

## **ITM 900 Capstone Project**

Group 7

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Submitted to:

Professor. Bachir Chabab

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A handwritten signature consisting of the name "Lasser" followed by a large, stylized checkmark symbol, and the word "BEAUTY" written vertically next to it.

## Table of Contents

<b>Section 1. Project Charter Executive Summary and Authorization.....</b>	<b>3</b>
1.1    Executive Summary.....	3
1.2    Authorization.....	4
<b>Section 2. Project Charter Overview.....</b>	<b>6</b>
2.1    Project Summary.....	6
2.1.1    Project Goals, Business Outcomes and Objectives.....	7
2.1.2    Project Scope.....	7
2.1.3    Scope Definition.....	8
2.1.4    Boundaries.....	8
2.2    Milestones.....	9
2.3    Deliverables.....	9
2.4    Dependencies.....	12
2.5    Project Risks, Assumptions, and Constraints.....	12
2.5.1    Risks.....	12
2.5.2    Assumptions.....	13
2.5.3    Constraints.....	14
<b>Section 3. Project Charter Organization.....</b>	<b>14</b>
3.1    Project Governance.....	14
3.2    Project Team Structure.....	14
3.3    Roles and Responsibilities.....	15
<b>Section 4. Project Schedule.....</b>	<b>16</b>
4.1    Gantt Chart.....	16
<b>Section 5. Identification of the Problems/Opportunities.....</b>	<b>21</b>
5.1    Overview of the Problems.....	21
5.1.1    Business Introduction.....	21
5.1.2    Business IS Overview.....	22
5.2    Diagnostic.....	23
5.3    Proposed Solution and Underlying Technology.....	26
<b>Section 6. Requirement Specification &amp; Modeling.....</b>	<b>28</b>
6.1    Use Case Model.....	28
6.2    Use Case Descriptions.....	29
<b>Section 7. Business Process Modeling.....</b>	<b>50</b>
7.1    As-Is BPMN Model Diagram.....	50
7.2    To-Be BPMN Model Diagram.....	52
<b>Section 8. Data Modeling &amp; Design of the new IS Solution.....</b>	<b>55</b>
8.1    Entity Relationship.....	55
8.2    Database Schema.....	57
<b>Section 9. Structural &amp; Behaviour Design of the new IS Solution.....</b>	<b>58</b>
9.1    Class Diagram.....	58

9.2	Sequence Diagram.....	59
<b>Section 10. Proof-of-Concept Implementation Prototype.....</b>		<b>64</b>
10.1	Prototype Modules for two Use Cases.....	64
10.1.1	As-Is System.....	64
10.1.2	To-Be System.....	67
<b>Section 11. Implementation and Deployment &amp; Risk Management Plan for the new IS.....</b>		<b>81</b>
11.1	Implementation and Deployment Activities.....	81
11.2	Risk Assessment and Mitigation Activities.....	82
<b>Section 12. Conclusion.....</b>		<b>84</b>

## **Section 1. Charter Introduction**

### **1.1. Executive Summary**

Objective: The primary objective of our project was to analyze, design, and propose a comprehensive overhaul of the Information System (IS) for LaserXBeauty, a newly established medical spa in Toronto. The clinic faces challenges such as inefficient booking processes, lack of client data management, and minimal technology use. Our goal is to enable LaserXBeauty to streamline its operations, enhance customer experience, and position itself for sustainable growth.

Our methodology encompassed a detailed analysis of LaserXBeauty's current operational challenges, identification of key problem areas, and an exploration of technological opportunities. Through interviews, diagnostic analysis, and market research, we gathered critical insights into the business's needs and the potential IS solutions that could address them. This approach has allowed the development of a tailored IS blueprint, consisting of requirement specifications, use case models, business process modeling, and data design.

Our investigation revealed significant gaps in LaserXBeauty's current IS, particularly in client booking and data management, technology utilization, and business process automation. The lack of a robust IS was hindering operational efficiency, scalability, and customer satisfaction. Specifically, the reliance on manual, informal booking processes and the absence of a comprehensive client database. These factors are identified as critical barriers to business growth.

We proposed a holistic IS solution designed to automate business processes, enhance client engagement, and streamline operations. Key components of the solution included a user-friendly online booking system, an integrated client database, and automated notification systems. The solution also emphasized the importance of scalability and flexibility, allowing for future expansions and technological integrations.

The implementation plan outlined a phased approach, starting with the development and deployment of the core IS components, followed by training for staff and ongoing support. A detailed risk management strategy was also developed to address potential challenges during the implementation phase.

Our project concluded that the strategic overhaul of LaserXBeauty's IS is not only feasible but also essential for its future success. The proposed IS solution offers a pathway to

improved operational efficiency, enhanced customer satisfaction, and business growth. We recommend that LaserXBeauty adopts this solution, with a focus on customization, user training, and continuous improvement to ensure the IS evolves in line with the business's needs.

The successful implementation of the proposed IS will position LaserXBeauty as a technologically advanced player in the medical spa industry. Moreover, this project contributes to the broader discourse on the critical role of IS in small businesses, highlighting how technology can be leveraged to overcome operational challenges and achieve competitive advantage.

## 1.2. Authorization

This project charter formally authorizes the existence of the project LaserXBeauty Booking System and provides the project manager with the authority to apply organizational resources to project activities described herein. If there is a change in the project scope, the project charter will be updated and submitted for re-approval.

LaserXBeauty members:



Amanda  
Executive Sponsor  
*Business Owner, LaserXBeauty*

Jan 31, 2024



Marina Kolpakova  
Project Sponsor  
*Contact Person, LaserXBeauty*

Jan 31, 2024

Student members::



*Ogen Odisho*  
*Team Member*

Jan 31, 2024



*Paul Nguyen*  
*Team Member*

Jan 31, 2024



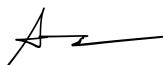
*Sakib Khan*  
*Team Member*

Jan 31, 2024



*Muhammad Yousuf Amray*  
*Team Member*

Jan 31, 2024



*Duy Anh Nguyen*  
*Team Member*

Jan 31, 2024



*Faraz, Ali*  
*Team Member*

Jan 31, 2024

## **Section 2. Project Charter Overview**

### **2.1. Project Summary**

This project consisted of helping LaserXBeauty, a small business that specializes in laser and spa treatments, improve their company website. The goal was to create a one-stop platform for customers to view and book treatment sessions, improve user-interface, and lines of communication and customer support. These improvements were decided upon because of the current version of the website having a lack of organized treatment categories, booking rescheduling, and distinctions between free consultations and treatments. Also, the newly designed website has admin support, including a client database storage that is automatic compared to a previously used manual database.

The project had many deliverables, with some key ones being a newly designed business process system, risk management analysis, and a prototype demo of what the website will become. There was a large dependency on the team members, who had to effectively and accurately design and create tasks and seek approval from the executive sponsor of the project. The gantt chart showcases the timeline of when the project kick-started until its end, including many milestones that were achieved such as the completion of class and sequence diagrams, risk analysis, and prototyping.

During the creation of the project proposal, the team members analyzed the assumptions and constraints of the project, developing a six-sigma analysis of what to expect and how to deal with defects and issues of current circumstances. The project has a sponsor with Marina Kolpakova, who is the main contact person for all team members. The team members communicate with Marina on a regular basis for all inquiries and to showcase completed tasks, which is then forwarded to Amanda, the executive sponsor, to oversee and provide feedback on the completed work. The stakeholders, Marina and Amanda, will benefit significantly from the changes this project has introduced, as their company website is revamped as a one-stop platform for all their customer needs.

The stakeholders should see an improvement in the handling of clients, as this newly designed system should be able to handle 6-7 clients and 20-30 email/phone calls a day after 6

months of implementation, compared to the current amount of 2-3 clients and 10-15 email/phone calls a day. They should also benefit from a higher customer satisfaction rate, where customer dissatisfaction of the booking system should decrease from 50% to 15% in the next customer survey. Overall, the project deliverables and milestones of this project, along with the risk analysis and project planning completed, should significantly boost LaserXBeauty's brand.

### **2.1.1. Project Goals, Business Outcomes and Objectives**

No .	Goals	Objectives	Business Outcomes
1	Create a one-stop IS System with multiple features	<ul style="list-style-type: none"> <li>● Appointment Booking</li> <li>● Client Database Storage</li> <li>● Client Communication</li> <li>● Business Performance Reporting</li> </ul>	<ul style="list-style-type: none"> <li>● Quick for both customer and business owner</li> <li>● Straightforward and affordable</li> <li>● Customer satisfaction</li> </ul>
2	Improve User-interface on webpage	<ul style="list-style-type: none"> <li>● Managing appointments</li> <li>● Provide customer with required documents</li> <li>● Log-in portal</li> </ul>	<ul style="list-style-type: none"> <li>● Customer can log-in and manage appointments themselves</li> <li>● Customer can sign-off on required documents online instead of in person</li> </ul>
3	Improve lines of communication and payment	<ul style="list-style-type: none"> <li>● Implement installment payments</li> <li>● Provide direct SMS/email communication between business owner and clients</li> </ul>	<ul style="list-style-type: none"> <li>● Customers may now be able to afford the services</li> <li>● Customers can be in constant communication with the facility if ever needed</li> </ul>

### **2.1.2. Project Scope**

Our goal is to transform LaserXBeauty's web page and user interface into a one-stop IS system where the customer experience is made more convenient and easier to use. We also intend to make it easier for the business owner, as we will create a client database storage that will allow us to store customer information. We plan on developing a business performance report using

software to have a better scope of the company's performance and trajectory. We have a deadline of April 1st, 2024, which we believe we can manage our time efficiently by dedicating time to work on this project every day until then. We will require a wide range of deliverables such as accurate project management, identifying problems and opportunities, specification and modeling, business process modeling, data modeling with structural and behavioral design of our new IS solution, a prototype for the solution, and lastly the implementation and deployment of the new IS model along with our risk management plan. This project will be a collaborative effort, with each team member helping to solve different tasks regarding the deliverables. Our sponsors also have a clear understanding of what we plan to achieve with this project. We intend to keep communication open with our sponsors and provide them with weekly updates of our progress. This project will be deemed successful if we are able to create a prototype IS system that will improve the user interface of the website, making it straightforward and convenient for both the customer and the business owner. If we are able to implement the IS system by April 1st, this project will have exceeded expectations.

### **2.1.3. Scope Definition**

Our design of a new information system for LaserXBeauty will scale the business so that higher volume of customers are easily managed, improve business process automation, and create a simplified one-stop platform that is convenient to both the business owner and customer, consisting of booking, client information, and communication tasks.

### **2.1.4. Boundaries**

<b>Activities In Scope</b>	<b>Activities Out of Scope</b>
1. Development and implementation of new information system	1. Create simple user interface so customers are not overwhelmed upon entering website
2. Train business owner on how to manage bookings, client information, and communications with customer	2. Provide multiple payment methods for customer convenience
3. Test functionality and reliability of information system while managing potential risks	3. Tailor website to attract the target market of females aged 25-40 looking for skin and body treatments

## 2.2. Milestones

Project Milestone	Description	Expected Date
1. Project Kickoff	Drafting a project proposal for LaserXBeauty	January 17, 2024
2. Company Approves Project Proposal	LaserXBeauty has allowed the team permission to begin working on a new and improved system	January 28, 2024
3. Six Sigma Analysis Completed	Plan and analyze ways to efficiently start and improve company's business processes	February 4, 2024
4. Work Breakdown Analysis Completed	Assign tasks to all team members with hard deadline for task completion	February 6, 2024
5. Use Case Diagram/Descriptions Completed	A simplified diagram to demonstrate the future requirements of the system and the descriptions of each use case	February 17, 2024
6. To-Be Diagram Completed	Creation of online booking system by customer and business owner, and demonstration of customer portal for appointment rescheduling	February 26, 2024
7. Class Diagram Completed	The entire To-Be system designed and modeled with the relationships between the set of objects	March 7, 2024
8. Sequence Diagram Completed	A model showcasing the messages exchanged between the objects within the process	March 15, 2024
9. Risk Analysis & Implementation Plan Completed	An analysis that identifies potential risks and their severities, along with an implementation plan for the booking system	March 21, 2024
10. Prototype Demo Completed	A premature demo of the To-Be implemented system	April 1, 2024
11. Webpage Demo Completed	Up and working interconnective webpage including the new to-be system	April 9, 2024

## 2.3. Deliverables

Project Deliverable 1: [Project Charter and Gantt Chart]	
Stakeholder :	Executive Sponsor

<b>Description :</b>	Create a project charter and gantt chart that will summarize and track project progress
<b>Acceptance Criteria:</b>	Project progress is tracked successfully with a step-by-step plan of the project goals. Project charter has great detail and can be used as a project overview / executive project summary. Time management and milestones are tracked using the gantt chart.
<b>Due Date:</b>	Weekly updates between Feb 07 - Apr 01, 2024
<b>Project Deliverable 2: [Identification of the Problems and Opportunities]</b>	
<b>Stakeholder :</b>	Executive Sponsor
<b>Description :</b>	Identify current problems and opportunities LaserXBeauty is facing with their IS system
<b>Acceptance Criteria:</b>	A detailed breakdown of the problems and opportunities this project will be tackling. The breakdown will consist of a diagnostic, where we will identify causes and issues
<b>Due Date:</b>	Feb 11, 2024

<b>Project Deliverable 3: [Requirement &amp; Specification Modeling]</b>	
<b>Stakeholder :</b>	Executive Sponsor
<b>Description:</b>	Create a use case diagram (with descriptions) that will detail the future requirements of the To-Be business process model and the IS system
<b>Acceptance Criteria:</b>	Developed a use case model for the new IS system, detailing the use case descriptions. This use case will outline the future requirements of the business process as it undergoes integration with the IS system.
<b>Due Date:</b>	Feb 17, 2024

<b>Project Deliverable 4: [Business Process Modeling (As-Is and To-Be diagrams)]</b>	
<b>Stakeholder :</b>	Executive Sponsor
<b>Description:</b>	Create an As-Is and a To-Be business process model
<b>Acceptance Criteria:</b>	Created a detailed business process model for both the current IS system and our new and advanced IS system.
<b>Due Date:</b>	Feb 26, 2024

<b>Project Deliverable 5: [Data Modelling &amp; Design of the new IS Solution]</b>	
<b>Stakeholder:</b>	Executive Sponsor
<b>Description:</b>	Create an entity relationship diagram and a database schema based on the To-Be business process model
<b>Acceptance Criteria:</b>	Effectively crafted a functional entity relationship diagram and database schema for the proposed business process model design, ready for real-time implementation.
<b>Due Date:</b>	Mar 4, 2024

<b>Project Deliverable 6: [Structural &amp; Behavioural Design of the new IS Solution]</b>	
<b>Stakeholder :</b>	Executive Sponsor
<b>Description:</b>	Create a class diagram and a sequence diagram based on the To-Be business process model
<b>Acceptance Criteria:</b>	Developed a robust structure and behavioral pattern that aligns seamlessly with the IS system we're constructing.
<b>Due Date:</b>	Mar 15, 2024

<b>Project Deliverable 7: [Implementation and Deployment &amp; Risk Management Plan for the New IS ]</b>	
<b>Stakeholder :</b>	Executive Sponsor
<b>Description:</b>	Implement and deploy new set of activities along with conducting risk assessment and mitigation
<b>Acceptance Criteria:</b>	Successfully implement and deploy the IS system while providing an accurate risk management plan that will avoid system breakdowns and failures
<b>Due Date:</b>	Mar 21, 2024

<b>Project Deliverable 8: [Proof-of-Concept Implementation Prototype]</b>	
<b>Stakeholder :</b>	Executive Sponsor
<b>Description:</b>	A prototype based on the use cases in project deliverable #3

#### Project Deliverable 8: [Proof-of-Concept Implementation Prototype]

<b>Acceptance Criteria:</b>	A detailed video including the steps of the new IS solution which highlights the benefits of this new system
<b>Due Date:</b>	Apr 01, 2024

#### 2.4. Dependencies

Dependency Description	Critical Date	Contact
Effective communication between team members and executive sponsor	Weekly/bi-weekly updates on in-progress and completed tasks	Executive Sponsor
Availability of team members with hard deadlines in place	Each set of tasks must be completed by the hard deadline in order for the project to progress	Team Members
Project buy-in from both team members and project sponsors, consisting of an alignment of goals and strategies	Every day of project duration	Team Members, Project Sponsors

#### 2.5. Project Risks, Assumptions, and Constraints

##### 2.5.1. Risks

No.	Risk Description	Probability (H/M/L)	Impact (H/M/L)	Risk Management Plan
1	Customer data breach	M	H	Protect customer data by implementing standard encryption protocols, security measures, and extensive staff training
2	System downtime	M	L	Either a redundant backup server or an alternative Excel document on the booking system
3	Can't meet customer demands	L	L	Use redundant backup server and implement a ReCaptcha

No.	Risk Description	Probability (H/M/L)	Impact (H/M/L)	Risk Management Plan
4	Booking errors	H	L	Send booking confirmations as well as train staff on booking system
5	Customer not liking booking system	M	L	Implement a guide section on the website, along with manually helping customers
6	Employee difficulties with booking system	M	L	Extensive training for all employees
7	Payment processing failing	M	M	Use reliable payment gateways with strong security features
8	Power outages	L	L	Manually write bookings and backup generators

### 2.5.2. Assumptions

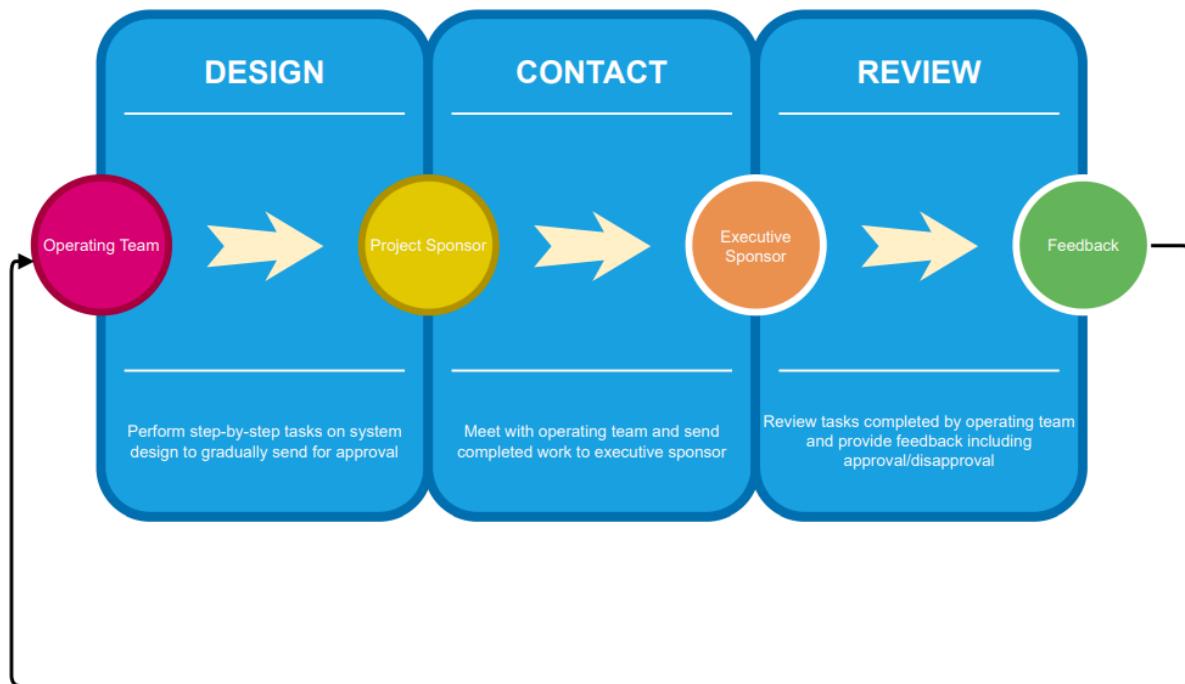
No.	Assumptions
1	Business owner is not tech-savvy, weekly/bi-weekly check-ups are done to give a explanation on completed work
2	Owner has a booking system that has not been used by owner or customers, as all appointments up-to-date have been booked manually
3	There is no system in place to track appointment history, client data, scheduling, and business reporting
4	Investment budget is low, the main goal is to improve the information system functions while maintaining low costs
5	Each newly designed business process diagram will be approved by the Executive Sponsor

