Project Proposal

Top Deal Auto Website

Company: Top Deal Auto Melbourne, Australia

Software: Car Selling Website

Team name: Prestige K/DA

Team Members:

Name	ID	Roles
Pham Duc Linh	103792371	Product Owner - BA
Pham Anh Vu	103806447	Solutions, IT Architect
Nguyen Thanh Dat	103804881	Project Manager - Scrum Master
Tran Tuan Nam	103792643	Lead Developer (BE)
Phung Xuan Tung	103792054	Lead Developer (FE)

Tutorial class: Fri 1:00 PM DT7.2

Tutor's Name: Dr. Pham Thi Kim Dzung

Background / Problem Description

The project under consideration involves the development and enhancement of Top Deal Auto's online presence. Top Deal Auto, a longstanding car retailer in Australia founded by Bill Joyce and partners, initially faced challenges in the competitive market during the 1970s. However, their fortunes changed in 1978 when a loyal customer, now a prominent figure, showcased their Melbourne car yard in a TV show. This pivotal moment catapulted Top Deal Auto to become the preferred car supplier for local businesses and government agencies. With the retirement of Bill Joyce and partners, the next generation now manages the business. The current initiative focuses on creating a more professional and responsive website accessible on multiple devices. This strategic move aims to improve services locally and cater to the growing demand both within the region and across state borders. The project aligns with Top Deal Auto's commitment to adapt and thrive in the evolving automotive market.

Scope

Re-design and Optimize Online Presence: Develop a more professional and responsive website to enhance Top Deal Auto's online visibility and user experience.

Scalability for Market Expansion: Meet the increasing demand for services locally and extend reach to interstate markets through an improved online platform.

Enhance User Interface: Create an intuitive and user-friendly interface to ensure seamless navigation for potential buyers visiting the website.

Implement Comprehensive Car Catalogue: Develop and integrate a detailed car catalogue that allows for easy browsing and search functionalities, catering to user preferences and requirements.

The software capabilities encompass the creation of an intuitive and user-friendly interface, ensuring seamless navigation for potential buyers. Specific goals include the implementation of a comprehensive car catalog, facilitating easy browsing and search functionalities. Additionally, the website will enable users to initiate and manage trading activities, providing a user-driven experience. The system will incorporate multi-device compatibility, allowing accessibility across various platforms. It is crucial to note that while this project focuses on the website's improvement, aspects such as internal business processes, inventory management, and external marketing strategies are considered outside the scope of this endeavor. The primary focus is on enhancing the customer-facing online platform to elevate Top Deal Auto's market presence.

Stakeholders

Top Deal Auto, founded by Bill Joyce and partners, is an Australian car retailer with three yards and showrooms. The company prioritizes customer and employee relationships, ensuring buyers only purchase suitable cars. Customers have the flexibility to cancel trading activities.

Established in 1972 in Melbourne, Top Deal Auto faced challenges against major competitors Ford and Holden. By 1978, a loyal customer, now a famous star, chose their Melbourne yard as a TV show backdrop, boosting their reputation. This led to Top Deal Auto becoming the preferred supplier for local businesses and government agencies.

Bill Joyce and partners have retired, and their children now run the business. Currently, Top Deal Auto aims to enhance its services by developing a more professional website accessible on various devices, catering to the growing demand both locally and interstate.

Deliverables and schedule

In terms of what we're delivering, it's essentially a brand-new and improved Top Deal Auto website. You'll have a fully operational site that's easy to use for both customers and staff. We'll hand over all the necessary files and documents, including the "behind-the-scenes" code that makes the website work. To make things even simpler, we'll provide a user manual that explains how to use the website and a training program to get everyone up to speed. Think of it as getting a complete package – a modern website ready to go, and everything you need to know to make the most of it. If there's anything you need ongoing help with, we can discuss that too, but for now, our focus is getting this user-friendly and efficient website up and running for Top Deal Auto.

The main deliverables of this project are:

A redesigned and optimized website for Top Deal Auto that showcases its competitive differentiation, enhances its online presence and user experience, and meets the functional, usability, reliability, and security requirements.

