The Detailers Edge

Jonathan Ramos
Ayoposi Olu-Bamisaye

January 2025

1 Introduction

The client, Emerson Jordan/The Detailer's Edge, is a self-employed business owner, seeking to improve his business's online presence and streamline his appointment scheduling process. His current online presence is an Instagram account where he handles all client interactions, including appointment scheduling. His current scheduling process involves direct messaging and phone calls, both of which can quickly become time consuming, limiting his ability to expand his business. To address his current challenges, our client has proposed a dedicated website to provide his clients an easy to understand and efficient way to schedule appointments. Automating the scheduling process through a user-friendly website will help Emerson save time, improve overall client satisfaction, and attract new clients through its professional image. Additionally, the website will serve as a portfolio for Emerson in which he can showcase the quality of his work. The website will also improve the company's credibility and trustworthiness by showing customer testimonials and reviews. Finally, the website needs to be mobile-friendly catering to his largely mobile- based clientele. Ultimately, this project will help Emerson/The Detailer's Edge focus on solely delivering high quality work, while positioning his business for success in a competitive digital market.

2 Functional Requirements User Stories and Tasks

2.1 Client Stories

S1.1: View Available Appointments (5 points)
As a client, I want to view available appointment slots in a calendar format so that I can see all scheduling options.

S1.2: Select Appointment (2 points)
As a client, I want to select an available appointment slot so that I can initiate the booking process.

S1.3: Create Appointment (3 points)
As a client, I want to create a new appointment by providing my details and service preferences so that I can secure my desired time slot.

S2: Booking Confirmation (2 points)
As a client, I want to receive confirmations so that I am assured my appointment has been set.

S3: Appointment Reminders (3 points)
As a client, I want to receive reminders so that I don't forget my appointments.

S4: Cancel Appointment (2 points)
As a client, I want to cancel my appointment so that I can accommodate schedule changes.

S5: Reschedule Appointment (3 points)
As a client, I want to reschedule my appointment so that I can accommodate schedule changes.

S6: Browse Services (3 points)
As a client, I want to browse detailed descriptions and pricing for services so that I can select the service that best fits my needs.

S7: Browse Portfolio (5 points)
As a client, I want to browse previous work through images/videos so that I can assess the quality of services before booking.

S8: Contact Form (1 point)
As a client, I want a contact form so that I can ask questions or request more information.

S9: Dynamic Testimonials (5 points)
As a client, I want to read testimonials and reviews from other clients so that I can trust the quality and professionalism of the business.
Definition of Done: Testimonials are stored in database and can be dynamically loaded and displayed.

S9.1: Submit Testimonial (3 points)
As a client, I want to submit my testimonial after receiving service so that I can share my experience.

S10: Instagram Feed Integration (3 points)
As a client, I want to view the business's Instagram feed within the website so that I can stay updated on their latest work.

S11: Client Registration (5 points)
As a client, I want to create an account so that I can manage my appointments and information.

S12: Client Login (3 points)
As a client, I want to login to my account so that I can access my appointment history and details.

2.2 Admin Stories

S13: Admin Account (3 points)
As an admin, I want secure admin login credentials so that only authorized users can make content changes on the website.

S14: Admin Edit Portfolio (13 points)
As an admin, I want to add, edit, or delete portfolio images easily so that I can keep my portfolio up to date.

S15: Manage Services CRUD (8 points)
As an admin, I want to create, read, update, and delete service offerings so that I can keep the services available up to date.

S16: Modify Timeslots (5 points)
As an admin, I want to define which times are available for appointments so that I can maintain control over the scheduling process.

S17: View Scheduled Appointments (3 points)
As an admin, I want to view a list of all scheduled appointments for the day so that I can easily keep track of what appointments remain.

3 Non Functional Requirements

NFR Usability

- The interface shall be mobile-responsive.
- The website shall be accessible on all major browsers (Chrome, Firefox, Safari).

NFR Security

- Admin access must have secure authentication.

NFR Reliability

- The system shall have stable uptime.

NFR UI

- The system will maintain a constant monochrome color scheme.

