

A Mini Project Synopsis on
E-Learning Web application

T.E. - I.T Engineering

Submitted By

Aagya Singh (20104076)

Aditya Waingade (20104099)

Adarsh Singh (20104080)

Under The Guidance Of

Prof. Charul Singh



DEPARTMENT OF INFORMATION TECHNOLOGY
A.P. SHAH INSTITUTE OF TECHNOLOGY

G.B. Road, Kasarvadavali, Thane (W), Mumbai-400615

UNIVERSITY OF MUMBAI
Academic year: 2022-23

CERTIFICATE

This to certify that the Mini Project report on **E-Learning** has been submitted by Aagya Singh (20104076), Aditya Waingade (20104099), and Adarsh Singh (20104080) who are the students of A. P. Shah Institute of Technology, Thane, Mumbai, as a partial fulfilment of the requirement for the degree in Information Technology, during the academic year 2021-2022 in the satisfactory manner as per the curriculum laid down by University of Mumbai.

Prof. Charul Singh

Guide

Dr. Kiran Deshpande

Head of Department of Information Technology

Dr. Uttam D. Kolekar

Principal

External Examiner(s):1.

2.

Place: A.P Shah Institute of Technology, Thane

Date:

ACKNOWLEDGEMENT

This project would not have come to fruition without the invaluable help of our guide Prof. Charul Singh. Expressing gratitude towards our HOD, Dr. Kiran Deshpande, and the Department of Information Technology for providing us with the opportunity as well as the support required to pursue this project. We would also like to thank our teacher Ms. Yaminee Patil who gave us her valuable suggestions and ideas when we are in need of them. We would also like to thank our peers for their helpful suggestions.

ABSTRACT

Due to rapid growth of internet technology, universities around the world are investing heavily in e-learning systems to support their traditional teaching and to improve their students' learning experience and performance. However, the success of an e-learning system depends on the understanding of certain antecedent factors that influence the students' acceptance and usage of such e-learning systems. This study claims to provide a discussion of the current e-learning environments including their characteristics, limitations, advantages, and the major factors that affect the acceptance of such technologies. 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. It aims to create an engaging and informative online course that helps learners achieve the desired learning outcomes. It is a learning system based on formalized teaching but with the help of electronic resources is known as E-learning. While teaching can be based in or out of the classrooms, the use of computers and the Internet forms the major component of E-learning. It is concluded that a successful e-learning system should consider the personal, social, cultural, technological, organizational, and environmental factors.

TABLE OF CONTENTS

1. Introduction.....	5
1.1 Purpose.....	6
1.2 Problem Statement.....	7
1.3 Objectives.....	8
1.4 Scope.....	9
2. Literature Review.....	10
3. Proposed System.....	11
3.1 Features and Functionality.....	11
4. Requirement Analysis.....	12
5. Project Design.....	15
5.1 Use Case diagram.....	16
5.2 DFD (Data Flow Diagram).....	17
5.3 System Architecture.....	17
6. Technical Specification.....	18
7. Project Scheduling.....	19
8. Implementation.....	20
9. Result and Discussion.....	21
10. Conclusion and Future Scope.....	22
11. References.....	23

Chapter No: 1

INTRODUCTION

e-Learning as the name suggests, the primary focal point is placed on the offline mode of learning. E-Learning is an alternative to a traditional classroom learning experience. As a result, website has been developing in this project using web development, to help users to simplify their learning experiences and the user will be able to study effectively and efficiently. Distance learning is a method of learning when the teacher and the learner are not physically present at the same time. E-Learning web application is logical, given how cost-effective, convenient, and useful online learning is to the public.

e-Learning is the employment of technology to aid and enhance learning. It can be as simple as High School students watching a video documentary in class or as complex as an entire university course provided online. e-Learning began decades ago with the introduction of televisions and overhead projectors in classrooms and has advanced to include interactive computer programs, 3D simulations, video and telephone conferencing and real-time online discussion groups comprised of students from all over the world. As technology advances, So does e-learning, making the possibilities endless.

e-learning web app is an interactive webpage that allows learners to input their data and get expected results through interactions. Your students can access the app from a web browser with an active internet connection from remote locations.

e-learning enhances the quality of education that the society experiences making it easier for the students and the teachers. It has been developed to override the problems prevailing in the practicing manual system. This software is supported to eliminate and in some cases reduce the hardships faced by this existing system. Moreover, this system is designed for the particular need of the company to carry out operations in a smooth and effective manner.

e-learning web application is introduced so that the students can get more clarity of the concepts that they wish to learn and understand.

1.1.Purpose:



- The purpose of E-learning is to automate the existing manual system by the help of computerized equipment's and full-fledged computer software, fulfilling their requirements.
- This is proposed to enhance the quality of education and meet the style or needs of students.
- For better practical understanding of the concepts.
- In this method the students of all age can learn from anywhere and anywhere in the world which removes time and geographical barriers.