### 2.5.3. Constraints

No.	Category	Constraints
1	Hard Deadline	Team members are currently occupied with other courses, necessitating effective time management skills for everyone to fulfill their individual tasks.
2	Website Demo	With a limited time frame of three months to develop a website demo, there is a high likelihood that the final product may be rushed
3	Low Investment Budget	A lower investment budget will make it difficult to create the best possible system with the current tools available

## Section 3. Project Organization

### 3.1. Project Governance



### 3.2. Project Team Structure

The group project will be carried out by the operating team, which consists of the team members named Ogen Odisho, Paul Nguyen, Sakib Khan, Faraz Ali, Duy Anh Nguyen, and

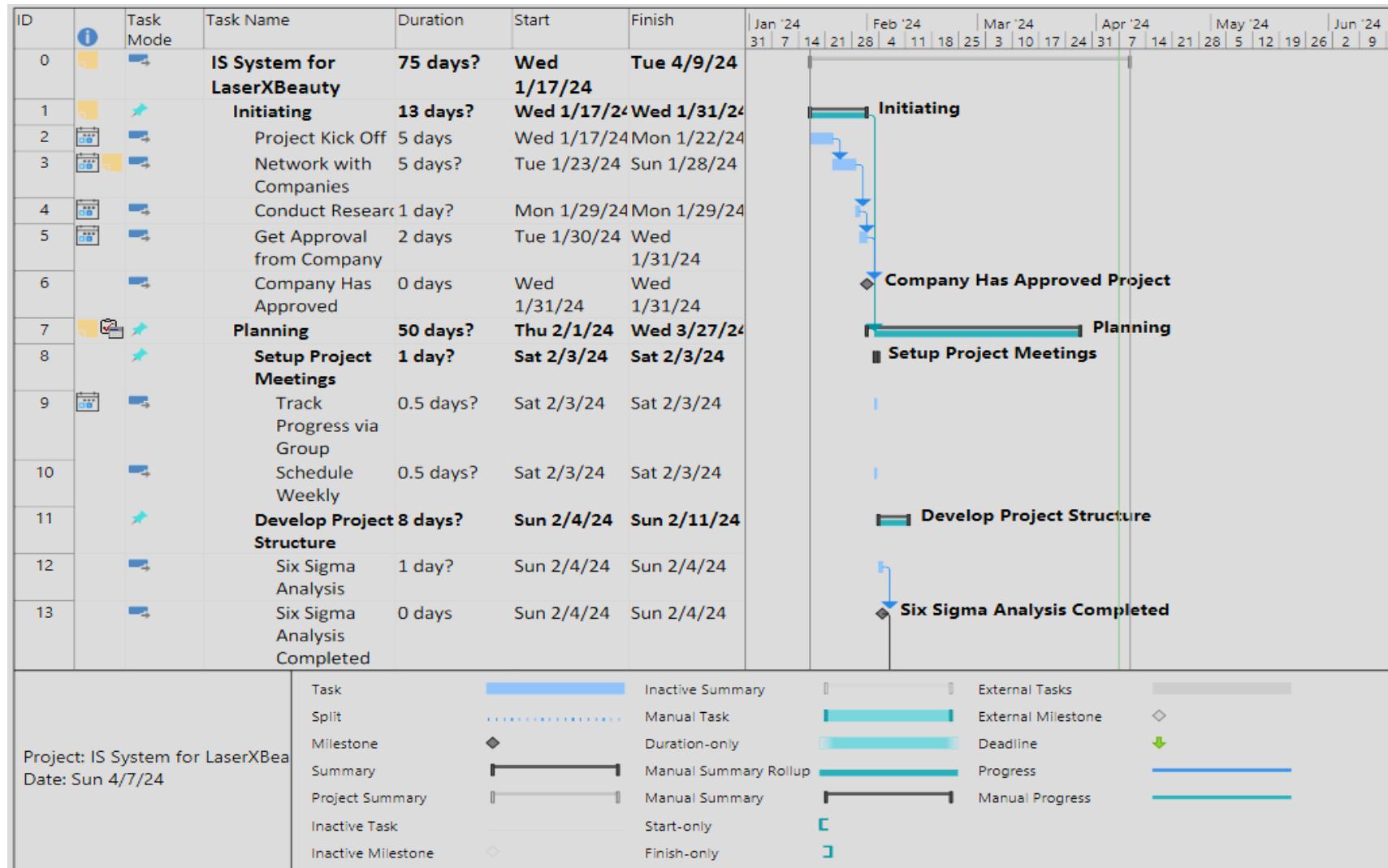
Muhammad Yousuf Amray. The team members will complete all tasks including diagrams, prototypes, and risk analysis. These task completions will be forwarded to the contact person and project sponsor Marina Kolpakova, who will be the main point of contact for the team members to get in touch with the Executive Sponsor, Amanda. Amanda will be overseeing, evaluating, and providing feedback as needed on all potential solutions presented to her.

### 3.3. Roles and Responsibilities

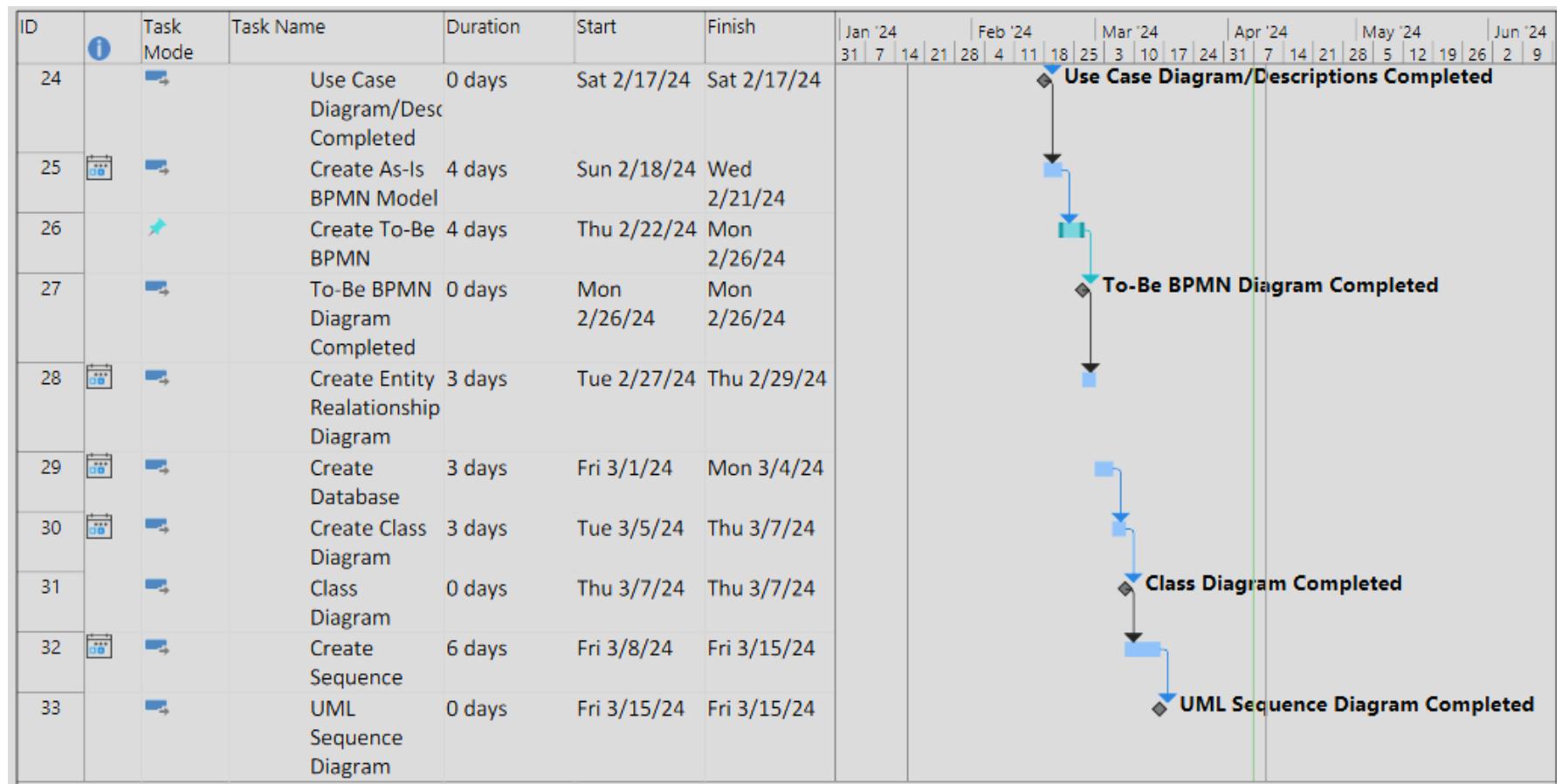
Project Member	Project Role	Responsibilities
Amanda	Executive Sponsor	Oversee, review, and give feedback on project solutions
Marina Kolpakova	Project Sponsor	Contact person for all team members regarding inquiries
Ogen Odisho	Team Member	Project Charter & Class Diagram
Paul Nguyen	Team Member	Gantt Chart, Use Case Diagram & Sequence Diagram
Sakib Khan	Team Member	As-Is and To-Be Diagrams, Prototyping
Faraz Ali	Team Member	Use Case Diagram, Use Case Descriptions, Risk Analysis & Implementation
Duy Anh Nguyen	Team Member	Business Overview, Diagnostic, As-Is and To-Be Diagrams, Prototyping, Database Schema
Muhammad Yousuf Amray	Team Member	As-Is and To-Be Diagrams, ERD Diagram

## Section 4. Project Schedule

### 4.1 Gantt Chart



ID	Task Mode	Task Name	Duration	Start	Finish	Jan '24	Feb '24	Mar '24	Apr '24	May '24	Jun '24																		
						31	7	14	21	28	4	11	18	25	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9
14		Define Dependencies	1 day?	Mon 2/5/24	Mon 2/5/24																								
15		Work Breakdown	1 day?	Tue 2/6/24	Tue 2/6/24																								
16		Work Breakdown Structure	0 days	Tue 2/6/24	Tue 2/6/24																								
17		Create Project	5 days?	Wed 2/7/24	Sun 2/11/24																								
18		Develop Project Support Plans	2 days?	Mon 2/12/24	Tue 2/13/24																								
19		Document Configuration Management	0.5 days?	Mon 2/12/24	Mon 2/12/24																								
20		Document Communicatik Management Plan	0.5 days?	Mon 2/12/24	Mon 2/12/24																								
21		Document Data	1 day?	Tue 2/13/24	Tue 2/13/24																								
22		Develop Project Diagrams	33 days?	Wed 2/14/24	Thu 3/21/24																								
23		Create Use Case	4 days	Wed 2/14/24	Sat 2/17/24																								



ID	Task Mode	Task Name	Duration	Start	Finish	Jan '24 31 7 14 21 28	Feb '24 4 11 18 25	Mar '24 3 10 17 24 31 7 14 21 28	Apr '24 5 12 19 26	May '24 2 9	Jun '24
34		Develop Risk Analysis & Implementation	10 days?	Sat 3/16/24	Wed 3/27/24						Develop Risk Analysis & Implementation
35		Identify Risks	1 day	Sat 3/16/24	Sat 3/16/24						
36		Analyze Risks	1 day	Sun 3/17/24	Sun 3/17/24						
37		Risks Have Been	0 days	Sun 3/17/24	Sun 3/17/24						
38		Create Risk Register	2 days	Mon 3/18/24	Tue 3/19/24						
39		Create Risk Heatmap	1 day?	Wed 3/20/24	Wed 3/20/24						
40		Create Risk Implementation Plan	1 day?	Thu 3/21/24	Thu 3/21/24						
41		Risk Implementation Plan	0 days	Thu 3/21/24	Thu 3/21/24						Risk Implementation Plan Completed
42		Executing	11 days?	Thu 3/28/24	Mon 4/8/24						Executing
43		Prototyping	5 days?	Thu 3/28/24	Mon 4/1/24						Prototyping
44		Linking of Webpages	3 days	Thu 3/28/24	Sat 3/30/24						
45		Prototype Dev	2 days	Sun 3/31/24	Mon 4/1/24						
46		Prototype Demo	0 days	Mon 4/1/24	Mon 4/1/24						
47		Troubleshoot Diagrams	3 days	Tue 4/2/24	Thu 4/4/24						

ID	Task Mode	Task Name	Duration	Start	Finish	Jan '24	Feb '24	Mar '24	Apr '24	May '24	Jun '24																		
						31	7	14	21	28	4	11	18	25	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9
48		Diagrams Update	0 days	Thu 4/4/24	Thu 4/4/24																								
49	📅	Troubleshoot System	2 days	Fri 4/5/24	Sun 4/7/24																								
50		System Troubleshooting (Constantly On-going)	0 days	Sun 4/7/24	Sun 4/7/24																								
51		Implement and Deploy	1 day	Mon 4/8/24	Mon 4/8/24																								
52		Webpage Implementation	0 days	Thu 3/28/24	Thu 3/28/24																								
53	💡	Closing	1 day	Tue 4/9/24	Tue 4/9/24																								
54		Webpage Demo	0.5 days	Tue 4/9/24	Tue 4/9/24																								
55		Webpage Demo Completed	0 days	Tue 4/9/24	Tue 4/9/24																								
56	📅💡	Project Presentation	0.5 days	Tue 4/9/24	Tue 4/9/24																								

\*Note the zero days are the milestones.

The Gantt chart serves as a comprehensive visual representation of project timelines and tasks, complementing the initial overview with detailed insights into project scheduling and progress tracking. The chart spans from January 17, 2024, to April 9, 2024, encapsulates the entirety of the project's duration. It provides a comprehensive view on its evolution over time. It follows the PMBOK guidelines with the key processes initiating, planning, executing, and closing.

## **5. Identification of the problem (s)/opportunities**

### **5.1. Overview of the problem(s)/opportunities**

#### **5.1.1. Business introduction**

- Business name: LaserXBeauty.
- Business owner: Amanda, supported by Marina - her friend in all digital marketing tasks.
- Website: <https://www.laserxbeauty.com/>
- Address: 1561 Dupont St, Toronto, ON M6P 3S5.
- Establishment date: Late 2023.
- Business type: Medical spa/cosmetic clinic, small business, startup, sole proprietor (owned and run by 1 person), female-owned.
- Products/services: Skin wrinkle reduction and fat melting treatments, price \$150 - up per treatment and can be \$3,000+ for a course of treatments.
- Target market: Female, 25-40, middle-high income, living in Toronto, interested in skin and body treatments.
- Client base: No client base, services provided to the owner's friends and family so far.
- Technology/IS:
  - No major technology/IS other than the website built on Squarespace and social media.
  - The owner is not tech-savvy, her friend Marina helped set up the website and other digital marketing technology.
  - Even though the website has a Book an Appointment button (powered by Squarespace's built-in booking platform called Acuity Scheduling), neither the owner nor clients have used it yet. All appointments were booked informally and manually by the owner through her own Instagram and phone.
  - The owner does not have a system to keep track of appointment history, client data, scheduling, and business reporting.
  - Also, no proper business process (sales, administration, HR, accounting, marketing, etc.) is in place yet.
- Investment budget: Low. The owner does not have an exact amount of investment for upgrading the current IS. However, given the business size, the budget is expected to be

under \$2,000 for implementation and \$100/month for ongoing operation and maintenance. The investment should focus on improving the most important functions of the IS only to save cost.

- Business goals: Have a quick, straightforward, and affordable IS system that can help the business owner do most of the booking and client database management. The IS is expected to be a one-stop platform so that she doesn't need to juggle between different apps. Expected functions are:
  - Appointment booking
  - Client database storage and management
  - Client portal that allows clients to manage their appointments and personal information

### **5.1.2. Business IS overview:**

As mentioned in section 5.1.1, the business owner does not utilize any IS for her business operations. The only booking and client data system the business has is Squarespace's built-in scheduling tool called Acuity Scheduling, however, neither the business owner nor her clients have used it yet because:

- The business was just opened recently (late 2023) and the owner is still busy with finishing up the machine setup and interior decor. It has not been busy yet, all clients so far are the owner's friends and family.
- The business owner is not tech-savvy, she prefers informal, traditional administration, such as booking via phone call and Instagram, and managing appointment history using her phone calendar or notes.
- The business has not been marketing to general clients yet; therefore, no online booking has been made so far.
- The business owner asked her friend to set up a low-cost website for her business, the business owner does not have experience in it and let her friend do everything website-wise. The business owner does not know what she needs for a well-functioning website, and her friend is not an aesthetician, so she might not fully understand what a medical spa website needs.

- No proper backend on the website to store and manage user data. For example, whenever a new appointment is created, the owner has to re-input client information rather than being able to retrieve it from the record system.

About Acuity Scheduling: This is a basic subscription-based scheduling tool for small businesses' Squarespace websites. LaserXBeauty is currently on the cheapest plan emerging for \$22 CAD/month or \$264 CAD/year with the following key features:

- Support 1 staff and 1 location.
- Accept online payments and deposits.
- Support online meetings via Zoom, Google Meet, and GoToMeeting.
- Automated email confirmation, reminder, and follow-up.
- Offer coupons and vouchers for discounts.
- Basic reporting about appointments, no-shows, and revenue.
- Sync with different popular calendar services, such as Google, iCloud, and Microsoft.
- Export invoices.

