BARBER BOOKING APP

INNOV8

Team 3 | Spring 2025 | Professor Martinez

OUR TEAM MEMBERS

Trinity Klein

Assistant Project Manager(APM)

Anthony Perla

Assistant Project Manager(APM)

Moshood Elias

Architect

Emad Abbasi

Project Manager (PM)

Isaiah Morales

Lead Developer

Jeremiah Jarina

Front-End Developer

Sarah Yao

Back-End Developer

TABLE OF CONTENTS

01

CLIENT OVERVIEW

02

PROBLEMS VS. SOLUTIONS

03

PROJECT MANAGEMENT DOCUMENTS

04

TECHNICAL DOCUMENTS

01

Client Overview

General Sponsor Information

Building Name: Prestige Barbershop & Salon

Location: 8200 Wilcrest Dr # 4, Houston, TX 77072
Owner: Carlos "El Tigre" Zuniga
Phone: (832) 863 – 6414

Availability: Open 11am to 7pm, Monday to Saturday

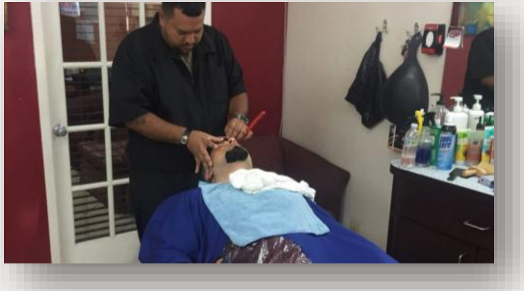
Services include but are not limited to:
Haircut (taper): $30
Facial Hair Trim : +$5
Hair Dyeing: Speak to the Owner for accurate pricing

Sponsor History

Mr. Zuniga has been cutting hair professionally since 1998, that's 27 years! Carlos works with a variety of customers as he is fluent in Spanish, French, and English.

Carlos emigrated to America from Honduras to pursue his dreams of owning his own shop.

He has been in his current location for over 10 years and is currently finalizing plans to co-own a new separate location.



02

PROBLEMS VS. SOLUTION

CURRENT SYSTEM

- All haircuts are through appointment only
- Haircuts take between 25-45 minutes depending on the services the customer has requested
- Appointments must be made through phone, where the customer asks for the time slot they prefer
- Mr. Zuniga is not physically recording any appointments, instead he relies on his memory to prevent any scheduling conflicts
- After the haircut is over, customer have the option to pay via cash, PayPal, or Zelle (with Cash & Zelle being the preferred methods)

ISSUES WITH CURRENT SYSTEM

- Appointments made over the phone are not being recorded
- Having additional employees increases the impact that the lack of communication creates for the day's outstanding appointments
- Lack of records prevent appointments from being scheduled far in advance without a greater risk of confusion
- There is no real avenue for a customer to cancel an appointment
- Due to the nature of the business, it can lead to scheduling conflicts where multiple customers may show up at once causing the barber to be behind or having excessive downtime

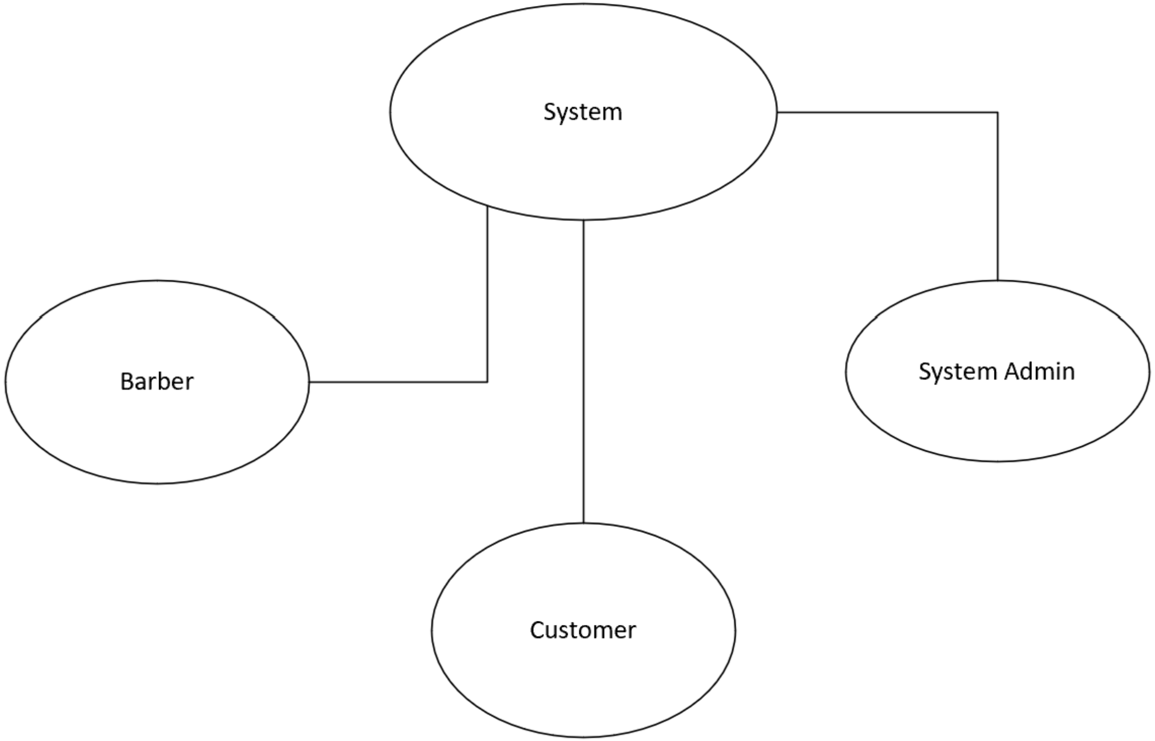
PROJECT OVERVIEW

- Full-stack development of a web-based application
  - Ensures accessibility across devices and platforms
  - Enables scalability and easier maintenance
- Includes front-end UI, back-end logic, and relational database integration
  - Provides a seamless and responsive user experience
  - Supports structured data storage and efficient data retrieval

