GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad
Affiliated

Silver Oak college of Engineering and Technology

A report on-

GPS based vehicle tracking system for school children

Under subject of
Design Engineering – 2A
B.E III, Semester –V
Computer Engineering

Submitted by

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SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY

2018-2019

Certificate

Date:

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CANDIDATE'S DECLARATION

We have finished our project report entitled "**GPS based vehicle tracking system for school children**" and submitted to our respective guide. We are in 5th semester and we have tried to give our best. We have done our work honestly and in a good way.

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Yours Sincerely,

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ABSTRACT

New ID card systems are appearing in countries around the world, based on biometrics and using searchable databases. High technology companies promote these,governments seek them for administrative efficiency and post-9/11 demands for ‘security’ provide a rationale for their introduction. The surveillance issue isnot so much the cards themselves butthe national registries that provide for processing the personal data. These foster a‘culture of control’ whose reach expands geographicallyas identification measures are harmonized and integrated across national borders. They also encourage less inclusive notionsof citizenship, andfacilitate the sorting of ‘desirable’ and ‘undesirable’ mobilities, based on the criteria of ‘identitymanagement’. The social sorting capacities of new IDsare underplayed, as are the implications forgovernance of ‘multiple function’ ID systems, with consequences for social justice.

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Chapter 1. Introduction

1.1 Design thinking and it's importance :

Design thinking is a process where we are to select a domain to make it better. Better in any sense one would think it could have been better regardless of its importance to one person.

Solving complex problem requires analysis and design thinking. There is always room for improvement and hence, innovation. Innovation can't just be done overnight and therefore, require planning and various designing aspects. Design should not be problem-focused it should be solution focused i.e. solution should be given utmost priority, to create desired outcomes that benefit user.

improved and as suggested above improvement is even harder than creating a new product, to find flaws in existing system is harder. Ever after finding some difficulties/problem, it is not necessary that they will be removed or rectified properly. This calls for proper planning as well proper user interaction and considering every aspect and state of system that might fall into.

1.2 Project Summary :

Distributed Learning has drawn a great deal of attention in the field of distance and continuing education. Distributed Learning has proved to enhance learning and teaching environments. The types of available technologies used in distance learning are divided into two groups: synchronous and asynchronous. One of the main advantages of distance leaning is that web-based courses can be accessed at any time or place feasible.

This project is to establish a Web-based distance learning system, where instructors and students participate in learning activities while geographically separated from each other. This study is aimed to design and implement a distance learning system and use internet as the delivery mode.

1.3 Scope :

1) **Online courses**: Many online universities and institutes have been offering online courses for graduation, masters' studies and diploma programs. This is quite beneficial as the student can learn the subject from the comfort of his home. Further they can take up in their spare time and need not quit their jobs. This way of learning helps them achieve higher educational qualification and in turn get promotions in jobs.

Further if a person needs to join some course and is lacking some expertise, he can take up college

prep courses online to get ready for regular course.

2) **Online revisions**: Revision is one of the key for daily study and exam preparations. Revision does not need a teaching but a constant grading of performance or updating the knowledge. Performance refers to ability to recall the subject while updating refers to improving the current knowledge of a topic from the one already had before. Since students might forget what he heard from teachers in school or college, revision helps him recall and remember that teaching.

3) **Online exam**: Many times students might need to face a competitive exam for an admission in a prestigious university or scholarships. Online exams serve as a mock test or practice papers to get prepared beforehand of the actual exam. It helps them know their ability to score from the knowledge they have and also their exam time utility.
Many students who appear for an exam without some prior practice test fail due to lack of time management or improper comprehension of questions. They do not understand the questions properly or their time to read and answer the questions was not fast enough. So they either make wrong answers be unable to answer all the questions due to lack for time. Online practice test help them learn how to manage time in exam hall and also improve the speed of solving the question paper. Thus keeps them ahead of competitors.

4) **Online training**: Some companies and even schools and colleges may need some training for their employs or students. This training mostly involves field or practical training. But still some times a mere demo online by a person performing it on the other side is sufficient. This way of online training reduces travel, time and other expenses.

5) **Online library**: Not all books are available in the local libraries or on the campus of an institute. Online libraries and other informative services as a part of online education help to solve the problem. One is accessible to unlimited set of journal or books for references.