Iteration	**User Stories**	**Points**
1	S1.1, S1.2, S1.3, S2, S13	15
2	S3, S4, S5, S11, S12	16
3	S6, S7, S8, S17	12
4	S9, S9.1, S10, S16, S15	24
5	S14	13
	Total:	**80**

Table 1: Story Planning with Point Distribution

4 Iteration Planning

5 Architecture

5.1 Cloud-Based Architecture Overview

The system implements a comprehensive cloud-based architecture utilizing Firebase as its primary platform. This serverless architecture is designed to provide robust scalability, seamless real-time updates, and enterprise-level security features. At its core, Firebase Authentication serves as the primary security layer, managing user authentication workflows for both clients and administrators. This component ensures secure login processes, handles session management, and maintains distinct access levels between client and administrative users.

The data layer is built upon Cloud Firestore, This database architecture efficiently manages several critical data collections: user profiles and credentials are stored with encrypted sensitive information; appointment data and scheduling information are structured to enable quick queries and real-time updates; service descriptions and pricing are organized to facilitate easy updates and version control; testimonials and reviews are stored with user references and timestamps; and portfolio images metadata is maintained with optimized indexing for quick retrieval.

For binary data management, Firebase Storage provides a scalable and secure solution. The storage architecture is organized into distinct buckets: portfolio images and videos are stored with optimized compression and caching strategies; user profile pictures are managed with appropriate size limitations and format standardization; and service-related media is stored with metadata linkage to corresponding service descriptions. This structured approach ensures efficient data retrieval and optimal performance.

Firebase Cloud Functions form the backbone of our operations. These functions handle several automated processes: appointment confirmation emails are triggered immediately upon booking confirmation; reminder notifications are scheduled and dispatched at configured intervals; and Instagram feed integration is managed through periodic API synchronization.

The application's delivery is handled through Firebase Hosting, which provides content delivery network (CDN) capabilities. This hosting solution ensures fast loading times through edge servers, handles SSL certification automatically, and provides seamless deployment pipelines.

5.2 Simplified Class Diagram

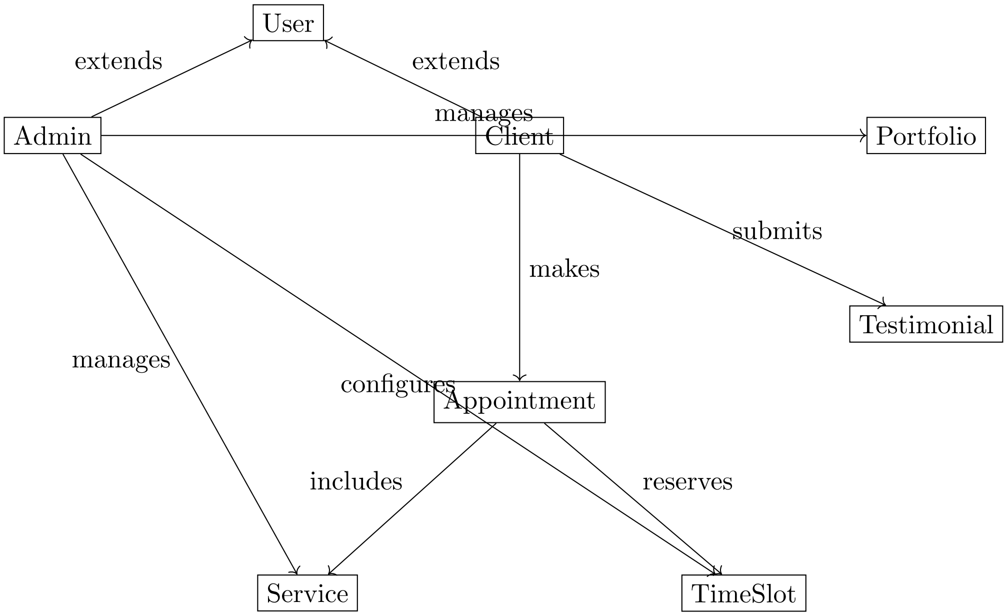


Figure 1: Simplified Class Diagram

The class diagram shows the core entities in the system and their relationships. The User class serves as the base class for both Client and Admin users. Clients can make Appointments which are associated with specific Services and TimeSlots. Clients can also submit Testimonials. Admins manage the Portfolio, Services, and TimeSlots.