03

PROJECT MANAGEMENT DOCUMENTS

Innov8 Scope Diagram

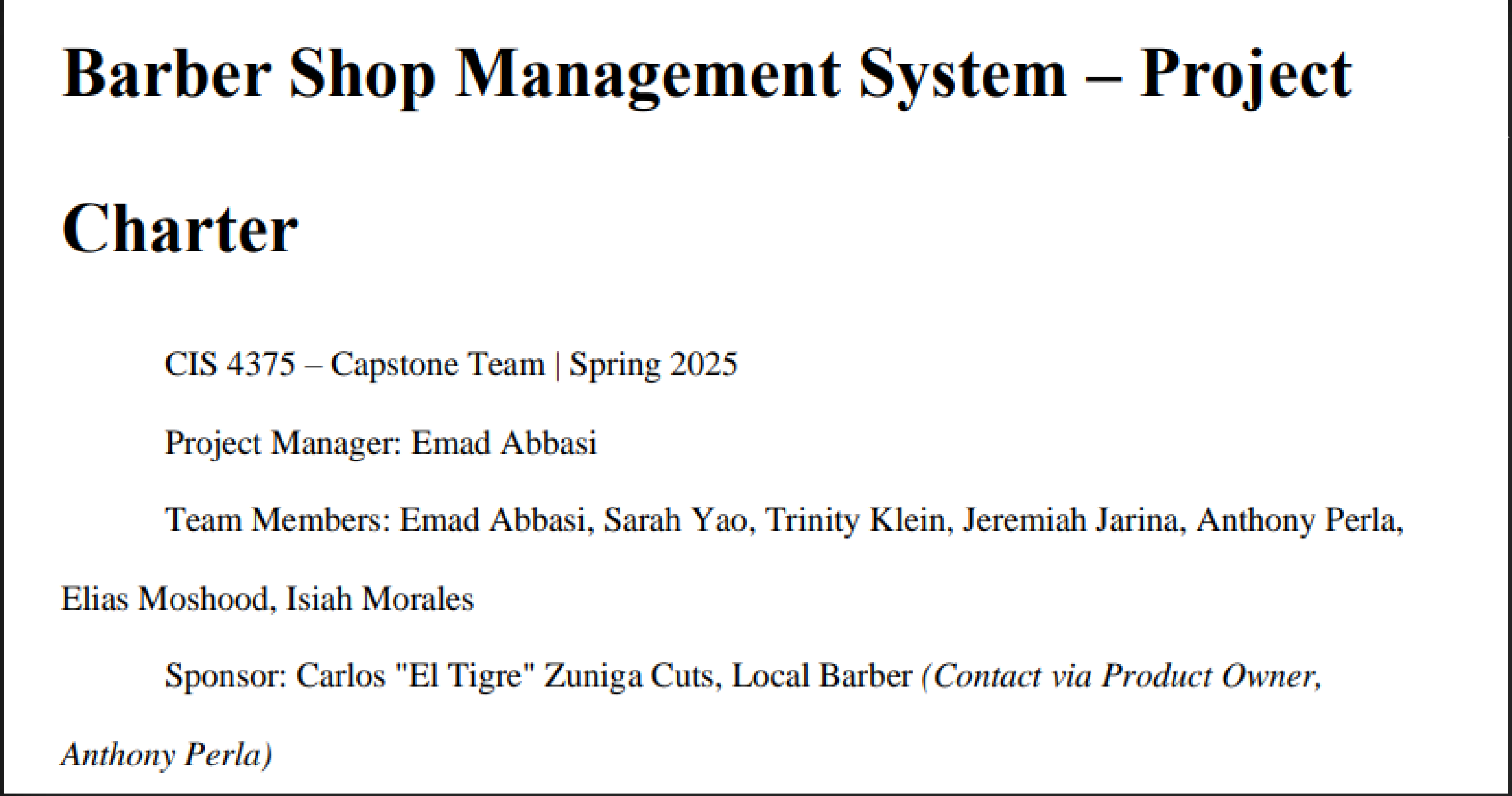


System

Barber

System Admin

Customer



Barber Shop Management System – Project Charter

CIS 4375 – Capstone Team | Spring 2025

Project Manager: Emad Abbasi

Team Members: Emad Abbasi, Sarah Yao, Trinity Klein, Jeremiah Jarina, Anthony Perla, Elias Moshood, Isiah Morales

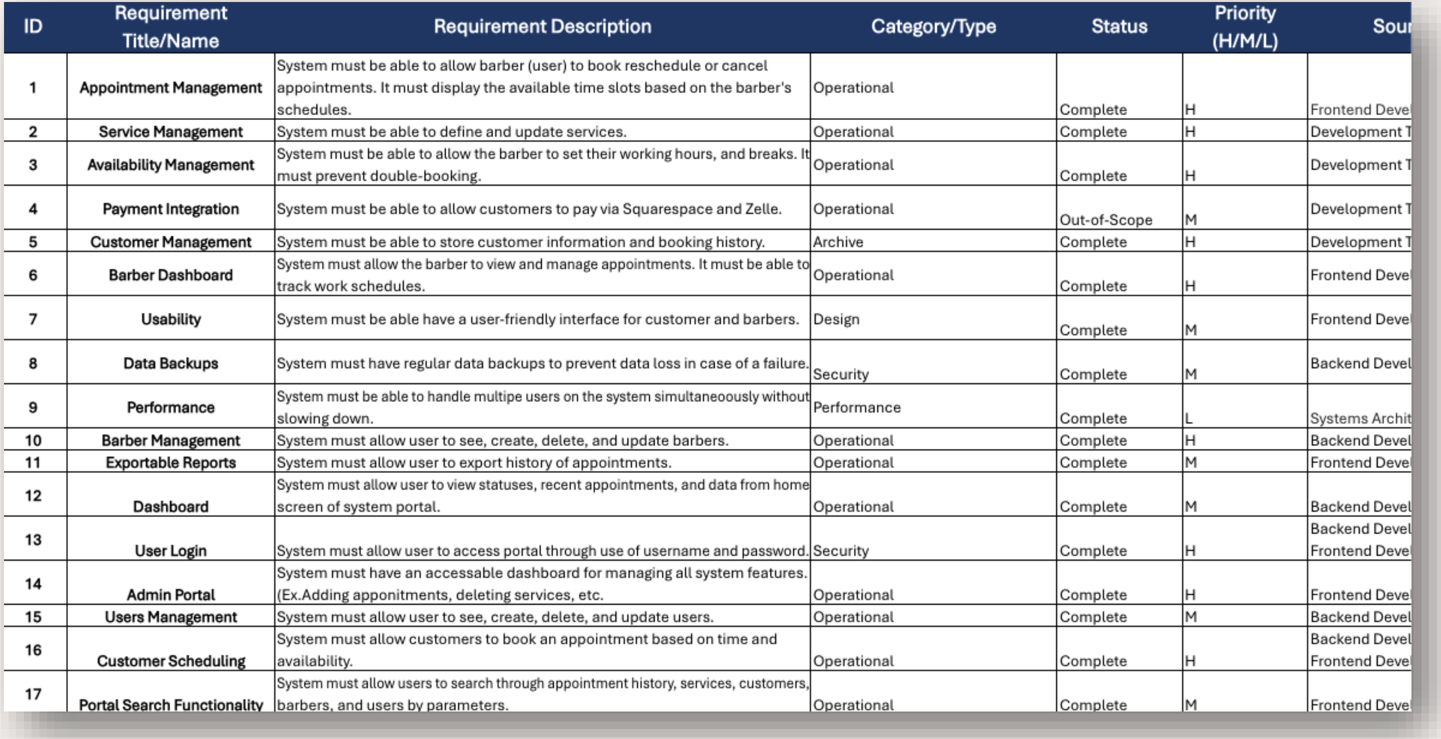
Sponsor: Carlos "El Tigre" Zuniga Cuts, Local Barber *(Contact via Product Owner, Anthony Perla)*

PROJECT SCOPE STATEMENT

Key Features

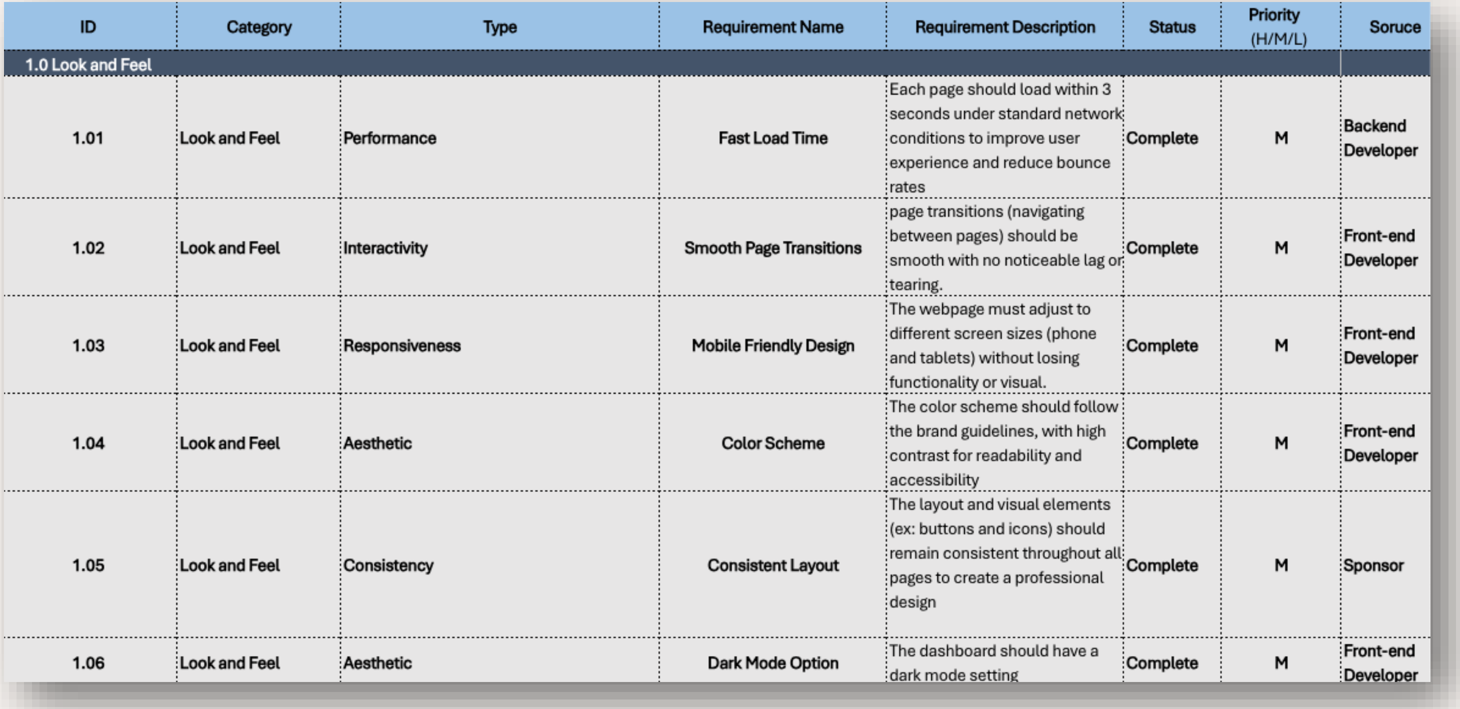
1. User Authentication: User Authentication for barbers.
2. Appointment Management Module: Schedule, reschedule, and cancel appointments
3. Customer Profile System : Stores client contact information and service history
4. Reporting Dashboard : Visualizes appointment trends and operational data
5. Security Measures : Encrypted login credentials, Secure access controls to protect sensitive data