## 5.2. Diagnostic (causes-problem-consequences)

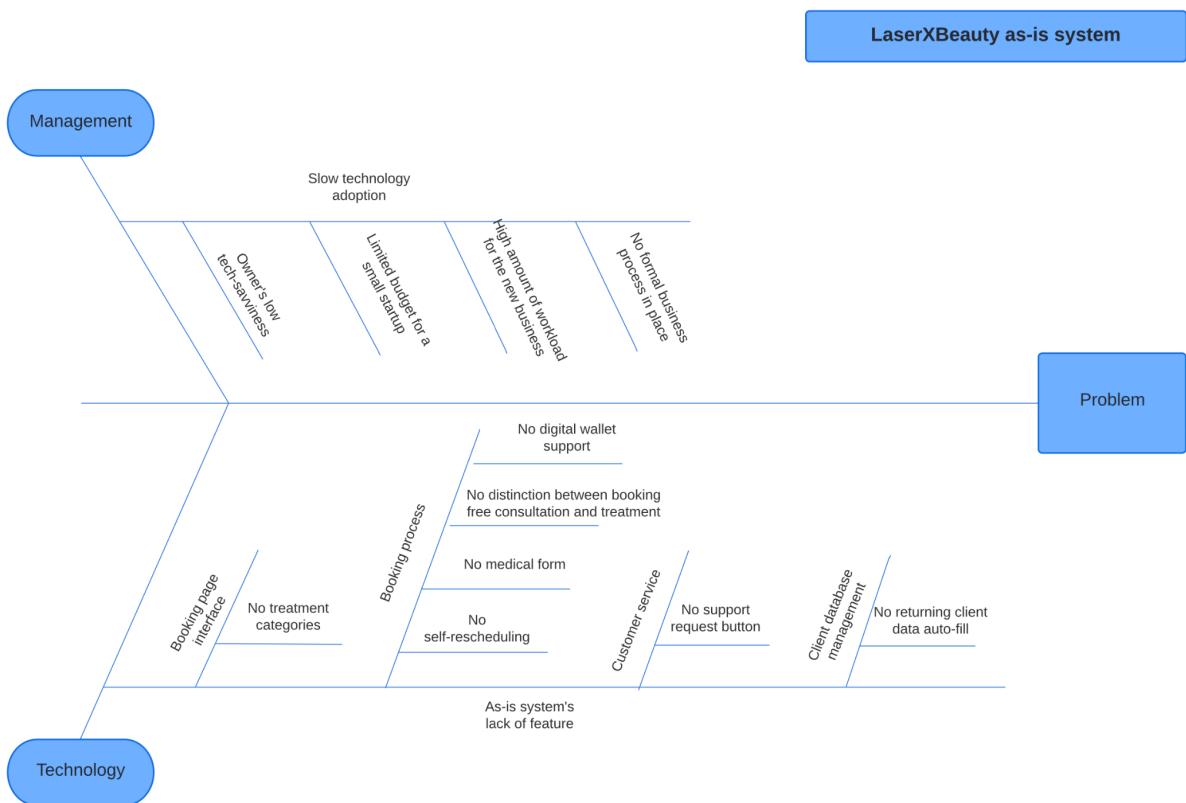
Based on our understanding of the business and what we gathered from the interview with the business owner, these are the list of major problems the business is facing with its IS.

#	Problems	Problems Descriptions and Causes
1	Slow technology adoption	<p>The owner is not familiar with IS. Also, the business is not busy at the moment and is still in development, which gives her less incentive to pursue a new IS.</p> <p>Therefore, the IS must be user-friendly and have a proper training plan for the owner.</p>
2	Lack of important features: <ol style="list-style-type: none"> <li>1. Booking page:               <ul style="list-style-type: none"> <li>• No treatment categories on the booking page</li> </ul> </li> <li>2. Booking process</li> </ol>	<p>Current IS (Acuity Scheduling) itself as it is more of an “add-on” rather than a standalone CRM for a medical spa. Therefore, its functionality is quite limited, especially for this business domain:</p> <ul style="list-style-type: none"> <li>• <b>No treatment categories on the booking page:</b> The booking page is complex with 15</li> </ul>

	<ul style="list-style-type: none"> <li>• Clients can't reschedule appointments by themselves</li> <li>• Do not have a medical form to sign</li> <li>• No distinction between the free consultation and treatments</li> <li>• Do not support digital wallets</li> </ul> <p>3. Communication/Customer service</p> <ul style="list-style-type: none"> <li>• Lack of the support request button</li> </ul> <p>4. Client database management:</p> <ul style="list-style-type: none"> <li>• Returning client data is not auto-filled when the business owner books them on the system</li> </ul>	<p>treatments on one page.</p> <p>There is no section divider between service groups, such as Book a Free Consultation, Skin treatments, Fat Melting treatments, etc.</p> <p>Furthermore, most treatments sound very similar, they need better descriptions so that clients know what they are getting for each one.</p> <ul style="list-style-type: none"> <li>• <b>Clients can't reschedule appointments by themselves:</b> The as-is client account can only save basic contact information and credit cards. If clients want to reschedule or cancel appointments (must be at least 48 hours in advance), clients must contact the business owner, which is inconvenient for both parties.</li> <li>• <b>Do not have a medical form to sign:</b> The business owner needs to manually send the medical form either via email or in person, instead of being able to ask clients to sign when they sign up for their accounts.</li> <li>• <b>Lack of the support request button:</b> If clients need support, they have to either call or email the spa with their phone/email. There is no Support button that allows clients to send a quick email without opening their emails.</li> <li>• <b>No distinction between free consultation and treatments:</b> It's difficult to find Book a Consultation as it got mixed up with other beauty treatments on the booking page. Also, the initial consultation should be free thus having a different booking process. However, currently, it is treated as a regular treatment which requires clients to pay a deposit of \$50.</li> <li>• <b>Do not support digital wallets:</b> The system only accepts cards and PayPal.</li> </ul>
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		<ul style="list-style-type: none"> <li><b>Returning client data is not auto-filled when the business owner books them on the system:</b> When booking a returning client, the business owner can't search them in the database and select them. Instead, she has to manually input their information.</li> </ul>
3	Limited budget	Due to small business size and human capacity, the IS must be affordable. To make it possible, superfluous features should be skipped to save the budget for key features only.

Visualization of LaserXBeauty's current problems utilizing the fishbone diagram:



Consequences:

- Impact business growth and scalability, especially when the business gets busy with more clients and employees.
  - The business expects to serve 6-7 clients and an average of 20-30 emails/phone calls daily after 6 months. With the current system, the business owner can only

handle 2-3 clients per day and 10-15 emails/phone calls per day on average, which is **around 50-70% potential revenue loss**.

- The reason for that is it takes a lot of time to contact clients and manually input their information into the system. Most of the time, new clients don't book treatments right away. Instead, they'd prefer having a consultation first and then deciding if they want to have a treatment with LaserXBeauty or not. As a result, from 10 phone calls, only 2-3 can actually become customers. Therefore, the system must be built to support a high volume of customer data.
- Prone to human error due to manual input and limitations of technology.
- Decrease client satisfaction, increase operational costs and profit loss due to poor online booking experience and risk of mistracking and mismanagement.
  - According to a small survey, 50% of owner's friends find it difficult to find a free consultation and treatments they want on the booking page.

Opportunities:

- Business scale as more clients come and more tasks can be automated providing the owner can utilize the IS fluently and take advantage of it.
  - Fully support the expected volume of customers (6-7 clients and an average of 20-30 emails/phone calls daily) after 6 months.
- Improve customer services, and reduce business opportunity loss caused by the booking system's inconvenience.
  - We are hoping to decrease the level of dissatisfaction with the booking page from 50% to 15% in the next customer survey after 6 months.
- Business process automation helps reduce errors due to manual input.
- Simplify business operations with a one-stop platform for all booking, client, and communication tasks.

### **5.3 Proposed solution and underlying technology:**

Based on our analysis, we decided to switch from Squarespace's default add-on Acuity Scheduling to a custom-made booking system with these following technologies:

- Front-end: React, utilizing Javascript

- Back-end: Nodejs, utilizing Javascript
- Database: SQL Server Express
- Server: Rent on AWS or Azure or similar

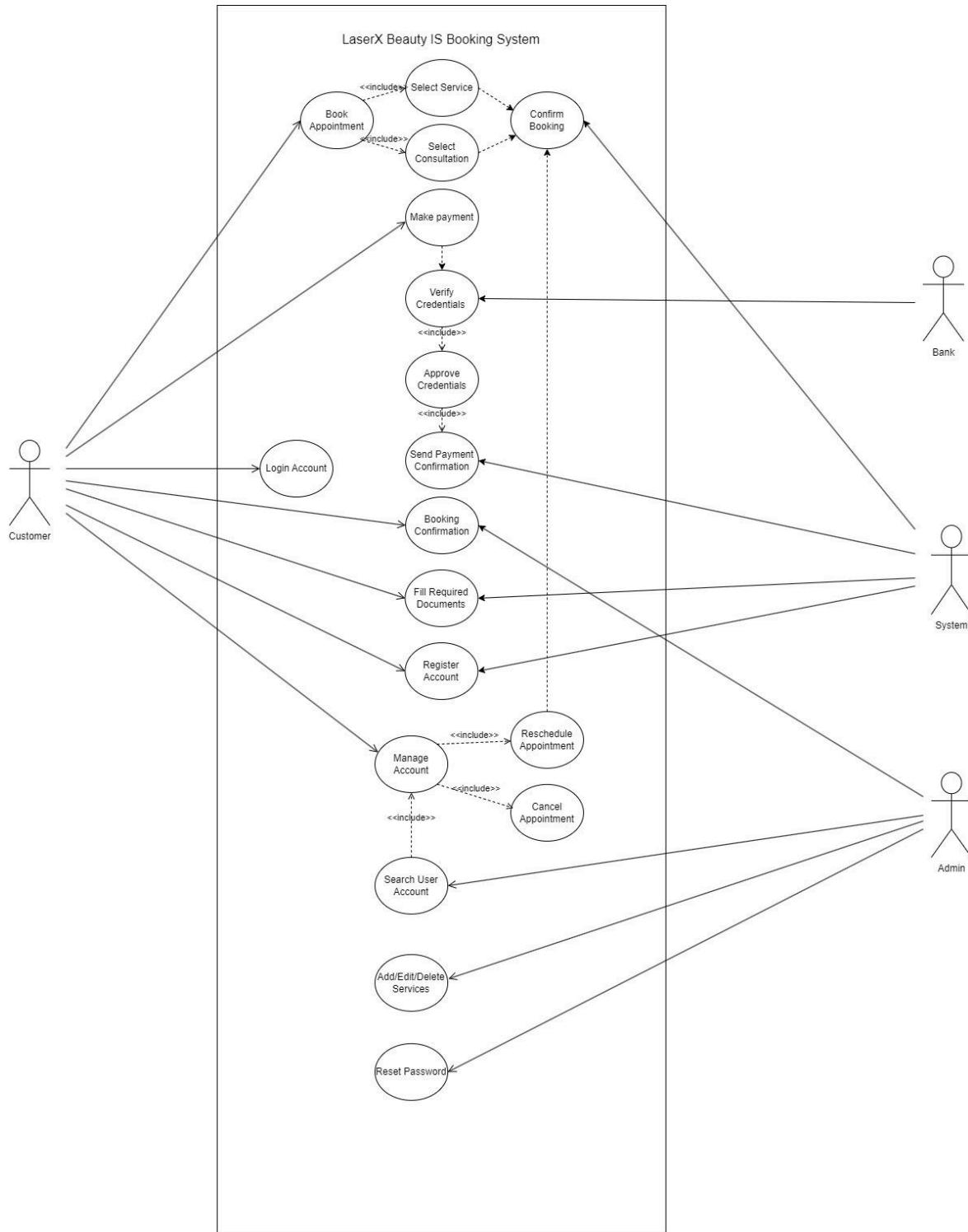
The reasons why we recommend custom-made system over off-the-shelf add-in like

Squarespace's Acuity Scheduling:

- Needs: Custom-made is well tailored to exactly what the business owner needs. On the other hand, the off-the-shelf, while it may help save time in deploying, is less intuitive and doesn't offer all features the business owner needs/includes superfluous features the business doesn't need.
- Security: As being a professional medical business, client confidentiality and privacy are of the utmost importance. Entrusting 3rd party systems for data management means the business assumes their partners do their own due diligence not using the business data for their own advantage. Therefore, it's more secure for a medical business like LaserXBeauty to build their own system for managing sensitive data. While we still utilize a third-party cloud like AWS or Azure, this approach ensures greater security compared to relying solely on one third-party provider.
- Cost: Custom-made costs more in the beginning, but it might be more cost effective in the long term. For an off-the-shelf SaaS booking system - subscription based that supports features LaserXBeauty needs, it would cost \$100-\$150 per month to begin with, and would increase in the future as the business grows. On the other hand, the custom-made system is a one time investment, that would cost around \$1000 to begin with, and \$70-\$100 for monthly server rental on AWS or Azure.
  - To help save development costs, we will outsource the system development part to a freelancer on Fiverr, preferably freelancers not based in Canada.
  - Instead of coding the system from scratch, the freelancer can utilize a pre-built open-source booking system source code, customize it and add HTML GUI as designed on Figma.
  - We expect this can be done by 1 developer based in India within 1-2 weeks.

## 6. Requirement Specification & Modeling

### 6.1. Use Case Model (future requirements)



## 6.2. Use Case Descriptions

<b>Use Case ID:</b>	1
<b>Use Case Name:</b>	User Registration
<b>Business Actor:</b>	Customer
<b>Description:</b>	Customers register on the system by providing personal information, contact details, and creating a secure login.
<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- Users should be informed of the required information to sign up for LaserX</li> <li>- Users should be able to access user registration easily through the LaserX website</li> </ul>
<b>Postconditions:</b>	<ul style="list-style-type: none"> <li>- Users should be granted immediate access to their account after registration</li> <li>- Users should be able to view account settings and information</li> <li>- Users should be directed to the frontpage of LaserXBeauty after user registration</li> </ul>
<b>Performance Goal:</b>	Efficiently gather customer data and allow them to book appointments for LaserXBeauty
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- User opens website</li> <li>- User clicks on user registration at the front page</li> <li>- After registration the user is redirected to the front page while logged into their account</li> </ul>
<b>Alternative Workflow:</b>	<ul style="list-style-type: none"> <li>- If an email or phone number is already in use then reject the user registration and display a message that the credentials are already taken</li> </ul>

<b>Frequency of use:</b>	Every time there is a new online customer
<b>Assumptions:</b>	<p>Users have an email or phone number</p> <p>Users have a device to access the website with</p> <p>Users have an internet connections</p>

<b>Use Case ID:</b>	2
<b>Use Case Name:</b>	Manage Profile
<b>Business Actor:</b>	Customers, System
<b>Description:</b>	Customers can update their profile information, such as contact details or preferences, ensuring accurate and up-to-date records.
<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- Customer has already created an account</li> </ul>
<b>Postconditions:</b>	<ul style="list-style-type: none"> <li>- Changes made to the account should be saved onto the system</li> </ul>
<b>Performance Goal:</b>	<ul style="list-style-type: none"> <li>- Allow the customer to easily make changes to their information that LaserXBeauty uses</li> </ul>
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer logs in</li> <li>- Customer opens profile settings</li> <li>- Customer makes changes to settings</li> <li>- Customer saves changes</li> <li>- Changes are updated in the system</li> </ul>

<b>Alternative Workflow:</b>	<ul style="list-style-type: none"> <li>- User changes are incompatible or insufficient and is not allowed to save the changes</li> <li>- No changes are made and user backs out of the manage profile page</li> </ul>
<b>Frequency of use:</b>	Whenever a user needs to make adjustments
<b>Risks:</b>	Customer login is compromised.
<b>Assumptions:</b>	<p>User already has an existing LaserXBeauty account</p> <p>Users have an email or phone number</p> <p>Users have a device to access the website with</p> <p>Users have an internet connections</p>

<b>Use Case ID:</b>	3
<b>Use Case Name:</b>	Admin Access, System
<b>Business Actor:</b>	Business Owner
<b>Description:</b>	Administrators log in to the system to manage spa professional availability, update service details, and handle any reported issues or disputes, add, modify and search user accounts as well as reset passwords.
<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- Administrator has already set up and created an administrator account</li> </ul>

<b>Postconditions:</b>	<ul style="list-style-type: none"> <li>- Changes made by the administrator is saved onto the system</li> </ul>
<b>Performance Goal:</b>	<ul style="list-style-type: none"> <li>- To easily and efficiently make changes to LaserXBeauty website information or any information pertaining to LaserXBeauty customers or bookings</li> </ul>
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- Administrator goes into the LaserXBeauty page</li> <li>- Administrator logs into LaserXBeauty site using an administrator account</li> <li>- Administrator views or makes changes to bookings, customer information on the LaserXBeauty website, such as their offerings</li> <li>- Changes are saved onto the system</li> </ul>
<b>Alternative Workflow:</b>	<ul style="list-style-type: none"> <li>- Administrator account login fails due to insufficient credentials and is brought back to the login page</li> <li>- Changes made to customer information are insufficient and the administrator cannot save it to the system.</li> </ul>
<b>Frequency of use:</b>	Whenever the owner or employees of LaserXBeauty need to access the website.
<b>Risks:</b>	<ul style="list-style-type: none"> <li>- Administrator account information is compromised, making the website unsafe.</li> </ul>
<b>Assumptions:</b>	<p>Administrators have a device to access the website</p> <p>Administrators have internet access</p>

<b>Use Case ID:</b>	4
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<b>Use Case Name:</b>	User Login
<b>Business Actor:</b>	Customer, System
<b>Description:</b>	Users log in securely using their credentials to access the system based on their roles (customer or administrator).
<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- User already has an existing LaserXBeauty account</li> </ul>
<b>Postconditions:</b>	<ul style="list-style-type: none"> <li>- User is brought to the front page of LaserXBeauty after login</li> </ul>
<b>Performance Goal:</b>	Allows customers easy and efficient access to LaserXBeauty services with their required personal information already ready for use.
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- User opens LaserXBeauty website</li> <li>- User goes to login page</li> <li>- User Logs in</li> </ul>
<b>Alternative Workflow:</b>	<ul style="list-style-type: none"> <li>- Account credentials are inputted incorrectly which will display an incorrect log-in message and take them back to the log-in screen</li> </ul>
<b>Frequency of use:</b>	Every time a user would like to log into the LaserXBeauty website
<b>Risks:</b>	User account login credentials are compromised
<b>Assumptions:</b>	<p>User has a device to access the LaserXBeauty website</p> <p>User has an internet connection</p> <p>User has a LaserXBeauty account</p>

<b>Use Case ID:</b>	5
<b>Use Case Name:</b>	Browse Services
<b>Business Actor:</b>	Customer
<b>Description:</b>	Customers navigate through the system to view available medical spa services, including detailed descriptions, prices, and any associated promotions.
<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- Customer has created a LaserXBeauty account</li> <li>- Customer has logged into their LaserXBeauty account</li> </ul>
<b>Postconditions:</b>	N/A
<b>Performance Goal:</b>	Allows customers to easily look through the services provided by LaserXBeauty
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer Logs into their LaserXBeauty account</li> <li>- Customer goes to the services page to look at LaserXBeauty services</li> </ul>
<b>Alternative Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer fails to login and is sent back to the login page</li> </ul>
<b>Frequency of use:</b>	<ul style="list-style-type: none"> <li>- Every time a customer is looking at services or wants to book a service with LaserXBeauty</li> </ul>
<b>Risks:</b>	<ul style="list-style-type: none"> <li>- Customer browses services that may be unavailable at the time</li> </ul>
<b>Assumptions:</b>	Customer can access the LaserXBeauty website with a device

