**EUROPEAN UNIVERSITY OF LEFKE**

FACULTY OF ENGINEERING

Graduation Project I

School bus information and

tracking website

Andile Nleya

164611

**ABSTRACT**

The project is about a formal website for the school bus. It will have a login module, news module, driver's module, about us module, and routes module. The admin can add announcements, the bus timetable and also the working hours for the drivers. The students and the drivers will be able to view this information after a successful login. Students will also be able to monitor the movement of the bus via GPS. There will be a portal for interaction between the users and the admin. The system will be developed using HTML, CSS, and JavaScript for the front end, PHP for backhand, MySQL Database, and an Arduino GPS hardware for tracking. This website will help the students to catch the bus on time at different bus stops. The admin will be able to ensure the safety of the student by following the bus movements. The site will make it easier to access information and any updates on the buses.

**Supervisor:**

Prof. Zafer Erenel

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# 1.Introduction

## 1.1 Problem definition

Nowadays, almost all schools have websites that have all the information one can need. For example, the European University of Lefke (EUL) has a school website [1] with a page with information about the school bus that is not easy to find. The information provided is minimal and not updated regularly. I will create a separate website for only the school bus. It will have less traffic compared to the school website and it will be more user friendly. The administrator will be able to post general information about the buses, a detailed timetable for the bus movements that can be used by a new student, a shifts timetable for the drivers, a regular newsletter for announcements. I will introduce GPS tracking for the student module. As a student, I know the struggle of waiting for the bus for too long or being late because the times are not the same for each trip due to different factors like traffic. The GPS will eliminate that problem since the student will be able to monitor the bus movement. The school bus website has been implemented by Colombia University for their shuttle services [2]. I will also introduce a module for the bus drivers. This way they will also be able to access their working timetables digitally and be easily notified if there are any changes or updates.

## 1.2 Goals

* To create an easily accessible school bus website that provides relevant information.
* To provide a platform for posting regular newsletters for new announcements about the buses
* To provide easy communication between users and admin for issues strictly concerning the school buses
* To include a tracking system for the school bus movement to improve student's life
* To include a module for bus drivers to access their shift timetables and any important announcements that may affect them.

1. **Literature Survey**

Most institutions have not implemented a separate website for their bus services. EUL has a page under their official school website for transportation. It is just a single page with a drawn map of the places around the school and pictures the timetables for movement which are not easy to understand. Harvard University has a more detailed transportation web page. It has a list of guidelines and requirements for passengers and drivers that are kept up to date. They have a link list of their services which go to separate pages. On the top right of the page, there is an option to track the shuttle movements from google maps. There is a list of shuttles that are in service and an option to search for a particular route to track. They also have a service alert page for important announcements. These features are some of the similarities with my own system. The major difference will be that it will be a separate website from the school's official website.

Columbia University made created a Columbia Transportation website. My project will mainly be based on this example. The website has a simple and user-friendly user face. Their menu shows travel options, car rental options, parking and parking policies for car owners, about us, and contact info. My website will be strictly about the school bus and its movements. The main page has safety protocols, news, and announcements section written in detail. This is a feature that I will be including as it is my goal to help students stay informed and safe. There are buttons to go to a different page for Shuttle Routes, Browse Services, and checking for more updates. Another difference between my site and theirs will be the login module. Only students and employees will have access. Colombia's shuttle tracker is not functional on the website but it can be accessed on their application. I will include the tracker on the website. Overall, the Colombia Transportation website has a very conducive layout that I will use for reference throughout my project.

1. **Background Information**

## 3.1 Required software

* **HTML:**

Hypertext Mark-up Language is the most basic tool for building a website. It is used to define the elements of a webpage and the layout. It is a standard language and very easy to understand. HTML is usually used together with CSS and JavaScript for the front end of the website.

* **CSS:**

Cascading Style Sheets is used to enhance the presentation of a webpage written with a markup language. This includes styling the font, describing the layout, and including colors. CSS designs add uniqueness to a web page.

* **JAVASCRIPT:**

JavaScript, usually written JS, is an interpreted and high-level programming language that has first-class functions. It conforms to ECMAScript specification. JavaScript has many uses but it is mainly used in the front end of web design.

* **PHP:**

PHP (PHP: Hypertext Pre-processor) is a scripting language embedded in HTML that is widely used in web development. It is used on the back end to create databases and in the management of dynamic content. Php scripts work on a server that already installed PHP and is very easy to use.

* **MySQL:**

MySQL is a database management system that uses structured Query Language. MySQL organizes and processes data that is stored in a database. It is an open-source that provides advanced features and reliability.