6) **Apps:** This is another area of development in online education. You might have noticed many apps to learn English language or any other language. These apps help you learn the foreign languages with ease. Also there are apps as simulation for various science, mathematics and

technology topics. Further these apps can be taken up on one smart phone or tablet to be read at convince like travel or outing etc.

7) **Games**: These play another prominent role in education. There are some games to help one learn some topics of study. This is a way of play and study liked by many kids. Even many colleges and schools find it difficult to cope up the cost of practical education. So they limit themselves from teaching most advanced methods or discoveries to their students as they are unable to afford the cost. For them online education comes as a solution. This is because they can get to see virtual practical experiments using online simulations and lab videos.

8) **Online research paper writing services**: This is another area where many people try to outsource their writing work. Though it might seem taking help in writing a research paper is not good. Still it saves time for students to utilize in other productive works.

Thus the scope of online education has ability to be taken up even in remote parts of the world and also by economically disadvantaged schools and colleges

Chapter 2. Literature Review / Secondary Research

2.1 Literature Review

Online learning has a number of potential benefits, not least of which is the ability to overcome the temporal and spatial restrictions of traditional educational settings (Bates, 2005). Freedom from constraint may also be seen as a defining feature of distance learning, for example freedom of content, space, medium, access (Paulsen, 1993), and relationship development (Anderson, 2006). Notwithstanding the advantages that online learning offers, a variety of factors have been identified as crucial to the success of online courses (McIsaac & Gunawardena, 1996). Motivation is one such factor (Bekele, 2010). Just as motivation is a key factor in learning and achievement in face-to-face educational contexts (Brophy, 2010), so it is in online learning environments (Jones & Issroff, 2007).

Now a day's more students are coming from rural areas and it's not possible to stay in cities for their education.This project can help them to improve their qualification as well as their knowledge. Here all students can register through this index web page and search available coerces and books in the database.This project mainly consists of website management module, new user (student) module, University names module, lecturer's module.

The importance of self-assessment through tools made available on Educational Technology platforms has been growing. Self-assesment in education technology relies on students analyzing their strengths, weaknesses and areas where improvement is possible to set realistic goals in learning, improve their educational performances and track their progress .

PROBLEM IN EXISTING SYSTEM:-

Distributed learning cannot give you access to your instructor
Distributed learning is isolated
Distributed learning does not offer immediate feedback
Distributed learning does not always offer all the necessary courses online
Distributed learning may not be acknowledged by a specific employer
Distributed learning does not give opportunity to work on oral communication skill.

ADD ON FEATURE AND FUNCTIONALITY :-

Free Courses

- Online Certification
- Varity Courses

Feedback

- Personal communication between student and experts
- Live video tutorials

2.2 Technology and Tools

Distributed leaning makes good use of database and cms (content management system) technologies. These two work hand in hand to store your course content, test results and student records. The data is stored in the database and the cms provides a user interface for you to add, update and delete data. A good lms will often provide reporting tools to generate and store progress reports.

Distributed leaning tools and technologies used to improve the quality of content are manifold. Software such as flash and powerpoint will help you make your presentations slick and interesting, with high quality, graphically rich content. There are word processing packages and html editors available these days that make formatting your text or web pages a breeze, removing a lot of the complexity. There are also lots of online services available that you can use to create interactive elements for your courses such as quizzes and games.

The key to having a truly interactive and engaging e-learning course is using the various multimedia resources that are available today. In our technological age, we now have access to instant streaming video, crystal clear recording capabilities and instant chat support services. Also, you can rely upon a myriad of highly interactive multimedia production tools, such as design software and high definition cameras to record informative courses for your audience. There are even editing tools that give you the power to turn raw footage into a masterpiece in just a matter of minutes.

For online learning, the “cloud” offers a shared pool of configurable computing resources (eg, networks, servers, storage, applications, and services) that can offer a range of benefits.

Chapter 3. Design Consideration

3.1 Design for Performance, Safety And Reliability:-

Performance points:-The performance of the System is very efficient. It consumes very less internet data for reading document and videos are available in different quality.Network traffic is reduced by web caching so it contains less time to response the request.

Safety :- By Creating restricted areas within the Learning course itself, so that only those with permission to be allowed to access more sensitive or important information**.** Important data is encrypted on all levels. A major concern for any Learning professional is the illegal download or usage of their content so security is needed for downloading the files.