REQUIREMENTS TRACEABILITY MATRIX: FUNCTIONAL



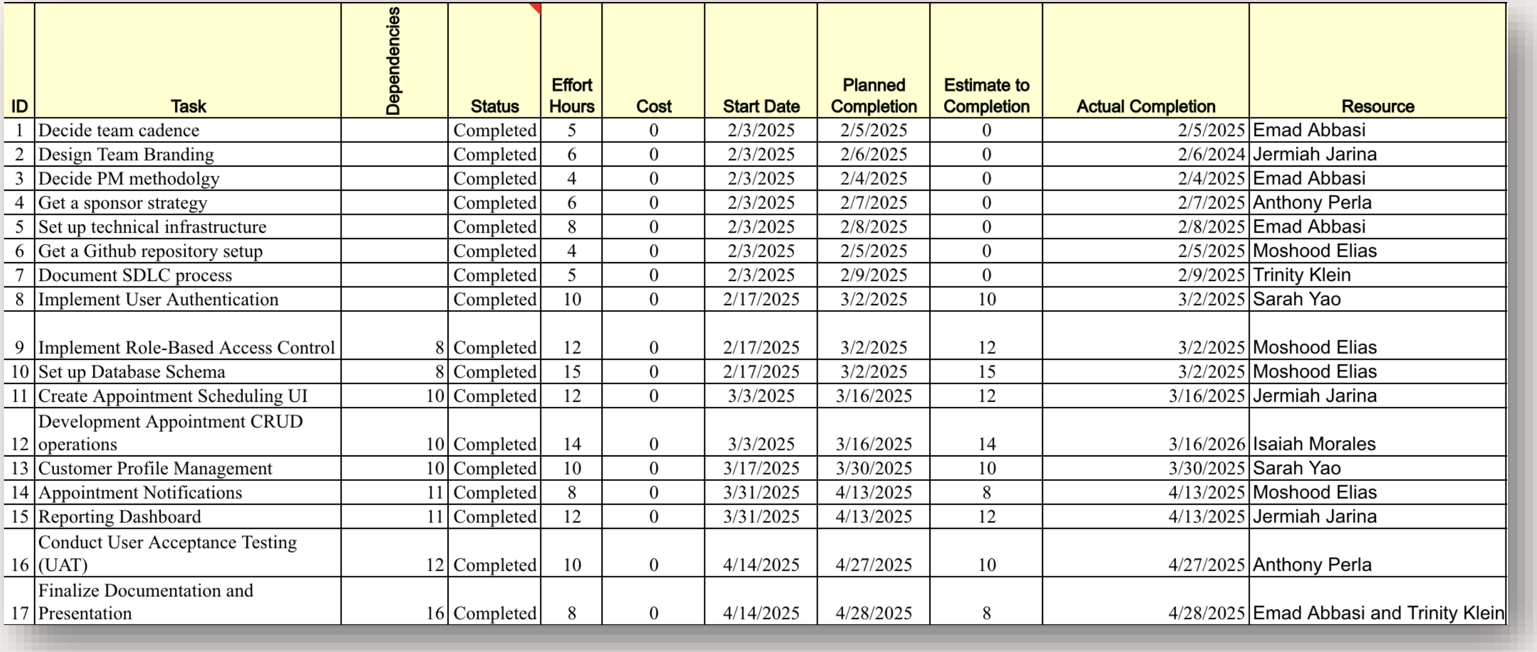
ID	Requirement Title/Name	Requirement Description	Category/Type	Status	Priority (H/M/L)	Sou
1	Appointment Management	System must be able to allow barber (user) to book reschedule or cancel appointments. It must display the available time slots based on the barber's schedules.	Operational	Complete	H	Frontend Devel
2	Service Management	System must be able to define and update services.	Operational	Complete	H	Development T
3	Availability Management	System must be able to allow the barber to set their working hours, and breaks. It must prevent double-booking.	Operational	Complete	H	Development T
4	Payment Integration	System must be able to allow customers to pay via Squarespace and Zelle.	Operational	Out-of-Scope	M	Development T
5	Customer Management	System must be able to store customer information and booking history.	Archive	Complete	H	Development T
6	Barber Dashboard	System must allow the barber to view and manage appointments. It must be able to track work schedules.	Operational	Complete	H	Frontend Devel
7	Usability	System must be able have a user-friendly interface for customer and barbers.	Design	Complete	M	Frontend Devel
8	Data Backups	System must have regular data backups to prevent data loss in case of a failure.	Security	Complete	M	Backend Devel
9	Performance	System must be able to handle multipe users on the system simultaneoously without slowing down.	Performance	Complete	L	Systems Archit
10	Barber Management	System must allow user to see, create, delete, and update barbers.	Operational	Complete	H	Backend Devel
11	Exportable Reports	System must allow user to export history of appointments.	Operational	Complete	M	Frontend Devel
12	Dashboard	System must allow user to view statuses, recent appointments, and data from home screen of system portal.	Operational	Complete	M	Backend Devel
13	User Login	System must allow user to access portal through use of username and password.	Security	Complete	H	Backend Devel Frontend Devel
14	Admin Portal	System must have an accessable dashboard for managing all system features. (Ex.Adding apponitments, deleting services, etc.	Operational	Complete	H	Frontend Devel
15	Users Management	System must allow user to see, create, delete, and update users.	Operational	Complete	M	Backend Devel
16	Customer Scheduling	System must allow customers to book an appointment based on time and availability.	Operational	Complete	H	Backend Devel Frontend Devel
17	Portal Search Functionality	System must allow users to search through appointment history, services, customers, barbers, and users by parameters.	Operational	Complete	M	Frontend Devel

REQUIREMENTS TRACEABILITY MATRIX: NON - FUNCTIONAL



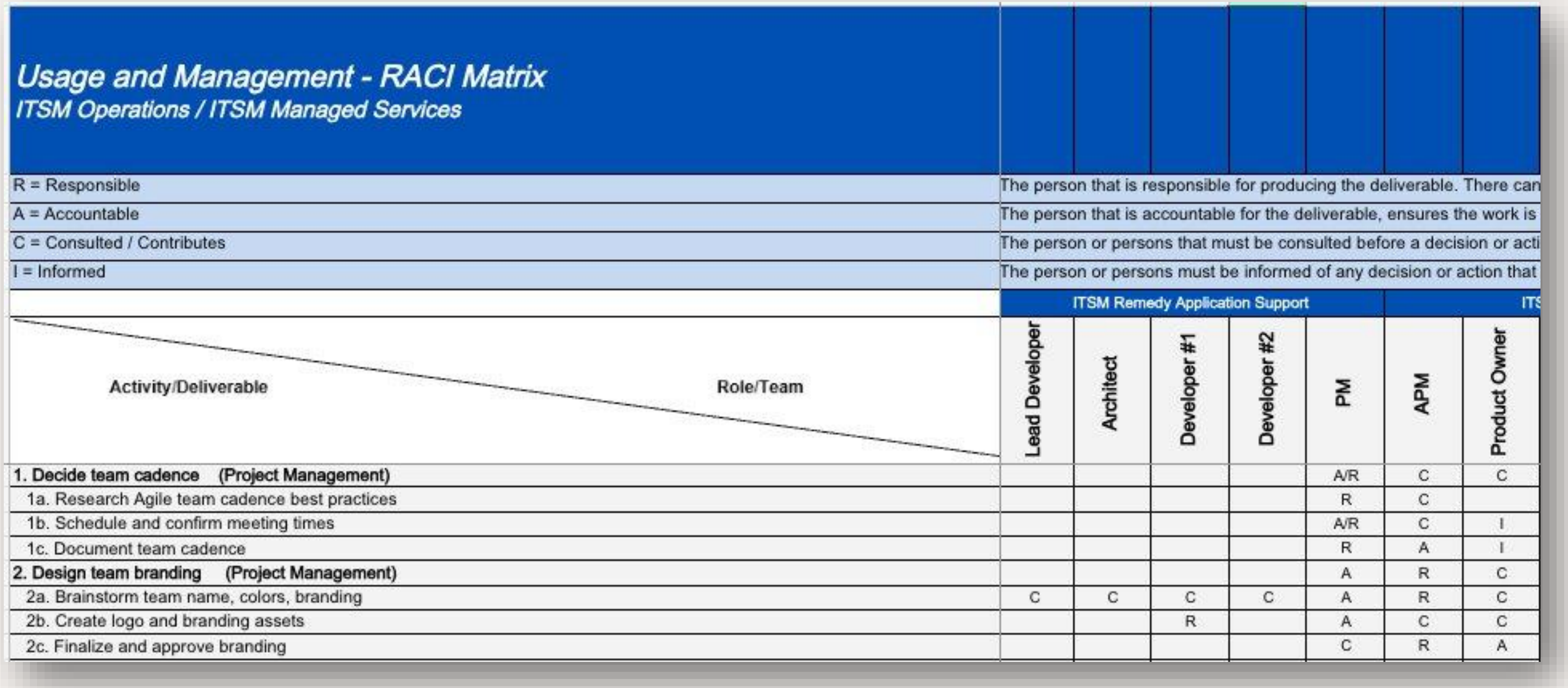
ID	Category	Type	Requirement Name	Requirement Description	Status	Priority (H/M/L)	Soruce
1.0 Look and Feel							
1.01	Look and Feel	Performance	Fast Load Time	Each page should load within 3 seconds under standard network conditions to improve user experience and reduce bounce rates	Complete	M	Backend Developer
1.02	Look and Feel	Interactivity	Smooth Page Transitions	page transitions (navigating between pages) should be smooth with no noticeable lag or tearing.	Complete	M	Front-end Developer
1.03	Look and Feel	Responsiveness	Mobile Friendly Design	The webpage must adjust to different screen sizes (phone and tablets) without losing functionality or visual.	Complete	M	Front-end Developer
1.04	Look and Feel	Aesthetic	Color Scheme	The color scheme should follow the brand guidelines, with high contrast for readability and accessibility	Complete	M	Front-end Developer
1.05	Look and Feel	Consistency	Consistent Layout	The layout and visual elements (ex: buttons and icons) should remain consistent throughout all pages to create a professional design	Complete	M	Sponsor
1.06	Look and Feel	Aesthetic	Dark Mode Option	The dashboard should have a dark mode setting	Complete	M	Front-end Developer

