REFERENCE

1.https://www.elearninglearning.com/examples/reference/

2.https://libraryguides.mcgill.ca/eLkit/bibliography

3.https://www.researchgate.net/publication/228002963_A_Reference_Model_for_Online_Learning_Communities

4.https://elearningindustry.com/lms-requirements-online-training-program-10-critical

APPENDIX

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Erudite_Academy</title>
    <link rel="stylesheet" href="style.css">
    <link
href="https://fonts.googleapis.com/css2?family=Noto+Sans&family=Roboto:wght@40
0;500&family=Ubuntu:wght@400;500&display=swap" rel="stylesheet">

</head>
<body>
    <nav id="navbar">
        <div id="pic1">
            <img src="PIC_2.png" alt="Erudite_Academy.com">
        </div>
        <ul>
        <li class="item"> <a href="#">Home</a></li>
        <li class="item"> <a href="#">About Us</a></li>
        <li class="item"> <a href="#">Our Partners</a></li>
        <li class="item"> <a href="#">Contact Us</a></li>
        </ul>
    </nav>

    <section id="home">
        <h1 class="h-primary">Welcome to Erudite Academy</h1>

        <button class="btn">Join Classes Now</button>
    </section>



    <section class="services-container">
        <h1 class="h-primary c1">About Us</h1>
        <div id="services">
            <div class="box">
                <img src="img_1.png" alt="">
                <h2 class="h-secondary center"> Online Classes</h2>
                <p class="center"> Join our Live Sessions for class 1-12 and
get assistance on all subjects. Connect with our mentors to
                    in order to understand theories and concepts with visual
effect and make studies more interesting.
```

```
                    </p>


        </div>

        <div class="box">
          <img src="img_2.png" alt="">
          <h2 class="h-secondary center">Study Materials</h2>
          <p class="center"> Get subject notes, question bank, previous
                    year paper, practice papers and much more...for alltopics
on our website. Register yourself on our  portal and get
                    access to our materials absolutely free for the first 12
months.
          </p>


      </div>

      <div class="box">
      <img src="img_3.png" alt="">
      <h2 class="h-secondary center">Assignments</h2>
      <p class="center"> Solve all the problems and Assignments given to you
by our mentors and becoame an A+ grader in your classroom.
        </p>


      </div>
    </section>

    <div id="services">
        <div class="box">
        <img src="img_4.png" alt="">
        <h2 class="h-secondary center">Doubt Solving</h2>
         <p class="center"> Having trouble in solving your homework and
project???... Now get 24/7 guidance on all subject matters by
             our mentors. Register yourself for the doubt solving sessions
quickly.
        </p>


    </div>

    <div class="box">
      <img src="img_5.png" alt="">
      <h2 class="h-secondary center">Regular Class Tests</h2>
      <p class="center"> Prepare for your examinations by attending weekly
```

```
class tests prepared by your faculty. After completing the
            test, your scores will be made available on your portal. Top
performers in the test will receive free goodies.
      </p>


  </div>

  <div class="box">
  <img src="img_6.png" alt="">
  <h2 class="h-secondary center">User Manual</h2>
  <p class="center"> Read the given user manual regarding all the services
provided by us. Login in to our portal today to enjoy the
            benefits of online teaching.
    </p>


  </div>
</section>
</section>

</div>
</div>
 </section>

 <section id="client-section">
     <h1 class="h-primary c1">Our Partners</h1>
     <div id="clients">
         <div class="client-item">
          <img src="img_10.png" alt="Our Clients">
         </div>
         <div class="client-item">
            <img src="img_8.png" alt="Our Clients">
         </div>

     <div class="client-item">
        <img src="img_9.png" alt="Our Clients">
    </div>
     </div>
 </section>

  <section id="contact">
     <h1 class="h-primary c1">Contact Us</h1>
     <div id="contact-box">
         <form action="">
             <div class="form-group">
```

```
                <label for="name">Name: </label>
                <input type="text" name="name" id="name" placeholder="Enter
your name">
            </div>