A comprehensive car catalogue that allows users to browse and search for cars based on various criteria, such as make, model, year, price, mileage, color, etc..

A user manual that guides the users on how to use the website and its features, such as creating an account, logging in, updating profile, browsing and searching for cars, creating and viewing listings, making and accepting offers, etc.

Phase	Activity	Task	Milestone	Deadline
Planning	Define project scope, objectives, deliverables, and quality metrics	-Review client's requirements and expectations	-Project charter approved	Jan 25, 2024
		-Develop project plan, schedule, budget, and risk management plan	-Project plan approved	Feb 2, 2024
Design	Design the website layout, interface, and functionality	-Create wireframes and mockups of the website pages and features	-Wireframes and mockups approved	March 9, 2024
		-Create database schema and data model for the car catalogue and trading platform	-Database schema and data model approved	March 16, 2024
Development	Develop the website front-end and back-end	- Implement the website pages and features using HTML, CSS, JavaScript, and PHP	- Website front-end completed	March 19, 2024
		- Implement the database and data access layer using	- Website back-end completed	March 26, 2024

		MySQL and PHP		
Testing	Test the website functionality, usability, reliability, and security	- Conduct unit testing, integration testing, system testing, and user acceptance testing	- Website tested and approved	March 30, 2024
		- Conduct performance testing, load testing, stress testing, and security testing	- Website optimized and secured	April 4, 2024
Deployment	Deploy the website to the production environment	- Transfer the website files and database to the client's server	- Website deployed and live	April 10, 2024
Documentation	Document the website features and usage	- Write the user manual for the website users	- User manual completed	April 13, 2024
		- Write the training manual for the website staff	- Training manual completed	May 18, 2024
Closure	Close the project and hand over the deliverables	- Obtain client's feedback and approval	- Project deliverables accepted	May 21, 2024
		- Conduct project	- Project closed	May 21, 2024

		evaluation and lessons learned		

Initial Release Schedule

No.	Item	Dependencies	Business Value (1 least – 10 most)	Release Schedule (Sprint 1 | 2 | 3 | …)
F1	Allow users to see all cars selling	None	9	Sprint 1
F2	Allow users to search for cars by model name, make, type	F1	9	Sprint 1
F3	Allow users to sign up for an account	None	8	Sprint 1
F4	Allow user to see a car's detailed information	F1, F3	9	Sprint 1
F5	Allow a site admin to log in to separate admin portal	None	9	Sprint 1
F6	Allow admin to add/remove car(s) to the website	F5	9	Sprint 1
F7	Allow admin to edit a car's information (name, make, model, price,...)	F5	9	Sprint 1
F8	Allow admin to see all users' basic information	F5, F3	9	Sprint 1
F9	Allow admin to see a user's detailed information	F5, F3	8	Sprint 1
F10	Allow user to see their own information	F3	9	Sprint 2
F11	Allow user to edit their own information	F3	7	Sprint 2
F12	Allow an user to have their own cart		8	Sprint 2
F13	Allow an user to add a car to their cart	F12	9	Sprint 2

F14	Allow an user to see the cars in their cart	F13	9	Sprint 2
F15	Allow an user to head to checkout with the items in the cart	F14	9	Sprint 2
F16	Allow an user to checkout with Credit Card and Debit Card information	None	9	Sprint 3
F17	Allow an admin to view all transactions	F16	9	Sprint 3
F18	Allow an admin to search transactions by including but not limited to price, customer, name, car, make, model, date, …	F17	9	Sprint 3
F19	Allow an user to view their own past transactions	F16	8	Sprint 3
F20	Allow an user to cancel their own pending transactions	F19	8	Sprint 3
F21	Allow an user to receive an email update for their transactions' state	F19	8	Sprint 3
F22	Allow an user to request a refund for their transaction	F20	8	Sprint 3
F23	Allow an user to contact customer support	F3	7	Sprint 3

Solution Direction

The chosen solution direction for the project is to develop a web-based application using the ASP.NET Core MVC framework and the Microsoft SQL Server database. The web application will consist of three tiers: presentation, business, and data. The presentation tier will handle the user interface and interaction, the business tier will contain the application logic and functionality, and the data tier will manage the data storage and retrieval. The web application will be hosted on the Microsoft Azure cloud platform, which will provide scalability, reliability, and security for the project.

