

**COMP 3059 – Capstone Project I**  
**Software Requirements Analysis and Design Assignment**

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## c. 1.0 Introduction

### i. 1.1 Purpose

The purpose behind our team was to create a group of people who have a common goal in mind and use our own life experiences and differences to better customize our idea for Cosmic. Through our work, we anticipate having a fully functioning application that allows customers to book for cosmetic appointments and for managers of these salons to have an organized and well-functioning management application that offers any and all of a manager's wants and needs. This document is intended for both the stakeholders and the developers of the system.

### *ii. 1.2 Scope*

This Statement of work aims to align the Client's interest in all in one place to search and book for appointments regarding their self care along with the need for small business to have an online presence and attract more customers.

#### 1.2.1 In Scope

The Cosmic Booking System Application will provide complete website discovery, comprehensive user experience (“UX”), creative redesign and development of all in one application for searching and booking appointments in hair and nail salons.

The project's primary goal will be to have a single application specially designed for finding hair and nail salons. The Cosmic Booking System Application will work with local and small businesses to expand their online presence for clients to have options to choose according to their requirements.

Functionality Includes:

- Ecommerce: Ability for visitors to book appointments directly on the application.
- Expanded support for backend business functionality
- A fully functional web and mobile application
- Increase branded content presence on the application, including the integration of social, video, photos, videos, etc.

#### 1.2.2 Out of Scope

- The project will not facilitate online payments in the initial implementations;
- As the team will only have a limited time frame to complete the project, we have decided to deploy the project in mobile and web application platforms. As a result, iOS devices will not be supported in the current development.

### 1.3. Glossary

Term	Definition
Business	It is the businesses who use our application (Cosmic) to advertise and offer their service(s) to their client(s)
Business	The business side user of Cosmic
Client	The client side who are users of Cosmic and who are customers of the businesses
Cosmic	An application that focuses on booking a cosmetic service appointment through personalized search options.
Database	It is where all the clients and business information are stored.
No Show	An instance where a client did not show up on a scheduled appointment
Rating	A metric used to define a user's booking activity within the application, ranging from 1 to 5 stars.
Stakeholder	Any person with an interest in the project who is not a developer.
Team	Group of people developing the Cosmic application
User	A person or entity that is using the Cosmic application, either as a Client or a Business.

### 1.4. References

IEEE. *IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications*. IEEE Computer Society, 1998.

## d. 2.0 Project Perspective

Cosmic is a project that is mostly self-contained. Every feature of this application with an exception with some parts in the frontend and backend will be developed by the team. In this project, it will demonstrate the team's skills in programming and design to develop a fully functioning application. By developing an app with tailored functions combined with a personal touch, the team aims to solve and provide a solution to the cosmetic industry particularly in booking and appointments – a low cost and efficient management application for clients and businesses with a solid technical support.

### i. 2.1 System Context

Cosmic will be developed using a SQL database and Google Cloud Platform for the implementation. The backend will be integrated to an Android application and a website for our frontend. By implementing separate platforms, maintenance cycles and patch updates will be manageable as the platforms do not share the same resources, making them independent from one another. This structure also makes it easy to manage and is ideal to implement features that are more optimal in specific platforms. Overall, the team developed this design for the application to be scalable.

### ii. 2.2 General Constraints

- Managing Client's Services
- Keeping the product up to date with the latest standards
- Maintaining an easy to use and user friendly product

One of the constraints of this project includes managing the client's pricing and services. As our application is only a platform to help them advertise their business, we choose to support what they offer as long as it is not against the terms and conditions we will be providing. Another constraint is maintaining a fluid design, which includes adhering to UX and UI standards. In order to maintain the application up to date with the latest standards, rapid response time is important. Lastly, the developers aim to deliver a product that is easy to use for both businesses and clients. Our goal is to keep the product's interface user friendly, with simple steps and easy to understand features, to avoid confusion when completing tasks within the application.

### iii. 2.3 Assumptions and Dependencies

In this project, the team assumes that all the features that were stated from the beginning of the project planning up to the current development will be implemented and be available to the users when completed.

## e. 3.0 Functional Requirements

### i. 3.1 Functional Requirements

#### 3.1.1 Business

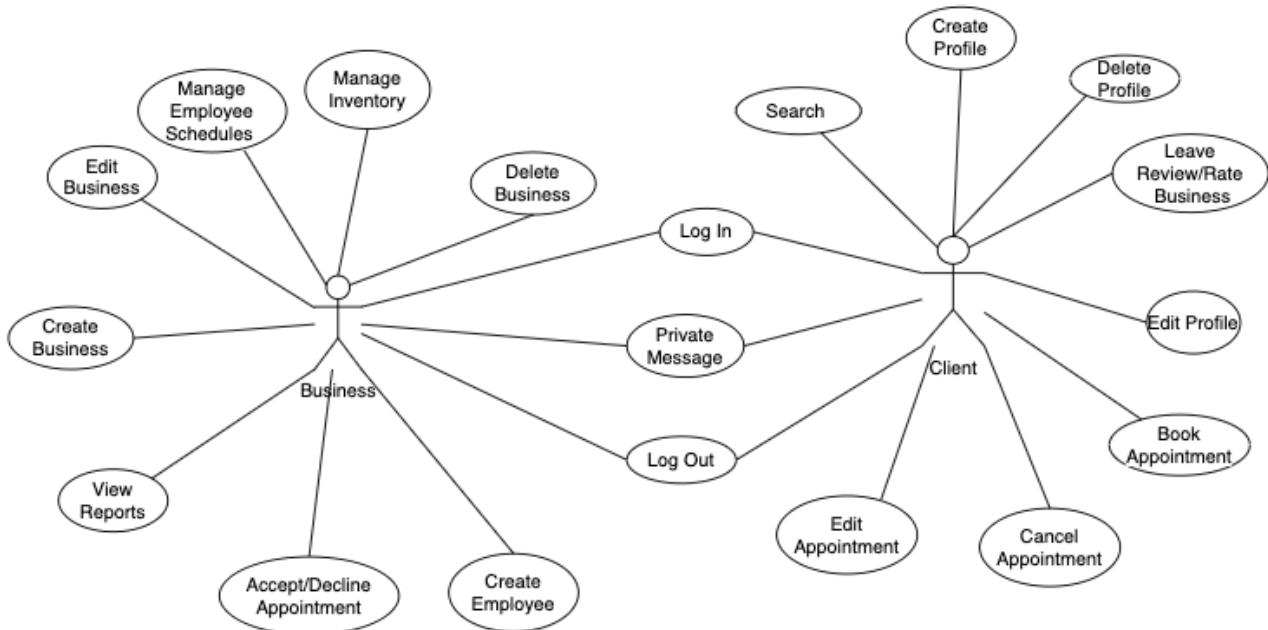
- Log In
  - Email and Password
- Log Out
- Cancel Appointment
- Manage Images
  - Add
  - Delete
- Manage Bio
  - Update
- Check Reports
- Manage Employees
  - Add Employee
  - Remove Employee
- Manage Inventory
  - Add Items
  - Delete Item
  - Modify Items
- Track Shifts
  - Clock In
  - Clock Out
  - Create Schedule
- Delete Business
- Private Message