Reliability:- Learners will not trust any learning system if it does not have a clear quality control policy . Moreover, poor quality research is subject to bias and, in some cases , this has led to ineffective or harmful interventions. Web sites don't just have to ensure that they are reliable, they have to show how they produce their content so that users can develop a sense of trust in them.

3.2 Design For Ergonomics

Ergonomics: The distributed learning system make sure that it is at most distance from anyone's reach and intact.It is user friendly in following aspects

1. **Providing detailed instructions:-** it's essential to provide detailed instructions on what user are expected to do, how user should utilize the eLearning course platform, and what steps they need to take in order to complete the eLearning module or activity.

2. **Keeping text short and succinct:-** Text is, of course, a necessary component of your eLearning course.By Keeping text blocks short and succinct, and make sure that only offer the need-to-know information

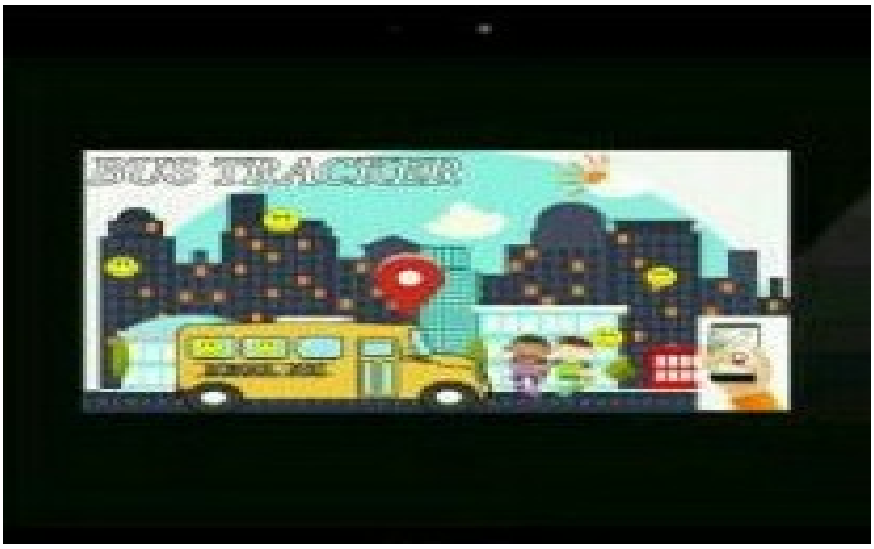
3. **By Creating an effective Learning course menu:-** it's always wise to create a detailed course menu or progress bar that highlights every element of the eLearning course.

4. **Using a responsive design tool:-** A responsive design tool gives you the opportunity to offer your eLearning course on virtually any device. The system automatically adjusts the layout of the page based on the device or browser that is being used.

Aeshtetics : The term aesthetics has its root in the Greek term for sensory, 'aisthánesthai,' or 'perceive sensuously' (Bowie, 2003)..

(1) Home Page

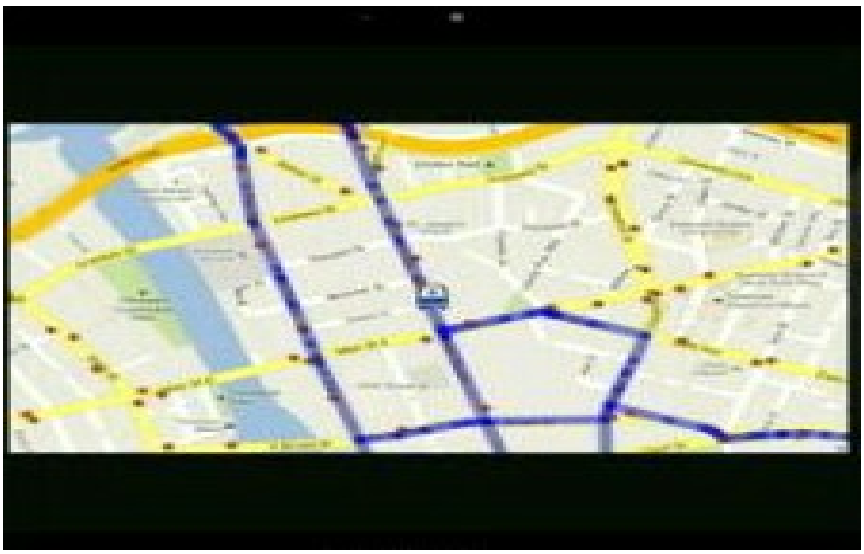
(2) Second page



(3) Login Page

(4) Enter the bus number that you want to track

(5) Shows your bus's current location



(6) Message Generation

3.3 Design For Cost

Once developed the online training module can be used many times with minimal delivery costs.

