

McMaster Engineering Capstone Expo

Department of Computing and Software

Executive Summary

Sayyara

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Sayyara is a progressive web application (PWA) which will act as a single platform for independent automotive repair shops and vehicle owners. The application can be accessed by users through a web browser on both desktop and mobile devices. This platform will allow repair shops and vehicle owners to interact in a more efficient and effective manner. Vehicle owners can search for automotive repair shops and services based on a variety of search filters; request quotes for service; book, view, and manage service appointments. On the application, shop owners will have full shop management capabilities such as: adding and managing a list of employees; managing a list of service types and corresponding service appointment availabilities; managing store information such as location, hours of operation, and contact information. Automotive repair shop owners and employees will be able to manage quotes, service appointments, and work orders from a single application. Ultimately, Sayyara will significantly improve the auto repair experience for both independent automotive repair shops and vehicle owners.

Sayyara is built using a variety of development tools and infrastructure. The website is a React application built using the Next.js framework for the front-end and back-end, Prisma for the object relational mapping (ORM) (i.e., database communications), and the Bing Maps API for powering the geolocation services. The website is hosted on Vercel using a serverless architecture and the Node 16 runtime. The database chosen to hold all the data is MySQL, a relational database, and is hosted on PlanetScale. The code base is version controlled using Git and is hosted on GitHub. The continuous integration and continuous delivery (CI/CD) is run on the GitHub Actions platform, where all tests and code quality checks are run on all additions to the code base. All tests were written using the Jest testing framework.

Sayyara is built using the culmination of all the software engineering design processes taught throughout the Software Engineering program. The process began with initial problem identification in the “Problem Statement and Goals” report. This outlined the problem proposed by the supervisor, Nabeel Ibrahim, at a high level. Details on how the team plans to effectively work together were outlined in the “Development Plan”. The problem was then broken down into a set of clearly defined requirements in the “Software Requirements Specification”. Next, any potential hazards and risks were reviewed in the “Hazard Analysis”. Following this, a plan was created for how the team will verify that the application meets the requirements in the “Verification and Validation Plan”. Design plans on the concrete implementation of the solution were planned out in a set of three documents: “Module Guide”, “Module Interface Specification”, and “System Design”. The solution was then built, and the verification plan was executed, with the results documents in the “Verification and Validation Report”. While the engineering process outlined here is linear, in reality, moving to the next did not imply that the previous step was set in stone. As new information and ideas were discovered throughout the process, past documents would be revised and updated.