            <div class="form-group">
                <label for="email">Email Id: </label>
                <input type="email" name="name" id="email" placeholder="Enter
your email id">
            </div>
            <div class="form-group">
                <label for="phone">Mobile Number: </label>
                <input type="phone" name="name" id="phone" placeholder="Enter
your mobile number">
            </div>

            <div class="form-group">
                <label for="message">Message: </label>
                <textarea name="message" id="message" cols="30"
rows="10"></textarea>
            </div>
        </form>
    </div>
 </section>

<footer>
<div class="center">
    Copyright &copy; www.Erudite_Academy.com. All rights reserved.
</div>
</footer>

</body>
</html>
```

```
*{
    margin: 0;
    padding: 0;
}


:root{
    --navbar-height: 59px;
}
```

```css
#navbar{
    display: flex;
    align-items: center;
    position: relative;
    top: 0px;
}

#pic1{
    margin: 10px 35px;
}

#pic1 img{
    height : 56px;
    margin : 13px 15px;

}


#navbar ul{
    display: flex;
}

#navbar::before{
    content: "";
    background-color: black;
    position: absolute;
    top: 0px;
    left: 0px;
    height: 100%;
    width: 100%;
    z-index: -1;
}

#navbar ul li{
    list-style: none;
    font-size: 1.3rem;
}

#navbar ul li a{
    color: white;
    display: block;
    padding: 3px 22px;
    border-radius: 20px;
    text-decoration: none;
}
```

```css
#navbar ul li a:hover{
    color: yellow;
    background-color: rgb(5, 5, 5);

}

#home{
    display: flex;
    flex-direction: column;
    padding: 3px 200px;
    height: 650px;
    justify-content: center;
    align-items: center;
}

#home::before{
    content: "";
    background: url('../PIC_1.jpg') no-repeat center center/cover;
    position: absolute;
    top: 0px;
    left: 0px;
    height: 80%;
    width: 100%;
    z-index: -1;
    opacity: 0.89;
}

#home.h1{
    color: black;
    text-align: center;
    font-size: 3.5rem;
    font-family: 'Noto Sans', sans-serif;
}

/* services*/


#services{
    margin: 30px;
    display: flex;
}

#services .box{
    border: 5px solid yellow;
    padding: 34px;
    margin: 3px 6px;
```

```
    border-radius: 29px;
    background: rgb(10, 10, 6);

}

#services .box img{
    height: 120px;
    margin: auto;
    display: block;
}


#client-section{
    position: relative;
    height: 344px;
}

#client-section::before{
    content: "";
    position: absolute;
    background: url('../bg1.jpg') no-repeat center center/cover;
    width: 100%;
    height: 200%;
    z-index: -1;
    opacity: 0.89;;
}

#clients{
  display: flex;
  justify-content: center;
  align-items: center;

}

.client-item{
    padding: 34px;
}

#client img{
 height: 60px;
}

#contact{
    position: relative;
}
```

```css
#contact::before{
    content:"";
    position: absolute;
    width: 100%;
    height: 100%;
    z-index: -1;
    opacity: 0.7;
    background: rgb(240, 241, 241);
}

#contact-box{
    display: flex;
    justify-content: center;
    align-items: center;
    padding-bottom: 34px;
}

#contact-box input,#contact-box textarea{
    width: 100%;
    padding: 9px 20px;
    border-radius: 9px;
    font-size: 1.1rem;
}

#contact-box form{
    width: 40%;
}

#contact-box label{
    font-size: 1.5rem;
    font-family: 'Noto Sans', sans-serif;

}

footer{
    background: black;
    color: white;
    padding: 10px 20px;
}
.h-primary{
    font-size: 3.4rem;
    padding: 50px;

}

.h-secondary{
```

```
    font-size: 2.8rem;
    padding: 45px;
    font-family: 'Noto Sans', sans-serif;
    color:azure

}

.btn{
    padding: 6px 20px;
    border: 2px solid white;
    background-color: black;
    color: white;
    margin: 25px;
    font-size: 1.2rem;
    border-radius: 20px;
    cursor: pointer;
}

.center{
    text-align: center;
    color: azure;
}

.c1{
    text-align: center;
}
```