Students can learn at their own pace, repeating parts of the training as necessary to ensure effective learning.

Training can be undertaken during or outside normal working hours and by students in different time zones, with consistent training ensured.

Different training pathways to the same content can deliver the flexibility to cover in-depth or refresher training, or provide an overview for managers or supervisors.

Competence assessments can readily be built in to check learning, whether voluntary or mandatory in nature, which can be used to unlock subsequent content.

Competence record keeping can be automated.

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Chapter 4. System Requirement Study

4.1 Functional Requirements

Login database firewatch or similar kind of service is needed for login / Authentication.
Fetch the data from database.
Convert media elements into compitable format.
SMPT Google Client for sending mail.

4.2 Non – Functional Requirements

Performance –Reduce server response time for high performance.
Network traffic –Reduced network traffic with Web caching.
Relaibility – Faster mail service by Google SMTP Client it is pretty reliable
Security – Using parameterised queries to secure database from SQL injection
Data Integrity – Use of derby Database and carefully chosen table attributes data intergrity is always maintained

4.3 Hardware Requirements

Laptop /computer
Fast And Reliable HDD (5400 RPM)
Internet availability
Microphone

4.4 Sofware Requirements

windows OS – Operating system software to work
on Visual studio –for .NET devlopment
MSSql –for creating database

Chapter 5. Data Modelling

5.1 E-R Diagram

Entity – Relationship Diagram is a first step to identify the entities related to our project and hence, needed to be improved or used optimally. ER diagram helps us to establish relations among entities and how to use them properly

