UGAthens Transit:

Software Requirements Specification

A Website that Integrates UGA and Athens Transit Data

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INTRODUCTION

Overview

This document defines the requirements for the UGAthens Transit website. This document is designed to be useful for both users of the website and the development team. After reading this document, users should be able to understand the inner workings of the UGAthens Transit website. The development team should be able to use this document while developing the website to ensure that the final product is cohesive and meets client expectations.
The UGAthens Transit website will be a website that is capable of tracking both the UGA and Athens Transit bus data. The website must be simple and allow users to be able to use it intuitively.

Goals and Objectives

1. Develop a low-maintenance website that requires minimal intervention from developers
2. Develop a database so users can create an account to track the users favorite bus routes and stops
3. Develop a user interface that allows users to sort through bus data by stop, route, or transit system

Scope

UGAthens Transit will allow users to view and interact with bus data from both the Athens and UGA Transit systems. This will include viewing and sorting by bus route and bus stop. Users will be able to see information from both transit sources at the same time, making it easy to find their most efficient route. The website will also include live bus tracking so users will be able to see active buses on a map. Users may also choose to create an account so they can easily access their favorite routes and stops.

Definitions

Use case	Describes an interaction between the system and an actor.
UGA Transit	The UGA transportation service. Provides public access to UGA bus routes, stops, and live tracking. Any member of the public may use the UGA buses for free.
Athens Transit	The Athens transportation service. Provides public access to UGA bus routes, stops, and live tracking. Any member of the public may use the Athens buses for free.
Route	The designated path of a bus. Routes loop.
Stop	The different places a bus will let people on and off the bus. Stops may be used in one or more routes.

Document Conventions

Below are the document conventions of this project. The UGAthens team will follow these conventions to ensure consistency, clarity, and good organization practices throughout the programming and documentation process.

Title Page	Each major document will contain a title page. The title page will feature the title, subtitle, team members, and due date. The first line of the title will be the project title and the next line will be the document name (Project Plan, Software Requirements Specification, etc).
Table of Contents	Use a table of contents for large documents. Include page numbers for easy tracking. The title page will not contain a page number, but the table of contents page will. The title page will be page 1, even though it is not shown on the page.
Heading and Subheadings	Have a clear hierarchy. Heading 1 will be used for the title of each section, heading 2 will be used for the subtitles of each section, and so on and so forth. When using heading 1, the tile will be in all caps. All headings should be bolded so readers can easily discern different sections.
Font	For consistency and readability purposes, we will use the font Times New Roman and, when applicable, we will use font size 12.

Images	Images and figures that are included in documentation will be large enough to be easily readable and centered.
Branch Structure	There will be a main branch. Each group member who makes edits to the website must create their own branch that will be titled the group member in question's name. The branch must be approved by either the project manager (or two other team members when the manager is not available) before the branch can be pushed to main.
Commenting Standards	Include comments when necessary to describe what is being done.

Assumptions

It is assumed that all users will have a device that can connect to the website. It is also assumed that all users understand the basics of public transportation such as what a bus route, stop, and line is.

GENERAL DESIGN CONVENTIONS

Product Environment

The website is currently only available locally, on a device that has successfully downloaded the necessary files from GitHub.

User Characteristics

New Users	Someone who has never used the website before and must create a user account.
Users	Someone who has a basic working knowledge of how websites function and understand the basics of public transportation.

Mandated Constraints

Budget Constraints: There are no funds available to be used on this project so everything must be done for free. At this time, the website will not be able to be uploaded under a relevant domain name that must be bought.
Deadline: All documentation and project uploads must be completed by December 8th, 2024.
Accessibility Constraints: The website must be easily readable. This includes the color scheme that is chosen. The writing on the website must be big enough to easily read and must be a color that stands out against the background.

Potential System Evolution

Due to time constraints, not all desired functionalities were able to be implemented.
The UGAthens Transit website may later be updated in the following ways:

- Guest access to the website
- Users who are logged in will be able to favorite bus routes and stops and will be able to view their favorites in a dedicated tab
- The map will be able to show a live location of each bus that updates as the bus moves

FUNCTIONAL REQUIREMENTS

The functional requirements are as follows:

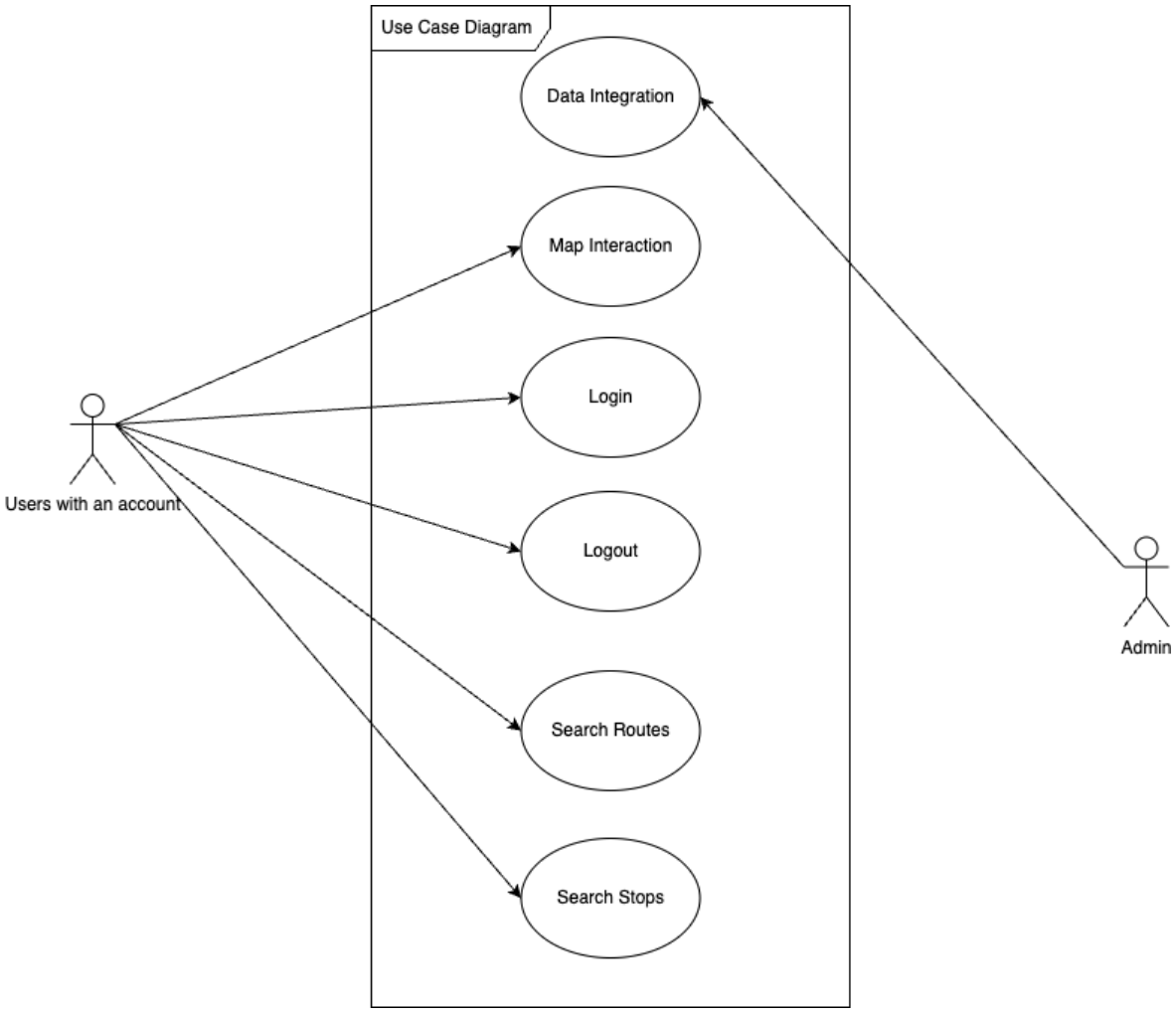
Data Integration	- Integrate the UGA and Athens Transit data
Live Tracking	- Users will be able to view when buses will arrive at different stops
Map Feature	- Display bus stops on a map
Authentication	- Allows users to create a user account and log in
Search	- Users will be able to search bus routes and stops

NONFUNCTIONAL REQUIREMENTS

The nonfunctional requirements are as follows:

Usability	- User interface will be designed in such a way that new users will be able to navigate the website intuitively - Website will have a responsive design so users can use the website on both desktop and mobile devices with no issues
Maintainability	- Clean coding practices will be followed for ease of future updates - Comprehensive documentation will be maintained
Accessibility	- The color palette and font sizes will allow the website to easily be read and navigated
Operational Requirements	- The website should be able to update live bus information in real time
Performance Requirements	- The website should load fully within 3 seconds (when there is good internet connection)
Security Requirements	- User account information should be stored securely - User passwords must be strong
Safety Requirements	- There are no safety requirements at this time
Legal Requirements	- Ensure no UGA or Athens Transit copyright is infringed upon - Including but not limited to logos

Use Case Diagram



Documentation and Training

Since the UGAthens Bus Stop App is designed to be intuitive and user-friendly, detailed documentation and training are unnecessary. Basic instructions and support include:

Quick Start Guide:

Users need to sign up with an email and password.

After logging in, they can search for bus stops, filter by distance, and view routes on the map.

Developer Notes:

The app uses a straightforward file structure (components, firebase, map).

Firebase handles authentication, and Google Maps powers the map functionality.

Minimal setup is required; a simple README file in the project provides installation and usage steps.

External Interface

User Interface

- **Dark Mode**: The app defaults to dark mode for a sleek and modern user experience.
- **Light Mode**: Users can easily toggle to light mode using a button in the navigation bar.
- **Responsive Design**: The interface is optimized for both desktop and mobile devices, ensuring accessibility and usability across all screen sizes.
- **Map Interaction**: An interactive map allows users to view bus stop locations and additional details by clicking on markers.

Software Interface

- **Closed Access**: The app does not have or expose any output APIs to external users.
- **Firebase Integration**: Firebase handles user authentication and data storage securely.
- **Google Maps API**: Provides dynamic mapping and geolocation features.

System Features

- **Theme Switching**: Users can seamlessly switch between Light Mode and Dark Mode.
- **Bus Stop Search**: Search bar functionality allows users to find specific bus stops by name or location.
- **Distance Filter**: Filters bus stops based on proximity, making it easier for users to plan their routes.

- **User Authentication**: Secure sign-up and login options to ensure personalized access to features.
- **Navigation**: Intuitive navigation bar with quick access to Contact Us, About Us, and other key pages.
- **Scalable Design**: Built with scalability in mind to accommodate future features like bus tracking or additional transit systems.