#### 3.1.2 Client

- Search
- Manage Booking
  - Create Appointment
  - Cancel Appointment
  - Modify Appointment

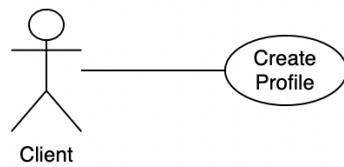
- Log In
  - Email and Password
  - Social Media
- Rate/Review
- Log Out
- Delete Account
- Private Message

*ii.*      **3.2 Use Cases**



### 3.2.1 Create Profile

**Diagram:**



### Brief Description

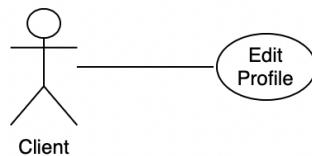
The client creates a profile in order to proceed with the booking process.

### Initial Step-By-Step Description

1. The client chooses to create a profile using their email or phone number.
2. The client must enter additional information including: name, birthday, password.
3. The system links to the user database to add the client.
4. The system verifies the information and returns the client to the main page.

### 3.2.2 Edit Profile

**Diagram:**



#### Brief Description

The client edits their profile.

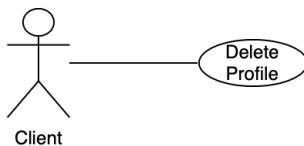
#### Initial Step-By-Step Description

Assuming the client is already signed into the application.

1. The client clicks the profile icon in the bottom right corner from the main screen.
2. The client clicks edit in the top right corner.
3. The client then changes any information they need.
4. If a client tries to change a password they must enter their old password first and then change to a new password, if they forget then they must go through a link in their email to change password.
5. The client then must click save changes.
6. The system verifies the information and returns the client to the profile page.

### 3.2.3 Delete Profile

**Diagram:**



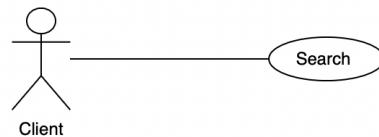
**Brief Description**

The client deletes their profile.

**Initial Step-By-Step Description**

Assuming the client is already signed in.

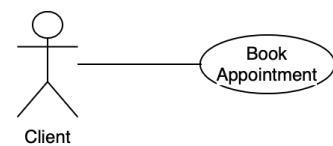
1. The client clicks the profile icon in the bottom right corner from the main screen.
2. The client clicks “Delete Profile” at the bottom of the screen.
3. The client is then required to verify their action by clicking a link sent to their email.
4. Once a link is opened a password is required to finalize the delete.
5. The system verifies the information and returns the client to the login page.

**3.2.4 Search****Diagram:****Brief Description**

The client can search for services or business.

**Initial Step-By-Step Description**

1. Client clicks the search bar at the top of the main page.
2. Client types something referring to the service or business they are looking for.
3. Options pertaining to the search are shown below.
4. Clients can then scroll and select whatever they are looking for.

**3.2.5 Book Appointment****Diagram**

**Brief Description**

Client books appointments for service.

**Initial Step-By-Step Description**

Assuming the client books through application:

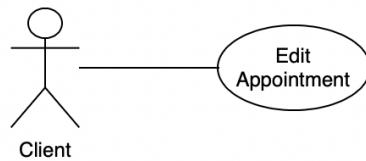
1. Client selects the business they like.
2. Client presses book appointments on the business page.
3. Clients are given options of the date, time and service they would like to book.
4. Client then selects “Book Appointment”.
5. If the client is not signed in they will be asked to sign in or create an account to process the booking. They will then be transferred to the corresponding page.
6. The booking will then be processed unless otherwise specified by the business who would need to accept the booking.

Assuming client book through number:

1. Client selects the business they like.
2. Client clicks the call option on the business page.
3. The client is then presented with the confirmation of the call.

Assuming client books through instant messages.

1. Client selects the business they like.
2. Client presses the chat icon on the business page.
3. They can then message the business with the necessary information.

**3.2.6 Edit Appointment****Diagram****Brief Description**

Clients can modify booked appointments.

**Initial Step-By-Step Description**

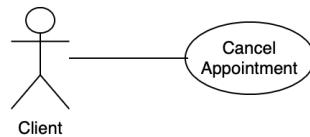
Assume the client is already signed into the application.

Assume the client is editing an appointment they booked through “Book Appointment” for other forms of booking (calling and instant messaging) they would be required to edit the same way.

1. Client clicks the calendar icon at the bottom of the home page.
2. A list of the clients appointments are shown.
3. The client can select which appointment they would like to edit.
4. They are directed to the appointment page.
5. In the top right corner they click “Edit Appointment”
6. The client is then able to modify the date, time or service(depending on availability)
7. The client then can click “Save Changes” once satisfied.

### **3.2.7 Cancel Appointment**

#### **Diagram**



#### **Brief Description**

Clients can cancel appointments made.

#### **Initial Step-By-Step Description**

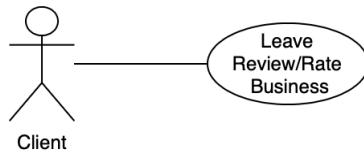
Assume the client is already signed into the application.

Assume the client is canceling an appointment they booked through “Book Appointment” for other forms of booking (calling and instant messaging) they would be required to cancel the same way.

1. Client clicks the calendar icon at the bottom of the home page.
2. A list of the clients appointments are shown.
3. The client can select which appointment they would like to cancel.
4. They are directed to the appointment page.
5. In the top right corner they click “Cancel Appointment”
6. The client is then given an alert to verify their choice.
7. The client is then given the option of “Confirm Cancellation” and “Go Back”.

### 3.2.8 Leave Review/Rate Business

#### Diagram



#### Brief Description

Customers can rate a business, which will be shown to the public.

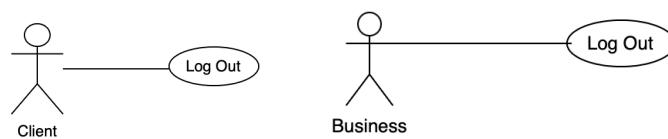
#### Initial Step-By-Step Description

Assuming the client has an account and is signed in.