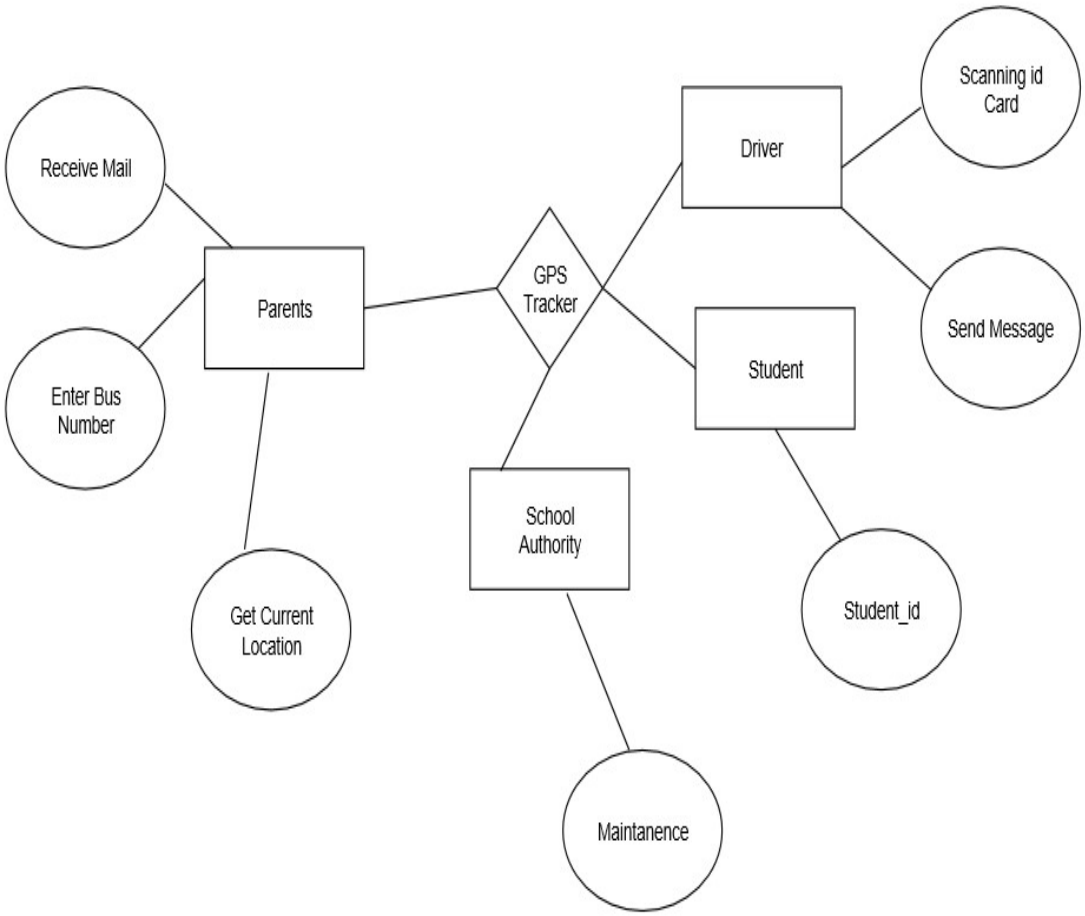


Figure 5-1- ER Diagram

5.2 Use Case Diagram

Use case diagram is primarily made to identify users and their requirements. These can easily be done by creating Use Case diagram. Use Case diagram also helps to identify factors that might influence or change the system.