	<p>Customer has internet connection</p> <p>Customer has a LaserXBeauty account</p> <p>LaserXBeauty services are all working and available</p>
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<b>Use Case ID:</b>	6
<b>Use Case Name:</b>	Schedule Appointment
<b>Business Actor:</b>	Customer, System
<b>Description:</b>	Customers select a preferred service, date, and time for their appointment, checking the availability of spa professionals in real-time.
<b>Preconditions:</b>	<p>Customer has a LaserXBeauty account</p> <p>Customer has browsed LaserXBeauty services</p>
<b>Postconditions:</b>	<ul style="list-style-type: none"> <li>- Appointment is booked and saved by the system</li> <li>- LaserXBeauty employees prepare to give service to the customer at the designated appointment time</li> </ul>
<b>Performance Goal:</b>	<ul style="list-style-type: none"> <li>- Allow customers to efficiently book appointments with LaserXBeauty online</li> </ul>
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer logs into LaserXBeauty</li> <li>- Customer browses and selects a service or consultation with LaserXBeauty</li> <li>- Customer picks a time and day for their service or consultation</li> <li>- The appointment is scheduled by the customer and is saved by the system as well as alerting LaserXBeauty staff</li> </ul>

<b>Alternative Workflow:</b>	<ul style="list-style-type: none"> <li>- Services or consultation is unavailable at the selected time and date so the customer cannot select it</li> <li>- Customer fails to log in and is shown a login failed message then sent back to the login page</li> </ul>
<b>Frequency of use:</b>	<ul style="list-style-type: none"> <li>- Every time a customer would like to book an appointment online</li> </ul>
<b>Risks:</b>	<ul style="list-style-type: none"> <li>- Customers book appointments but do not show up to them in person without canceling</li> </ul>
<b>Assumptions:</b>	LaserX services are all operational and working as expected

<b>Use Case ID:</b>	7
<b>Use Case Name:</b>	Confirm Booking
<b>Business Actor:</b>	Customer, System
<b>Description:</b>	After selecting the desired appointment details, customers review and confirm the booking, receiving a confirmation notification with appointment details
<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- Customer has logged into LaserXBeauty website</li> <li>- Customer has picked a service and appointment</li> </ul>
<b>Postconditions:</b>	<ul style="list-style-type: none"> <li>- The appointment is saved on the system and LaserXBeauty staff are alerted of the appointment</li> </ul>
<b>Performance Goal:</b>	<ul style="list-style-type: none"> <li>- Allowing customers to easily confirm their booking with LaserXBeauty</li> </ul>

<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer logs into LaserXBeauty</li> <li>- Customer selects service or consultation</li> <li>- Customer selects date and time</li> <li>- Customer confirms their booking</li> <li>- Booking is saved onto the system and LaserXBeauty staff are alerted</li> </ul>
<b>Alternative Workflow:</b>	<ul style="list-style-type: none"> <li>- Appointment becomes unavailable before confirmation and the customer can no longer confirm their appointment and is brought back to the appointment scheduling page.</li> </ul>
<b>Frequency of use:</b>	<ul style="list-style-type: none"> <li>- Every time a customer would like to book an appointment</li> </ul>
<b>Assumptions:</b>	<ul style="list-style-type: none"> <li>- Customer has internet access</li> <li>- Customer has a device to access LaserXBeauty</li> </ul>

<b>Use Case ID:</b>	8
<b>Use Case Name:</b>	Cancel Appointment
<b>Business Actor:</b>	Customer, System
<b>Description:</b>	Customers cancel an existing appointment, providing a reason if desired, and receive confirmation of the cancellation.
<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- Customer has already booked an appointment with LaserXBeauty</li> </ul>
<b>Postconditions:</b>	<ul style="list-style-type: none"> <li>- Appointment is canceled and saved by the system and alerts LaserXBeauty employees</li> </ul>

<b>Performance Goal:</b>	<ul style="list-style-type: none"> <li>- Allows customers to easily cancel appointments with LaserXBeauty without having to take up time talking to employees</li> </ul>
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer logs into LaserXBeauty</li> <li>- Customer goes to their scheduled appointments page</li> <li>- Customer selects the appointment they wish to cancel</li> <li>- Customer selects the cancellation option and fills out the cancellation form</li> <li>- Customer submits cancellation</li> <li>- System sends customer a cancellation confirmation after the cancellation is updated in the system and alerts LaserXBeauty staff</li> </ul>
<b>Alternative Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer is unable to cancel appointment, as it is too close to the appointment time and day and the cancellation option isn't available</li> </ul>
<b>Frequency of use:</b>	<ul style="list-style-type: none"> <li>- When customers need to cancel or change appointments</li> </ul>
<b>Risks:</b>	<ul style="list-style-type: none"> <li>- Customers cancel appointments too frequently</li> </ul>

<b>Use Case ID:</b>	9
<b>Use Case Name:</b>	Manage appointments
<b>Business Actor:</b>	Customer
<b>Description:</b>	Customers access a history of past and upcoming appointments, including details such as date, time, and service received.

<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- Customer has an account</li> <li>- Customer has appointments booked</li> </ul>
<b>Postconditions:</b>	<ul style="list-style-type: none"> <li>- Changes made to appointments are saved on the system</li> </ul>
<b>Performance Goal:</b>	<ul style="list-style-type: none"> <li>- Allow customers to check on their appointments easily without having to call and communicate with employees</li> </ul>
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer logs into LaserXBeauty website</li> <li>- Customer navigates to the manage appointments page</li> </ul>
<b>Alternative Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer has no appointments book so there is nothing to manage on the manage appointments page</li> </ul>
<b>Frequency of use:</b>	<ul style="list-style-type: none"> <li>- Somewhat frequent, whenever a customer wants to check appointment schedule or to manage appointments</li> </ul>
<b>Risks:</b>	<ul style="list-style-type: none"> <li>- Customer accidentally mismanaging their appointment</li> </ul>
<b>Assumptions:</b>	<ul style="list-style-type: none"> <li>- Customer has a device to access the LaserXBeauty</li> </ul>

<b>Use Case ID:</b>	10
<b>Use Case Name:</b>	Send Support Request
<b>Business Actor:</b>	Customer, System
<b>Description:</b>	Customers can access a customer service page to submit and file any issues or disputes to the administrators or employees of LaserXBeauty as well as find contact information for one to one customer service with LaserXBeauty for any issues and disputes.

<b>Postconditions:</b>	<ul style="list-style-type: none"> <li>- LaserXBeauty follows up on issues or disputes filed by customers</li> </ul>
<b>Performance Goal:</b>	<ul style="list-style-type: none"> <li>- Allowing for easy and efficient customer service with LaserXBeauty customers</li> </ul>
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer goes into LaserXBeauty website</li> <li>- Customer goes on the customer support page</li> <li>- Customer fills out the form and submits a dispute or looks at contact information</li> <li>- Dispute is saved on LaserXBeauty system and sent to LaserXBeauty staff</li> <li>- Dispute confirmation message is sent to customer</li> </ul>
<b>Alternative Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer does not fill out the required fields for the dispute request so the website does not permit them to submit the dispute</li> </ul>
<b>Frequency of use:</b>	<ul style="list-style-type: none"> <li>- Whenever a customer needs help with an issue pertaining to LaserXBeauty</li> </ul>
<b>Risks:</b>	<ul style="list-style-type: none"> <li>- Customers may send requests in hopes of getting free services</li> </ul>
<b>Assumptions:</b>	<ul style="list-style-type: none"> <li>- Customer has had prior appointments or experiences with LaserX for them to send support requests about</li> </ul>

<b>Use Case ID:</b>	11
<b>Use Case Name:</b>	User Requirements, System

<b>Business Actor:</b>	Customer
<b>Description:</b>	Customers can upload and fill out required documents for services done by LaserXBeauty as well as agree to the LaserXBeauty deposit policy
<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- Customer has set up a LaserXBeauty account</li> </ul>
<b>Postconditions:</b>	<ul style="list-style-type: none"> <li>- Customer will now be able to easily book services and consultation appointments</li> </ul>
<b>Performance Goal:</b>	<ul style="list-style-type: none"> <li>- Easily and efficiently gather required documentation to proceed with LaserXBeauty services</li> </ul>
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer creates LaserXBeauty account</li> <li>- Customer goes to account requirements page</li> <li>- Customer uploads or fills out required documentation</li> <li>- Customer agrees to the LaserXBeauty policy</li> </ul>
<b>Alternative Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer declines deposit policy and cannot proceed to book LaserXBeauty services</li> <li>- Customer does not fill out required documentation and cannot proceed to book LaserXBeauty services</li> </ul>
<b>Frequency of use:</b>	<ul style="list-style-type: none"> <li>- Whenever a customer creates a LaserXBeauty account</li> </ul>
<b>Risks:</b>	<ul style="list-style-type: none"> <li>- Document is uploaded but it is the incorrect document or formatted incorrectly</li> </ul>
<b>Assumptions:</b>	<ul style="list-style-type: none"> <li>- Customer has the required documentation to proceed with LaserXBeauty</li> </ul>

<b>Use Case ID:</b>	12
<b>Use Case Name:</b>	Notifications
<b>Business Actor:</b>	Customer, System
<b>Description:</b>	The system sends automated notifications to customers, reminding them of upcoming appointments, providing service-related information, and notifying about any changes or promotions.
<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- Customer is signed up with LaserXBeauty on the website</li> </ul>
<b>Performance Goal:</b>	<ul style="list-style-type: none"> <li>- Easily market promotions to customers of LaserXBeauty and remind customers about appointments</li> </ul>
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- LaserX adds a promotional offer to the website</li> <li>- System notifies all customers through email and/or text</li> <li>- Customer appointment is coming up (1 week or 1 day before)</li> <li>- Customer is notified by the system through email and/or text</li> </ul>
<b>Alternative Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer has opted out of notifications so they do not receive any</li> </ul>
<b>Frequency of use:</b>	<ul style="list-style-type: none"> <li>- Whenever there is a new promotional offer or there is an upcoming appointment</li> </ul>

<b>Use Case ID:</b>	13
<b>Use Case Name:</b>	User Payment

<b>Business Actor:</b>	Customer, Bank
<b>Description:</b>	Customers make secure payments for their booked services through the integrated payment system, which is linked to the bank.
<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- An appointment must be booked by the customer beforehand</li> </ul>
<b>Postconditions:</b>	<ul style="list-style-type: none"> <li>- The payment is accepted and money is transferred to LaserXBeauty</li> </ul>
<b>Performance Goal:</b>	<ul style="list-style-type: none"> <li>- To authorize payments from customers to LaserXBeauty</li> </ul>
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer makes a payment</li> <li>- Bank checks payment credentials</li> <li>- Bank authorizes payment</li> <li>- Payment is approved</li> </ul>
<b>Alternative Workflow:</b>	<ul style="list-style-type: none"> <li>- Payment is declined by the bank and shows a declined message to the customer</li> </ul>
<b>Frequency of use:</b>	<ul style="list-style-type: none"> <li>- Used for every transaction with LaserXBeauty</li> </ul>
<b>Risks:</b>	Customer payment credentials getting stolen from LaserXBeauty
<b>Assumptions:</b>	<ul style="list-style-type: none"> <li>- Customer is can facilitate online banking and transactions</li> </ul>

<b>Use Case ID:</b>	14
<b>Use Case Name:</b>	View payment history

<b>Business Actor:</b>	Customer
<b>Description:</b>	Customers access a history of their payment transactions, including dates, amounts, and services paid for.
<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- There is a history of payments on the customers account</li> </ul>
<b>Performance Goal:</b>	<ul style="list-style-type: none"> <li>- Easily find receipts for transactions with LaserXBeauty</li> </ul>
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer logs into LaserXBeauty</li> <li>- Customer goes to view payments page</li> </ul>

<b>Use Case ID:</b>	15
<b>Use Case Name:</b>	Verify Payment
<b>Business Actor:</b>	Bank
<b>Description:</b>	Bank verifies that the payment made by the customer is authentic
<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- A payment is in progress from the customer to LaserXBeauty</li> </ul>
<b>Performance Goal:</b>	<ul style="list-style-type: none"> <li>- To make sure payments are authentic</li> </ul>
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- Bank receives pending payment</li> <li>- Bank verifies the credentials of the payment</li> <li>- Bank approves of the payment</li> </ul>

<b>Alternative Workflow:</b>	<ul style="list-style-type: none"> <li>- Bank declined payment and does not allow it to go through</li> </ul>
<b>Frequency of use:</b>	<ul style="list-style-type: none"> <li>- Every transaction made at LaserXBeauty</li> </ul>

<b>Use Case ID:</b>	16
<b>Use Case Name:</b>	Send Payment Confirmation
<b>Business Actor:</b>	Bank, System
<b>Description:</b>	Bank sends the payment confirmation to LaserXBeauty so that the payment can be authenticated and approved
<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- Bank must have already verified the transaction and approved the payment</li> </ul>
<b>Postconditions:</b>	<ul style="list-style-type: none"> <li>- Payment from customer to LaserXBeauty goes through</li> </ul>
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- Bank receives pending payment</li> <li>- Bank approves payment</li> <li>- Bank sends payment confirmation</li> </ul>
<b>Alternative Workflow:</b>	NA
<b>Frequency of use:</b>	<ul style="list-style-type: none"> <li>- Every transaction done at LaserXBeauty</li> </ul>

<b>Use Case ID:</b>	17
<b>Use Case Name:</b>	Search for user accounts.
<b>Business Actor:</b>	Admin
<b>Description:</b>	LaserXBeauty staff and administrators can search for specific users that have already created accounts on their website.
<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- Customer that is being searched must</li> </ul>
<b>Performance Goal:</b>	<ul style="list-style-type: none"> <li>- Easily and efficiently find customer information</li> </ul>
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- Administrator logs into LaserXBeauty website</li> <li>- Administrator goes to customer search page</li> <li>- Administrator searches for the desired customer</li> </ul>
<b>Alternative Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer is not on the database and must be added manually by LaserXBeauty staff or they sign up themselves</li> </ul>
<b>Frequency of use:</b>	<ul style="list-style-type: none"> <li>- Every time LaserXBeauty employees need to find information on file about a customer</li> </ul>
<b>Assumptions:</b>	<ul style="list-style-type: none"> <li>- LaserXBeauty staff have access to the website with administrator accounts</li> </ul>

<b>Use Case ID:</b>	18
<b>Use Case Name:</b>	Reset Password

<b>Business Actor:</b>	Administrator
<b>Description:</b>	Administrators can reset the password of user accounts or administrator accounts on the LaserXBeauty website through the administrative backend.
<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- Customer that is looking to get their password reset must have an existing LaserXBeauty account</li> </ul>
<b>Postconditions:</b>	<ul style="list-style-type: none"> <li>- New password is saved onto the system</li> </ul>
<b>Performance Goal:</b>	<ul style="list-style-type: none"> <li>- Help customers recover their accounts if they cannot log into them</li> </ul>
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- Administrator logs into LaserXBeauty</li> <li>- Administrator searches customer</li> <li>- Administrator resets their password</li> </ul>
<b>Alternative Workflow:</b>	<ul style="list-style-type: none"> <li>- If the new password is insufficient it will not allow the administrator to save it</li> </ul>
<b>Frequency of use:</b>	<ul style="list-style-type: none"> <li>- Whenever a customer is locked out of their LaserXBeauty account</li> </ul>

<b>Use Case ID:</b>	19
<b>Use Case Name:</b>	Change Services
<b>Business Actor:</b>	Administrator, System

<b>Description:</b>	Administrators can add, delete or change the services that are available to book for users on the LaserXBeauty website.
<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- There is a change in the services provided by LaserXBeauty</li> </ul>
<b>Postconditions:</b>	<ul style="list-style-type: none"> <li>- Changes to LaserXBeauty services are saved onto the system and updated on the website for customers to view</li> </ul>
<b>Performance Goal:</b>	<ul style="list-style-type: none"> <li>- Easily facilitate the changes made to LaserXBeauty's offering</li> </ul>
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- A service is changed, added or removed from LaserXBeauty's offering</li> <li>- Administrator logs into LaserXBeauty</li> <li>- Administrator goes to service change page</li> <li>- Administrator changes the services available at LaserXBeauty</li> <li>- Changes are saved onto the system</li> </ul>
<b>Frequency of use:</b>	<ul style="list-style-type: none"> <li>- Every time there is a change in the services of LaserXBeauty</li> </ul>

<b>Use Case ID:</b>	20
<b>Use Case Name:</b>	Select Consultation
<b>Business Actor:</b>	Customer
<b>Description:</b>	Users can select the appointment date and time and with whom they would like to do a consultation with through the LaserXBeauty website booking.
<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- Customers must have a LaserXBeauty account</li> </ul>

<b>Performance Goal:</b>	<ul style="list-style-type: none"> <li>- Easily book consultations with LaserXBeauty</li> </ul>
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer logs into LaserXBeauty</li> <li>- Customer goes to browse services page</li> <li>- Customer selects the consultation option</li> <li>- Customer finds a date and time with a LaserXBeauty employee they would like to book</li> </ul>
<b>Alternative Workflow:</b>	<ul style="list-style-type: none"> <li>- Consultation with desired date and time and employee is unavailable for selection so the customer must pick another</li> </ul>
<b>Frequency of use:</b>	<ul style="list-style-type: none"> <li>- Every time customers would like to book consultations</li> </ul>
<b>Risks:</b>	<ul style="list-style-type: none"> <li>- Booking consultations but then not booking follow up appointments for services</li> <li>- Customers not showing up for consultation appointments</li> </ul>

<b>Use Case ID:</b>	21
<b>Use Case Name:</b>	Fill documentation
<b>Business Actor:</b>	Customer, System
<b>Description:</b>	Customers can add their required documentation that is needed to use LaserX services onto the LaserXBeauty site.
<b>Preconditions:</b>	<ul style="list-style-type: none"> <li>- Customer must have signed up for a LaserXBeauty account</li> </ul>
<b>Postconditions:</b>	<ul style="list-style-type: none"> <li>- Documentation is saved to the system for further and future use</li> </ul>

<b>Performance Goal:</b>	<ul style="list-style-type: none"> <li>- Provides an easy way for customers to fill out or upload required paperwork</li> </ul>
<b>Basic Workflow:</b>	<ul style="list-style-type: none"> <li>- Customer goes to account requirements page</li> <li>- Customer uploads or fills out required documentation</li> <li>- Customer agrees to the LaserXBeauty policy</li> </ul>
<b>Alternative Workflow:</b>	<ul style="list-style-type: none"> <li>- Documentation is insufficient and cannot be saved by the customer onto the system</li> <li>- Documentation is not uploaded or filled out so customer cannot move onto the next step</li> </ul>
<b>Frequency of use:</b>	<ul style="list-style-type: none"> <li>- Every time a new customer is signed up for LaserXBeauty</li> </ul>
<b>Risks:</b>	<ul style="list-style-type: none"> <li>- Wrong documentation is uploaded</li> </ul>
<b>Assumptions:</b>	<ul style="list-style-type: none"> <li>- Customers have the required documentation to provide for LaserXBeauty</li> </ul>

## 7. Business Process Modeling (As-Is and To-Be diagrams)

### 7.1. As-Is BPMN Model Diagram (the entire actual system) - Online booking by customer and business owner:

Note: All diagrams belong to one booking system. We broke down the system to illustrate how different users log in to and use it.