6 Technology

Based on the requirements of this project, we will use HTML, CSS, and JavaScript as the foundation of the application. Additionally, we will use React to create an easy to understand user interface for all clients. By leveraging React, we can create a modern user interface that competes adequately with all modern competition. The web application will require a Database to store booking information. The Database will also serve content to the website to allow for dynamic web pages without the need for an admin to code any changes on the website. To serve the needs of our application we have selected Firebase as it provides modern features such as user authentication while offering the flexibility of a non-relational Database.

For testing we will use Jest as the majority of the code will be written in JavaScript. Due to Firebase being chosen as our Database, we will have to mock many built-in Firebase functions to properly test the functionality of our application. Based on the experience we have had testing Firebase, successfully mocking functions may be a challenge to overcome.

7 Data

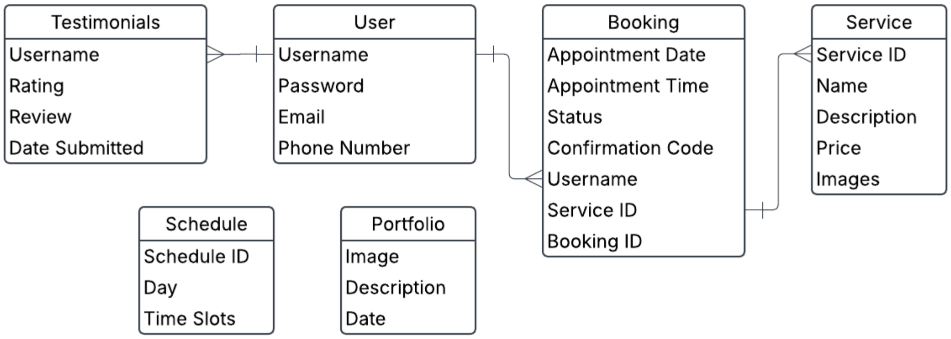


Figure 2: Diagram of our proposed Database

8 UI

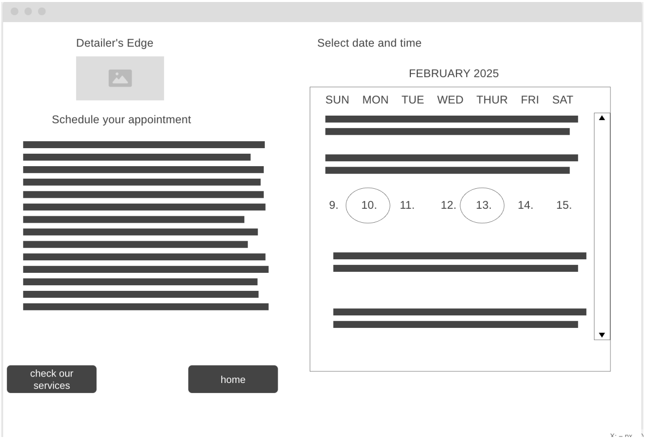
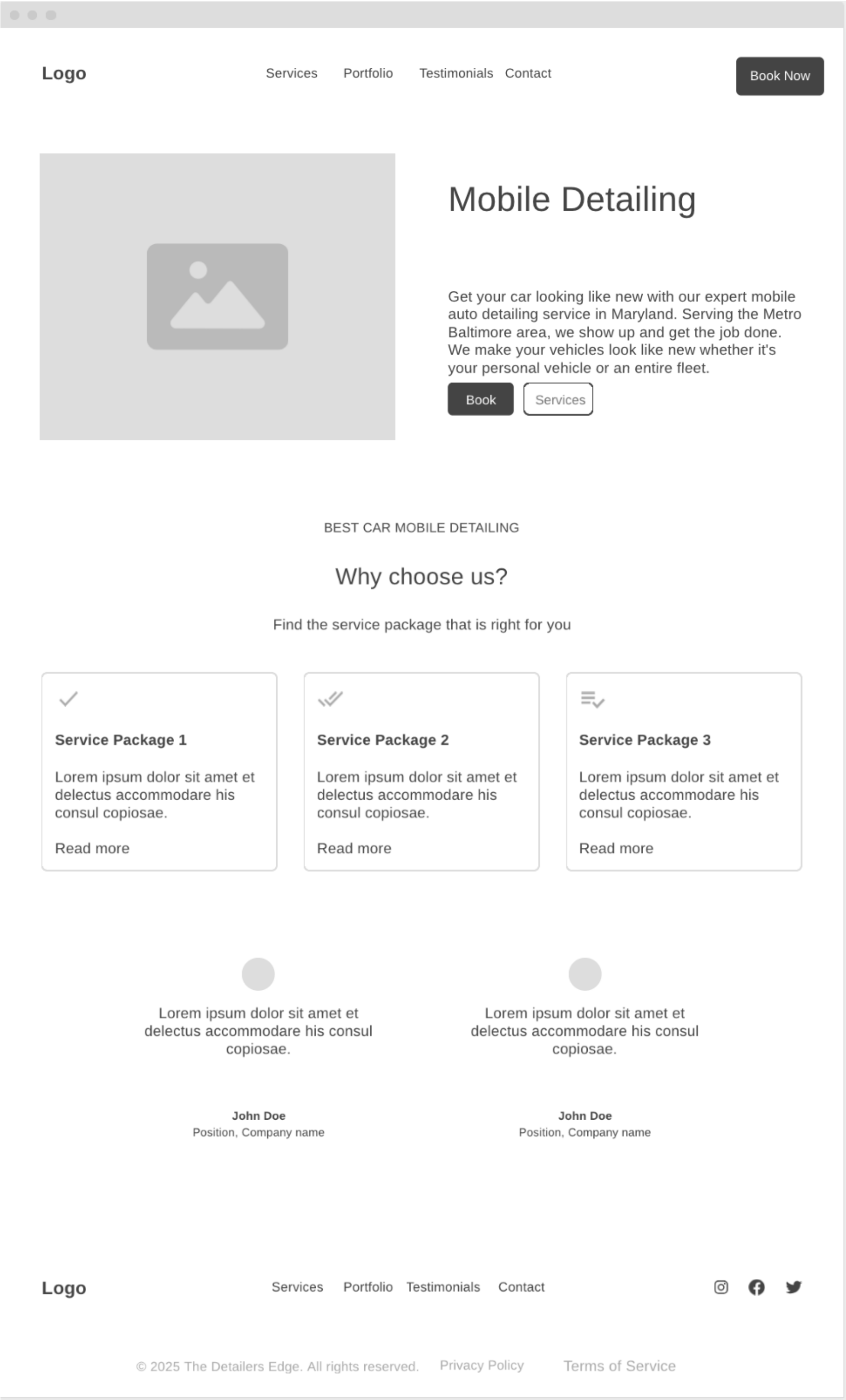


Figure 3: Scheduling Page



Mobile Detailing

Get your car looking like new with our expert mobile auto detailing service in Maryland. Serving the Metro Baltimore area, we show up and get the job done. We make your vehicles look like new whether it's your personal vehicle or an entire fleet.

BEST CAR MOBILE DETAILING

Why choose us?

Find the service package that is right for you

Service Package 1

Lorem ipsum dolor sit amet et delectus accommodare his consul copiosae.

Read more

Service Package 2

Lorem ipsum dolor sit amet et delectus accommodare his consul copiosae.

Read more

Service Package 3

Lorem ipsum dolor sit amet et delectus accommodare his consul copiosae.

Read more

Lorem ipsum dolor sit amet et delectus accommodare his consul copiosae.

John Doe
Position, Company name

Lorem ipsum dolor sit amet et delectus accommodare his consul copiosae.