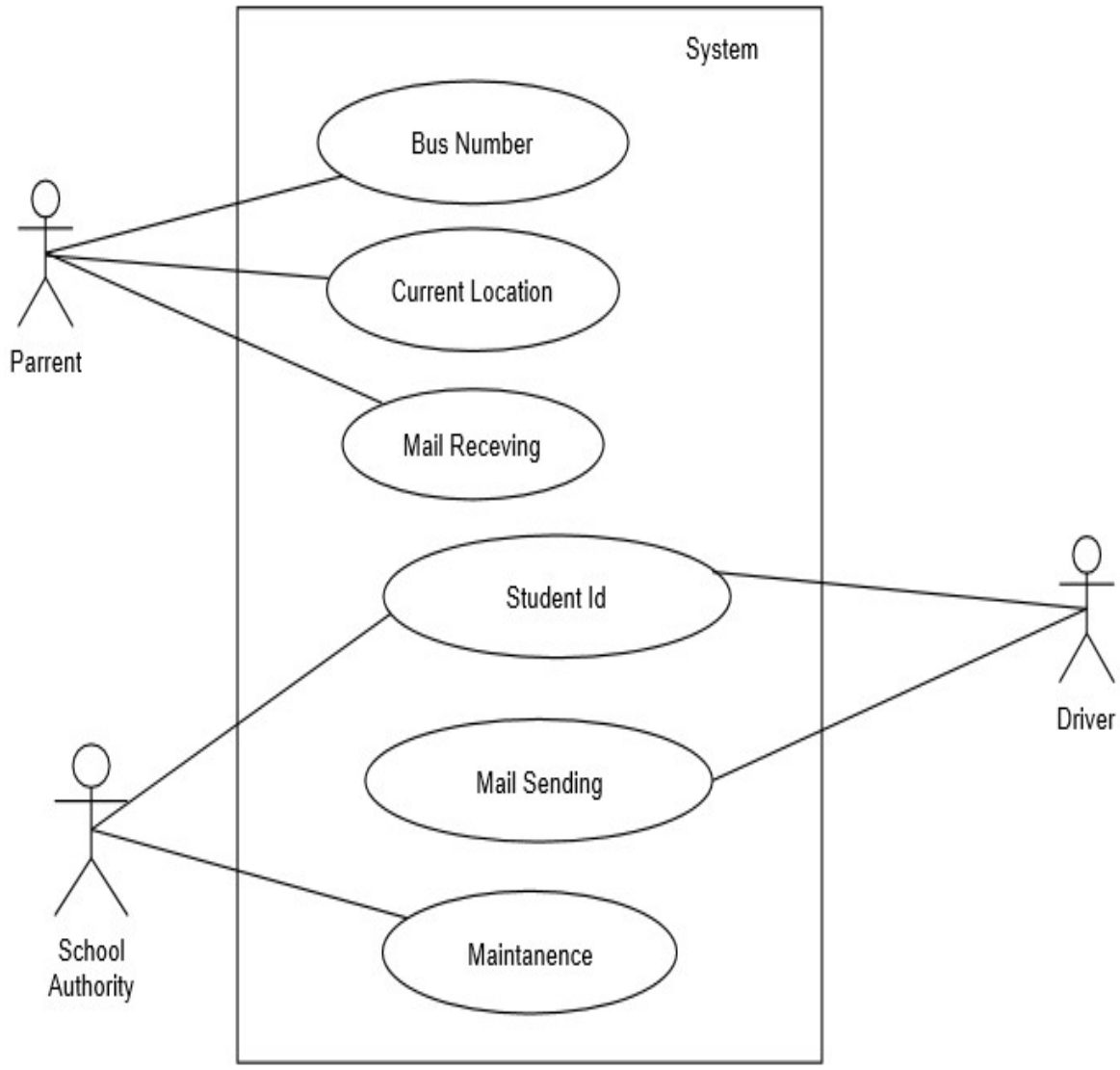


Figure 5-2 Use Case Diagrame

5.3 Sequence Diagram

After understanding requirements, entities and relationship between among them, it is very essential to figure out how they interact with each other. These interaction can easily be identified by using sequence diagram. Sequence diagram is used to show interaction between objects.