1. From the homepage the client can find the business they want to rate from the search bar at the top of the screen.
2. Once a client selects the business they can scroll to the bottom or click the “Rating” below the Business name to take them to the ratings section.
3. At the rating section of the screen there is a “Add a Review” button.
4. Once clicked the client will be taken to a page that will allow the user to add information like their review and the amount of stars. The user can also choose to remain anonymous by clicking the slider tab to “Anonymous”.
5. Once the form is filled out the user can click submit. The user will then be taken back to the businesses page.

### 3.2.9 Log Out

#### Diagram:



#### Brief Description

The client/business logs out of their profile.

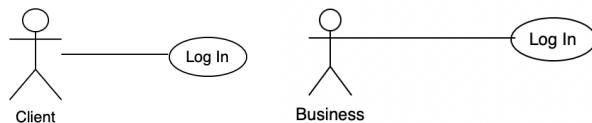
#### Initial Step-By-Step Description

Assuming the client/business is already signed into the application.

1. The client/business clicks the profile icon in the bottom right corner from the main screen.
2. The client/business scrolls to the bottom of the page where there will be a “Log Out” button they click.
3. The system returns the client to the profile page.

### 3.2.10 Log In

#### Diagram



#### Brief Description

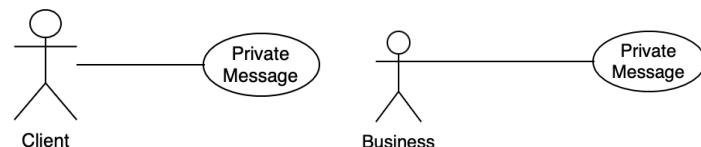
The client/business logs into their profile.

#### Initial Step-By-Step Description

1. When the application is opened there will be a screen that asks the client/business whether they need to log in or out.
2. The client/business then chooses “Log In”
3. They are taken to the login page where they are required to input a username or email and password.
4. The system verifies the information and returns the client/business to the home page.

### 3.2.11 Private Message

#### Diagram



#### Brief Description

Clients/businesses can contact through private messaging. For booking or other issues.

#### Initial Step-By-Step Description

Assuming the client/business is logged in. Assuming business enabled private messaging.

### Client

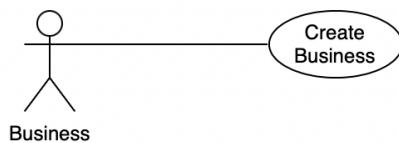
1. Once a business is selected(either through search or clicking on a business in the main page) the user is taken to the business profile.
2. There will be a button in the top right corner of the profile. Once selected the user is taken to a messaging screen.
3. The user can use the input section at the bottom of the screen to message the business.
4. To the right of the text area is a button that will send the message. Once clicked the message will be sent and appear above.

### Business

1. When a customer sends a message the business will be notified and in the bottom of the screen the inbox tab will show a message is unread.
2. The business can select the inbox tab and be taken to their inbox.
3. They can then choose to press the message they want to open and proceed with replying.

### 3.2.13 Create Business

#### Diagram



#### Brief Description

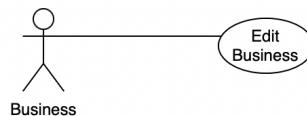
Businesses add their business to our application.

#### Initial Step-By-Step Description

1. The business chooses to create a profile using their email or phone number.
2. The business must enter additional information including: name, password, and proof of business.
3. After the business is verified as legitimate the system links to the business database to add the business.
4. The system verifies the information and returns the business to the login page.

### 3.2.14 Edit Business

#### Diagram



#### Brief Description

The Business edits their page.

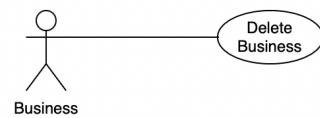
#### Initial Step-By-Step Description

Assuming the business is already signed into the application.

1. The user clicks the business icon in the bottom right corner from the main screen.
2. The user clicks edit in the top right corner.
3. The user then changes any information they need.
4. If a user tries to change a password they must enter their old password first and then change to a new password, if they forget then they must go through a link in their email to change password.
5. The user then must click save changes.
6. The system verifies the information and returns the user to the business page.

### 3.2.15 Delete Business

#### Diagram



#### Brief Description

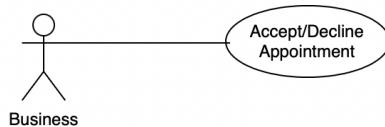
Businesses who choose to leave our system or go out of business and delete their business from our app.

## Initial Step-By-Step Description

1. At the bottom of the screen there is the profile tab in the right corner. When clicked the user is taken to their businesses profile page.
2. The user clicks “Delete Business” at the bottom of the screen.
3. The user is then required to verify their action by clicking a link sent to their email.
4. Once a link is opened a password is required to finalize the delete.
5. The system verifies the information and returns the user to the login page.

### 3.2.16 Accept/Decline Appointment

#### Diagram



#### Brief Description

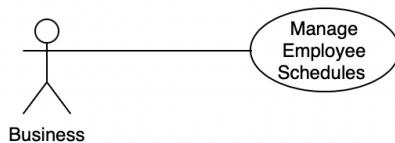
Businesses can choose to accept or decline appointments based on their scheduling/booking type.

#### Initial Step-By-Step Description

1. When appointments are made they show up in the “Appointments” tab at the bottom of the screen. When clicked they go to the appointments page
2. Listed are the appointments in order of date and time. The business can then choose to click an appointment.
3. In the appointment details there will be a decline button at the bottom of the page. Once clicked a warning will pop up to confirm the decline if the user clicks confirm the client who booked the appointment will be emailed and the user is returned back to the appointments page.

### 3.2.17 Manage Employee Schedules

#### Diagram



#### Brief Description

Manager can create an employee schedule.

### Initial Step-By-Step Description

2. In the main page of the business application there is a “Scheduling” tab. When clicked the user is taken to the scheduling page.
3. The user will then click in the top right corner “+” to add a schedule. They are taken to the scheduling form.
4. In the form when they press the date and time they are shown the employees available to work.
5. When the schedule is filled the user can click either save schedule in order to save the progress, or they can click publish in order to send all the employees the new schedule.
6. The system verifies the information and returns the user to the schedule page.

### 3.2.18 View Reports

#### Diagram



#### Brief Description

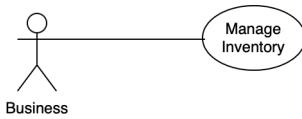
Reports containing information about the business and their success will be calculated weekly. This information is then made user friendly and shown to the business.

### Initial Step-By-Step Description

1. At the bottom of the screen there is a “Reports” button when clicked the user is taken to the reports page.
2. There will be a list of all the reports offered. For further information on the report they will click which report they want to see.

### 3.2.19 Manage Inventory

#### Diagram



**Brief Description**

Businesses can add and update their inventory.

**Initial Step-By-Step Description****View Inventory**

1. In the bottom of the screen there is a button that says “Inventory” once the user selects it they are taken to the inventory page.