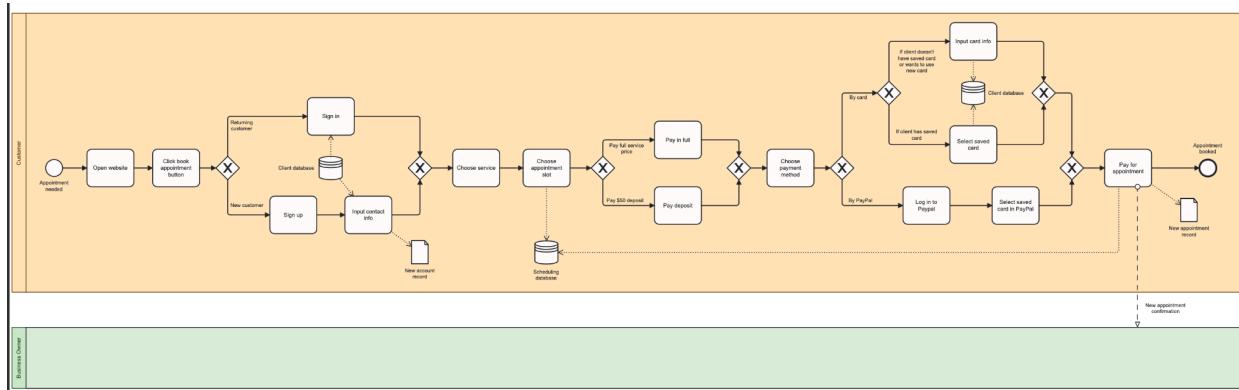
Based on the client interview, we learned that the current/as-is booking system is relatively basic:

1. Online booking by client: As LaserXBeauty is a professional medical spa, a client account on the spa's customer portal is required before booking a treatment. Once a client successfully signs in to their account, they can choose a service and see available times and dates for that service. Payment (full payment or deposit) is also required. There are 2 currently supported payment methods, which are by card and by PayPal. Once payment

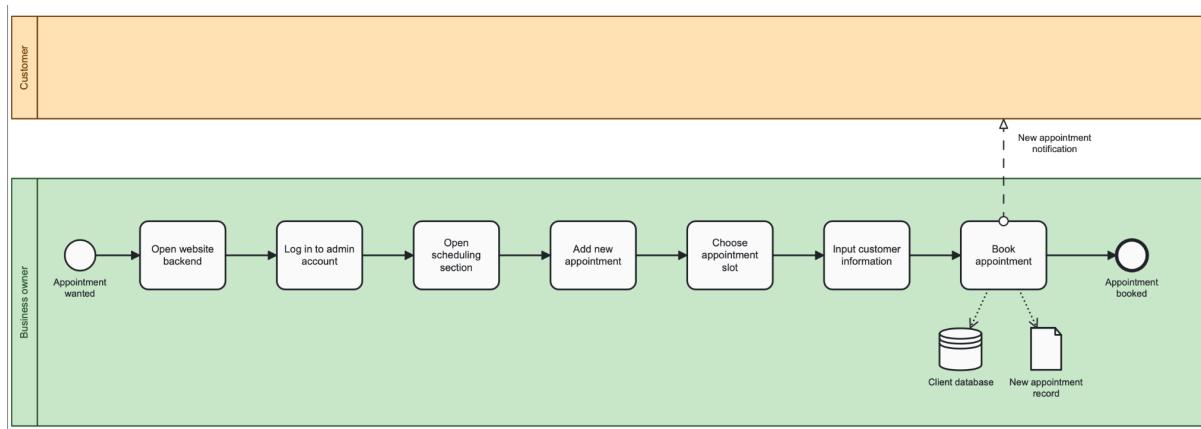
goes through, the appointment is booked and the business owner will receive a notification on their calendar.

- Online booking by business owner: Typical back-end online booking process.

### As-Is-online-booking-process-by-customer-diagram



### As-Is-online-booking-process-by-business-owner-diagram



### As-Is booking process drawbacks:

- Customer Portal:
  - Mostly used to save customer contact and payment information, it can't be repurposed for other data management tasks.
  - Does not support medical consent, which is important, when signing up online, the business owner has to ask the customer to fill out and accept the medical form manually.
  - Clients can't reschedule or cancel by themselves and must contact the business owner to do so.

2. Booking:

- No service categorization or consultation is listed together with other treatments on the booking page. This makes booking a consultation difficult, especially considering most clients need to have a consultation first before they can book a treatment.

3. Payment:

- Does not support digital wallets (Apple Pay, Google Pay, etc.)

4. Customer Support:

- No “Send support request” button. Clients need to open their own emails to send support requests to the spa.

5. Business Owner Booking:

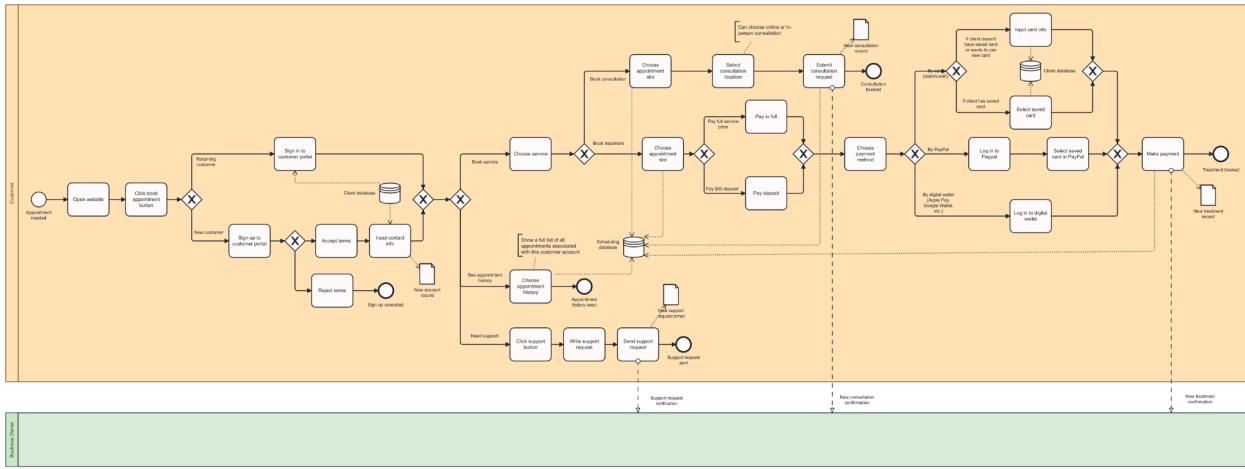
- Business owners can't use existing customer data to autofill new appointment bookings.
- Have to manually edit all appointments should the customer want to reschedule or cancel.

**7.2. To-Be BPMN diagram (the entire To-Be system) - online booking by customer and business owner + demonstration of customer portal for appointment rescheduling:**

Note: All diagrams belong to one booking system. We broke down the system to illustrate how different users log in to and use it.

Based on the drawbacks of the as-is booking process system and business owner's needs, we have redesigned the system as follows:

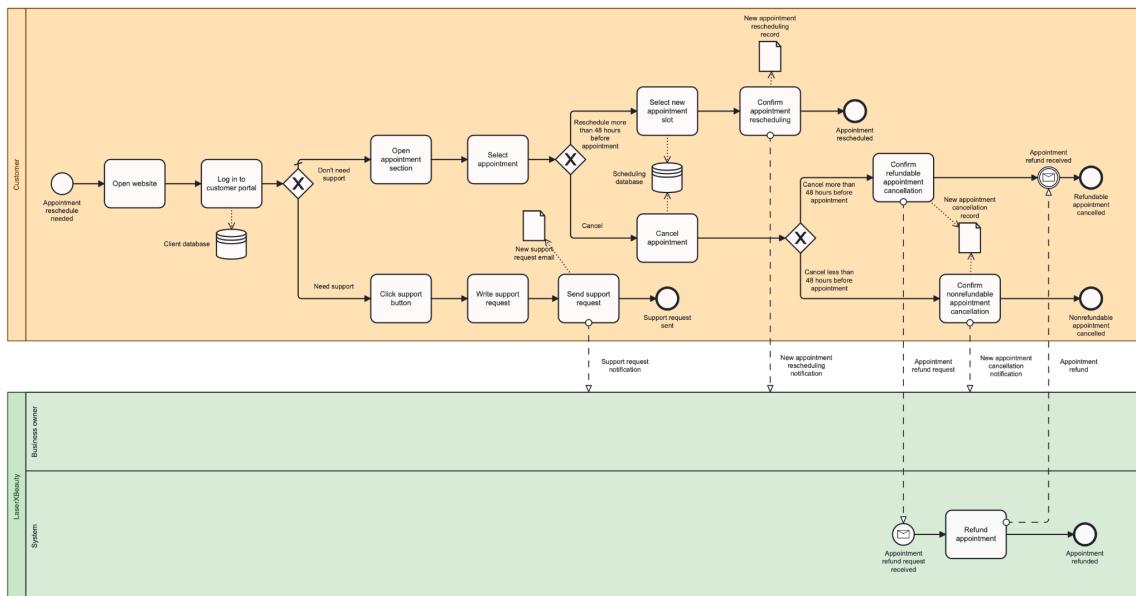
## To-Be-online-booking-process-by-customer-diagram



### Client Online Booking Process:

- The customer portal now supports medical form consent when signing up for a new account.
- Consultation is now separated from other medical treatments. Consultation can be conducted online or in person.
- Support request button is now added should the client needs support. Requests will be opened and sent to the spa's work email.
- Payment now supports digital wallets.

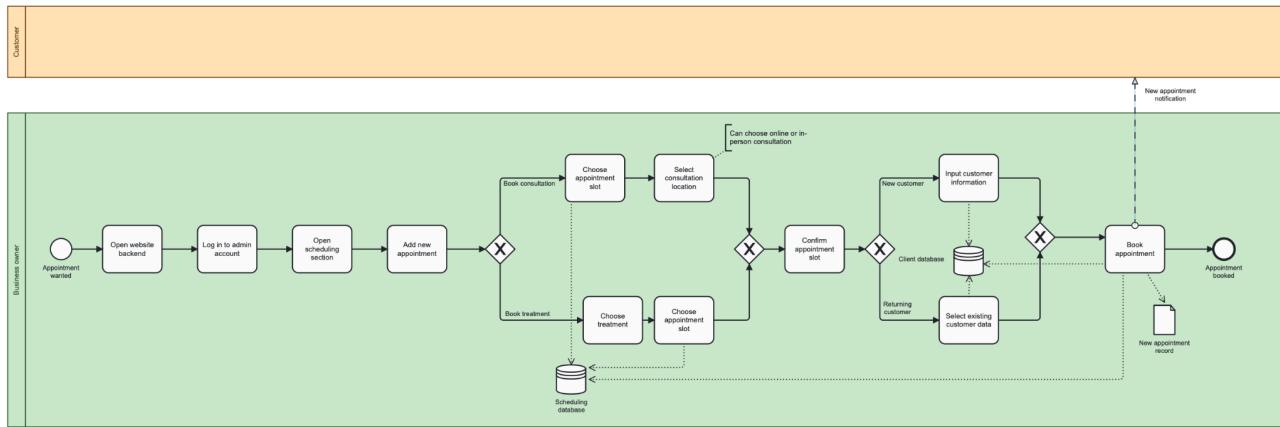
## To-Be-online-rescheduling-process-by-customer-diagram



Client Portal (broken down from the same to-be online booking by client process for better illustration)

- Better use of the customer portal: Customers now can reschedule or cancel appointments on their own through the customer portal.
- Automatic refund: Should the appointment be canceled more than 48 hours in advance, the system will automatically refund the deposit to the customer. No refund for cancellation of less than 48 hours.
- Note: Regarding rescheduling, the customer won't be allowed to self-reschedule if it is fewer than 48 hours before the appointment.

### To-Be-online-booking-process-by-business-owner-diagram

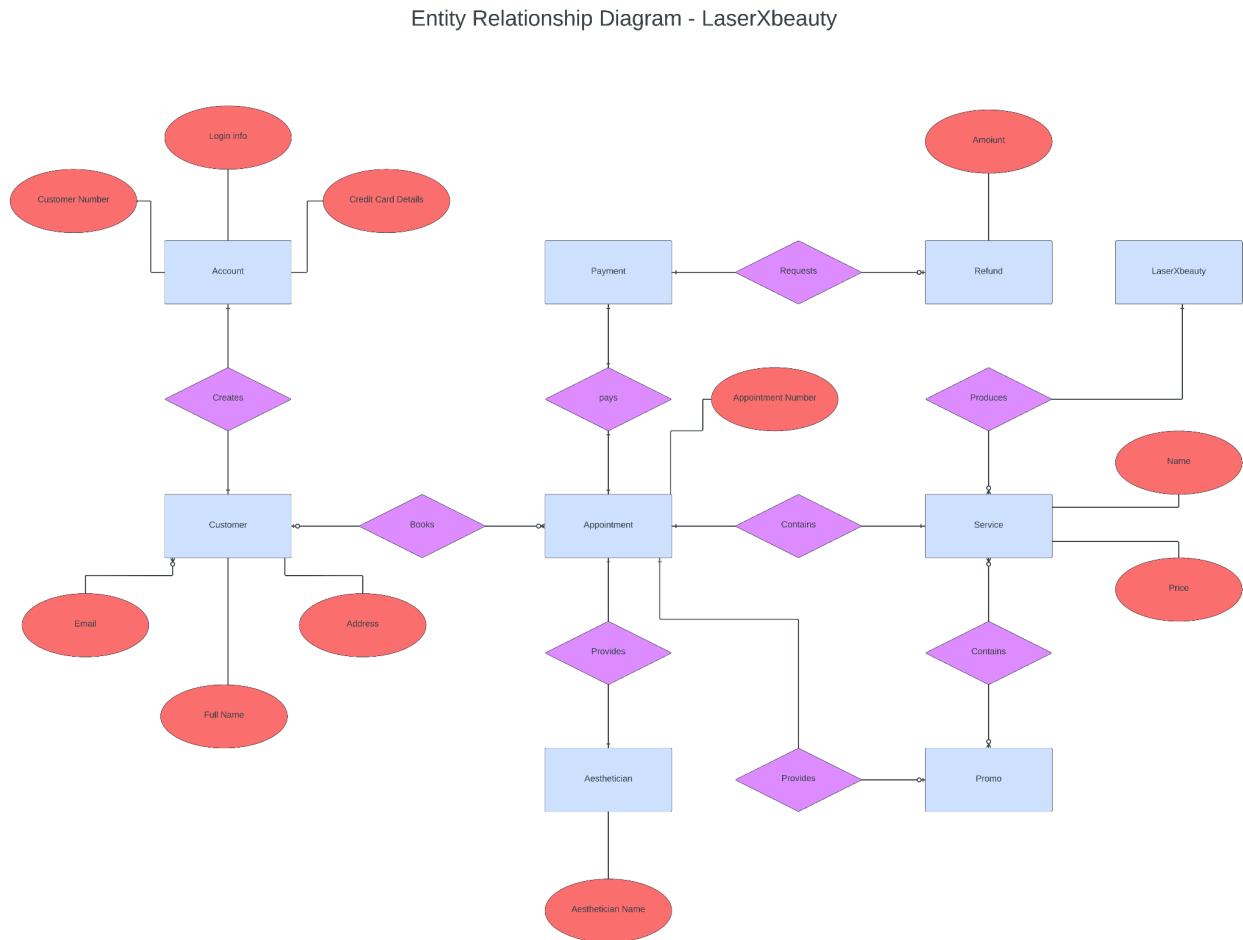


Business owner booking process:

- Similarly, business owners now can book consultations separately.
- Better use of customer data: Existing client information can be retrieved automatically by the system and populated into an appointment form, which is faster and more convenient than the old manual method.

## 8. Data Modeling & Design of the new IS solution

### 8.1. Entity Relationship Diagram (the entire To-Be system).



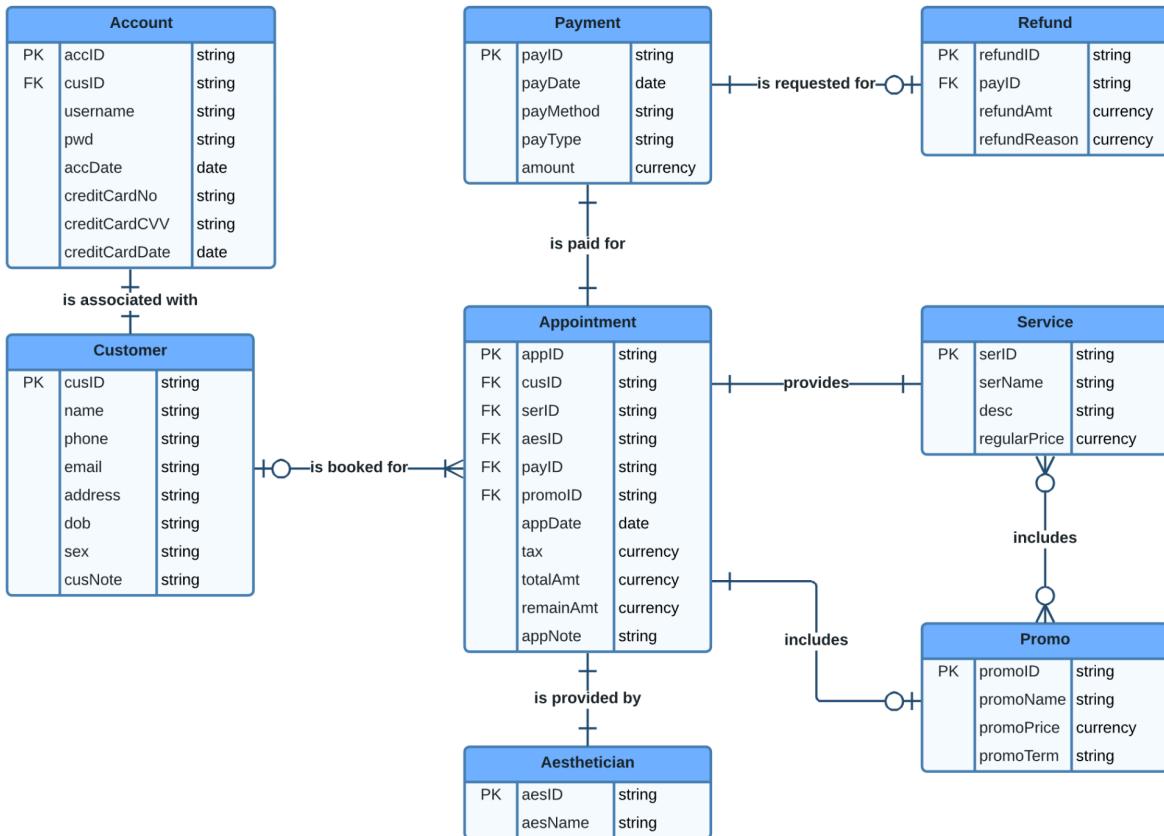
The Entity Relationship Diagram (ERD) showcases how various entities are interconnected in LaserXBeauty booking system.