The web-based application solution direction was chosen for the following reasons:

- It aligns with the project scope of re-designing and optimizing the online presence of the company, as it will provide a modern and professional website that can be accessed by users from anywhere and anytime.
- It meets the quality management criteria of functional suitability, usability, and reliability, as it will use the ASP.NET Core MVC framework, which is a robust

and versatile technology that supports various features and functionalities, such as data validation, authentication, authorization, routing, etc. The framework also follows the Model-View-Controller (MVC) design pattern, which separates the concerns of the application and facilitates the development and maintenance of the software. The Microsoft SQL Server database is a reliable and secure data management system that can store and manipulate large amounts of data efficiently and effectively. The Microsoft Azure cloud platform is a leading cloud service provider that offers various benefits, such as scalability, availability, fault tolerance, backup, recovery, etc.

- It leverages the existing skills and expertise of the development team, as they are familiar with the Microsoft technologies and tools, such as Visual Studio, C#, HTML, CSS, JavaScript, etc. This will reduce the learning curve and increase the productivity and quality of the software.

Alternatives and Rationale

The following table summarizes the alternatives that were considered and discarded for the project, along with the reasons for their rejection.

Table

Alternative	Description	Reason for Rejection
Mobile application	A native or hybrid mobile application that can be installed and run on mobile devices, such as smartphones and tablets.	A mobile application would limit the accessibility and reach of the website, as it would require the users to download and install the application on their devices. It would also increase the complexity and cost of the project, as it would require the development and maintenance of different versions of the application for different platforms, such as iOS, Android, etc.

WordPress website	A website that is built and managed using the WordPress content management system (CMS), which is a popular and widely used platform for creating and maintaining websites.	A WordPress website would not provide the flexibility and customization that the project requires, as it would rely on the predefined themes, plugins, and features that WordPress offers. It would also pose security and performance issues, as WordPress is prone to hacking and malware attacks, and may not be able to handle the high volume and complexity of the data and transactions that the project involves.
PHP and MySQL website	A website that is developed using the PHP scripting language and the MySQL database, which are open-source and widely used technologies for web development.	A PHP and MySQL website would not match the quality and standards that the project demands, as PHP and MySQL are outdated and obsolete technologies that have many drawbacks, such as poor performance, lack of security, inconsistency, etc. They would also not integrate well with the Microsoft technologies and tools that the development team is accustomed to.

High Level Design

The presentation tier is responsible for the user interface and interaction of the web application. It consists of the following components:

- Views: The views are the web pages that display the content and layout of the website, such as the home page, the car catalogue page, the trading page, etc. The views are written in HTML, CSS, and JavaScript, and use the Razor syntax to embed C# code and data.
- Controllers: The controllers are the classes that handle the user requests and responses, such as the HomeController, the CarController, the TradeController, etc. The controllers are written in C# and use the ASP.NET

Core MVC framework to implement the application logic and functionality, such as data validation, authentication, authorization, routing, etc.
- Models: The models are the classes that represent the data and business entities of the website, such as the Car, the Customer, the Trade, etc. The models are written in C# and use the Entity Framework Core (EF Core) to map the classes to the database tables and perform the data operations, such as adding, updating, deleting, and querying the data.

The business tier is responsible for the application logic and functionality of the web application. It consists of the following components:

- Services: The services are the classes that provide the core business logic and functionality of the website, such as the CarService, the CustomerService, the TradeService, etc. The services are written in C# and use the ASP.NET Core MVC framework to implement the business rules and algorithms, such as calculating the car prices, generating the sales reports, managing the inventory, etc.
- Repositories: The repositories are the classes that abstract the data access and manipulation from the services, such as the CarRepository, the CustomerRepository, the TradeRepository, etc. The repositories are written in C# and use the EF Core to communicate with the database and perform the data operations, such as adding, updating, deleting, and querying the data.

