SP-6 Red Time Mileage Tracker (w GPS)

Software Design Document, Senior Project, Section 2, Fall 2024, 08/27/2024, Professor Sharon Perry

Project Team

Roles	Name	Major responsibilities	Contact (Cell Phone)
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1. Introduction and Overview

The Time Mileage Tracker with GPS is a mobile app that enables employers to ensure that employees are efficiently managing time and mileage. Employers can access data on employees' activities to verify time and mileage reports. The app aims to improve productivity, reduce user input errors, and provide accurate records for employers.

2. Design Considerations

2.1.   Assumptions and Dependencies

- Software that can run the latest version of Google Chrome, such as iOS 16 and Android 8
- Assumed to be compatible with all main operating systems, as it is web-based
- Device is assumed to have the ability to use location services
- Device is assumed to be a mobile device such as a smartphone so that movement may be traced
- User must have a functioning email address
- User is above the age of 4

2.2.   General Constraints

- Device must have a user interface
- Data storage is required to run admin reports
- Device must have proper power (battery life)
- Device must have 300 MB of RAM available
- Strong GPS signal is required to maintain proper accuracy when tracking a device.
- GDPR Compliance would be required if the application is to be used in the EU, storing of personal data and information must be done securely and properly
- Application will use Maps APIs and the device must be able to use and handle these APIs allowing for a proper exchange of information

2.3.   Development Methods

TBD

3. Architectural Strategies

- Programming Language and Framework
    - The choice of Django as the primary framework was driven by its robust ecosystem and built-in features such as the ORM, which simplifies database interactions, and its strong community support.
    - Django's "batteries-included" philosophy allows for rapid development and reduces the need for third-party dependencies, which aligns with maintaining a streamlined and manageable codebase.
- User Interface Paradigm
    - A responsive web design was adopted for the user interface, utilizing modern frontend frameworks like React.
    - This approach ensures that the application is accessible across a variety of devices, catering to drivers and administrators who may access the system on the go. The use of React also allows for a dynamic, real-time user experience.

4. System Architecture

TBD

5. Glossary

An ordered list of defined terms and concepts used throughout the document.

- MB- megabyte: unit of memory storage.
- RAM- random access memory: the computer hardware that provides temporary storage to the computer and its programs.
- API- Application Programming Interface: an interface allowing two or more computer programs or components to communicate with each other.
- GPS- Global Positioning System: a satellite-based radio navigation system that most modern mobile devices are manufactured with.
- EU- The abbreviation for the continent of Europe and for the European Union.
- GDPR- General Data Protection Regulation: a European Union regulation on information privacy in the European Union and the European Economic Area.
- Email- Electronic Mail: Denotes email in the general sense such as Gmail, Outlook, Yahoo, and any other email service available.
- React - A JavaScript library that helps developers create graphical interfaces for web applications and native platforms.

- Django - A free and open-source web framework that runs on a web server, and uses the Python programming language.
- ORM - Object-Relational Mapper, which is a software tool that translates data representations between databases and object-oriented programming languages.

6. Bibliography

TBD