1.2 Problem Definition:

The students initially faced tremendous issues related to time, space and other major concerns. The previous mode of learning lacked self-paced education which maximizes productivity and targets majority of crowd

Some of the common problems defined in E-learning are listed below –

1. **Resource constraints:** The e-learning web application introduces low cost and optimal solution to the problems faced by the students earlier like resources. The example of resource is internet. Some students from rural areas may face resource constraints.
2. **Geographical barriers:** The traditional mode of learning caused issues like geographical barriers the online mode of learning solves the specific issue. The students had to gather at a specific place from long distances making it very hectic for them. The application makes it easier for the students and maximizes productivity and efficiency.
3. **Time constraints:** The traditional mode of education had time constraints, the students had to attend the college or school at a specific time, but online education makes it self-paced for the students making the education impactful. This empowers the students and make them intelligent and future ready.
4. **Not very much Centralized:** The previous education system wasn't centralized as the students had to practically reach out the professors in order to get their assignments checked or to mark their attendance but as the teaching and learning has enhanced the students can now mark their attendance and submit their assignments online making the process easier, efficient and productive.
5. **Low reach to the mass:** The majority of people that reside in India are suffering from poor income so it is a great way to target those audience as there were less platforms providing free mode of online education with easy to use and access GUI.

1.3 OBJECTIVES

- To enhance the quality of teaching and learning.
- To meet the learning style or need of students.
- To improve the efficiency by centralized and systematic approach of learning.
- To enhance effectiveness by high-value content.
- To build a user-friendly application.
- To reduce paperwork and cost.
- To improve user-accessibility.
- To improve time flexibility to engage learners in the learning process.

1.4 SCOPE

- Can be used to learn anywhere when you are on the move.
- Can be used to learn at your pace.
- Can be used to understand concepts through multiple videos.
- Can be used to bridge the gap between students and education.
- Can be used to minimize cost on infrastructure investment.
- Can be used to learn without investing in any expensive software.
- Can be used to learn without any restrictions of space and time.

Chapter No: 2

Literature Review

Despite the enormous growth of e-learning in education and its perceived benefits, the efficiency of such tools will not be fully utilized if the users inclined to not accept and use the system. Therefore, the successful implementation of e-learning tools depends on whether or not the students are willing to adopt and accept the technology.

Fischer et al. (2015) studied how proceedings of scientific conferences can be used for trend studies in the field of e-learning. They examined the abstracts of 427 scientific articles of leading German-speaking e-learning conferences Gesellschaft für Medien in der Wissenschaft and E-Learning-Fachtagungen der Gesellschaft für Informatik e. V. (GMW and DeLFI) – published from 2007 to 2013. The study was conducted at German-speaking conferences and, thus, reflects the situation in Germany, Switzerland and Austria. Fischer et al. (2015) made an important contribution to the diffusion of digital media in higher education. The researchers found that the detailed analysis of the frequency distribution over the seven years reflects the intensity of scientific discussion towards e-learning trends, and conclusions about the didactical or technical potentials of innovations can be introduced. Specifically, they found the development potential of learning management, mobile learning, virtual worlds, e-portfolio, social media and Massive Open Online Courses are crucial for e-learning in German higher education.

Moravec et al. (2015) showed how e-learning tools impact students' achievement. The study was attended by nearly 2000 students. According to Moravec et al. (2015), the study compares the results of questions from the area of law where the tool was provided in a pilot version with the results of questions, where the e-learning tool was not provided. The researchers found that the e-learning tools have affected the students' results. Nevertheless, the belief of the e-learning tool may possibly have a negative effect on students who will depend on given materials was disproved. By using the Cohen's model and based on data collected from 15 documents from relevant research studies conducted on the effect of ICT based e-learning on academic achievement during 2010-2012, Mothibi (2015) examined the relationship between e-learning and students' academic achievement in higher education. The researcher found that ICT had a statistically significant positive influence on e-learning based students' academic achievements. The results also indicated that ICT had a significant positive influence on students' educational overall academic achievements

Chapter No: 3

Proposed System

3.1 Features & Functionality:

This application solves time and space constraints in a major way. The students can access the course catalogs innumerable times which in turn enhances effectiveness of learning the skill.

- **Course Catalog:**

User can refer to various courses which will help them understand the topic well.

- **Expert Teacher Guidance:**

User can view the best student tutors and the social handles related to them so that they can connect well with them.

- **E Learning Platform:**

User can learn anything they wish to in just a matter of click in this online leaning platform.

- **Structured Storage of Learning Materials:**

User has access to the structured storage of learning materials.

- **High-Value Content:**

User can get access to high quality content which has a high value in the market.

Chapter No: 4

REQUIREMENT ANALYSIS

Software Requirement Specification:

The Software Requirement Specification is produced at the culmination of the analysis task. The function and performance allocated to software as part of system engineering are refined by establishing as part of system engineering are refined by establishing a complete information description, an indication of performance requirements and design constraints, appropriate validation criteria, and other data pertinent to requirements.

Key Requirements:

- System needs to store information about new entry during log in and sign up.
- System needs to update the old courses and introduce new courses with time.
- System needs to maintain quality record.
- System needs a security system to prevent data.
- System also needs a search area.
- System needs database structures.
- System needs good and efficient management of data.
- System needs time to time updating.
- System needs to analyse the input and give the desired output.

System Design of E-learning Web Application:

In this phase, a logical system is built which fulfills the given requirements. Design phase of software development deals with transforming the client's requirements into a logically working system. Normally, design is performed in the following in the following two steps:

- Primary Design Phase:
- Secondary Design Phase:
- **Primary Design Phase:**

In this phase, the system is designed at block level. The blocks are created on the basis of analysis done in the problem identification phase. Different blocks are created for different functions emphasis is put on minimizing the information flow between blocks. Thus, all activities which require more interaction are kept in one block.