## 3.3 Hardware

* **Arduino:**

Arduino is an open-source electronic device made of both hardware (microcontroller) and some software on the computer to write and upload code to the hardware. I will use it in my GPS set up to enable the tracker on my website.

1. **Modules**

## 4.1 Login Module

The users will be able to access the website by entering their credentials on the login module. Only registered personnel will be saved in our database. Students and drivers will initially be given the details to log in. If the information entered on the login module does not match our database, access will be denied and an error message will be shown. If the information matches our database, the user will automatically be directed to our home page. They will be given the option to personalize their passwords after. A login module is a form of security because it ensures that only people with permission will be allowed to access the system.

## 4.2 Routes Module

The routes module will be found on our home page after a successful login. It will have a drop menu that has a list of all the different destinations that the school bus will be moving to. If the user picks one of them, for example, Lefke, they will be redirected to a new page that has all the information about the destination. There will be two timetables to show the times from the destination to the school campus and vice versa. The page will also show the route taken by the bus to the destination including all the school bus stops along the way. The option to track the school bus will also be included on this page. There will also be a section for the announcements that concern only the particular destination chosen.

## 4.3 News Module

The news module will also be on the home page. It will also redirect to a different page. The first section on the page will contain safety measures and regulations to be followed by all students who want to use the school bus. The second section will be for important announcements and daily updates concerning transportation. For example, if the school bus will not be available, an article will be added to this module to inform readers. This module will basically be responsible for sending out information that the users will need to know about the school bus. It will be maintained and updated on daily basis.

**4.4 Driver's Module**

The driver's module will be a page about the employees. There will be a little information about the employees who drive the buses that includes their qualifications and a gallery. The importance of this page will be for the students to know who will be driving them so that they feel safe. There will be a schedule included to show who will be working at a particular time. This will be useful to the drivers as well because they will be able to log in and check their schedules online.

**4.5 About us Module**

This module will have information about the transportation department on how they started operating, the achievements, the school mission, and any future plans. A gallery will be included on this page to show pictures of the buses, the school bus stops, the parking lot, and any other relevant pictures. The contact information will also be found on the page. Users will be able to contact the administration for any inquires. The head of department contact information will also be included.

1. **Risk Analysis**

* Some students may not know about the website
* Increase workforce because the website will need daily maintenance
* Both the users and the school bus will need a strong internet connection at all times
* The website might crash if overloaded
* Students who are not in our database will not have access to the website

1. **Ethics**

* Most of the work on our web pages will be authentic and references will be included for any copied information.
* The website will not use any material withheld by copyrights.
* The website will have a secure login for protection against bugs and viruses.
* Users' information will not be accessible to any other party.
* No spam or chain messages will be allowed [3].

1. **Conclusion**

## 7.1 Benefits

**Benefits to users:**

* Easy access to information about the school bus
* Students will be able to catch the bus on time when using the tracker
* Admin can monitor the bus movement for security purposes
* Students have direct communication with the admin.
* The drivers will be able to see their schedule and any important notifications.

**Benefits to me:**

* Building the website from scratch will help me test my skills in real-life situations
* I will learn how to connect hardware (Arduino) to my software practically
* I will be able to identify my weaknesses and improve
* The research has made me learn a lot of new information

## 7.2 Future Works

Some institutions already have websites similar to mine. I want to make sure that this project will actually be practical so it can be used by the school after my graduation. I will like to add more functionalities like a button to book a sit on the bus before the trip and to show when a bus is full. This will be useful because it can notify the admin to add a bus so that students are not left out. I will continue to research further to improve the system that I will build and add other features as well.

**Why did I choose this project?**

As a student, not having adequate information about the school bus has been an issue. I was having a conversation with my friends and the idea came to me. The main objective is to improve the life of students. The website will have the school timetables and if there are any changes, the news module will make announcements. Since the bus movement is not constant due to traffic and other factors, the tracking features will help the student to know exactly where the bus and catch it on time. This feature will also be useful to the administrators. They will be able to monitor the movement of the buses to ensure the security of the students.

1. **References**

[1]: European University of Lefke – Life at EUL – Transportation, [www.eul.edu.tr/laude-yasam/hizmetler/ulasim/](http://www.eul.edu.tr/laude-yasam/hizmetler/ulasim/)

[2]: Colombia Transportation, https//www.transportation.colombia.edu/ /cu\_card\_group-594

[3]: Harvard Transportation and Parking, https//www.transportation.harvard.edu/shuttle-van-services

[4]: Ethical and Legal Issues in Web Development, 2013 Certification Partners, LLC