WBS



ID	Task	Dependencies	Status	Effort Hours	Cost	Start Date	Planned Completion	Estimate to Completion	Actual Completion	Resource
1	Decide team cadence		Completed	5	0	2/3/2025	2/5/2025	0	2/5/2025	Emad Abbasi
2	Design Team Branding		Completed	6	0	2/3/2025	2/6/2025	0	2/6/2024	Jermiah Jarina
3	Decide PM methodolgy		Completed	4	0	2/3/2025	2/4/2025	0	2/4/2025	Emad Abbasi
4	Get a sponsor strategy		Completed	6	0	2/3/2025	2/7/2025	0	2/7/2025	Anthony Perla
5	Set up technical infrastructure		Completed	8	0	2/3/2025	2/8/2025	0	2/8/2025	Emad Abbasi
6	Get a Github repository setup		Completed	4	0	2/3/2025	2/5/2025	0	2/5/2025	Moshood Elias
7	Document SDLC process		Completed	5	0	2/3/2025	2/9/2025	0	2/9/2025	Trinity Klein
8	Implement User Authentication		Completed	10	0	2/17/2025	3/2/2025	10	3/2/2025	Sarah Yao
9	Implement Role-Based Access Control	8	Completed	12	0	2/17/2025	3/2/2025	12	3/2/2025	Moshood Elias
10	Set up Database Schema	8	Completed	15	0	2/17/2025	3/2/2025	15	3/2/2025	Moshood Elias
11	Create Appointment Scheduling UI	10	Completed	12	0	3/3/2025	3/16/2025	12	3/16/2025	Jermiah Jarina
12	Development Appointment CRUD operations	10	Completed	14	0	3/3/2025	3/16/2025	14	3/16/2026	Isaiah Morales
13	Customer Profile Management	10	Completed	10	0	3/17/2025	3/30/2025	10	3/30/2025	Sarah Yao
14	Appointment Notifications	11	Completed	8	0	3/31/2025	4/13/2025	8	4/13/2025	Moshood Elias
15	Reporting Dashboard	11	Completed	12	0	3/31/2025	4/13/2025	12	4/13/2025	Jermiah Jarina
16	Conduct User Acceptance Testing (UAT)	12	Completed	10	0	4/14/2025	4/27/2025	10	4/27/2025	Anthony Perla
17	Finalize Documentation and Presentation	16	Completed	8	0	4/14/2025	4/28/2025	8	4/28/2025	Emad Abbasi and Trinity Klein

RACI MATRIX



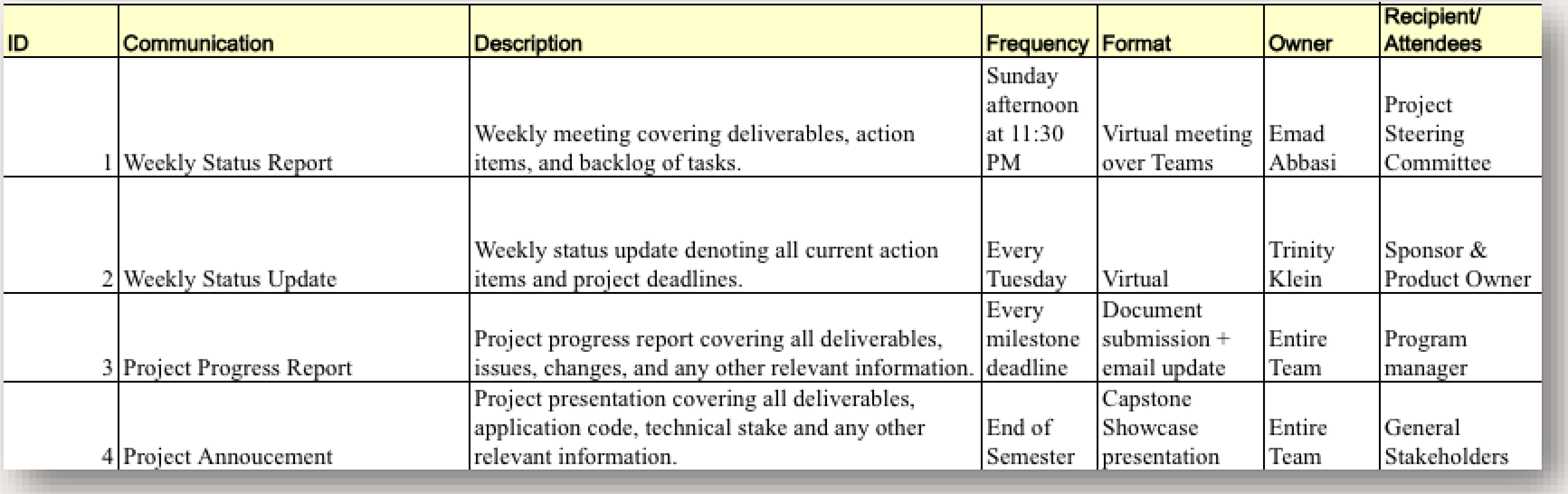
Usage and Management - RACI Matrix

ITSM Operations / ITSM Managed Services

R = Responsible	The person that is responsible for producing the deliverable. There can
A = Accountable	The person that is accountable for the deliverable, ensures the work is
C = Consulted / Contributes	The person or persons that must be consulted before a decision or acti
I = Informed	The person or persons must be informed of any decision or action that

	ITSM Remedy Application Support					ITS	
Activity/Deliverable — Role/Team	Lead Developer	Architect	Developer #1	Developer #2	PM	APM	Product Owner
1. Decide team cadence (Project Management)					A/R	C	C
1a. Research Agile team cadence best practices					R	C	
1b. Schedule and confirm meeting times					A/R	C	I
1c. Document team cadence					R	A	I
2. Design team branding (Project Management)					A	R	C
2a. Brainstorm team name, colors, branding	C	C	C	C	A	R	C
2b. Create logo and branding assets			R		A	C	C
2c. Finalize and approve branding					C	R	A

COMMUNICATION PLAN



ID	Communication	Description	Frequency	Format	Owner	Recipient/ Attendees
1	Weekly Status Report	Weekly meeting covering deliverables, action items, and backlog of tasks.	Sunday afternoon at 11:30 PM	Virtual meeting over Teams	Emad Abbasi	Project Steering Committee
2	Weekly Status Update	Weekly status update denoting all current action items and project deadlines.	Every Tuesday	Virtual	Trinity Klein	Sponsor & Product Owner
3	Project Progress Report	Project progress report covering all deliverables, issues, changes, and any other relevant information.	Every milestone deadline	Document submission + email update	Entire Team	Program manager
4	Project Annoucement	Project presentation covering all deliverables, application code, technical stake and any other relevant information.	End of Semester	Capstone Showcase presentation	Entire Team	General Stakeholders