- **Secondary Design Phase:**

In the secondary phase the detailed design of every block is performed.

General task involved in the design process are following:

1. Design various blocks for overall system processes.
2. Design smaller, compact and workable modules in each block.
3. Design various database structures.
4. Specify details of programs to achieve desired functionality.
5. Design the form of inputs, and outputs of the system.
6. Perform documentation of the design.
7. System reviews.

Chapter No: 5

PROJECT DESIGN

5.1. Use Case Diagram of e-learning web application

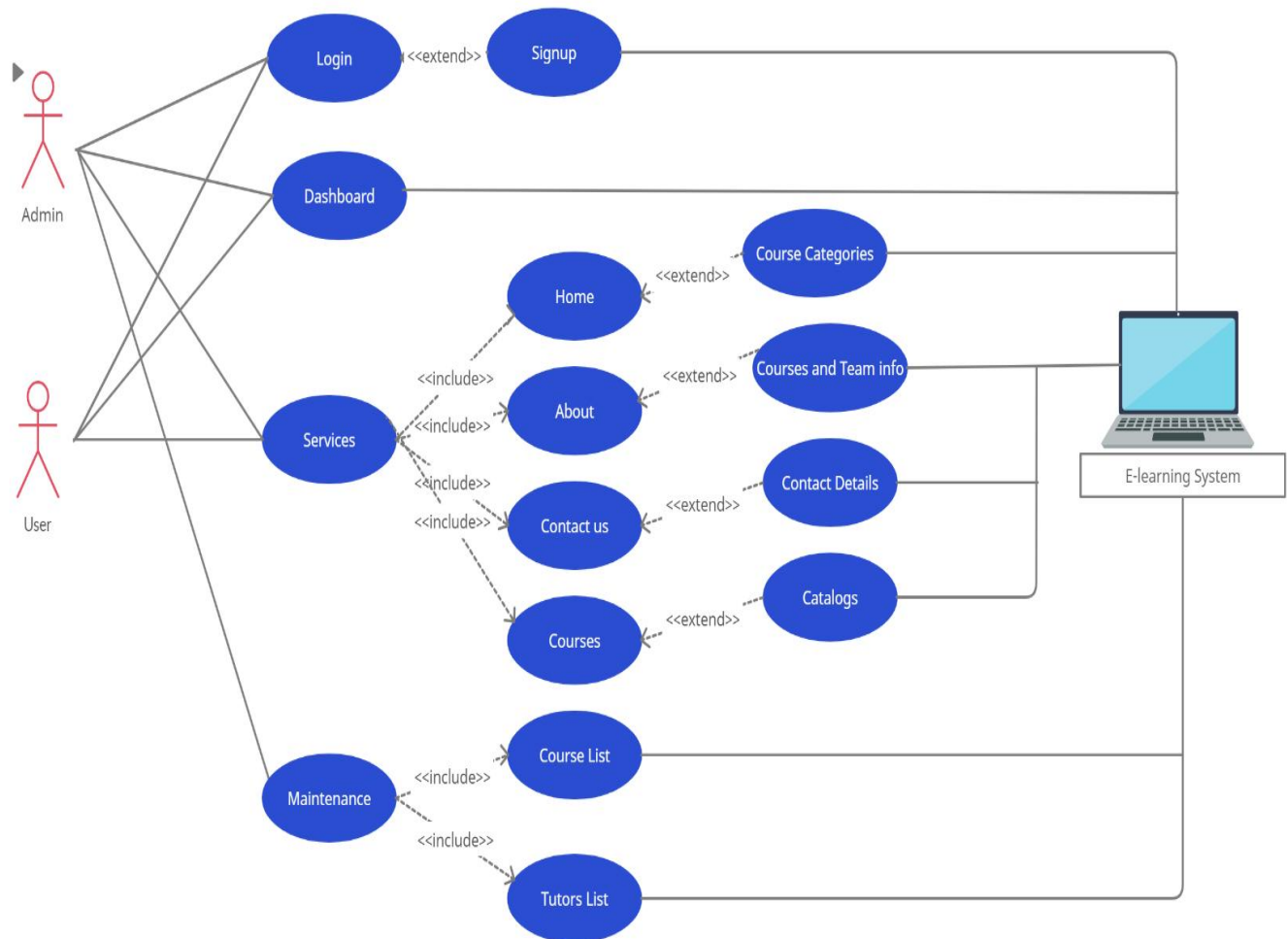


Figure 2: Use Case Diagram

5.2 DFD (Data Flow Diagram) E-learning web application

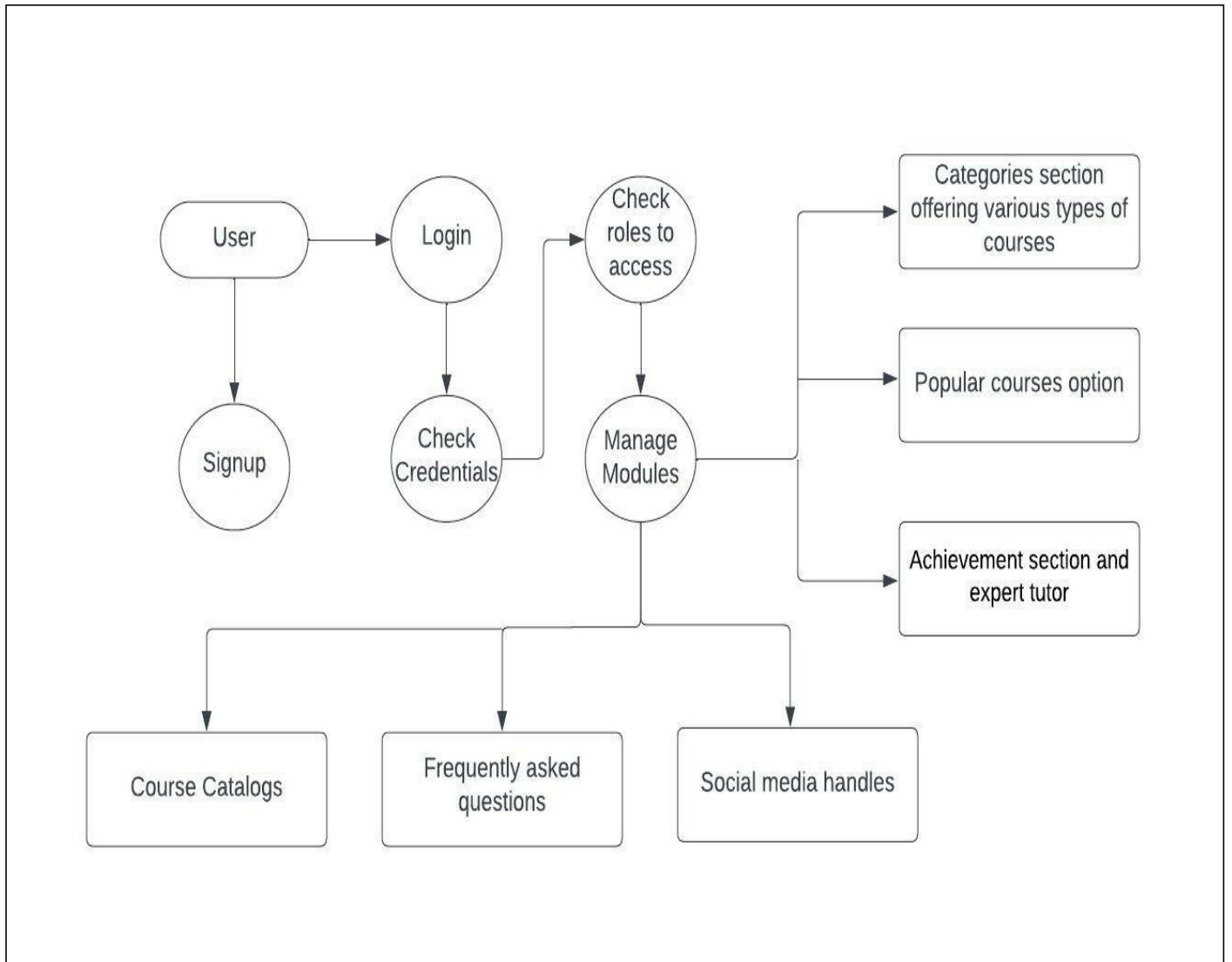


Figure: DFD (Level 2)

6. System Architecture

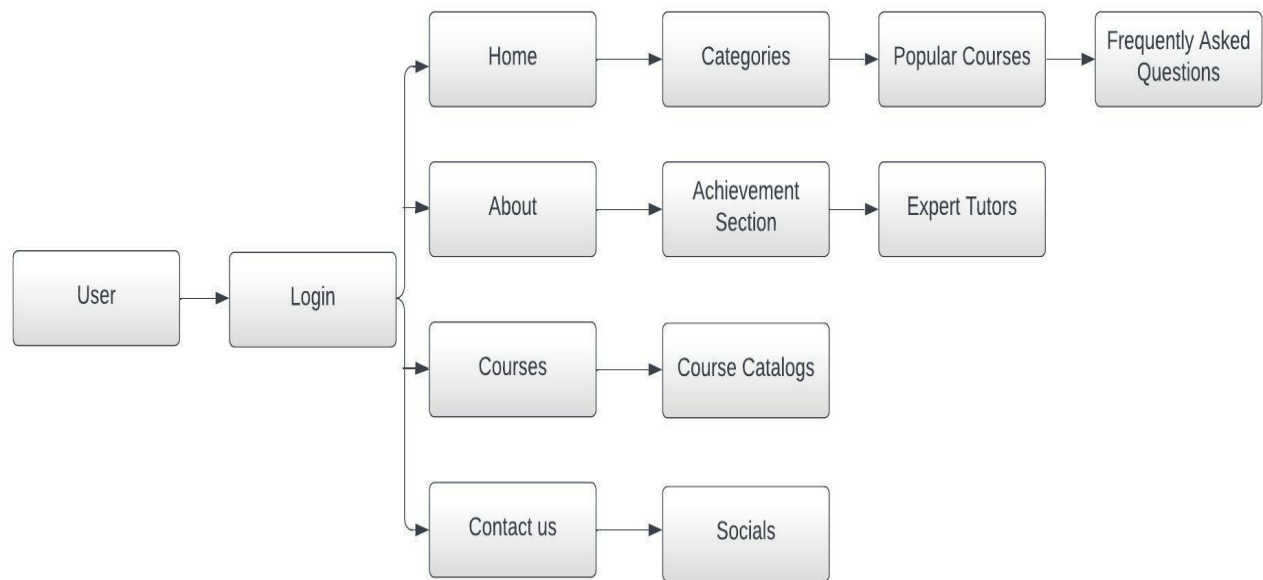


Figure 6: E Learning architecture

Chapter No: 6

TECHNICAL SPECIFICATIONS

Development: VS Code

VS Code also known as Visual Studio Code is a source code editor made by Microsoft for Windows, Linux, MacOS. It has various features such as Debugging, Syntax highlighting, extension, intelligent code completion.