John Doe
Position, Company name

© 2025 The Detailers Edge. All rights reserved. Privacy Policy Terms of Service

Figure 4: Home Page

9 Development Iteration 1

Name	Stories	Points	Hours
Jonathan	S1.1 S1.2	7	10
Ayoposi	S1.3 S13	6	8

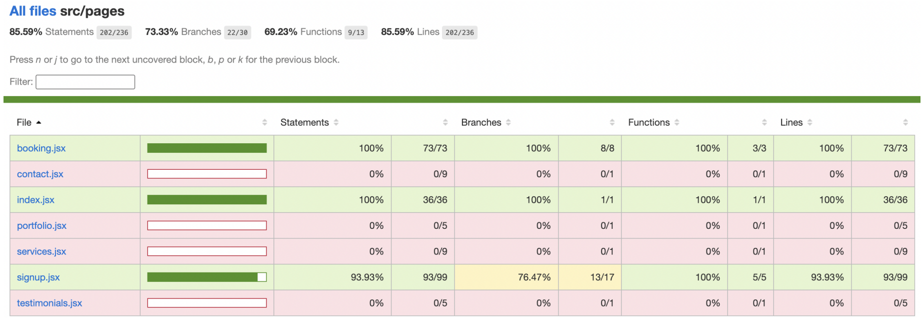
Table 2: Development Iteration 1

9.1 Retrospective and Reflection

During this iteration of development, we focused on setting up our project and database properly to begin the development of the web application. Additionally, the lack of any landing page or home page needed to be addressed as the rest of the application's interface will need to consistently follow the same design and flow overall. During this iteration we also ensured the current interface is mobile friendly as exemplified through the Navbar that is used throughout all of the websites pages. To address the difference in screen size between mobile and desktop, the Navbar transforms into a side menu when the screen size is small.

The setup of firebase and the proposed collections was done during this iteration of development. Our current Firestore collections match exactly the proposed database diagram, with the exception that our user collection does not store passwords due to security concerns. To address this issue, we use Firebase authentication which allows for Google sign-in as well as Email and password sign-up. Passwords are hashed for privacy protection. To handle the appointment bookings offered, we opted to use Google Calendar. We initially underestimated the complexity behind building an entire scheduling system in the span of 1 development iteration. Since we need to leave enough time to build the rest of the application, we looked for other options that we could implement within the web application.

Currently, our testing has over 90% statement coverage for all of the pages that were worked on during this development iteration (booking.jsx, index.jsx, signup.jsx). The pages that show up as 0 coverage, have not yet been tested as they are currently placeholder pages. For testing we are using Jest, which facilitates testing of React code. Jest also allows us to mock firebase functions which is essential for testing authentication and future queries.



All files **src/pages**

85.59% Statements `202/236` **73.33%** Branches `22/30` **69.23%** Functions `9/13` **85.59%** Lines `202/236`

Press *n* or *j* to go to the next uncovered block, *b*, *p* or *k* for the previous block.

Filter:

File ▲		Statements		Branches		Functions		Lines	
booking.jsx		100%	73/73	100%	8/8	100%	3/3	100%	73/73
contact.jsx		0%	0/9	0%	0/1	0%	0/1	0%	0/9
index.jsx		100%	36/36	100%	1/1	100%	1/1	100%	36/36
portfolio.jsx		0%	0/5	0%	0/1	0%	0/1	0%	0/5
services.jsx		0%	0/9	0%	0/1	0%	0/1	0%	0/9
signup.jsx		93.93%	93/99	76.47%	13/17	100%	5/5	93.93%	93/99
testimonials.jsx		0%	0/5	0%	0/1	0%	0/1	0%	0/5

Figure 5: Testing Coverage

9.2 Planning For The Next Iteration

In the next iteration we will continue building out the main page to follow the wireframe design. Additionally, we need to work on connecting Google Calendar with Firebase through the Google Calendar API so that the database will keep track of a user's history of booked appointments. We also need to provide a sign-up for clients and a proper interface where logged-in clients can view their history and other details. Testing needs to be improved to ensure that all current pages at least render properly. We need to ensure that the web application is optimized for mobile devices on all pages so that it loads efficiently while being easy to navigate on a small screen. To ensure that git traceability is improved in the upcoming iteration, we will use development branches while each feature is being worked on.