PROCEDURES FOR RESOLVING ISSUES

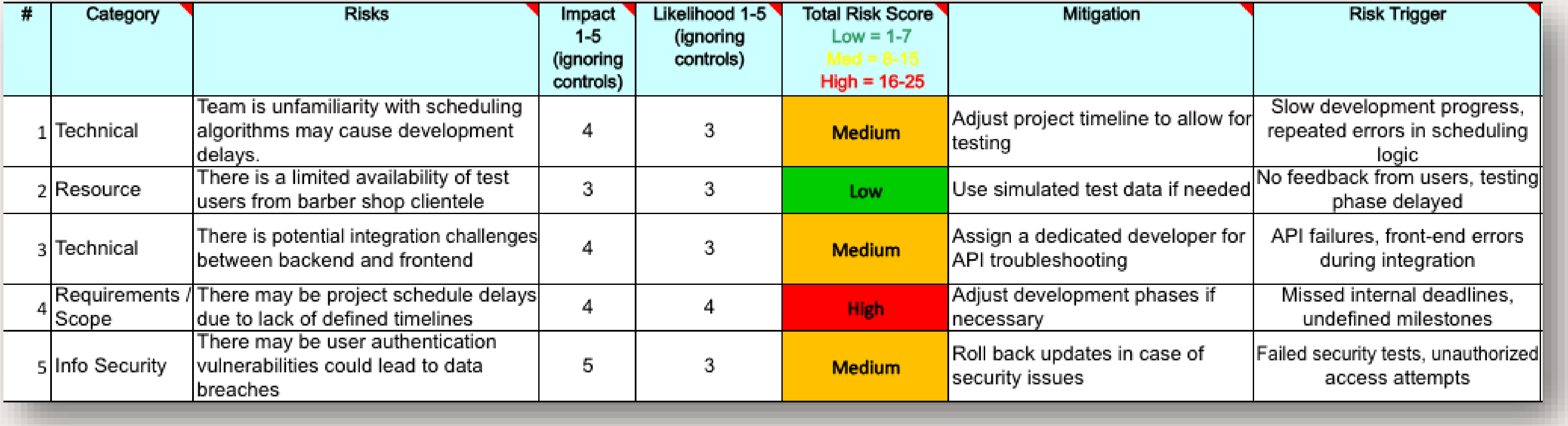
Step 1: Discuss issues within the team during meeting.

Step 2: If unresolved, escalate to the Project Manager (Emad Abbasi).

Step 3: If further escalation is needed, the Product Owner (Anthony Perla) will liaise with the sponsor.

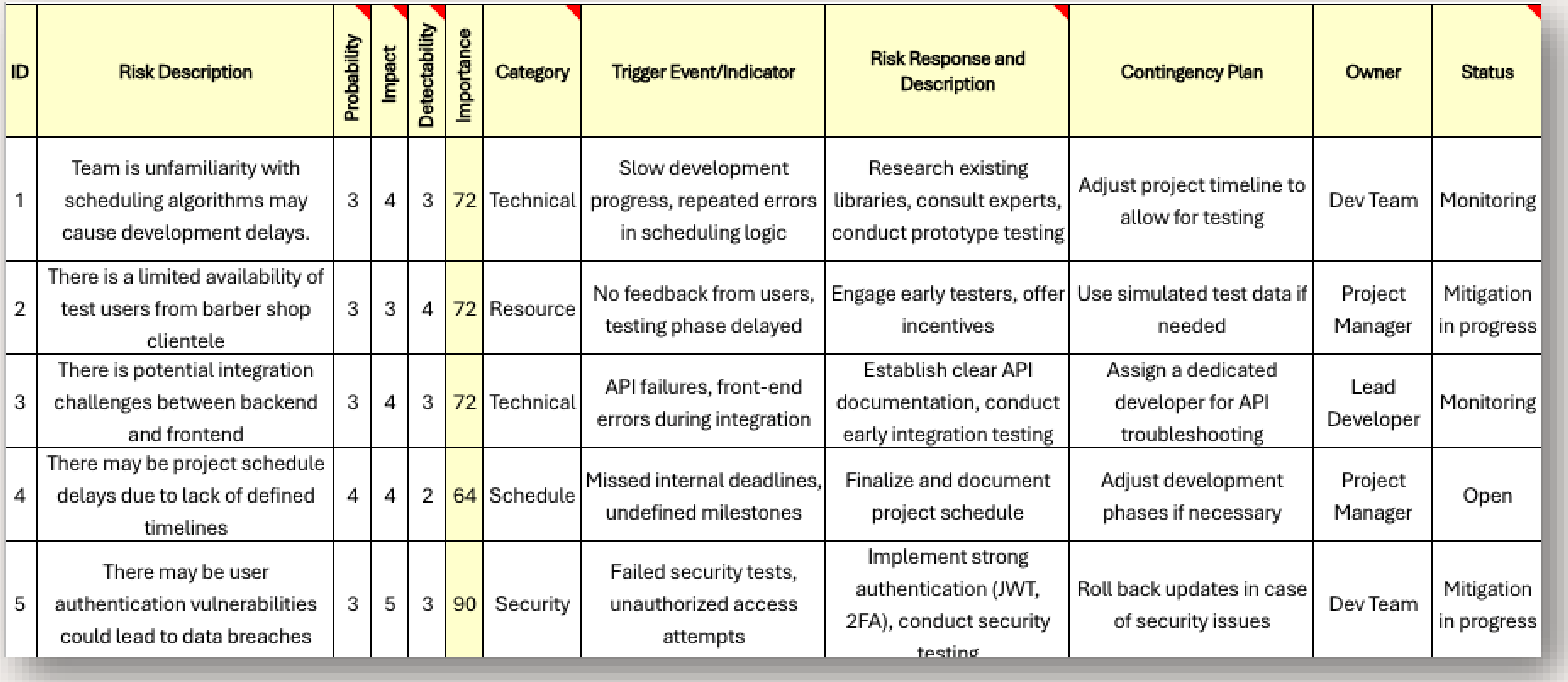
Step 4: If a critical issue remains unresolved, it will be raised to the Program Manager for intervention.

RISK LOG



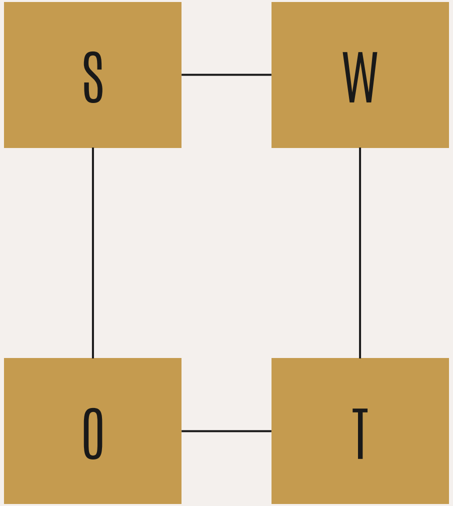
#	Category	Risks	Impact 1-5 (ignoring controls)	Likelihood 1-5 (ignoring controls)	Total Risk Score Low = 1-7 Med = 8-15 High = 16-25	Mitigation	Risk Trigger
1	Technical	Team is unfamiliarity with scheduling algorithms may cause development delays.	4	3	Medium	Adjust project timeline to allow for testing	Slow development progress, repeated errors in scheduling logic
2	Resource	There is a limited availability of test users from barber shop clientele	3	3	Low	Use simulated test data if needed	No feedback from users, testing phase delayed
3	Technical	There is potential integration challenges between backend and frontend	4	3	Medium	Assign a dedicated developer for API troubleshooting	API failures, front-end errors during integration
4	Requirements / Scope	There may be project schedule delays due to lack of defined timelines	4	4	High	Adjust development phases if necessary	Missed internal deadlines, undefined milestones
5	Info Security	There may be user authentication vulnerabilities could lead to data breaches	5	3	Medium	Roll back updates in case of security issues	Failed security tests, unauthorized access attempts