2. The inventory page will have a list of all the products the business adds to their inventory.

**Adding Inventory**

1. In the inventory page the top right corner will contain a plus sign that once clicked will take the user to a form to add an item.
2. In the form they will input the item, the amount of it they need, the frequency of notifications they would like to receive and any other information they would like to add.
3. Once the user hits submit the system verifies the information and returns the business to the inventory page.

**Deleting Inventory**

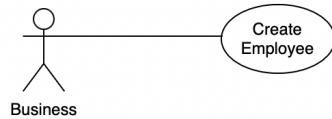
1. The user must click the inventory item they would like to delete.
2. At the bottom of the page there will be a “Delete Item” button
3. Once the button is clicked an alert confirming the deletion will pop up.
4. When the user clicks it the system verifies the information and returns the business to the inventory page.

**Modifying Inventory**

1. The user must select the inventory item they want to modify.
2. They will be taken to the inventory page where all the information on the item will be displayed
3. There will be an edit button in the top right corner.
4. Once clicked they can modify the item.
5. At the bottom of the edit form there is a submit button. When the user clicks it the system verifies the information and returns the business to the inventory page.

### 3.2.20 Create Employee

#### Diagram



#### Brief Description

Managers can create employees.

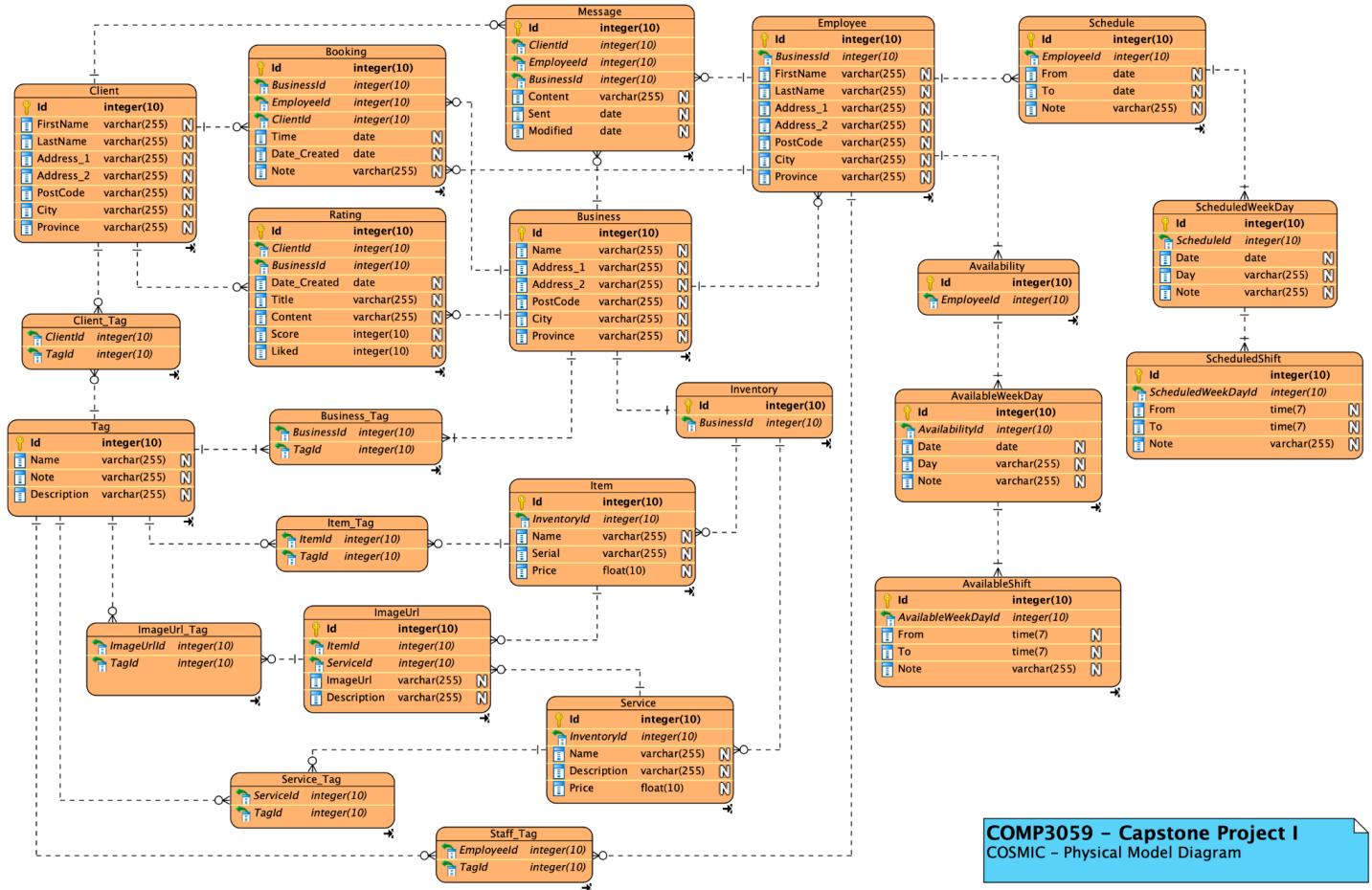
#### Initial Step-By-Step Description

1. On the main page of the business application there is a tab that says “Add Employee” once clicked the user is taken to the Add Employee form.
2. Once the form is filled out with any necessary information the user can click save employee. When the user clicks it the system verifies the information and returns the business to the employees page.