Frontend: Html, CSS, JavaScript

As a web developer, the three main languages we use to build websites are HTML, CSS, and JavaScript. JavaScript is the programming language, we use HTML to structure the site, and we use CSS to design and layout the web page. These days, CSS has become more than just a design language, though. You can actually implement animations and smooth transitions with just CSS.

OS : Windows

Windows is a **graphical operating system** developed by Microsoft. It allows users to view and store files, run the software, play games, watch videos, and provides a way to connect to the internet. It was released for both home computing and professional works.

Backend: Firebase

With firebase, you can connect to multiple databases. The Firebase Realtime Database is a cloud-hosted NoSQL database that lets you store and sync data between users in real-time. Cloud Firestore enable you to store, sync and query data at global scale.

6.1 FLOWCHART

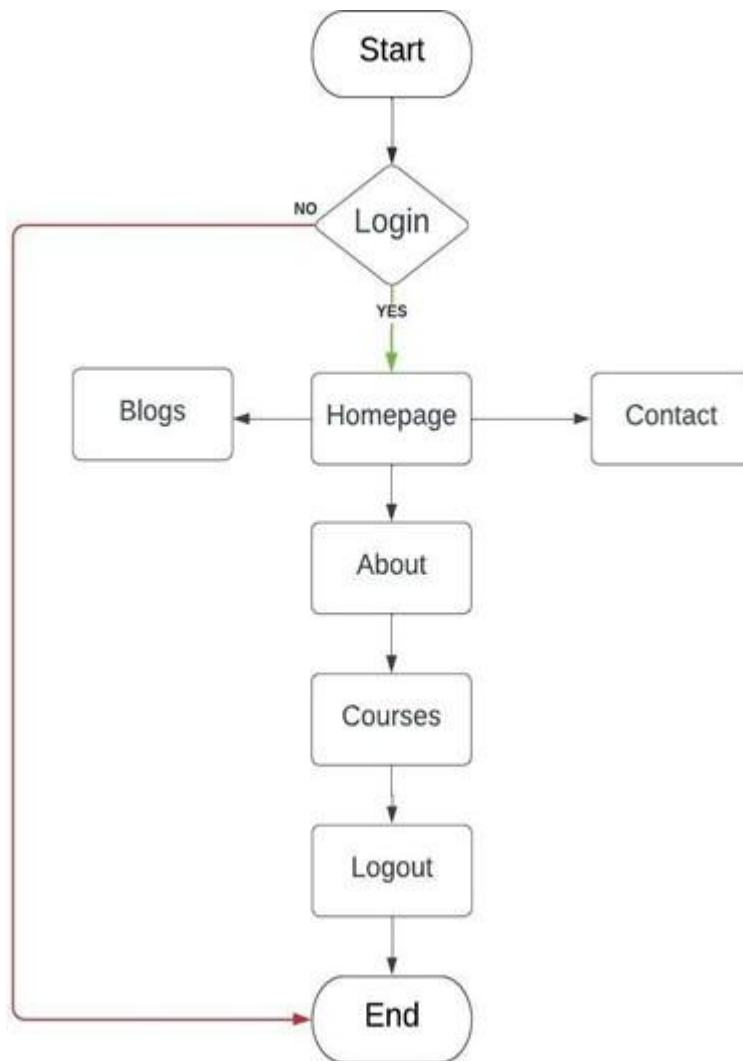
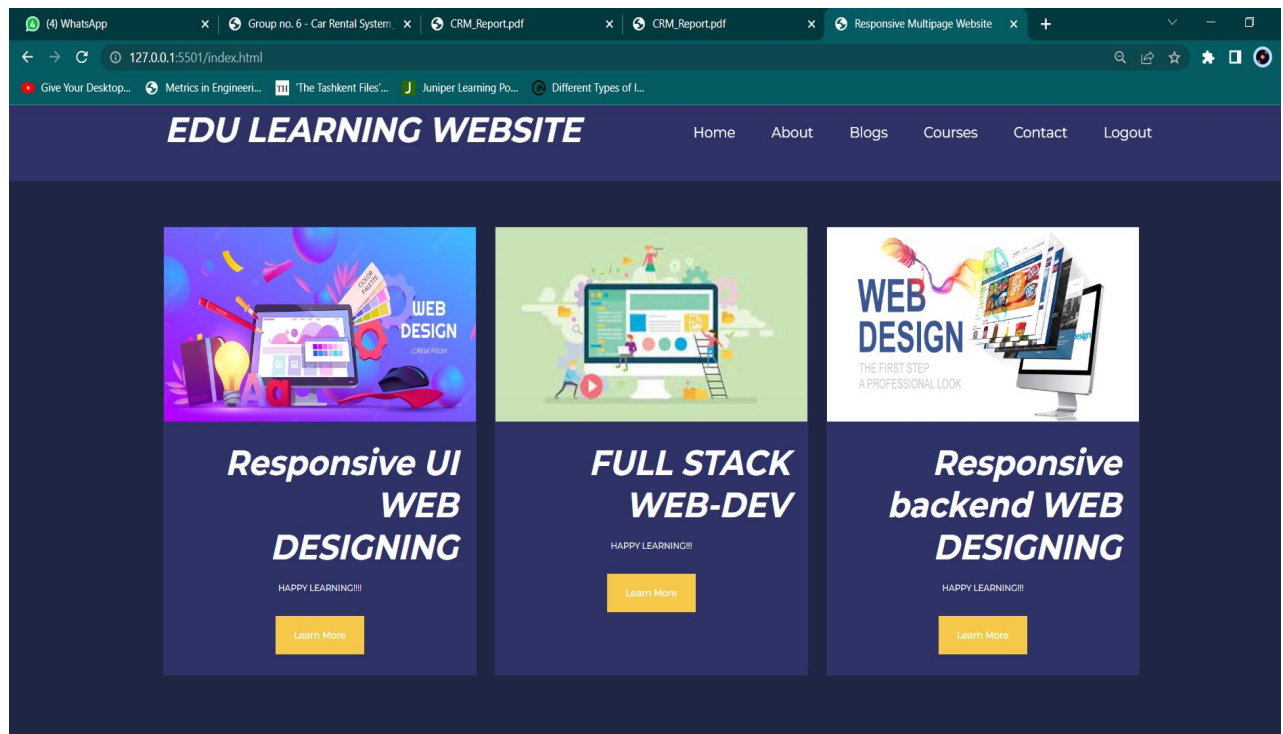
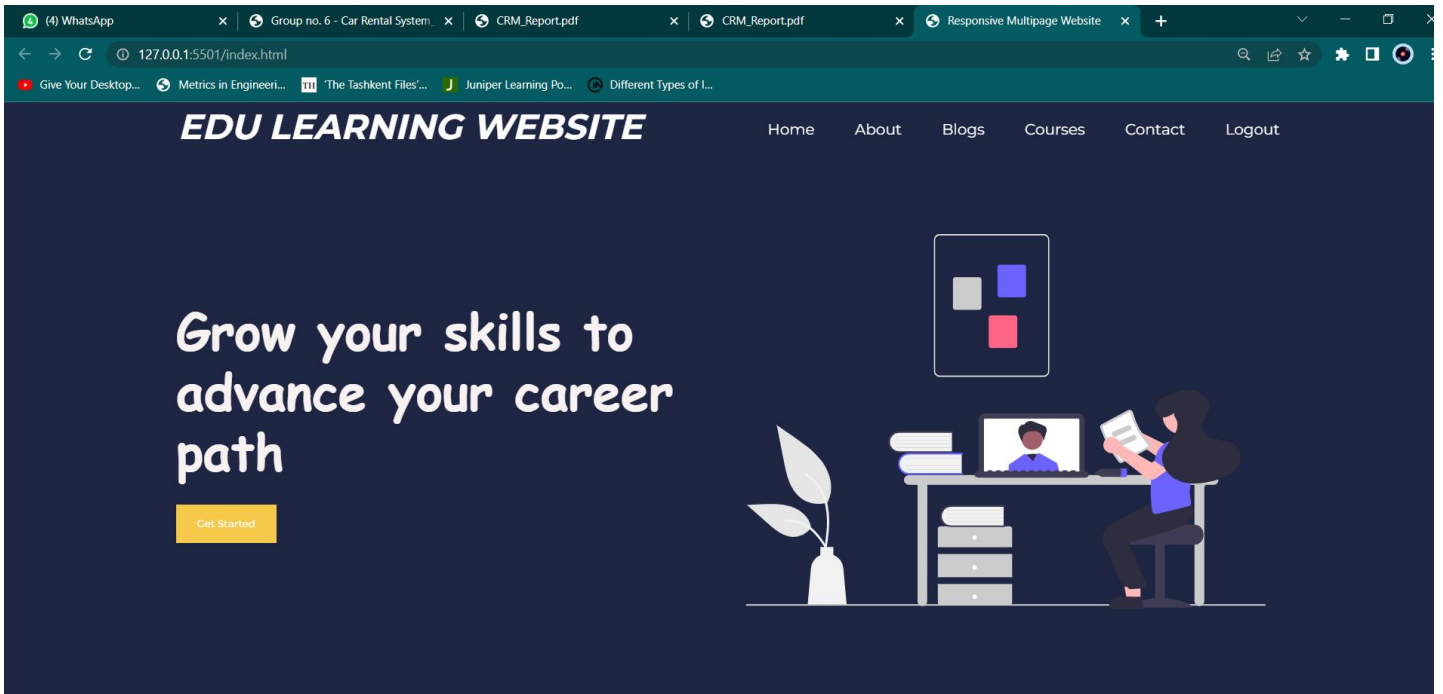
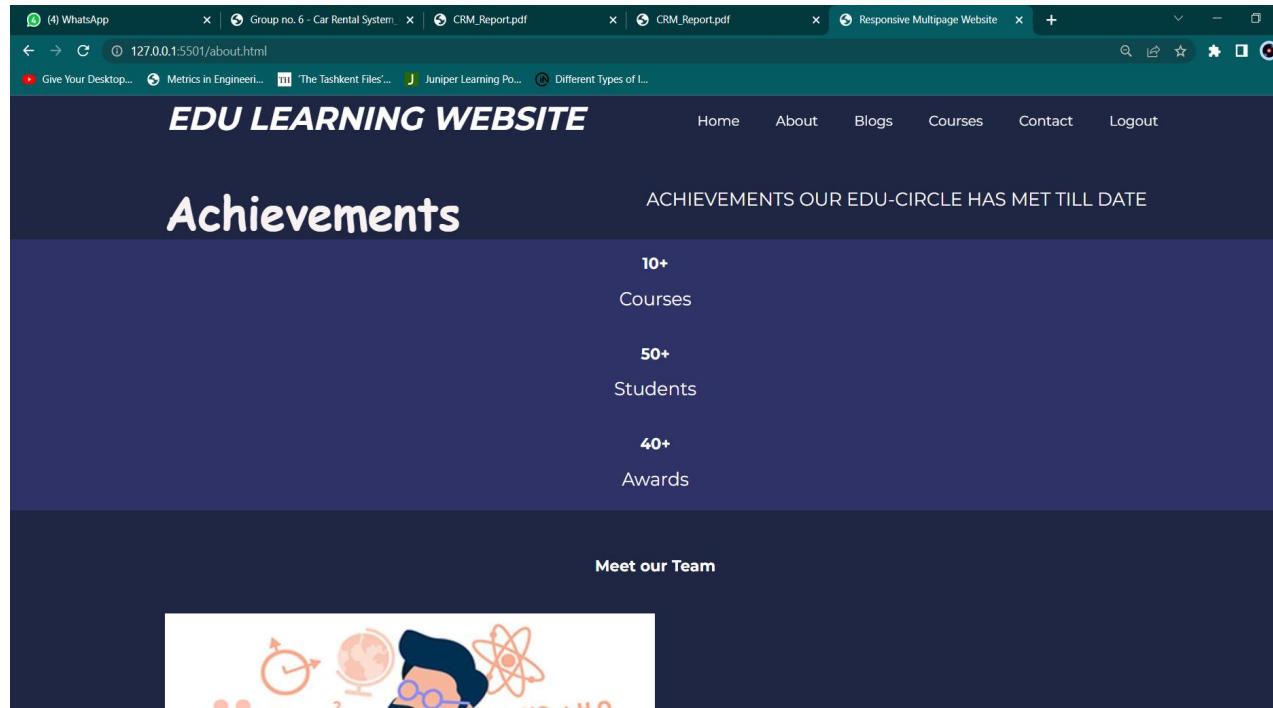