RISK MANAGEMENT MATRIX



ID	Risk Description	Probability	Impact	Detectability	Importance	Category	Trigger Event/Indicator	Risk Response and Description	Contingency Plan	Owner	Status
1	Team is unfamiliarity with scheduling algorithms may cause development delays.	3	4	3	72	Technical	Slow development progress, repeated errors in scheduling logic	Research existing libraries, consult experts, conduct prototype testing	Adjust project timeline to allow for testing	Dev Team	Monitoring
2	There is a limited availability of test users from barber shop clientele	3	3	4	72	Resource	No feedback from users, testing phase delayed	Engage early testers, offer incentives	Use simulated test data if needed	Project Manager	Mitigation in progress
3	There is potential integration challenges between backend and frontend	3	4	3	72	Technical	API failures, front-end errors during integration	Establish clear API documentation, conduct early integration testing	Assign a dedicated developer for API troubleshooting	Lead Developer	Monitoring
4	There may be project schedule delays due to lack of defined timelines	4	4	2	64	Schedule	Missed internal deadlines, undefined milestones	Finalize and document project schedule	Adjust development phases if necessary	Project Manager	Open
5	There may be user authentication vulnerabilities could lead to data breaches	3	5	3	90	Security	Failed security tests, unauthorized access attempts	Implement strong authentication (JWT, 2FA), conduct security testing	Roll back updates in case of security issues	Dev Team	Mitigation in progress

SWOT ANALYSIS



STRENGTHS

Scalable Architecture
Enhanced Customer Experience
Improved Operational Efficiency
Minimal Operating Costs

WEAKNESSES

Limited Post-Launch Support
No Native Payment Integration
Non-Compliance with Formal Regulatory Standards
Sponsor Technical Dependency

OPPORTUNITIES

Payment API Integration
Client Expansion and Loyalty Features
Multi-Location and Multi-Staff Support
Mobile App Deployment
Brand Development
Marketing Integration

THREATS

Technology Obsolescence
Third-Party Service Dependency
Competitive Software Offers
Security Risks
Data Breach Risks

ANNUAL COST

Cost Category	Monthly Estimate (USD)	Yearly Estimate (USD)
2x AWS EC2 Instances (Linux) (t2.micro or t3.micro) (t3.medium)	Free (First Year) $37.67 (After First Year)	Free (First Year) $452.04 (After First Year)
API Gateway (Free Tier)	Free	Free
Route 53 (1 Hosted Zone)	$0.50	$6.00
CloudFront	Free	Free (First year)
Virtual Private Cloud (VPC)	Free	Free
CloudWatch (Free Tier)	Free	Free
RDS (db.t2.micro)	Free (First Year) $117.35 (After First Year)	Free (First Year) $1408.20 (After First Year)
S3 (5 GB Storage)	~$0.205	~$2.46

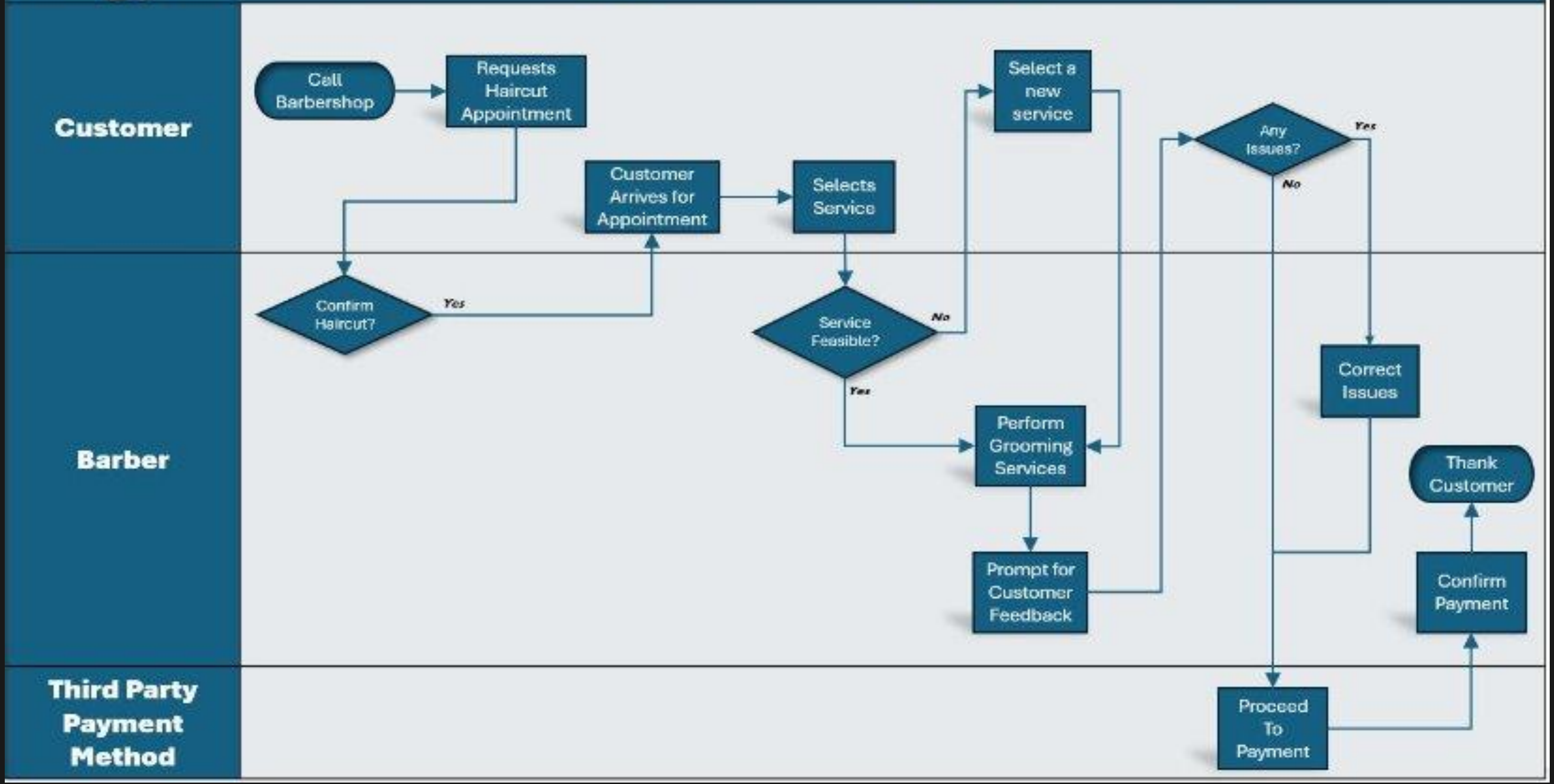
Estimated Total Costs (First Year):

Total Monthly Cost (USD)	Total Yearly Cost (USD)
$22.10	$265.20

Estimated Total Costs (After First Year):

Total Monthly Cost (USD)	Total Yearly Cost (USD)
155.72	$1868.70

Initial Process Map (Swim Lanes Diagram) for "El Tigre"



Customer

Barber

Third Party Payment Method

Call Barbershop

Requests Haircut Appointment

Confirm Haircut?

Yes

Customer Arrives for Appointment

Selects Service

Service Feasible?

No

Yes

Select a new service

Perform Grooming Services

Prompt for Customer Feedback

Any Issues?