*i. 3.3 Data Modelling and Analysis*

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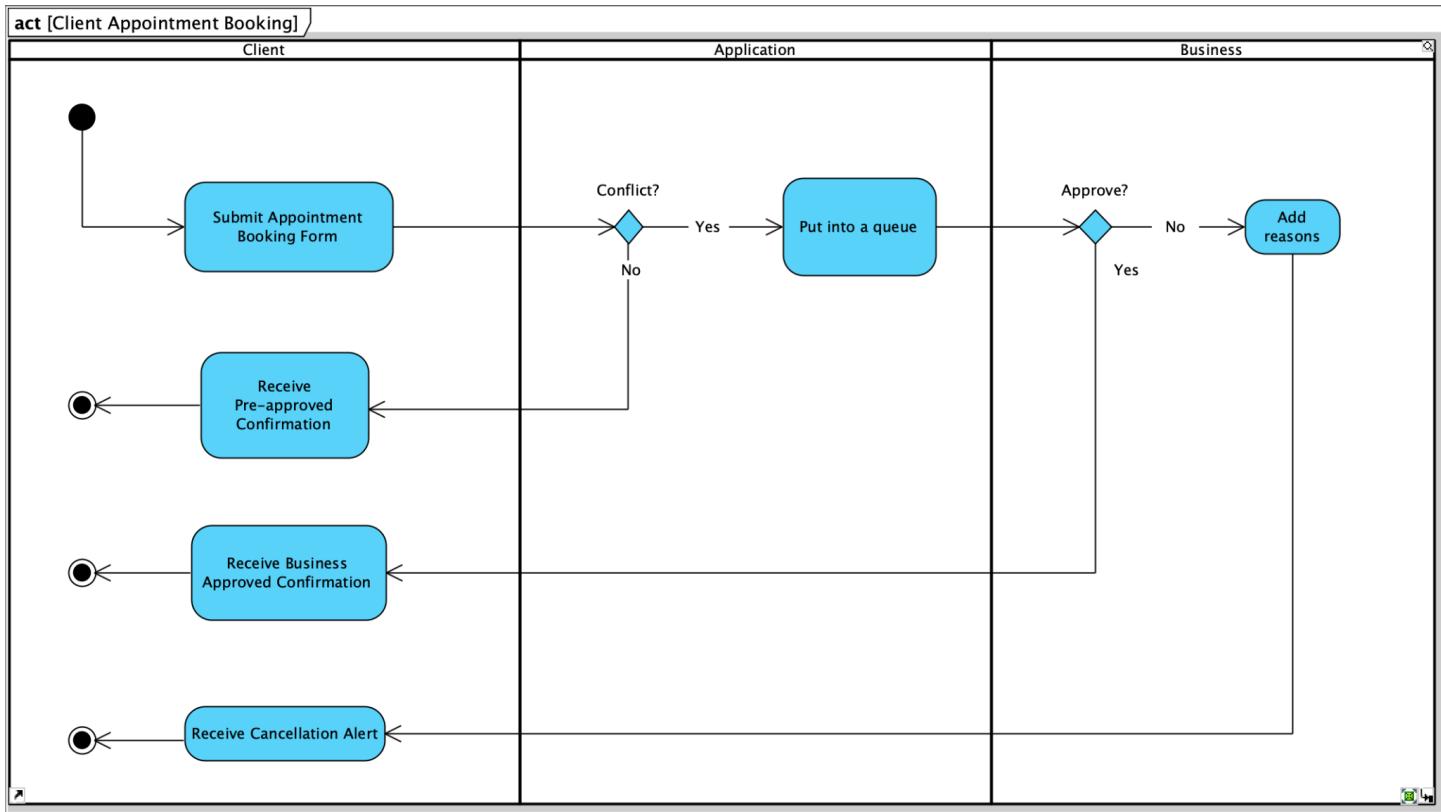
**3.3.1 Normalized Data Model Diagram**

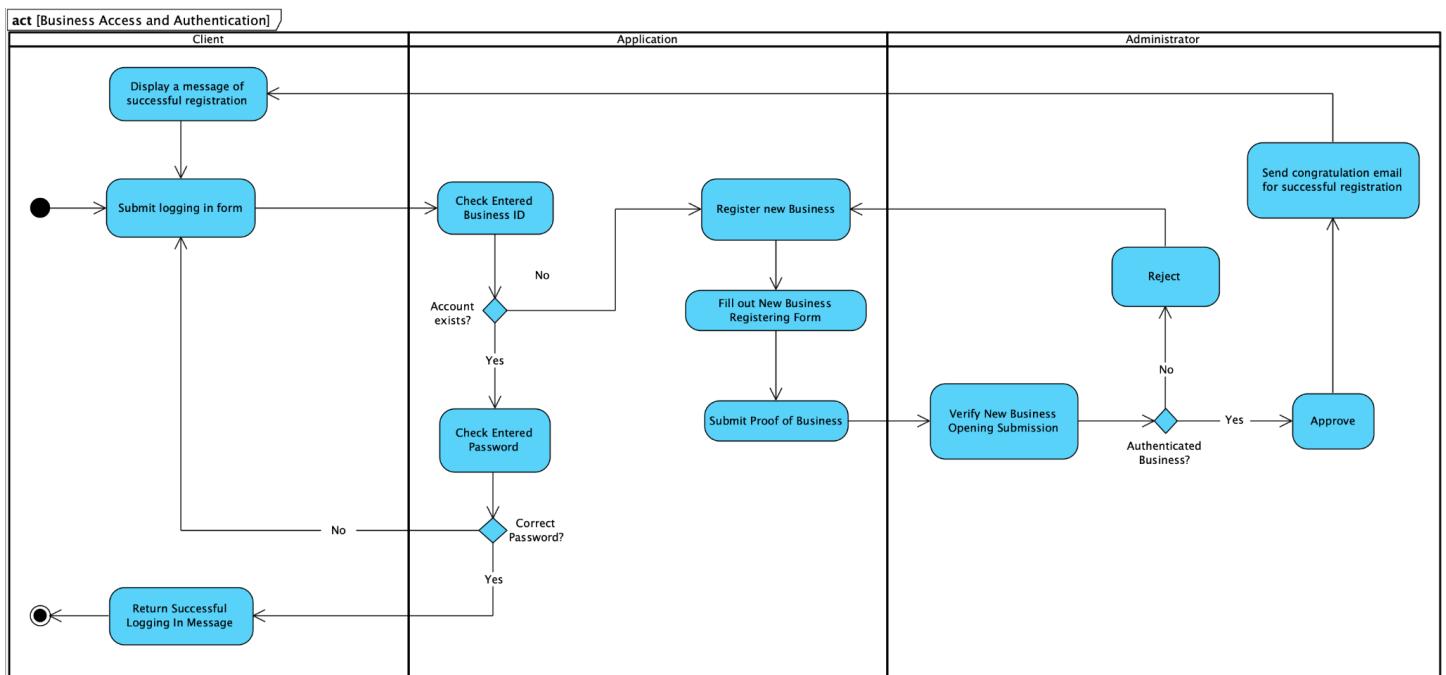
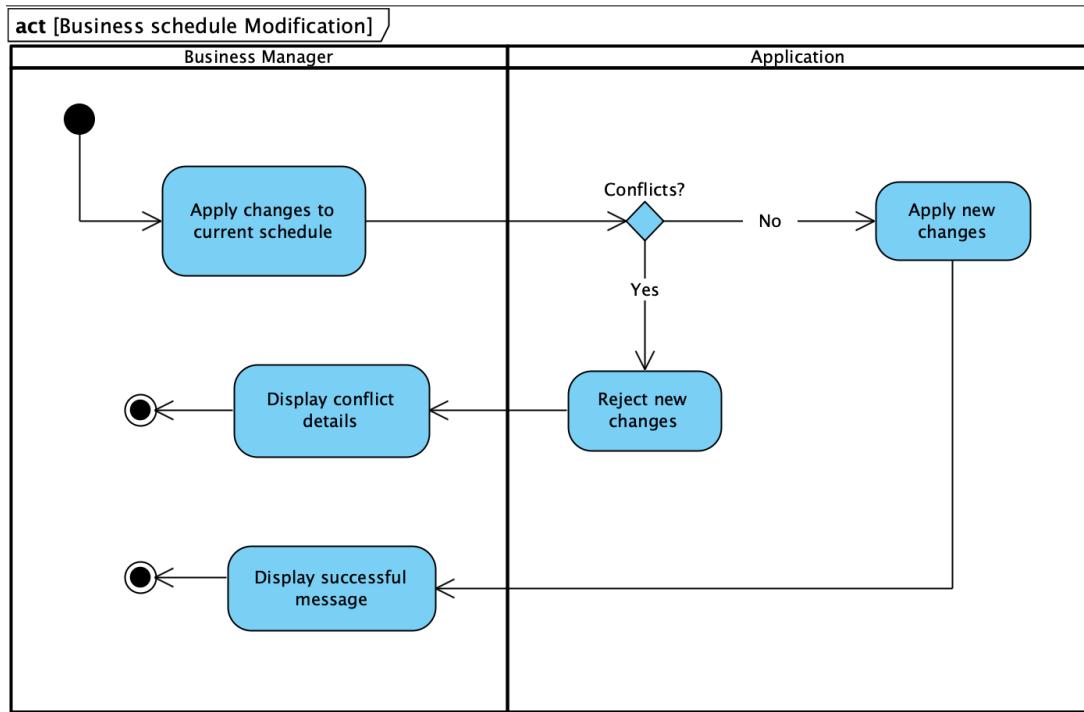