1. Customer entity: hold basic contact details about the customer.
2. Account entity: holds login information and credit card details. Account is mandatory.  
Customers are required to have 1 and only 1 account.
3. Payment entity: Keeps track of payment transactions. 1 payment can only link to 1 appointment.

- a. payType attribute: Indicates either full payment or \$50 deposit. If it's \$50 deposit, the rest of the amount will be reflected in the Appointment entity, remainAmt attribute
- 4. Refund entity: Is optional. 1 payment can have only 1 or 0 refund requests.
- 5. Aesthetician entity: Is required for any appointment. 1 aesthetician can only provide 1 treatment in 1 appointment.
- 6. Service entity: includes services offered at LaserXBeauty and their details.
- 7. PromoOffering entity: is optional.
  - a. 1 service can have 0 or many promos, and 1 promos can link to 1 or many services. For example: 1 specific skin care treatment can be eligible for a 30% Mother's Day discount + an extra 10% discount if the client gives a 5-star review. On the other hand, a 30% Mother's Day discount can be applied to all skin and fat melting services.
  - b. However, only one promo (the one that has the highest value) is accepted (Offer may not be used in conjunction with any other promotional code, discount or offer).
- 8. Appointment entity: This is the core of the snowflake database schema. It links to customer, payment, aesthetician, service, and promo entities.
  - a. 1 Customer can have 1 or many appointments.
  - b. 1 payment can only link to 1 appointment.
  - c. 1 aesthetician can only provide 1 treatment in 1 appointment.
  - d. Promo with discounted service price is optional, but 1 appointment can only have 1 promo (promo has the highest value) to avoid double discount.

## 8.2. Database schema (the entire To-Be system)

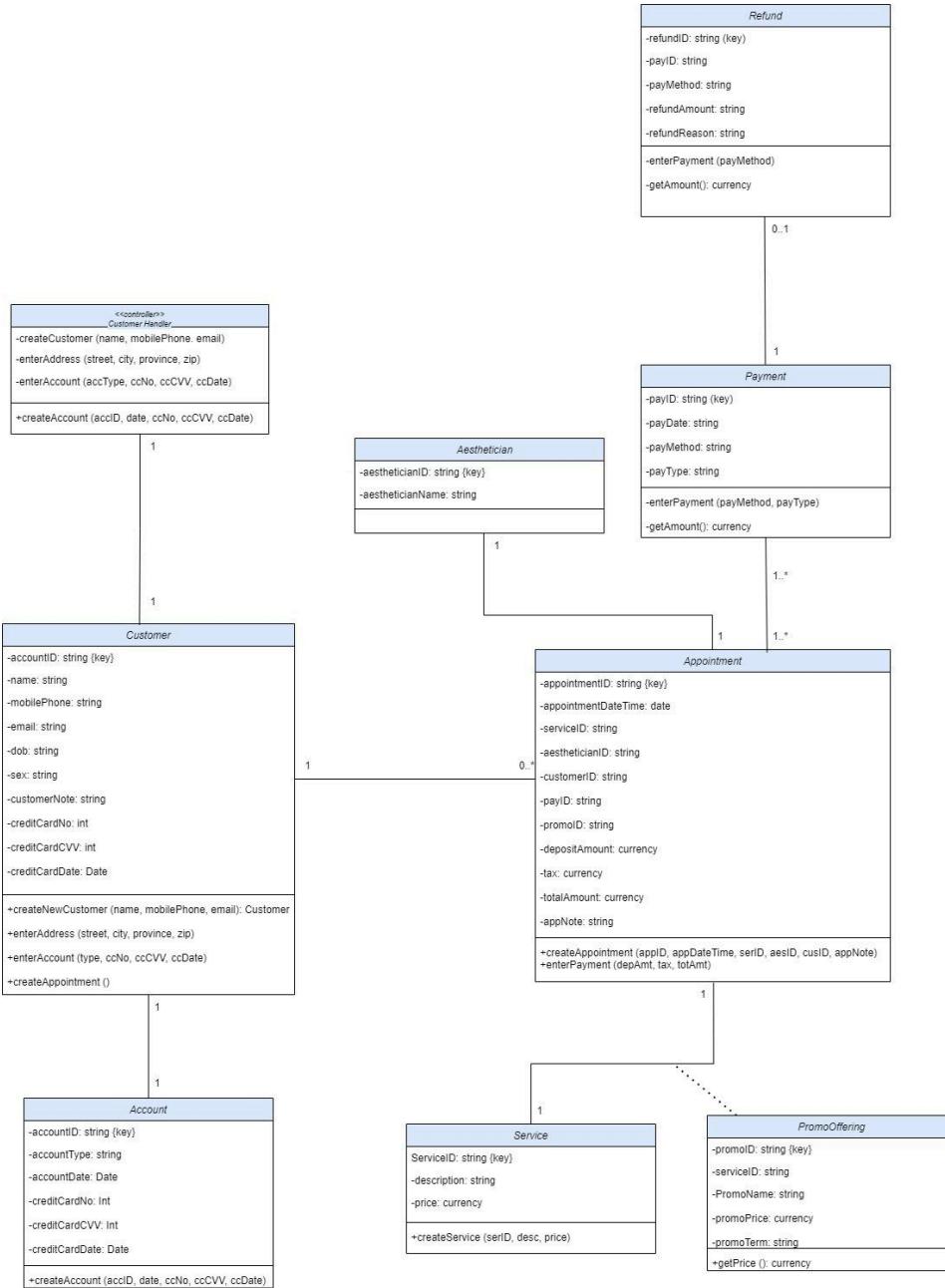
to-be-entity-relationship-diagram-booking-system



We utilize the snowflake schema, with the Appointment entity at the center of the snowflake, to increase normalization and reduce data redundancy, thereby improving the integrity of the database. This approach will benefit the business in the long term as the database scales with the growth of the business.

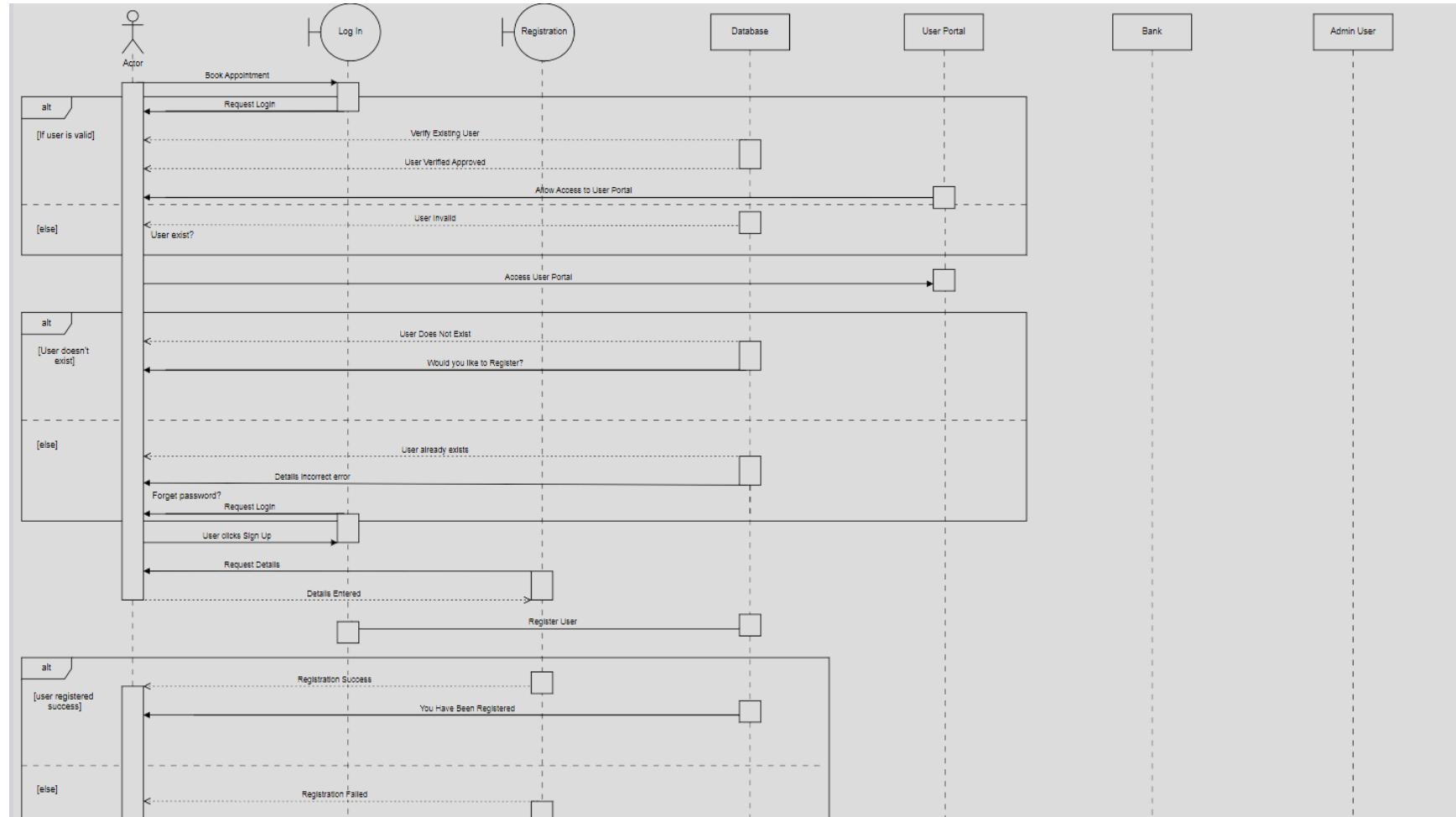
## 9. Structural & Behavioral Design of the new IS solution

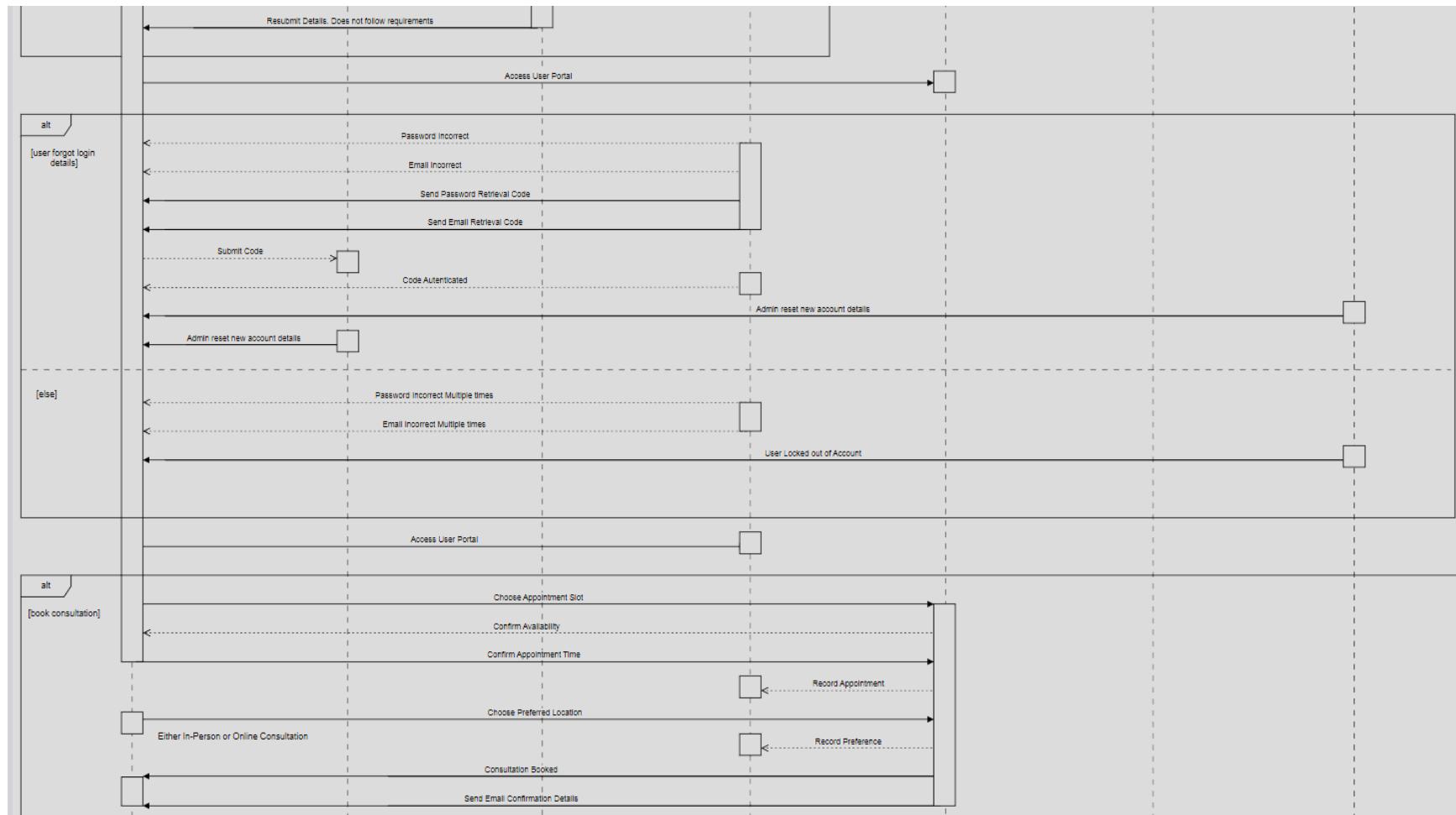
### 9.1. Class Diagram (the entire To-Be system)

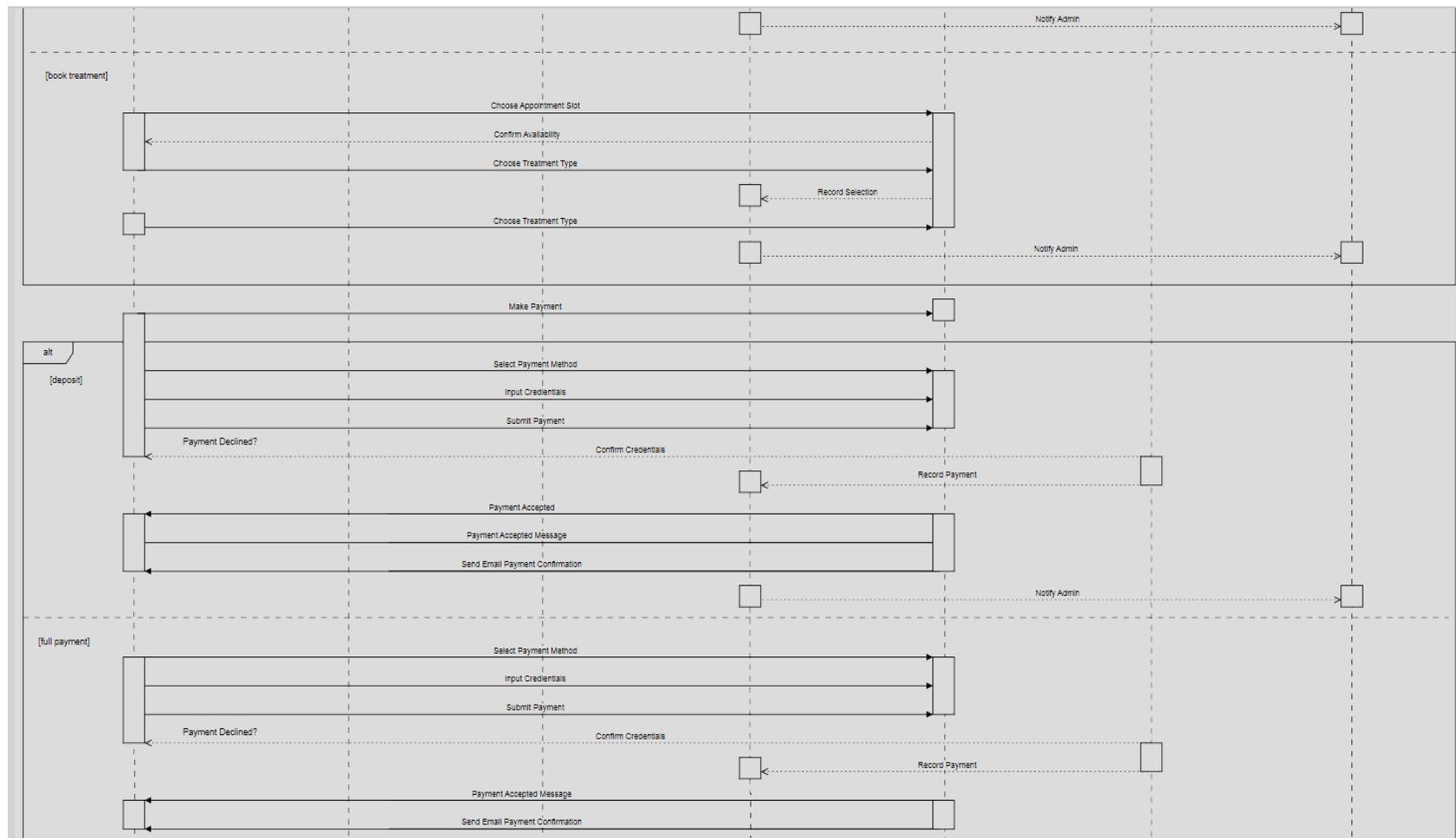


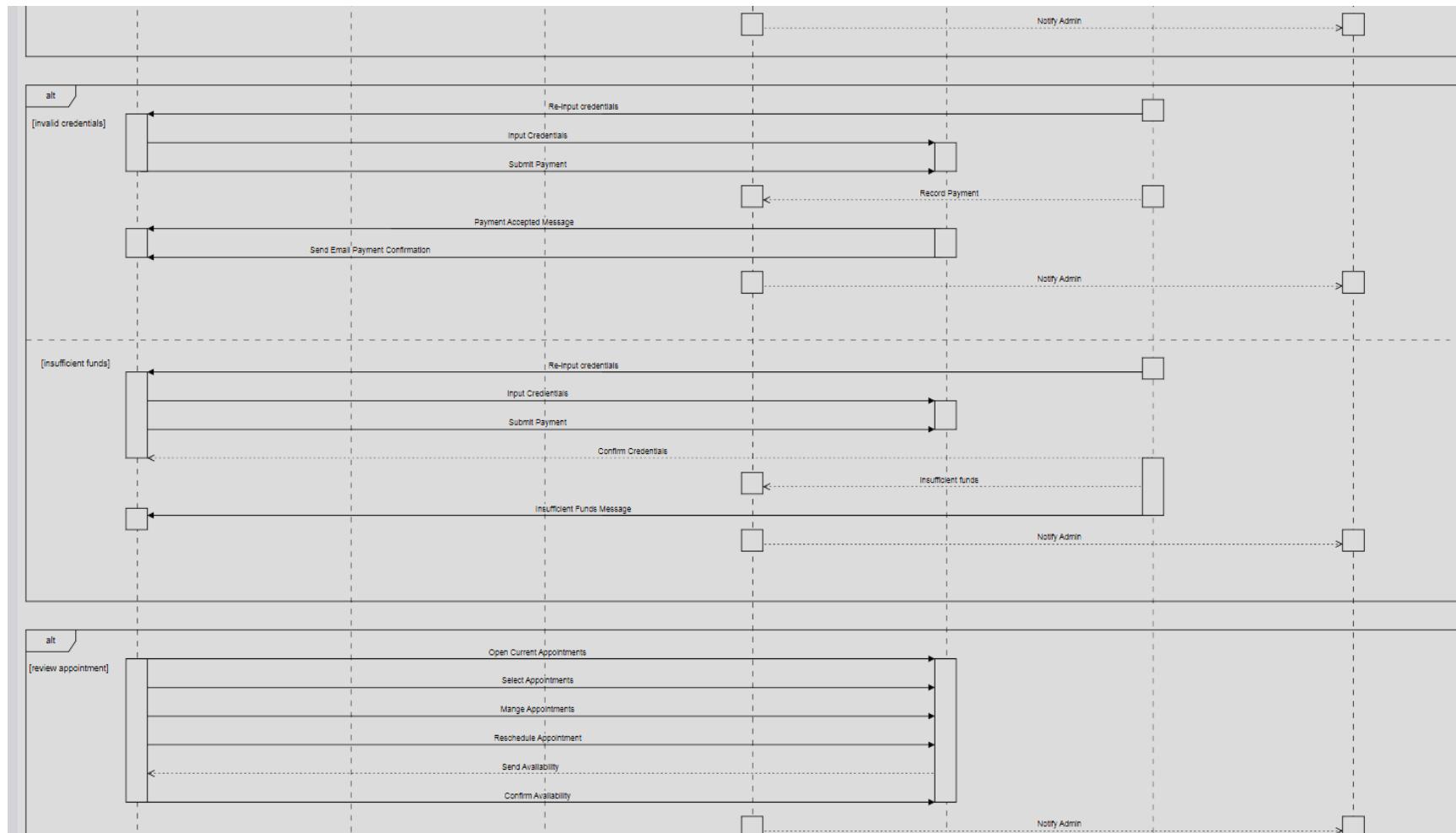
The class diagram was crucial in identifying all the different attributes within their distinct classes of the business process, while also establishing the necessary relationships between other classes. Along with the different attributes and relationships, the diagram is necessary in providing a blueprint for how the classes interact with each other, and the dependencies between the classes.