Yes

No

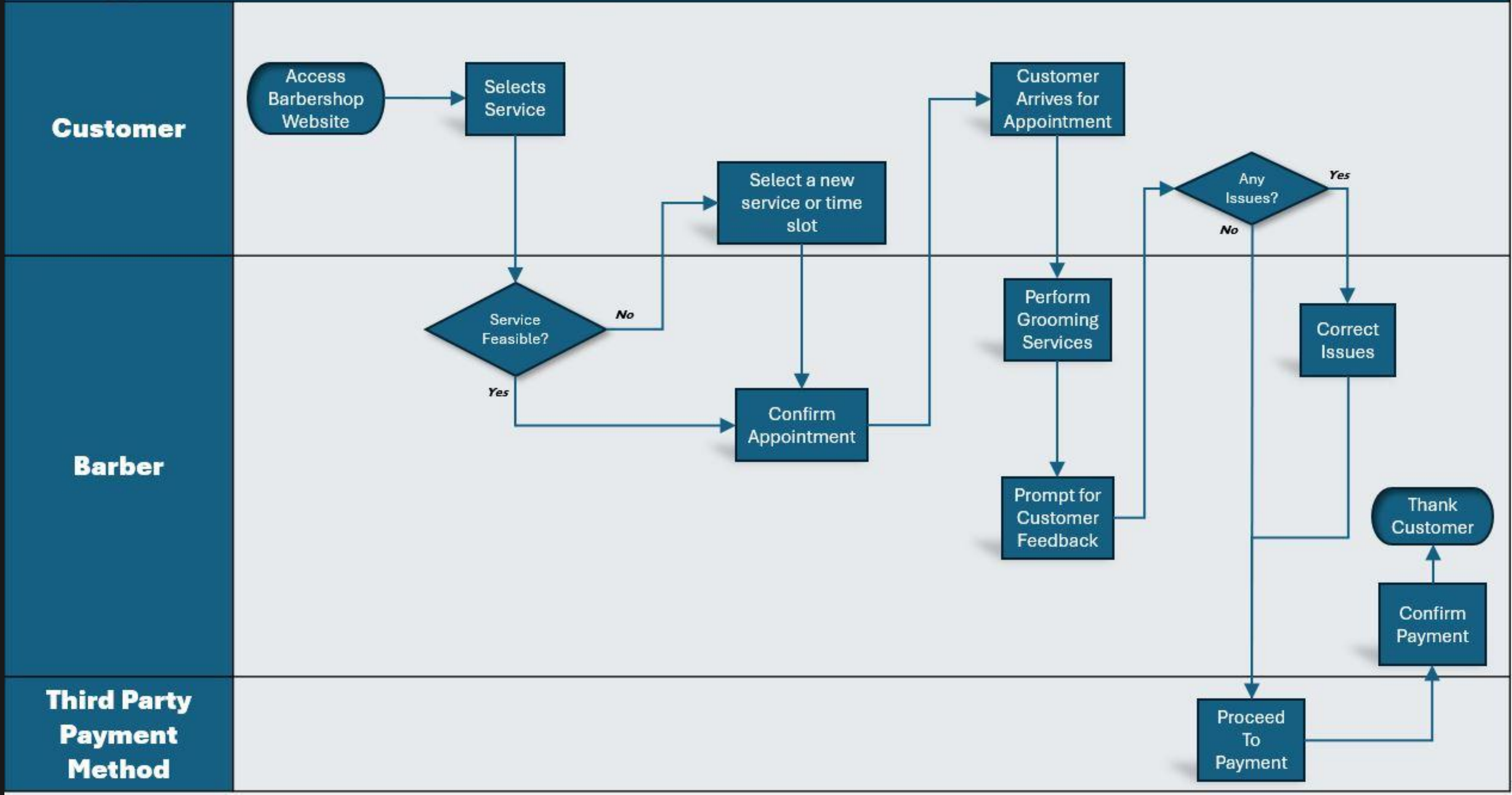
Correct Issues

Proceed To Payment

Confirm Payment

Thank Customer

Final Process Map (Swim Lanes Diagram) for “El Tigre”



Customer
Barber
Third Party Payment Method
Access Barbershop Website
Selects Service
Service Feasible?
No
Yes
Select a new service or time slot
Confirm Appointment
Customer Arrives for Appointment
Perform Grooming Services
Prompt for Customer Feedback
Any Issues?
Yes
No
Correct Issues
Proceed To Payment
Confirm Payment
Thank Customer

04

TECHNICAL DOCUMENTS

System Stack

Database

MySQL

Cloud Infrastructure

AWS RDS

Front-End

Vue.js

HTML5

CSS3

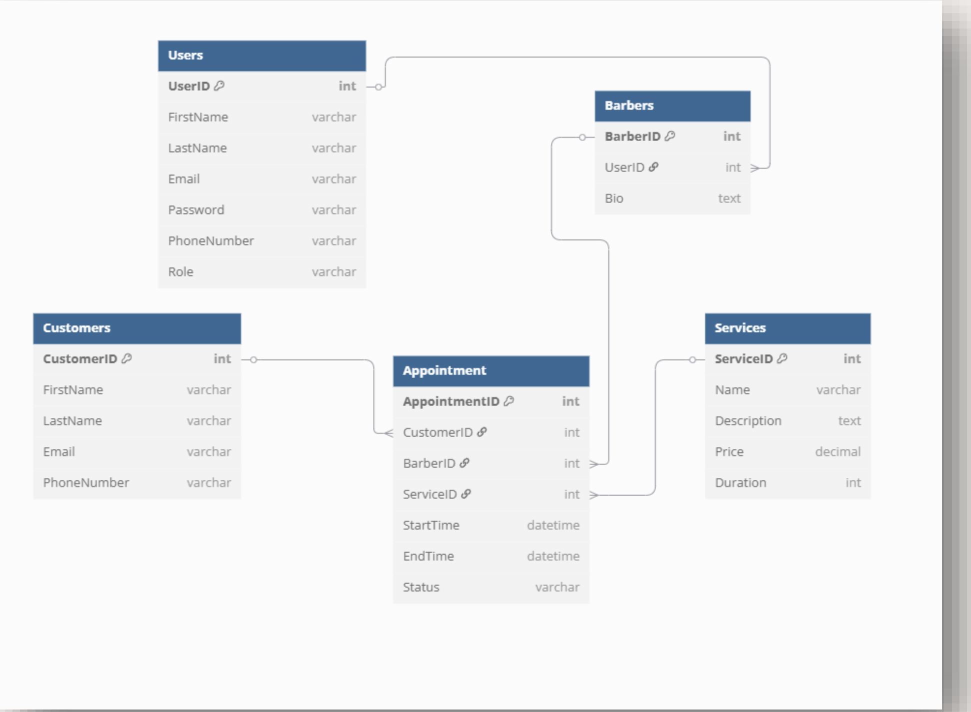
JavaScript

Back-End

Node.js

Express.js

DATABASE DESIGN & ERD



Users	
UserID	**int**
FirstName	varchar
LastName	varchar
Email	varchar
Password	varchar
PhoneNumber	varchar
Role	varchar

Barbers	
BarberID	**int**
UserID	int
Bio	text

Customers	
CustomerID	**int**
FirstName	varchar
LastName	varchar
Email	varchar
PhoneNumber	varchar

Appointment	
AppointmentID	**int**
CustomerID	int
BarberID	int
ServiceID	int
StartTime	datetime
EndTime	datetime
Status	varchar

Services	
ServiceID	**int**
Name	varchar
Description	text
Price	decimal
Duration	int

- Basic five table **relational database** created in **MySQL** and hosted in **AWS RDS**

- Core Tables: Users, Appointments, Customers, Barbers, Services

- **Primary** and **Foreign** key constraints to ensure data integrity

- **2nd Normal Form** (2NF) with no partial dependencies

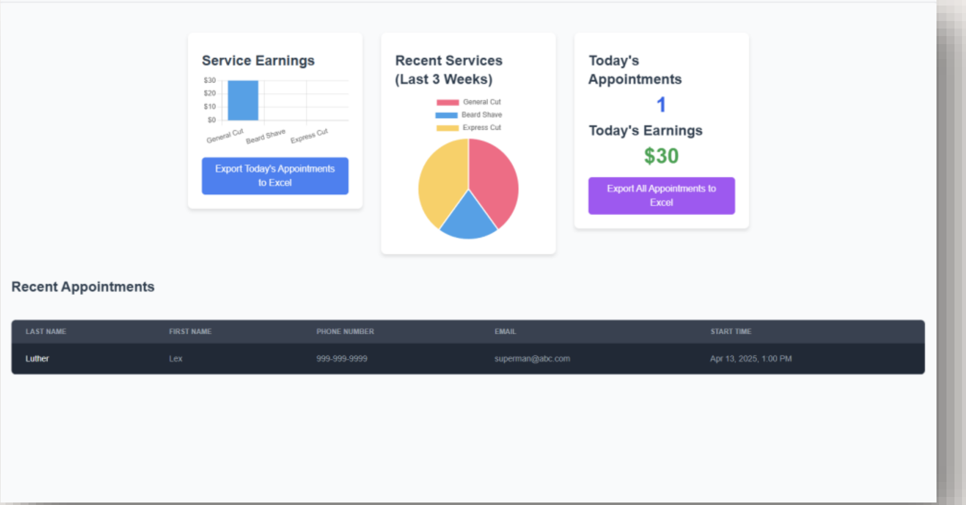
FRONTEND & API INTEGRATION

- Frontend communicates with backend via **Axios** HTTP requests.
- **Key API routes:** /login, /appointments, /customers, /portal
- **JSON** used as the standard data format all request/response payloads.
- Robust **error handling** implemented for statuses: **404** (Not Found), **401**(Unauthorized), **500**(Server Error)
- Secure endpoints with authentication and role-based access control

BACKEND & CRUD APIS

- Backend uses Express.js and Node.js to create and utilize the REST APIs
- **Key API routes:** api/customers, /api/barbers, /api/users ,/api/services, /api/appointments, api/login
- **JSON** used as the standard data format all request/response payloads.
- **Intricate checks** for avoiding redundant data and maintaining accurate insertion, deletion, and updates of database information. (Ex. Checks for data existence)

Reporting & Dashboard



Service Earnings
$30
$20
$10
$0
General Cut
Beard Shave
Express Cut
Export Today's Appointments to Excel
Recent Services (Last 3 Weeks)
General Cut
Beard Shave
Express Cut
Export All Appointments to Excel