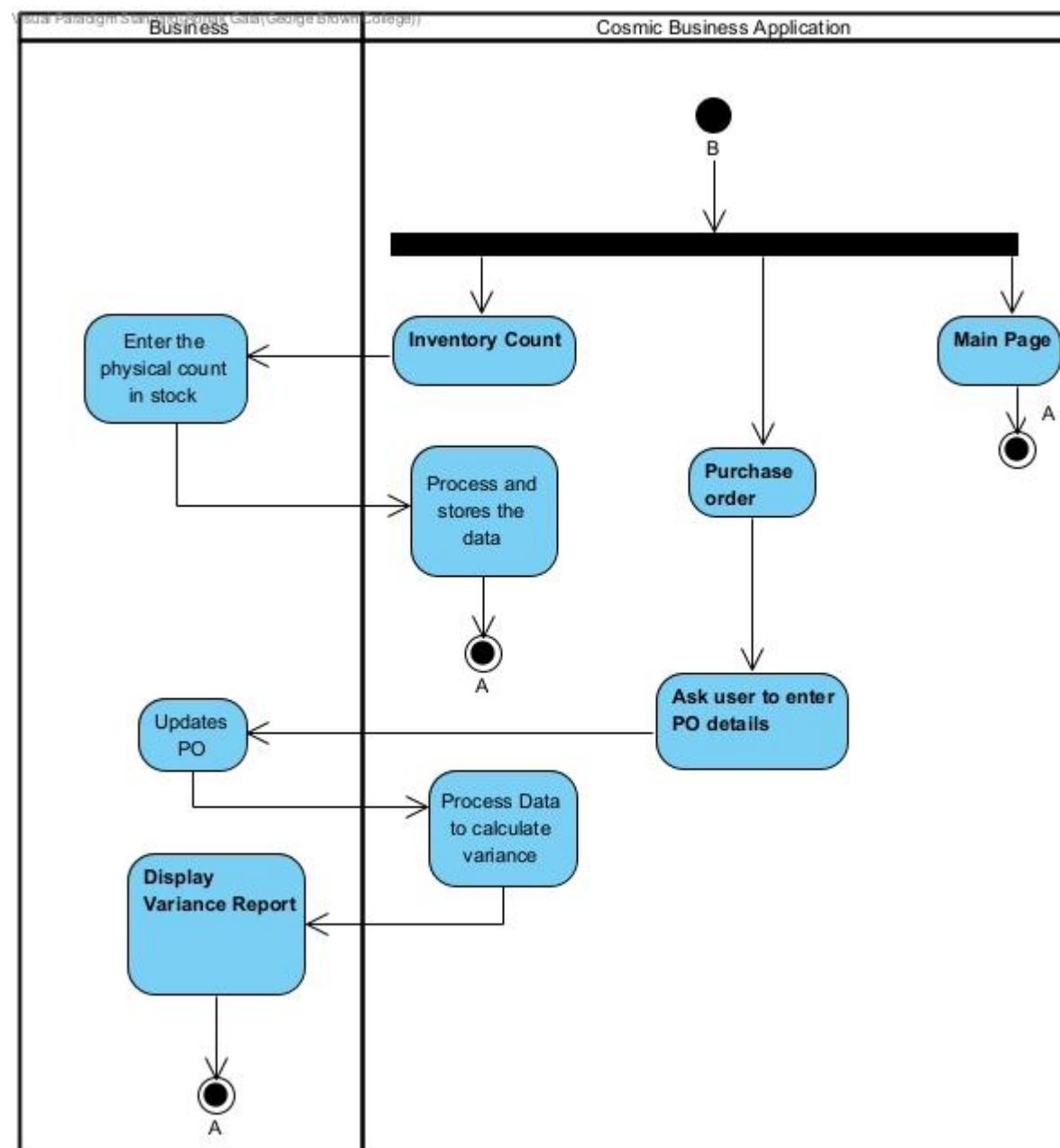
COMP3059 – Capstone Project I  
COSMIC – Physical Model Diagram