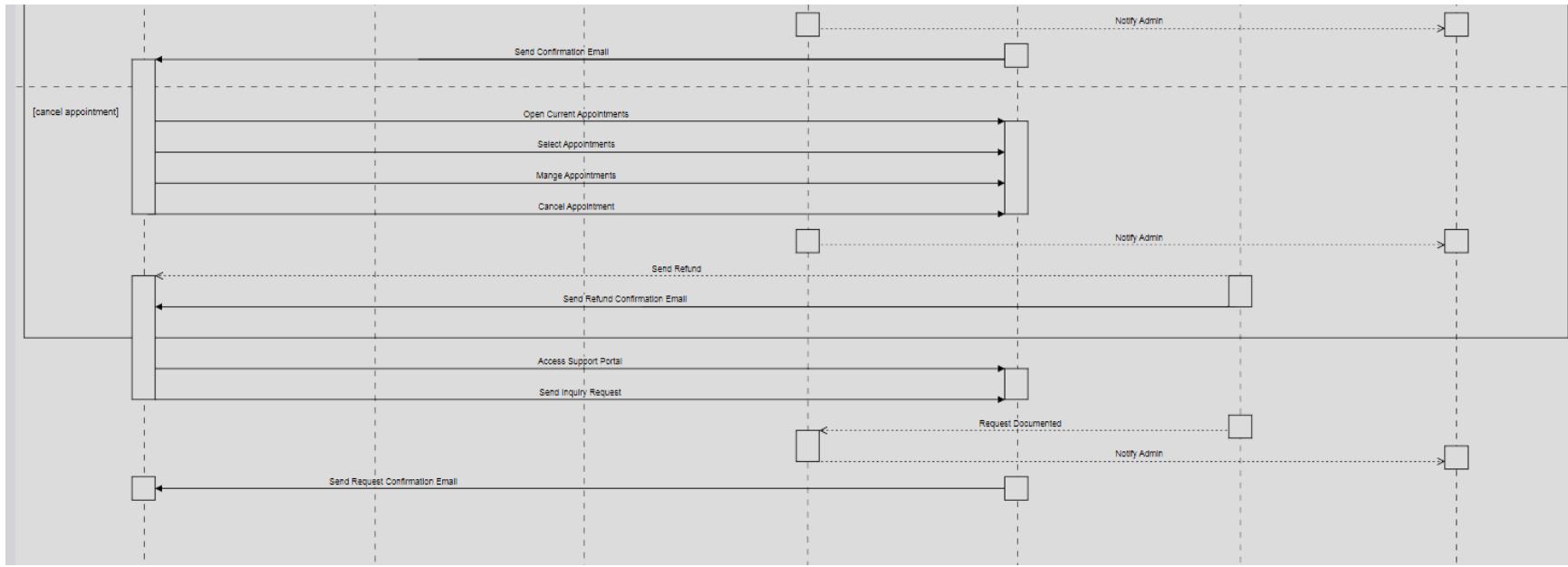
## 9.2. Sequence diagrams (the entire To-Be system)











This UML sequence diagram outlines key components and interactions within LaserXBeauty. It features:

- Two boundary elements represented as the Log-in and Register Portals, facilitating user interaction and access management.
- Four crucial objects are highlighted: the Database, User Portal, Bank, and Admin User, each contributing pivotal functions within the system's architecture.
- There is a singular actor, the customer, whose interactions with the system are demonstrated through numerous alternative fragments.

These fragments show different scenarios and interactions that customers may encounter while navigating the LaserXBeauty website. The diagram displays activation bars, which show the active duration of each boundary, object, and the customer throughout the sequence. This helps create a clear visualization of different points of engagement and exchange within the system.

## 10. Proof-of-Concept Implementation prototype

### 10.1. Prototype modules for two use cases

In this section, we will present 2 basic use cases: Online appointment booking from the customer's side and from the business owner's side, assuming both use cases are happy paths with all default steps in the booking processes.

#### 10.1.1. As-is system:

1. Customer booking interface



The image shows a mobile application interface with a light gray background. It features four rectangular service cards, each with a black 'Book' button in the top right corner.

- Consultation**  
30 minutes
- A Consultation is the first step to getting a detailed analysis of your skin and/or body, where we can talk about a customized treatment plan together and track your results over time.
- PROMO BodyFx Body Contouring Package (8 Sessions)**  
1 hour 30 minutes @ CA\$1,000.00
- Forma improves skin texture, addressing delicate areas of the face for desired results.  
Ideal for remodelling the skin for a more youthful and natural appearance.
- PROMO Forma Facial Skin Tightening Treatment (Single Session)**  
1 hour @ CA\$79.00
- Recommended 6 sessions to see full results.
- PROMO Forma Facial Skin Tightening Treatment (6 Session)**  
1 hour @ CA\$632.00
- BodyFx is our body contouring treatment that are scientifically proven to reduce cellulite, improve skin texture and firmness and destroys fat cells.
- Recommended 6 sessions to see full results.

As explained above, the as-is booking system is quite simple. The book appointment button is on top of the page. Services are not categorized.

## 2. Business owner booking interface

The screenshot shows a monthly calendar interface for February 2024. At the top, there's a header with the month "February 2024" and "0 appointments". To the right are two buttons: "BLOCK OFF TIME" and "ADD NEW". Below the header are navigation controls: arrows for month navigation, a "TODAY" button, and dropdown menus for "Month View", "All calendars", and "1x". To the right of the calendar is a search bar with a magnifying glass icon and a refresh/circular arrow icon.

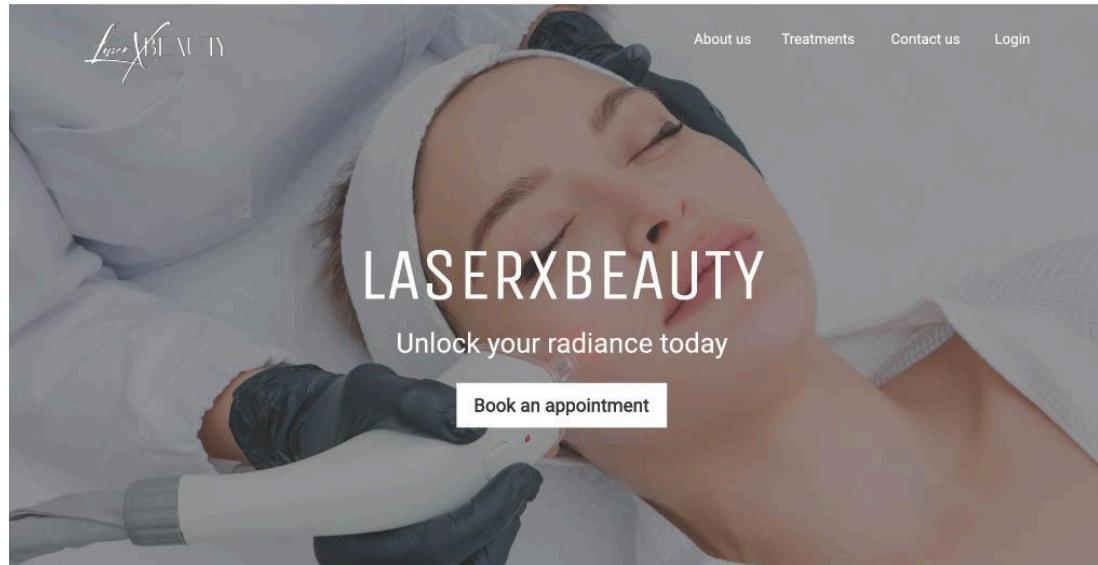
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29		

The admin dashboard is basic with a calendar that allows admin users to see booked appointments. Admin users can click on any date to check appointments or add/modify an appointment.

### 10.1.2. To-Be system

#### Use case 1: Online appointment booking from the customer's side

1. Landing page for clients when they visit the website. We also redesigned the landing page to make it more attractive and also bring down the book appointment button to the centre of the hero image so that it pops out more.



The landing page features a large background image of a woman lying down, receiving a facial treatment. The brand logo 'LaserXBEAUTY' is in the top left corner. In the top right, there are navigation links: 'About us', 'Treatments', 'Contact us', and 'Login'. The main title 'LASERXBEAUTY' is prominently displayed in the center, with the tagline 'Unlock your radiance today' below it. A central call-to-action button says 'Book an appointment'.

#### BODY CONTOURING

BODY FX IS THE PREMIER NON-SURGICAL BODY CONTOURING TREATMENT THAT USES FRACTIONAL LASER TECHNOLOGY TO REMOVE UNWANTED BODY FAT, TIGHTEN SKIN, AND IMPROVE SKIN TEXTURE.



2. Sign-in page after clicking the “Book An Appointment” button

**SIGN IN**

Please login to continue to your account.

Email —  
jane\_doe@torontomu.ca |

Password 

Keep me logged in

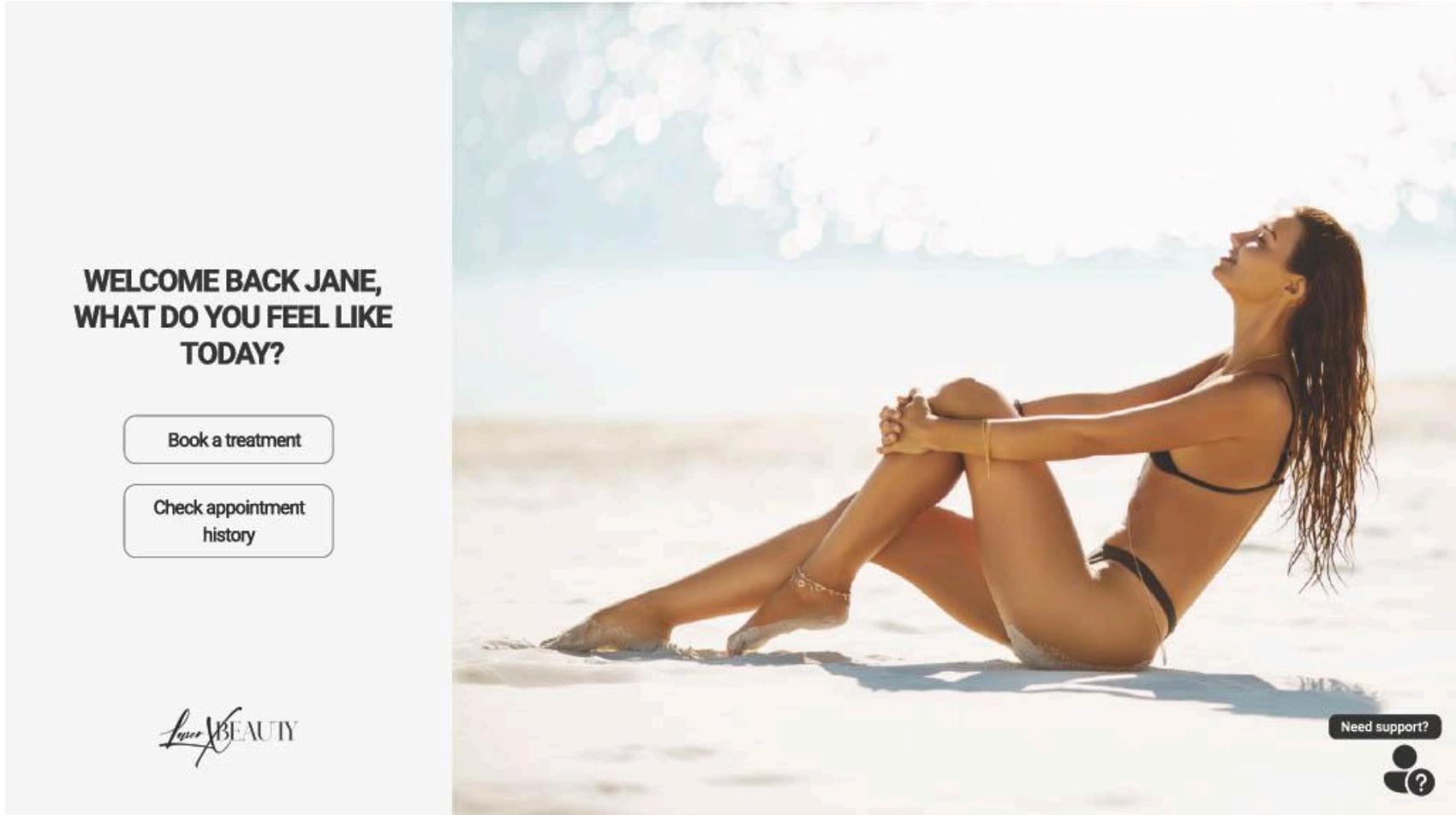
**Sign in**

Don't have an account? [Sign up](#)

*Laser BEAUTY*



3. Landing page after signing in for the client to pick whether they want to book an appointment or check their history. Also, there is a support button at the bottom of the page. This support button exists in all the pages.



4. Various services to choose from for the client.

The image shows a mobile application interface for a beauty salon named 'Your BEAUTY'. The top navigation bar features the brand name 'Your BEAUTY' in white on a dark background, with a small profile icon and a search icon. Below the navigation, the main content area is titled 'SELECT TREATMENT' in large, bold, black capital letters. To the left of the main content, there is a vertical sidebar with four rounded rectangular buttons: 'Free consultation', 'Facial', 'Body', and 'Other'. The main content area is divided into three sections: 'Free consultation', 'Facial', and 'Body'.  
  
**Free consultation**  
Consultation  
30 minutes Book  

A Consultation is the first step to getting a detailed analysis of your skin and/or body, where we can talk about a customized treatment plan together and track your results over time.

  
**Facial**  
**Forma & Red Light Therapy Package**  
1 hour @ CA\$375.00 Book  

Forma improves skin texture, addressing delicate areas of the face for desired results.  
Ideal for remodelling the skin for a more youthful and natural appearance.

Recommended 8 sessions to see full results.

  
**Forma Skin Tightening Face & Neck (Single Session)**  
1 hour 30 minutes @ CA\$600.00 Book  

Forma improves skin texture, addressing delicate areas of the face for desired results.  
Ideal for remodelling the skin for a more youthful and natural appearance.

Recommended 8 sessions to see full results.

  
**Body**  
**BodyFx Body Contouring (Single Session)**  
1 hour @ CA\$300.00 Book  
Need support?   

BodyFx is our body contouring treatment that are scientifically proven to reduce cellulite, improve skin texture and firmness and destroys fat cells.

5. Landing page after choosing the service. In this page the client will pick the date and the time for their appointment.

The image shows a user interface for booking an appointment. At the top, it says "Facial". Below that, there's a service description: "Forma & Red Light Therapy Package" and "1 hour @ CA\$375.00". A brief description follows: "Forma improves skin texture, addressing delicate areas of the face for desired results. Ideal for remodelling the skin for a more youthful and natural appearance." It also notes "Recommended 8 sessions to see full results".

**SELECT DATE AND TIME**

A calendar for April 2024 is displayed. The current date is Monday, April 1. The time zone is set to "EASTERN TIME - TORONTO (GMT-04:00)". The available appointment times for April 1 are:

11:00 AM	11:30 AM	12:00 PM
12:30 PM	1:00 PM	1:30 PM
2:00 PM	2:30 PM	3:00 PM
3:30 PM	4:00 PM	4:30 PM
5:00 PM		

At the bottom right, there's a "Need support?" button with a person icon and a question mark.

*Laser BEAUTY*

6. In this page the client will pick if they want to pay for the service online or just pay the deposit.

The screenshot shows a user interface for selecting a payment method. At the top, there is a back arrow labeled "EDIT APPOINTMENT DATE AND TIME". Below it, a box displays the appointment details: "Forma & Red Light Therapy Package", "1 hour @ CA\$375.00", and "April 1, 2024 at 11:00am". The main area is titled "SELECT PAYMENT". It contains two buttons: "Full treatment price" and "Deposit (\$50)". To the left of the buttons is a logo with the text "Laser BEAUTY". On the right side, there is a large image of a woman in a bikini sitting on a white surface, looking up. A "Need support?" button with a person icon and a question mark is located in the bottom right corner.

**SELECT PAYMENT**

You can choose to pay the full treatment price now or make a \$50 deposit, with the remaining amount to be paid on the day of your appointment

Full treatment price

Deposit (\$50)

Laser BEAUTY

Need support?

7. In this page the client will pick their payment method.

The screenshot shows a payment selection interface for a medical spa treatment. On the left, there's a sidebar with the title "SELECT PAYMENT". It contains two buttons: "Full treatment price" (solid black background) and "Deposit (\$50)" (white background with a thin black border). Below this is the "LaserXBEAUTY" logo, which includes a stylized signature of "LaserX" followed by "BEAUTY".