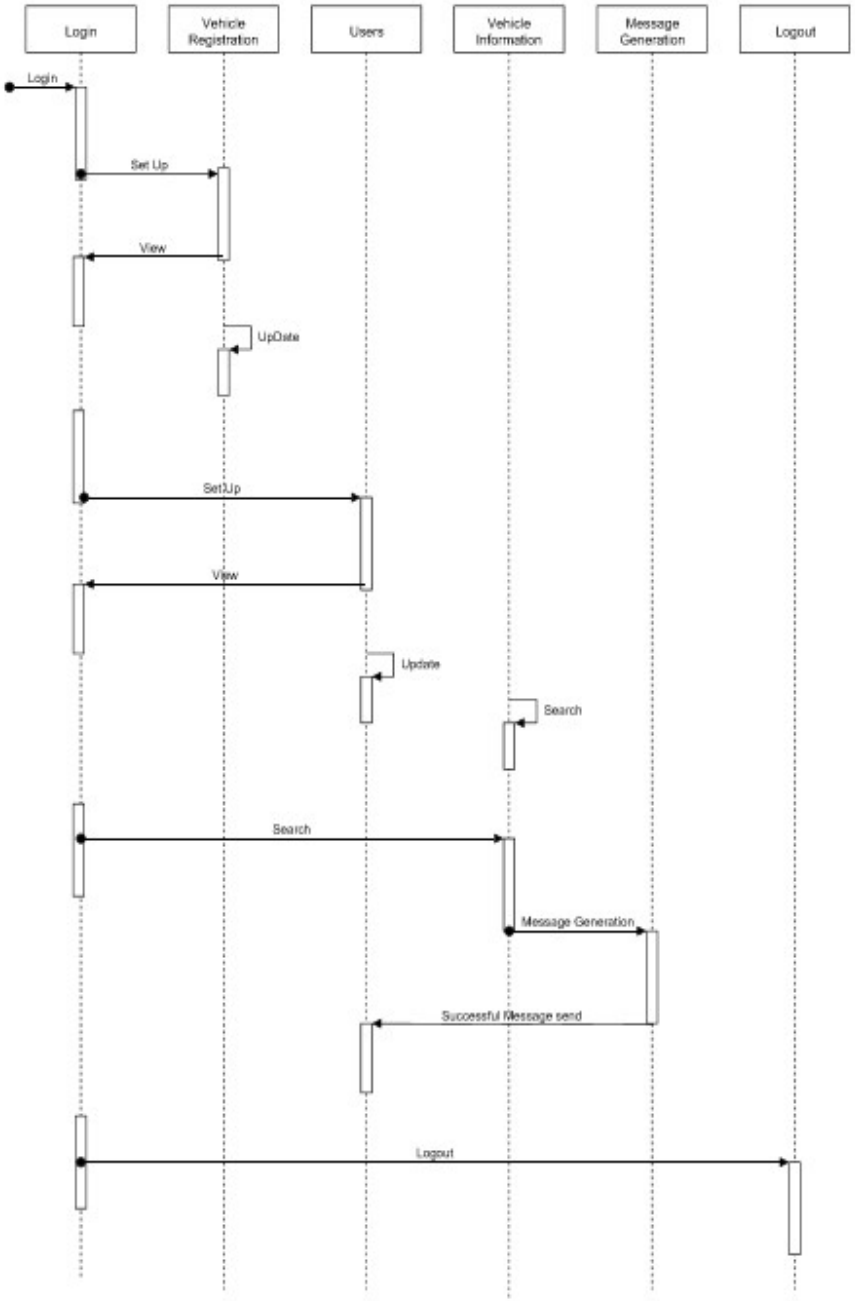


Figure 5-3- Sequence Diagram

5.4 State Diagram

Interaction have been understood but our project is still not ready for every expected and unexpected behavior that might leave our system into non-working state. This can be ensured by building our own State Diagram.

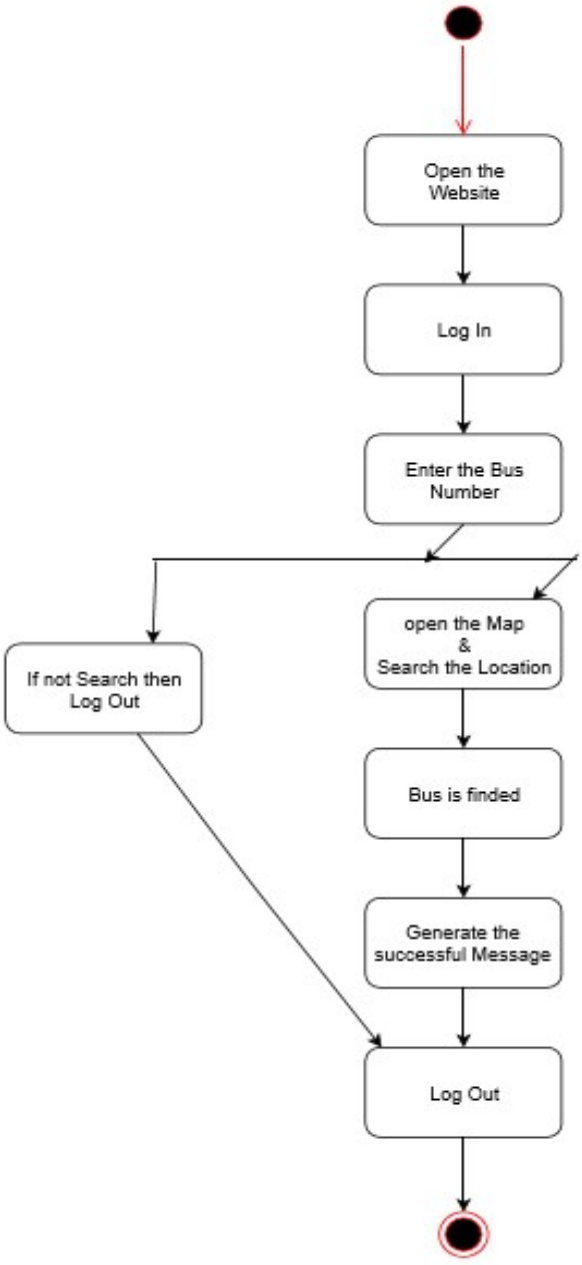


Figure 5-4- State Diagram

Chapter 6. Data Dictionary

Application Database	
1.	User Information
2.	university Information
3.	course Information

Table 1- Database Design

Application Database is quite small and up to the mark database is created to authenticate users and important information. Student information is used to send mails, faculties' information can be used to send or retrieve mails also, to authenticate, University and course information is used to organize files and folders.

User Information: is viable for sending mails and reciveing requests of lecture notes. Student information includes name, address, user ID, phone and mail id.

Attributes	**Description**	**Data Type And Size**	**Required?**	**Accept Null Values**
Name	Identifier of a user	VARCHAR(18)	Yes	No
Address	Student's pic up & Reach place	VARCHAR(18)	Yes	No
User ID. (primary key)	User ID provided by Admin	VARCHAR(18)	Yes	No
Phone	Phone number of User	NUMBER(18)	Yes	No
Mail ID	Email ID of user	VARCHAR(18)	Yes	No

Table 2 - User Table

School information: is another thing that is needed to be organized using database as many shcools are offering same course and we cannot leave anything behind or unorganized.