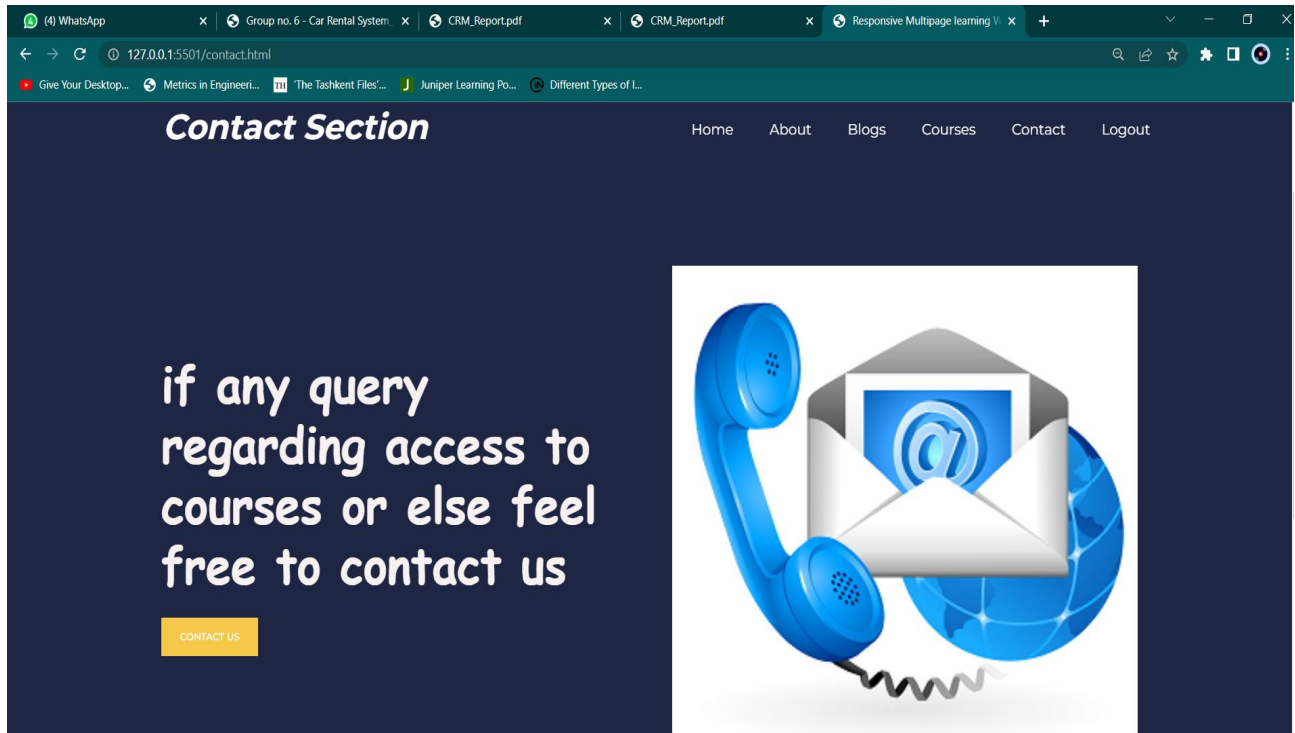
Figure 6.1: Flowchart of Project

Chapter No: 8

IMPLEMENTATION







Chapter No: 9

RESULT AND DISCUSSION

Since e-learning, particularly interactive learning, plays an important role in staff development and learning for academia and industry, case studies will be presented to demonstrate the effectiveness for training and teaching. This section presents two major topics for discussion to demonstrate impacts and contributions offered by interactive learning. The first topic is about how to use interactive learning with different types of emphasis and variations for academia and industry.

- **How to balance the use of interactive learning techniques for industry and academia**

This section describes how to balance the use of interactive learning techniques for industry and academia since the emphasis and orientations can be different. Referring to Table 3, webcasts, presentation sequences and Scavenger hunts are the common grounds for all types of learning, since all the learners should be able to download webcasts and watch them. They will be able to search information they require to know such as the use of Google and any online resources. They need to be able to express their thoughts, learning experience and research findings well. Learners should be able to articulate their work in a way that is acceptable to both industry and academia.

- **How interactive learning can be useful to industry is described as follows.**

Practical skills relevant and effective to the job with better performances are the expected goals for the majority of staff training (Guzzo and Dickson, 1996; Janssen and Van Yperen, 2004). Hence, there is an emphasis with the practical skill training. For example, when high-tech machinery has been purchased to a manufacturing organization to increase productivity by 20% a day, all the production line staff need to undergo training to ensure that they are proficient in the use of the machinery and feel confident and comfortable to use machinery like expert users to reduce the percentage of errors they have made and improve the productivity. Similarly, staff in banks can perform more accurate audits and more thorough checks with less time and less effort to double check. In another example, developers can learn new languages and apply them more efficiently to their new projects. Developers can utilize or create libraries and functions to make new Application Program Interfaces (APIs), so that outputs can be presented quickly and appeared in a way that users can understand better about the services since APIs can interact between software and hardware more efficiently and directly without executing additional codes. All these examples support that Drilled-and-practice activities, hands-on activities and team design are common and suitable for these types of training. In developer workshops that core programming skills are aimed for improvement due to the running of simulations and experiments, then virtual laboratories and learning games are required to make that happen.