Today's Appointments

1

Today's Earnings

$30

Recent Appointments

LAST NAME	FIRST NAME	PHONE NUMBER	EMAIL	START TIME
Luther	Lex	999-999-9999	superman@abc.com	Apr 13, 2025, 1:00 PM

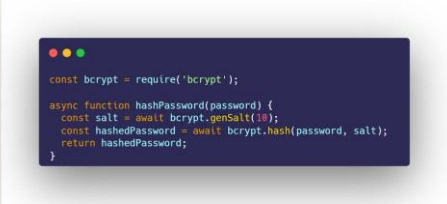
- Reporting module built with **Chart.js** for visual representation
- Displays metrics: **Appointment Frequency, Most Requested Service, Highest Earning Service**
- Appointment list is exportable to **Excel**
- Can export **todays** and **all** appointments in history
- Calculates the **total amount** earned as well.
- Table displays **Recent Appointments** (Last 3 Days) with details

Testing Strategy

- Manual testing performed across all core features (Webpage & Dashboard)
- **Unit testing** conducted for authentication and CRUD operations
- API endpoints tested using **Postman** with various request type(GET, POST, PUT, PATCH, and DELETE)
- **User-Acceptance Testing** in final week with sponsor feedback loop.
- Bug logging and resolution documented in **Azure DevOps**

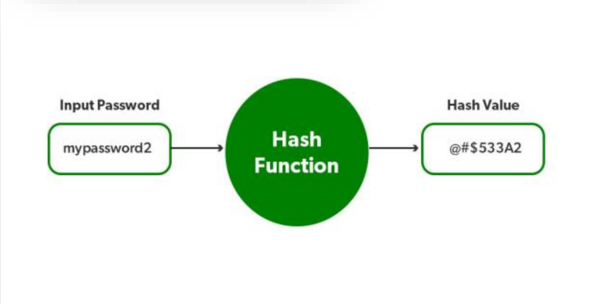
Security and Authentication

- JWT tokens used for secure session authentication.
- Passwords are hashed using **bcrypt** before transfer and storage into the database for security and privacy.



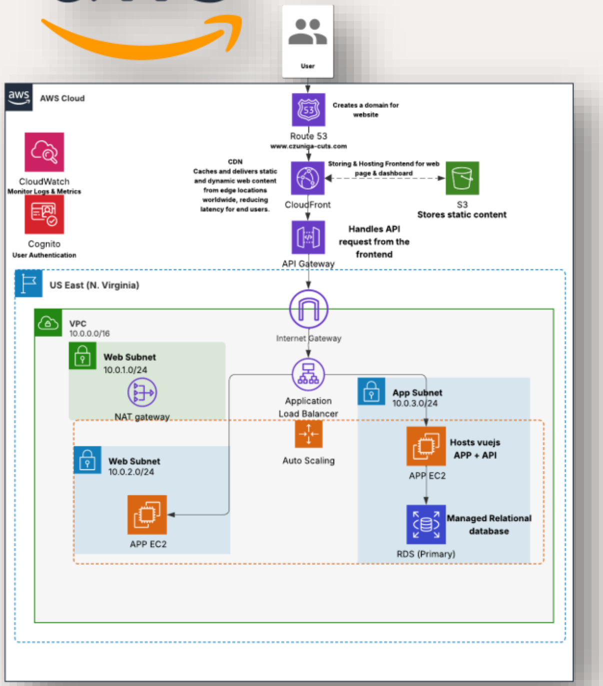
```
const bcrypt = require('bcrypt');

async function hashPassword(password) {
  const salt = await bcrypt.genSalt(10);
  const hashedPassword = await bcrypt.hash(password, salt);
  return hashedPassword;
}
```

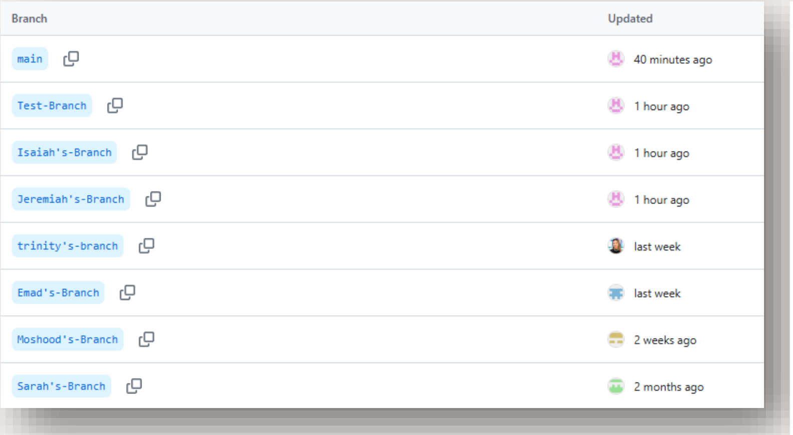


Hosting & Deployment

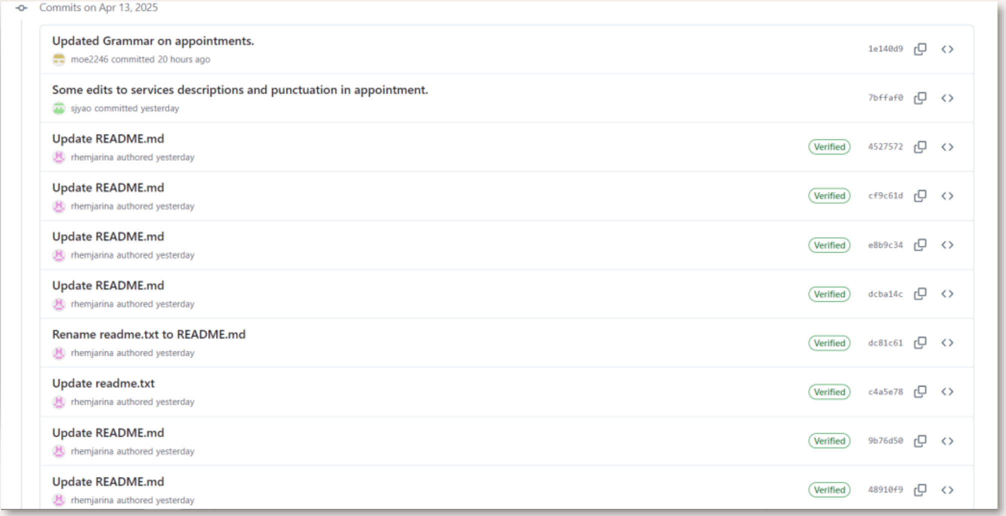
- **AWS Route53:** Domain registration and DNS routing
- **AWS CloudWatch:** Monitoring and Logging Dashboard
- **AWS Cognito:** Secure user authentication and authorization (Portal)
- **API Gateway:** Handles API request and has built-in security and monitoring
- **AWS CloudFront + S3:** Static hosting and CDN for public webpage & private dashboard
- **AWS RDS:** Managed relational database



GitHub: Branch & Commit History



Branch	Updated
main	40 minutes ago
Test-Branch	1 hour ago
Isaiah's-Branch	1 hour ago
Jeremiah's-Branch	1 hour ago
trinity's-branch	last week
Emad's-Branch	last week
Moshood's-Branch	2 weeks ago
Sarah's-Branch	2 months ago



Commits on Apr 13, 2025

Updated Grammar on appointments.
moe2246 committed 20 hours ago — 1e140d9

Some edits to services descriptions and punctuation in appointment.
sjyao committed yesterday — 7bffaf0

Update README.md
rhemjarina authored yesterday — Verified — 4527572

Update README.md
rhemjarina authored yesterday — Verified — cf9c61d

Update README.md
rhemjarina authored yesterday — Verified — e8b9c34

Update README.md
rhemjarina authored yesterday — Verified — dcba14c

Rename readme.txt to README.md
rhemjarina authored yesterday — Verified — dc81c61

Update readme.txt
rhemjarina authored yesterday — Verified — c4a5e78

Update README.md
rhemjarina authored yesterday — Verified — 9b76d50

Update README.md
rhemjarina authored yesterday — Verified — 48910f9

Future Improvements

- ✂ Enable **SNS or Email notifications** for reminders
- ✂ Build a calendar sync feature with Google Calendar
- ✂ Allow customers to make payments directly through website
- ✂ Improve overall UI/UX

Lessons Learned

- Importance of early backend/frontend integration.
- More testing cycles improve stability and confidence.
- Communication is key to resolving blockers quickly.
- Agile flexibility helped reprioritize scope efficiently.
- Time-boxing features helped avoid over-engineering.

INNOV8

Questions?

CREDITS: This presentation template was created by **Slidesgo**, including icons by **Flaticon** and infographics & images by **Freepik**