The data tier is responsible for the data storage and retrieval of the web application. It consists of the following components:

- Database: The database is the Microsoft SQL Server database that stores and manages the data of the website, such as the car records, the customer records, the trade records, etc. The database consists of various tables, such as the Car, the Customer, the Trade, etc., that store the data in a structured and relational manner.
- Cloud: The cloud is the Microsoft Azure cloud platform that hosts and runs the web application and the database, providing scalability, reliability, and security for the project. The cloud consists of various services, such as the App Service, the SQL Database, the Storage Account, the Key Vault, etc., that offer various benefits, such as scalability, availability, fault tolerance, backup, recovery, etc.

Quality Management

- **Functional Suitability**: The software should meet the functional requirements specified by the client, such as adding, updating, deleting, and searching for car records, generating sales reports, managing inventory, etc. The quality metrics for this characteristic are:
    - Number of errors found in testing: The software should have less than or equal to 5% of the total test cases fail due to functional errors.

    - Number of defects per KLOC: The software should have less than or equal to 5 defects per thousand lines of code (KLOC) related to functional issues.
- **Usability**: The software should be easy to use, learn, and operate by the end-users, such as car dealers, customers, and managers. The quality metrics for this characteristic are:
    - User satisfaction: The software should achieve a high score (at least 4 out of 5) on a user satisfaction survey that measures the aspects of usability, such as efficiency, effectiveness, learnability, and satisfaction.
    - Task completion time: The software should enable the users to complete the common tasks, such as adding a sales record, searching for a car, or generating a report, within a reasonable time (less than 5 minutes).
- **Reliability**: The software should perform consistently and correctly under normal and abnormal conditions, such as high load, network failure, or invalid input. The quality metrics for this characteristic are:
    - Availability: The software should be available for use at least 99% of the time, meaning that the downtime should be less than 1% of the total operating time.
    - Fault tolerance: The software should be able to recover from errors and resume normal operation within a short time (less than 1 minute).
- **Security**: The software should protect the data and the system from unauthorized access, modification, or deletion, such as hacking, phishing, or malware. The quality metrics for this characteristic are:
    - Number of security breaches: The software should have zero security breaches that compromise the confidentiality, integrity, or availability of the data or the system.
    - Number of security vulnerabilities: The software should have zero security vulnerabilities that can be exploited by malicious actors, such as SQL injection, cross-site scripting, or buffer overflow.
- **Maintainability**: The software should be easy to modify, test, and deploy by the developers, such as adding new features, fixing bugs, or updating the system. The quality metrics for this characteristic are:
    - Code readability: The software should follow the coding standards and conventions that make the code easy to read, understand, and maintain, such as consistent indentation, naming, and documentation.
    - Code complexity: The software should have a low cyclomatic complexity, which measures the number of linearly independent paths through the code, such as branches, loops, or conditions. The software should have an average cyclomatic complexity of less than 10 per function or method.

Resources

Pham Anh Vu

Solutions, IT Architect

Specializes in AWS and Azure, with 8 years of experience in deploying scalable cloud solutions. Known for optimizing cloud costs and implementing serverless technologies, he has led the cloud migration of high-traffic platforms, showcasing his capability to manage demanding cloud environments.

Pham Duc Linh

Product Owner - BA

With a background in product management and a keen eye for market trends, Linh has 4 years of experience in aligning project goals with customer needs. He excels in roadmap planning and stakeholder communication, ensuring projects are customer-focused and market-driven.

Nguyen Thanh Dat

Project Manager - Scrum Master

Certified Scrum Master with 5 years of experience in fostering Agile environments. Skilled in enhancing team productivity and removing project impediments.

Phung Xuan Tung

Lead Developer (FE)

6 years of experience in front-end development, skilled in React and responsive design

Tran Tuan Nam

Lead Developer (BE)

5 years in back-end development, specializes in Node.js and database management

Approval Signatures:

Project Team

	Name of student	Student Id	Signature
1	Pham Duc Linh	103792371	
2	Nguyen Thanh Dat	103804881	
3	Phung Xuan Tung	103792054	
4	Tran Tuan Nam	103792643	
5	Pham Anh Vu	103806447	

Project Sponsor [Your Tutor]

Tutor's name (on behalf of the client)	Signature:
Pham Thi Kim Dzung	