

**The University of the West Indies**

**Department of Computing and Information Technology**

**Undergraduate Project Course**

**Project Proposal**

University Shuttle Routing and Tracking System

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# Introduction

One of the main services made available to students of the University of the West Indies (UWI) is its shuttle service. This service provides students with free transportation to and from different locations in and around the University. It has proven to be a valuable resource to those who require transportation between the Faculty of Medical Sciences (FMS), the Faculty of Law (LAW), the Sir Arthur Lewis Hall (SAL) and the University’s main campus in St. Augustine. Therefore, students living in and around campus are the main beneficiaries of the service.

However, there is an underlying problem with the current operation of the shuttle service. While its operation is beneficial to many students, it has proven to be inefficient and unreliable. This is because shuttles routinely do not arrive on time or do not arrive at all. While some of these problems may be as a result of administrative issues, the students who rely on the service are left stranded waiting on buses that may arrive late or may not arrive at all. This has created a sense of distrust in scheduled arrival times for buses among the University’s students.

The shuttle service can be improved by providing students with accurate and timely information on the whereabouts of shuttles. This information can be provided by a robust application to be used by the University’s students. This system will maintain a store of shuttle routes and estimated arrival and departure times. This is done so that a student who uses the system can receive estimated times of arrival, locate which shuttle they require based on the routes available and then determine whether the shuttle will be unable to satisfy their transportation needs.

When implemented, this system has the potential to increase the efficiency of the service for the students, as well as the shuttle drivers. It also increases a sense of trust in the reliability of the service which will promote an improved and more secure campus.

# Positioning

## Problem Statement

The UWI Shuttle Service does not have a strict schedule to adhere to and sometimes do arrive within the specified interval periods; therefore, there is no way to predict if or when a shuttle may arrive. As a result, students are left stranded without transportation or left inconvenienced, which entails its own subsequent issues. In successfully solving this, the efficiency and reliability of the service will be increased for both students and shuttle drivers.

## Product Position Statement

For UWI students who utilize the University’s shuttle transportation service, the application is a monitoring system that will track the shuttle’s real-time routes and locations to provide an estimate of its arrival. Unlike the existing system that has a schedule of the shuttles’ operational period, alongside the stipulated 10 - 15 minute intervals, the application will be able to notify users of a more accurate arrival time.

# Stakeholder Descriptions

## Stakeholder Summary

### User Stakeholders

The user stakeholders of this project are students of the University of the West Indies as well as the shuttle drivers of the University’s shuttle service, as they will be using the application being developed.

### Non-user stakeholders

The non-user stakeholders include those that have a vested interest in the development of the application. These persons are the group members, the course lecturer involved with the overseeing of the project and the University of the West Indies. Group members will be involved in the development of the application to be produced and they will ensure that the application will be maintainable for any future works. The course lecturer will be responsible for overseeing the project and providing guidance and feedback on deliverables produced and processes undertaken by the group members. The University of the West Indies will be interested in the outcome of the project as when the successful solution is developed, they can choose to utilize it to improve on students’ university experience.

## User Environment

The application is to be utilized on any Android mobile device and requires a Wi-Fi or cellular data connection. The university provides an open WIFI connection across campus and can provide access to the application’s features. The backend of the application will be built in such a way that an iOS or web version of the application can be easily developed in the future.

The application also gives more accurate information if the user’s Global Positioning Service (GPS) is turned on but does not need it to be functional.

# Product Overview

The product is an Android application which utilizes location-based services to allow students of the University of the West Indies to track the real-time location and routes of the student shuttles provided by the University’s shuttle service.

## Product Perspective

The product will work on Android devices and utilize its GPS functionality. It is dependent on a working internet connection. The product’s main purposes are to allow students to locate the shuttles, and to allow the shuttle drivers to broadcast their location, routes, and other relevant information.

## Needs and Features

The needs are a real-time locator for the student shuttles, as well as to determine their arrival times and routes. Currently, the only method to identify a shuttle’s arrival time is the specified schedule and this is not always followed or is altered by circumstantial events.

## Alternatives and Competition

GPS systems can be installed into the shuttles. Online fleet tracking services can also be utilised; however, these will be expensive for the University as they usually incur a monthly fixed cost per device (and thus per shuttle).

# Other Product Requirements

The product services requires that the shuttle driver’s phone has a constant internet connection. This will be required for the real time tracking. If a constant internet connection cannot be had, then the system will rely on the scheduled time of departure and arrivals. The product service requires that the users phone be connected to the internet to receive updated information of the shuttle’s location.

## Browser Compatibility

The application is not compatible with browsers but is intended to be cross-platform, available on both Android devices. However, a web application that adapts to the backend can be developed at some point in the future to allow browser compatibility.

## Usability

The application should provide a uniformed look and feel between all pages. The application should also be designed for error prevention.

## Responsiveness

The information received will be real-time.

## Visual Design

The application will need be to designed to fit the respective style of the operating system for each platform.

## Long-term Scalability

The application will be developed so that other campuses will be able to use the technology. The features of the application can also be used for companies who experience similar problems and are in demand of a similar service.