Attributes	Description	Data Type And Size	Required?	Accept Null Values
Name	Identifier of a School	VARCHAR(18)	Yes	No
School ID (primary key)	Unique ID provided by Admin	NUMBER(18)	Yes	No
Phone	Phone number of School office	NUMBER(10)	Yes	No
Mail – ID	Mail ID of School	VARCHAR(18)	Yes	No

Table 3 -university InformationTable

Bus information is another thing that is needed to be organized using database as there are many differenent numbers of bus.

Attributes	Description	Data Type And Size	Required?	Accept Null Values
Number	Number of a Bus	VARCHAR(18)	Yes	No
Name	Driver's full Name	VARCHAR(18)	Yes	No
School ID (foreign key)	ID givem to school by Admin	VARCHAR(18)	Yes	No

Table 4 - course Information Table

Chapter 7. Prototype

7.1 UI Design

(1) Home-Page

The home page contains information about our project that how it will work , what we can do with this website.

(2) Second Page

This page is shows only the picture that what is done by you.

(3) Login Page

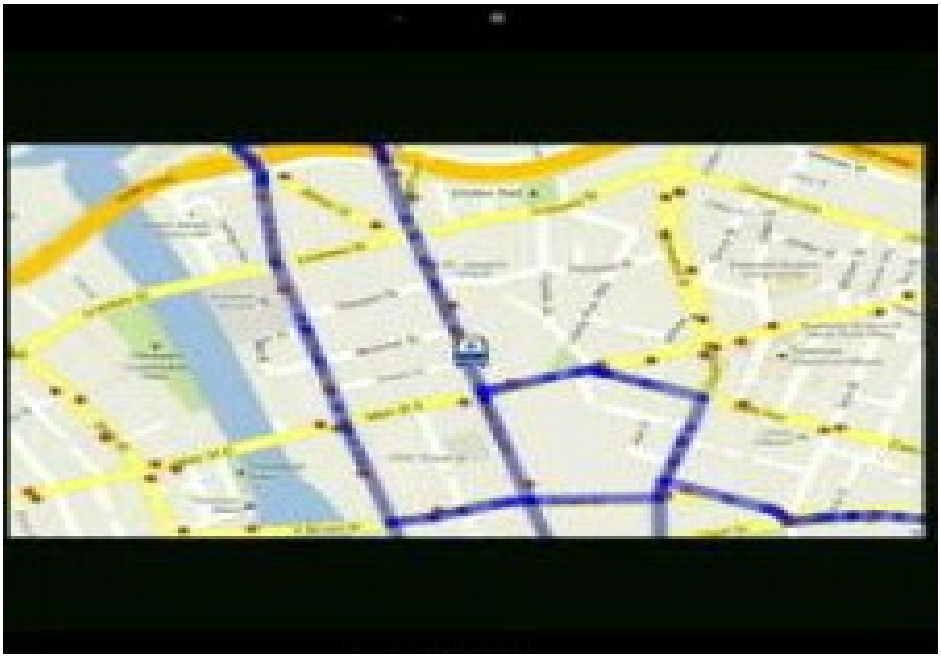
The login page will require user's email-id and password for authentication and to login to our website.

(4) Enter the bus number that you want to track

Here, parents or user of this website enter the bus number ,that which buses current location you want to see.

(5) Show that bus's current location

This page is show a map and the current location of that bus that you want to track.



(6) Message Generation

The students leave any place then the SMS is successfully sent to the parents phone number.

Chapter 8. Conclusion and Future work

8.1 Conclusion

The educational opportunities that distributed learning affords are exciting, but institutions face significant obstacles that need to be addressed before such prospects can be made real. Among the challenges is the development of

• Viable organizational, governance, and business strategies.

• Appropriate definitions of intellectual property rules with faculty and other developers.

• Teaching modalities that recognize new styles of learning.

• Suitable online student services and support structures.

• Adequate faculty support structures.

• Meaningful assessment metrics.

• Articulation agreements defining what and how many courses will be accepted and transferable for a degree.

8.2 Future Work

Distributed education can bring many benefits to higher education, such as

• Enhanced learning experiences.

• Improved access to education.

• Greater learner flexibility.

• Expansion of education to new groups.

• Increased interaction and collaboration.

Distributed education will be part of higher education's future. With careful planning, judicious choices, and resolute execution, that future will be a positive one for our institutions, as well as for those we serve.