Chapter No: 10

CONCLUSION AND FUTURE SCOPE

The e-learning web application aims to build an application which is user-friendly and easy to operate for the students. User can study through online courses with the unlimited and life-time free access to all the courses which are valuable and time-worthy for their careers. Users of all the ages can access the courses without undergoing an under-graduate or post-graduate program. This application aims to make the life of inquisitive students easy-going and productive. The user can manage their studies extremely well through this application. This e-learning web application provides seamless and manageable experience to get better in the future. Therefore, our aim is to create an easy to access application that can help students manage their education efficiently.

Chapter No: 11

REFERENCES

- [1] Whitelock, D. (2007). Computer Assisted Formative Assessment: Supporting Students to Become More Re active Learners, In 8th International Conference on Computer Based Learning in Science, CBLIS, PP. 492-503.
- [2] Nicol, D., & Macfarlane-Dick, D. (2006). Formative Assessment and Self-regulated Learning: A Model and Seven Principles of Good Feedback Practice. *Studies in Higher Education*, 31(2), 199-218
- [3] Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From games design elements to gamefulness: defining gamification. In proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments, pp. 9-15.
- [4] Ferguson, R. (2012). Learning analytics: drivers, developments and challenges, *International Journal of Technology Enhanced Learning*, 4(5-6), 304-317.
- [5] Siemens, G. (2013). Massive Open online courses: Innovation in education. *Open educational resources: Innovation, resources, and practice*, 5.
- [6] Romero, C., & Ventura, S. (2010). Educational data mining: a review of the state of the art. *Systems, Man and Cybernetics, Part C: Applications and Reviews*, IEEE Transactions on, 40(6), 601-618.
- [7] IEEE Standard for Learning Technology—Data Model for Content Object Communication. IEEE Std 1484.11.1-2004(R2010)
- [8] IEEE Standard for Learning Technology—ECMAScript Application Programming Interface for Content to Runtime Services Communication IEEE Std 1484.11.2-20003 (R2009)
- [9] Romero, C., & Ventura, S. (2007). Education; data mining: A survey from 1995 to 2005. *Expert systems with applications*, 33(1), 135-146.
- [10] Dimopoulos, I., Petropoulos, O., Agre, G., & Retails, S. (2013). Using Learning Analytics in Moodle for assessing students' performance.
- [11] Gibson, D., Ostashewski, N., Flintoff, K., Grant, S., & Knight, E. (2013). Digital badges in education. *Education and Information Technologies*, pp. 1-8. Springer.
- [12] Raymond, K. (1995). Reference model of open distributed processing (RM-ODP): Introduction. In *Open distributed processing*, pp. 3-14. Springer US.