The main content area has a header "PAYMENT METHOD" and a sub-header: "Select a payment method below. LaserXBeauty processes your payment securely with end-to-end encryption." Below this are four payment method icons: Credit card, Google Pay, Apple pay, and Paypal. A dropdown menu is open, showing "Select saved cards" with a checked checkbox and a card number "\*\*\*\*\*1234 - 10/24" also with a checked checkbox. Another dropdown menu is partially visible, showing "Add new card".

To the right, there's a summary box for a "Forma & Red Light Therapy Package" with a "Full treatment price payment". It specifies a duration of "1 hour" and the date "April 1, 2024 at 11:00am". The summary table shows:

Subtotal	\$375.00
Taxes	\$48.75
Total	\$423.75

A "Confirm and pay" button is located next to the summary box. At the bottom right, there's a "Need support?" button with a person icon and a question mark icon.

8. Appointment confirmation page for the client.

The image shows a screenshot of an appointment confirmation page. At the top, it says "APPOINTMENT CONFIRMATION". Below that, it displays the appointment details: "Jane Doe - April 1, 2024 from 11:00 to 12:00" and a "Confirmed" status with a checkmark icon. To the right of the appointment details are three buttons: "Directions", "Reschedule", and "Cancel". Below the appointment details, there is a small thumbnail image of a treatment room. To the right of the thumbnail, the service provider is listed as "LaserXBeauty - Toronto" with the address "1561 Dupont St, Toronto, ON M6P 3S5" and phone number "+1 (416) 939-9318". Further down, the treatment package is listed as "Forma & Red Light Therapy Package" with a duration of "1 hour" and a time range of "11:00 - 12:00". The total price is listed as "\$423.75". On the left side of the main content area, there is a large, bold "YOU'RE ALL SET!" message. Below this message, a smaller note says "Your appointment has been booked successfully. Please review the appointment details on the right hand side". At the bottom left, there is a "Go back to main page" button. On the right side, there is a "Rescheduling and cancellation policy" section with a logo for "LaserXBEAUTY" and a "Need support?" button with a person icon and a question mark. The background of the page features a blurred image of a woman lying down, possibly receiving a treatment.

## Use case 2: Online appointment booking from the business owner's side

1. Admin sign in page for office usages.

**ADMIN SIGN IN**

Please login to continue to your account.

Email —  
laserxbeauty@gmail.com | 

Password 

Keep me logged in

**Sign in**

*Laser X BEAUTY*



2. Calendar dashboard for the admins to view to determine and organize upcoming appointments.

April 2024 ▾

S	M	T	W	Th	F	S
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4
5	6	7	8	9	10	11

Appointments

Clients

Staff schedule

Settings



April 2024 1 appointment

BLOCK OFF TIME
ADD NEW ▾

< TODAY > Month View All calendars 1x Q Search Print

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 11:00am Jane Doe	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

April 1, 2024

11:00am
Monday, April 1, 2024
60min

12:00pm

Jane Doe

Treatment

Himani Parmar

(123) 555-0101

### 3. Select date and time for appointments

April 2024

S	M	T	W	Th	F	S
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4
5	6	7	8	9	10	11

**Appointments**

**Clients**

**Staff schedule**

**Settings**

*Lya BEAUTY*

April 2024 1 appointment

Sun	Mon	Tue	Wed
	1 11:00am Jane Doe 1 apppt.	2	3
7	8	9	10
14	15	16	17
21	22	23	24
28	29	30	

April 1, 2024

11:00am	Monday, April 1, 2024
12:00pm	Jane Doe
	Treatment
	Himani Parmar
	(123) 555-0101

Back New treatment New consultation

Treatment (1 hour @ \$300.00) with Himani Parmar

Treatment (1 hour @ \$300.00) Edit

Date & Time

Client's Time Zone: (GMT-4:00) Eastern Time - Toronto

Clients will see times in this time zone. Times below are in your business time zone.

S	M	T	W	Th	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Times shown above are in your business time zone

**Client list**

First Name \*

Last Name \*

Phone

Email

4. Business owner can quickly pull up contact information from the client list for existing clients when filling in the appointment details section.

The image consists of three side-by-side screenshots illustrating a software interface for managing appointments and clients.

**Screenshot 1: Client List**

A table showing a list of clients:

<input type="checkbox"/>	Last Name	First Name	Phone	Email	Account
<input type="checkbox"/>	Doe	Jane	(123) 555-0101	jane.mc test@example.com	...
<input type="checkbox"/>	Doe	John	(647) 123-1231	john.doe@gmail.com	...
<input type="checkbox"/>	McTest	Jane	(123) 555-0101	jane.mc test@example.com	...
<input type="checkbox"/>	Uzumaki	Naruto	(647) 123-9632	Naruto@gmail.com	...

**Screenshot 2: Calendar View**

A monthly calendar for April 2024 showing an appointment on April 1st:

Sun	Mon	Tue	Wed
	1 11:00am Jane Doe	2	3
7	8	9	10
14	15	16	17
21	22	23	24
28	29	30	1
5	6	7	8

**Screenshot 3: Appointment Details**

Details for the appointment on April 1st:

11:00am - 12:00pm | Monday, April 1, 2024  
 Jane Doe  
 Treatment  
 Himani Parmar  
 (123) 555-0101

**Left Sidebar:**

- Appointments
- Clients
- Staff schedule
- Settings

**Logo:** Layer BEAUTY

5. Appointment details are filled.

The image displays three screenshots illustrating the appointment booking process:

- Left Screenshot:** A calendar for April 2024. The date **April 1** is highlighted with a dark gray circle. Below the calendar are four buttons: **Appointments**, **Clients**, **Staff schedule**, and **Settings**. At the bottom is a logo for **Lux BEAUTY**.
- Middle Screenshot:** A detailed view of the calendar for April 2024. It shows a single appointment entry for **Monday, April 1, 2024** at **11:00am** for **Jane Doe**. The appointment is labeled **1 appt.** The day header **Mon** is bolded. The date **1** is also bolded. To the right of the appointment, there is a small circular icon with a checkmark.
- Right Screenshot:** An appointment creation dialog box. The title is **Treatment (1 hour @ \$300.00)**. The **Date & Time** section shows the appointment is set for **April 2, 2024** at **10:00am**. The time dropdown shows options from 9:00am to 3:00pm. The **Client's Time Zone** is set to **(GMT-4:00) Eastern Time - Toronto**. The **Client Name** field contains **John Doe**, with additional fields for **Phone** and **Email**. The **Forms and Notes** section includes a **Schedule Appointment** button and a **Cancel** button.

## 6. Appointment confirmation.

The image consists of three side-by-side screenshots illustrating the appointment booking process:

- Screenshot 1 (Left):** A monthly calendar for April 2024. The date **April 1** is highlighted with a dark gray circle. Below the calendar are four buttons: **Appointments**, **Clients**, **Staff schedule**, and **Settings**. At the bottom is a logo for **Laser BEAUTY**.
- Screenshot 2 (Middle):** A detailed view of the appointment for April 1, 2024. The card shows the time **11:00am - 12:00pm**, the date **Monday, April 1, 2024**, the client's name **Jane Doe**, the service **Treatment**, the staff member **Himani Parmar**, and the phone number **(123) 555-0101**.
- Screenshot 3 (Right):** A confirmation dialog box. It states **Added appointment for John Doe on April 2, 2024 at 10:00am**. Below this are fields for **First Name** (**John**), **Last Name** (**Doe**), **Appointment Type** (**Treatment (60 minutes @ \$300.00)**), **Date & Time** (**Tuesday, April 2, 2024 10:00am - 11:00am**), **Calendar** (**Himani Parmar**), and a status indicator **Confirmed**. The dialog also includes fields for **Phone** (**6471231231**), **Email** (**john.doe@gmail.com**), and **Time zone** (**(GMT-4:00) Eastern Time - Toronto**). At the bottom right are **Save** and **Cancel Editing** buttons.

## 11. Implementation and deployment & risk management plan for the new IS

### 11.1. Implementation and deployment activities

ACTION	PARTY RESPONSIBLE	PRIORITY	START DATE	END DATE
<b>Phase 1: Define Scope of booking system</b>				
Identify goals and objectives of the booking system for LaserX	LaserX Management	Medium	01-23-24	01-29-24
Identify rudimentary and basic needs for a booking system	IT consultants	High	01-29-24	01-30-24
<b>Phase 2: Research and Consultation</b>				
Conduct thorough interviews with LaserX and research with LaserX to determine what booking system options they are looking for	IT consultants	High	1/31/24	02-02-24
Evaluate pros and cons of the options that LaserX is looking for and select priorities for a booking system that aligns with LaserX's budget and objectives	IT consultants	Medium	02-04-24	02-05-24
<b>Phase 3: Configure Booking System</b>				
Work closely with LaserX to develop a functional booking system	Booking system provider and IT consultants	High	02-06-24	03-21-24
Set up administrator accounts for LaserX staff members	LaserX Management and IT Consultants	Medium	03-21-24	03-21-24
Configure the booking system to reflect LaserX branding and services	IT consultants	Low	02-14-24	03-21-24
<b>Phase 4: Train Staff</b>				
Guide the LaserX staff or owner on how to use the booking system	LaserX Staff and IT Consultants	Low	03-25-24	03-25-24
Conduct a training session and create basic training material so employees are proficient with using the booking system	LaserX Staff	High	03-25-24	03-25-24
<b>Phase 5: Data Migration</b>				
Transfer data from old booking system onto the new booking	IT consultants	Medium	03-28-24	03-28-24
Verify the accuracy and completeness of the data that has been migrated	IT consultants	Medium	03-28-24	03-28-24
<b>Phase 6: Testing</b>				
Conduct thorough testing of the bookings on both ends of the booking system	IT consultants	High	03-28-24	04-04-24
Involve staff in testing process to see if the booking system is successfully meeting their needs	IT consultants and LaserX Staff	Medium	03-28-24	04-04-24
Document issues and feedback from LaserX	IT consultants	Medium	03-28-24	04-04-24
<b>Phase 7: Soft Launch</b>				
Soft launch the booking system to staff members of LaserX	LaserX management	Medium	04-04-24	04-09-24
Gather information and performance of the soft launch	IT consultants	Medium	04-04-24	04-09-24
Make adjustments if needed if there are concerns from the staff	IT consultants	High	04-04-24	04-09-24
<b>Phase 8: Marketing</b>				
Create a marketing plan to communicate to existing customers about the booking new system	LaserX management	Low	04-10-24	04-11-24
Plan an incentive for customers to use the new online booking system	LaserX management	Low	04-10-24	04-11-24
<b>Phase 9: Full Launch</b>				
Roll out new booking system to all customers	LaserX management	High	04-11-24	04-12-24
Provide technical support for the rollout and monitor the booking system during the process	IT Consultants	Medium	04-11-24	04-12-24
<b>Phase 10: Support and maintenance</b>				
Have dedicated support for LaserX if issues arise in the future	IT Consultants	Low	04-12-24	04-12-24
Consistently review and update the system to continually meet the needs of LaserX	IT Consultants	Medium	04-12-24	04-12-24
Gather feedback on a consistent basis to find areas to improve and update	IT Consultants	Low	04-12-24	04-12-24

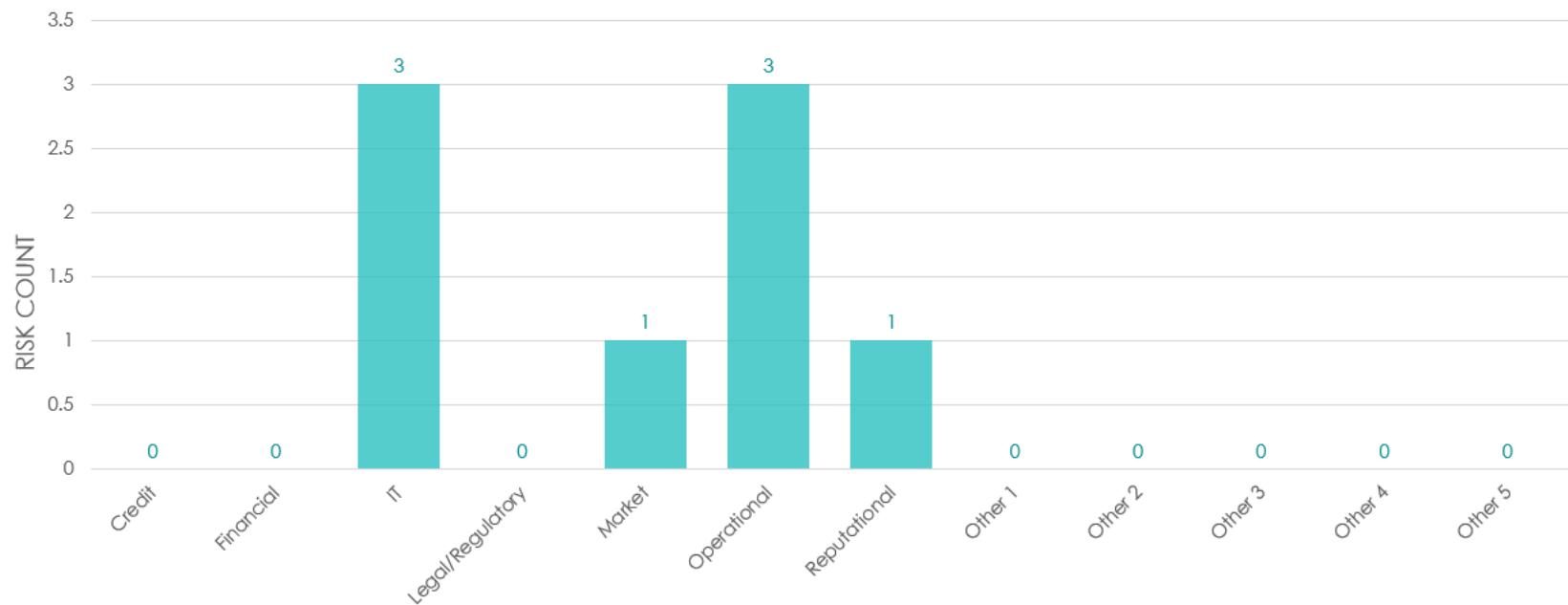
## 11.2. Risk assessment and mitigation activities

### LaserX Booking System Risk analysis

PROBABILITY   1 - 5	IMPACT   1 - 16	PI SCORES   1 - 80
1 - RARE	1 - IN SIGNIFICANT	1 - 2 • NEGLIGIBLE
2 - UNLIKELY	2 - MINOR	3 - 8 • LOW
3 - POSSIBLE	4 - MODERATE	10 - 16 • MEDIUM
4 - LIKELY	8 - MAJOR	20 - 32 • HIGH
5 - ALMOST CERTAIN	16 - SEVERE	40 - 80 • EXTREME

PROBABILITY					
	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
4	4	8	12	16	20
8	8	16	24	32	40
16	16	32	48	64	80

### RISKS BY CATEGORY



REF ID	RISK CATEGORY	RISK DESCRIPTION	PROBABILITY 1 – 5	IMPACT 1 – 16	RISK SEVERITY SCORE	RISK CRITERIA	MITIGATION / RESPONSE PLAN	MONITORING FREQUENCY
1	IT	Data breach where customers sensitive information gets stolen	3	16	48	This could occur with improper handling of customer information or website security breaches by hostile parties	Implement standard encryption protocols and security measures for sensitive customer data as well as give staff extensive training on handling and using sensitive customer data appropriately	Very often on a monthly basis
2	IT	System downtime where the booking system will be offline	2	4	8	This may occur during maintenance of the booking system or errors in the booking system occurring, needing it to be temporarily closed	Either have redundant backup server for the booking system or have an alternative booking system plan for a system downtime if it were to occur such as writing down customer information separately to be inputted into the system when it is back up	As this is unlikely to be an issue and system downtime will be likely be planned, only required monitoring should be at the time of the downtime
3	Market	Cannot meet customer demand and keep up with bookings coming in.	1	4	4	A very high influx of customer booking in a short span of time could cause an overload of bookings and cause a malfunction	Have customers go through a ReCaptcha to slow down traffic and use redundant servers to be able to handle traffic	Only monitored during extremely busy periods
4	Operational	Booking errors that may happen on the online booking system	4	4	16	Errors made by customers or LaserX staff members when booking appointments	Have booking confirmations to make sure that bookings are double checked as well as having staff trained to properly input and look over bookings on the system	Daily, every time a booking is made by an employee
5	Reputational	Customers not liking the change of booking system	2	2	4	Customers not liking the change of the booking system, causing them to get confused and frustrated when booking	Have LaserX's website have a quick guide on the new system when it is launched and have employees guide customers who are not good at using the internet guide them through the booking process either through the customer support section of the website or hands on with customers if they need the help	Only monitor during the first few months after launch
6	Operational	New booking system is hard to use for employees	2	4	8	Employees being inexperienced with the booking system causing slowdowns in productivity	Have extensive training with employees before launch and new employees must be trained on the booking system as well	Monitor with all new hires and the first few weeks of launch
7	IT	Booking system payment processing failing or not working correctly	3	8	24	Payments made through the online booking system are not working due to the booking system itself malfunctioning	Use reliable payment gateways that have strong security features and conduct regular testing of the online payment system	Monthly basis to make sure payment system is working as intended
8	Operational	Unable to properly book customers if power or internet went out	1	4	4	If there is a power or internet outage, an online booking system to book customers in person at LaserX would not be able to function	Manually write down bookings if there are customers trying to book in person during an outage to put into the system when there is internet and power again. As business operations would likely stop altogether if there is no power, an alternative could be having backup generators if an outage occurs	Only when there is an outage, which is very highly unlikely to happen

## **Conclusion**

In summary, our project has taken a deep dive into revitalizing the Information System (IS) for LaserXBeauty, a medical spa located in Toronto. This venture went beyond theoretical exploration, aiming to demonstrate how small businesses can significantly benefit from embracing technology. Our approach was comprehensive, focusing on identifying core issues, proposing an innovative IS redesign, and emphasizing actionable solutions.

Our findings highlighted that LaserXBeauty's initial technological challenges, client management difficulties, and lack of process automation were major obstacles to its growth and client contentment. The IS revamp we proposed, elaborated through detailed requirements and operational frameworks, is set to dramatically alter the spa's operational dynamics and customer interactions.

The prototype we developed confirms the viability and potential effectiveness of our IS redesign, indicating marked improvements in operational efficiency and user engagement. This project is not merely about solving present problems but also about setting a foundation for sustained growth and innovation.

A detailed yet viable plan for implementing the new system has been laid out, aiming for a smooth and economically sensible transition. This highlights the indispensable role of IS in enabling small businesses to compete and thrive in today's digital landscape.

To conclude, this project signals the beginning of an exciting journey for LaserXBeauty. The recommended changes are designed to enhance operational efficiency, enrich customer experiences, and instill a culture of innovation. This effort contributes to a wider conversation on the role of technology in empowering small businesses, underscoring its importance in driving growth, improving operational efficiency, and elevating customer satisfaction in the beauty industry.