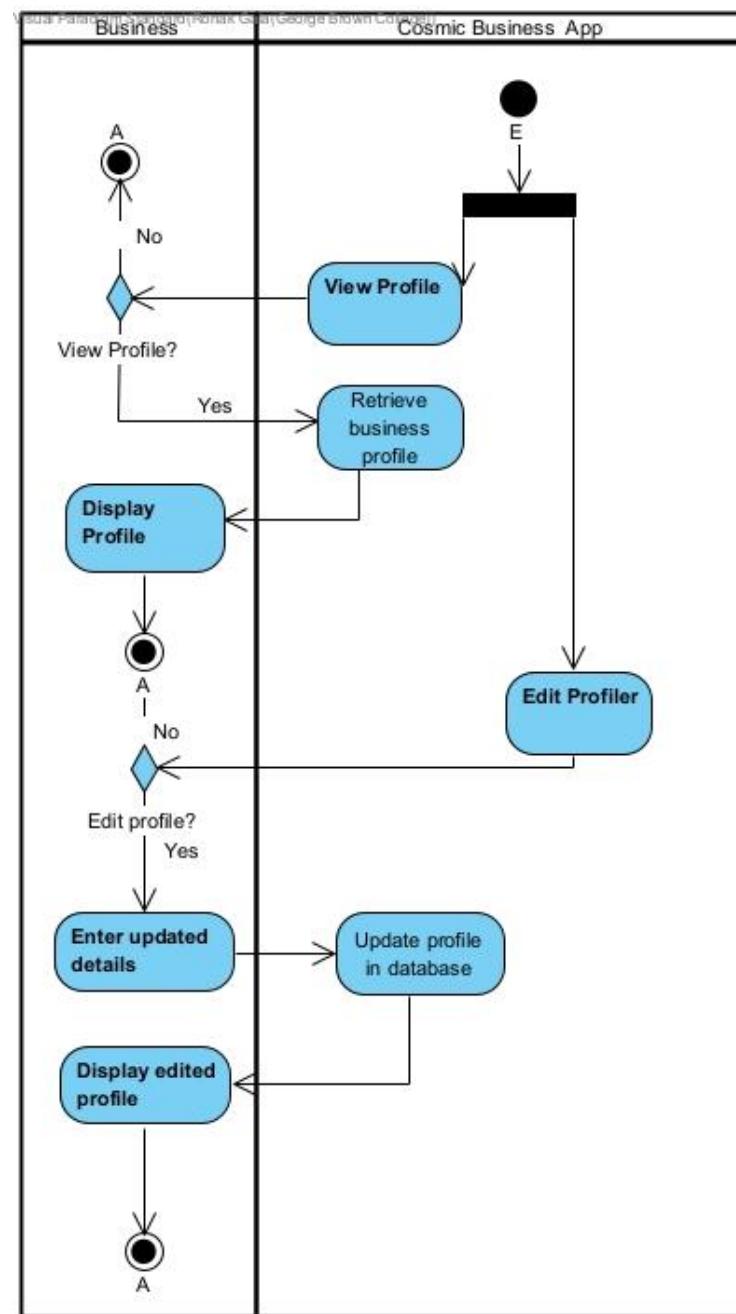
### 3.3.2 Activity Diagrams

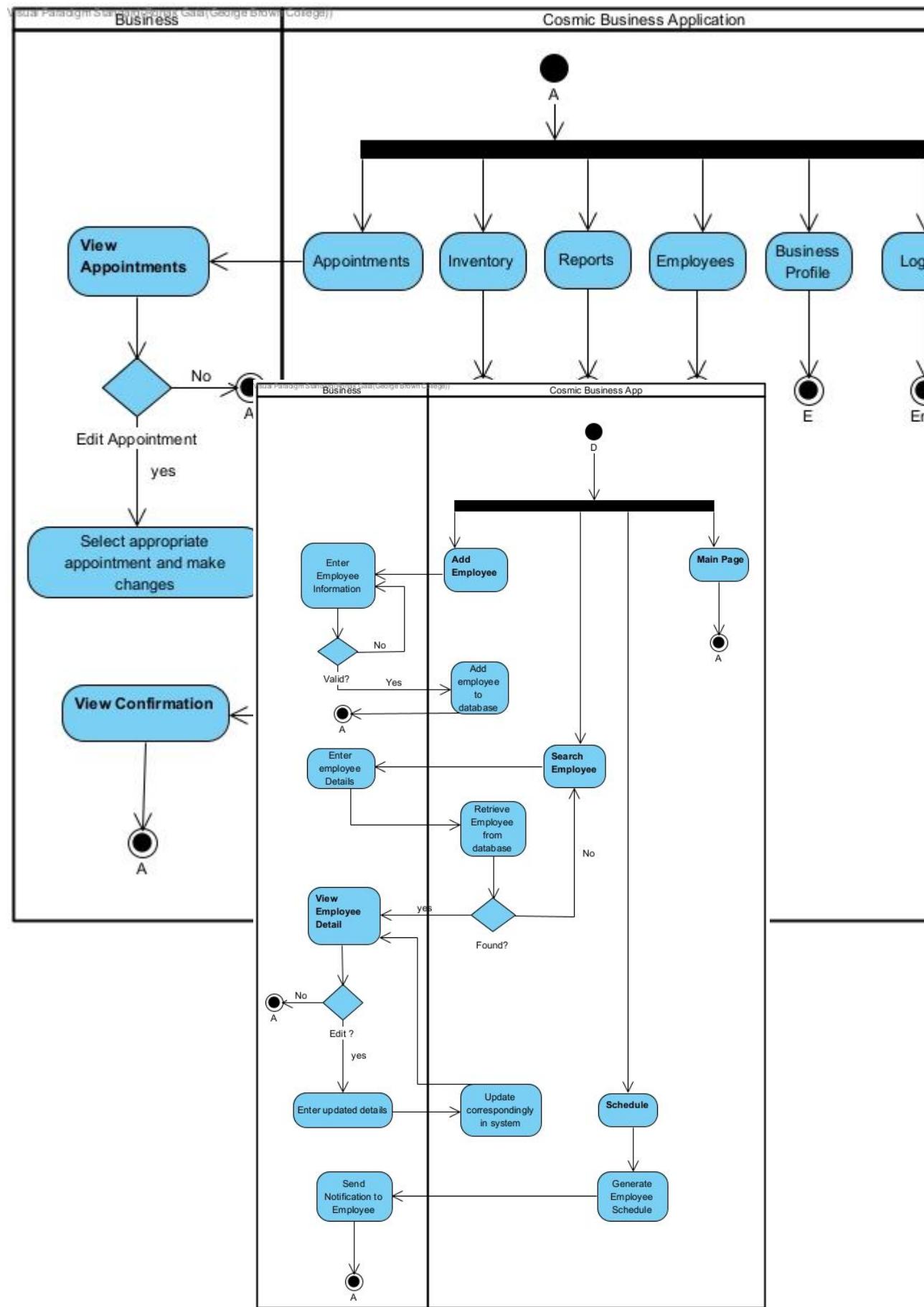
#### Client Side:

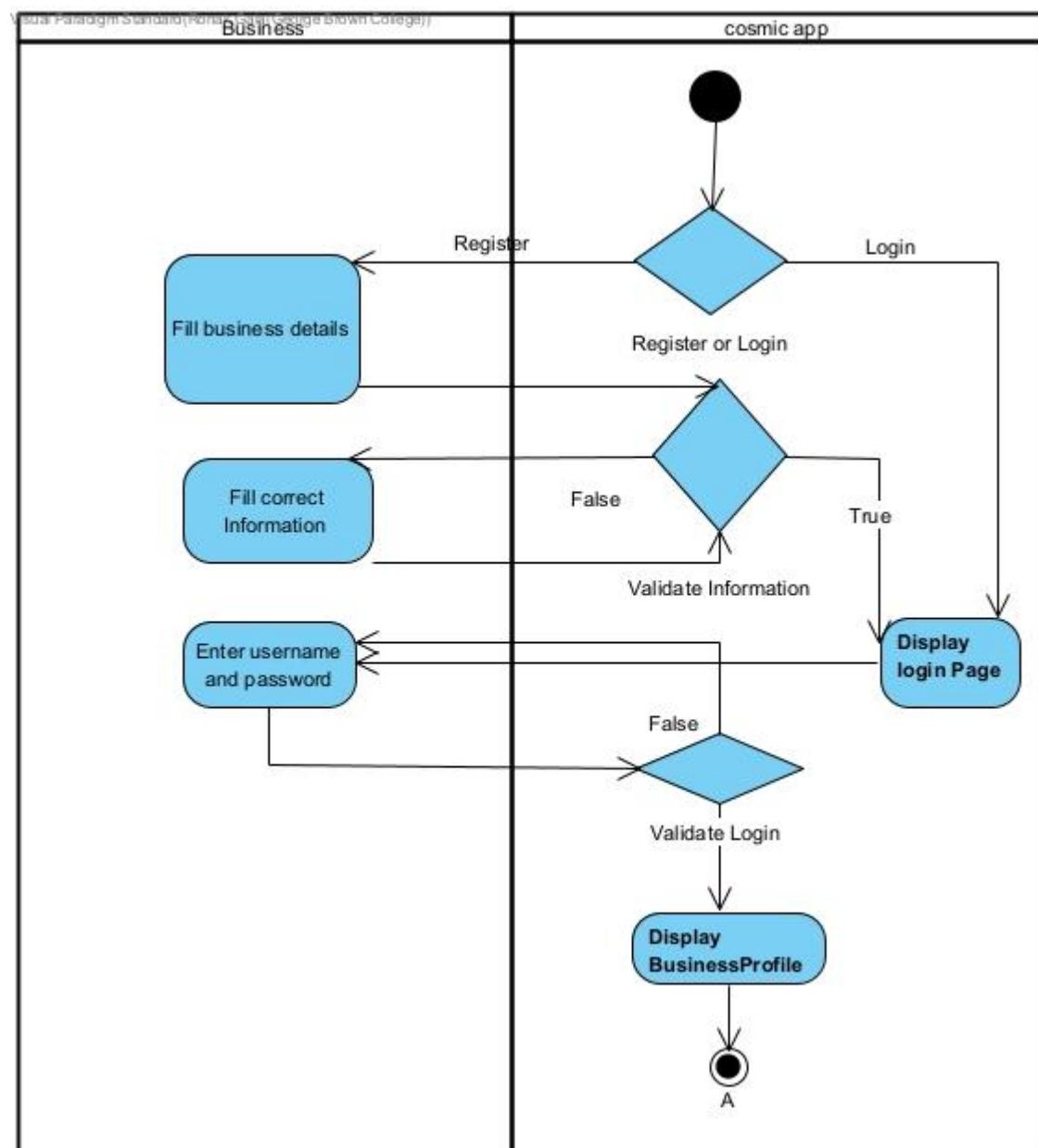


**Business Side:**

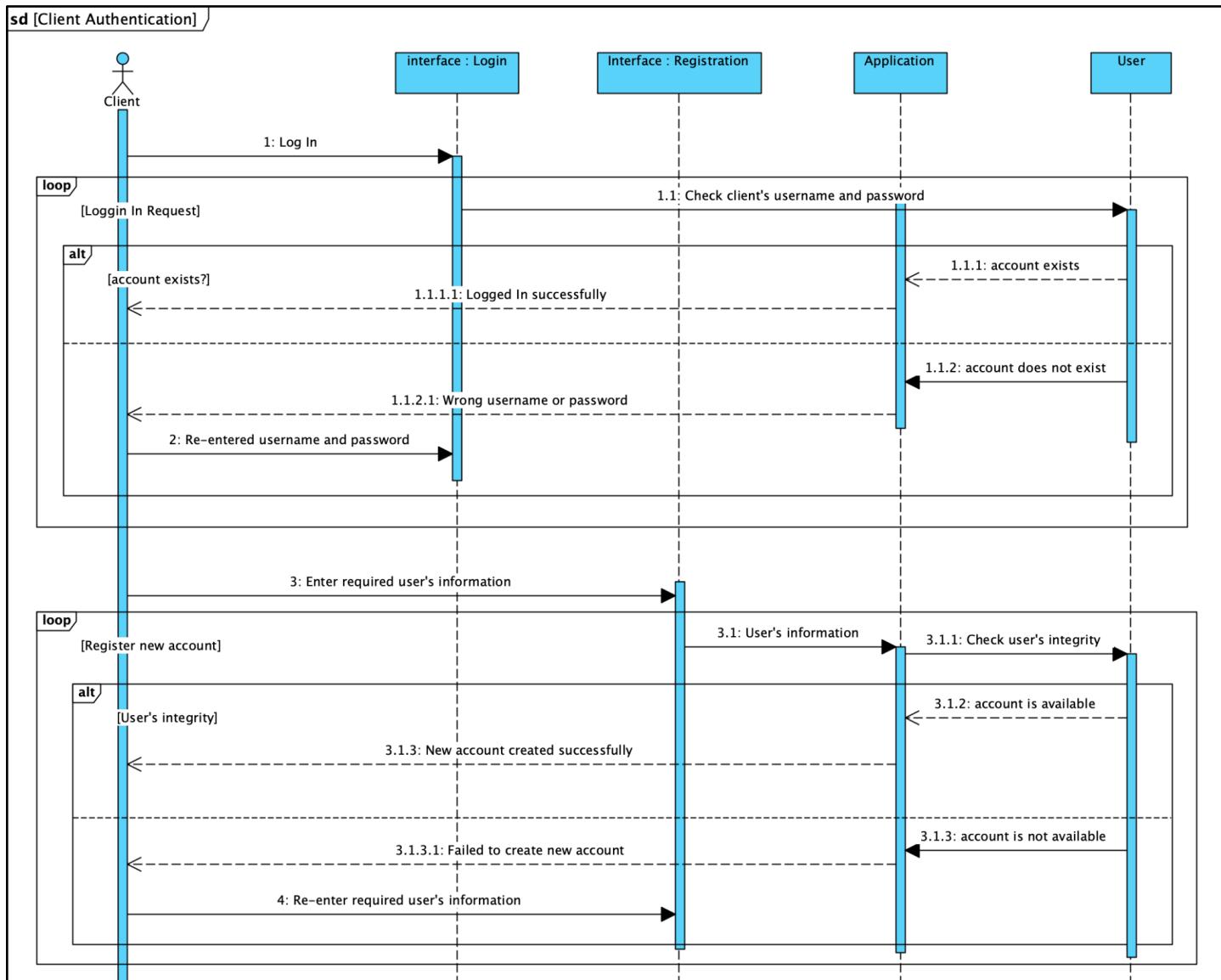


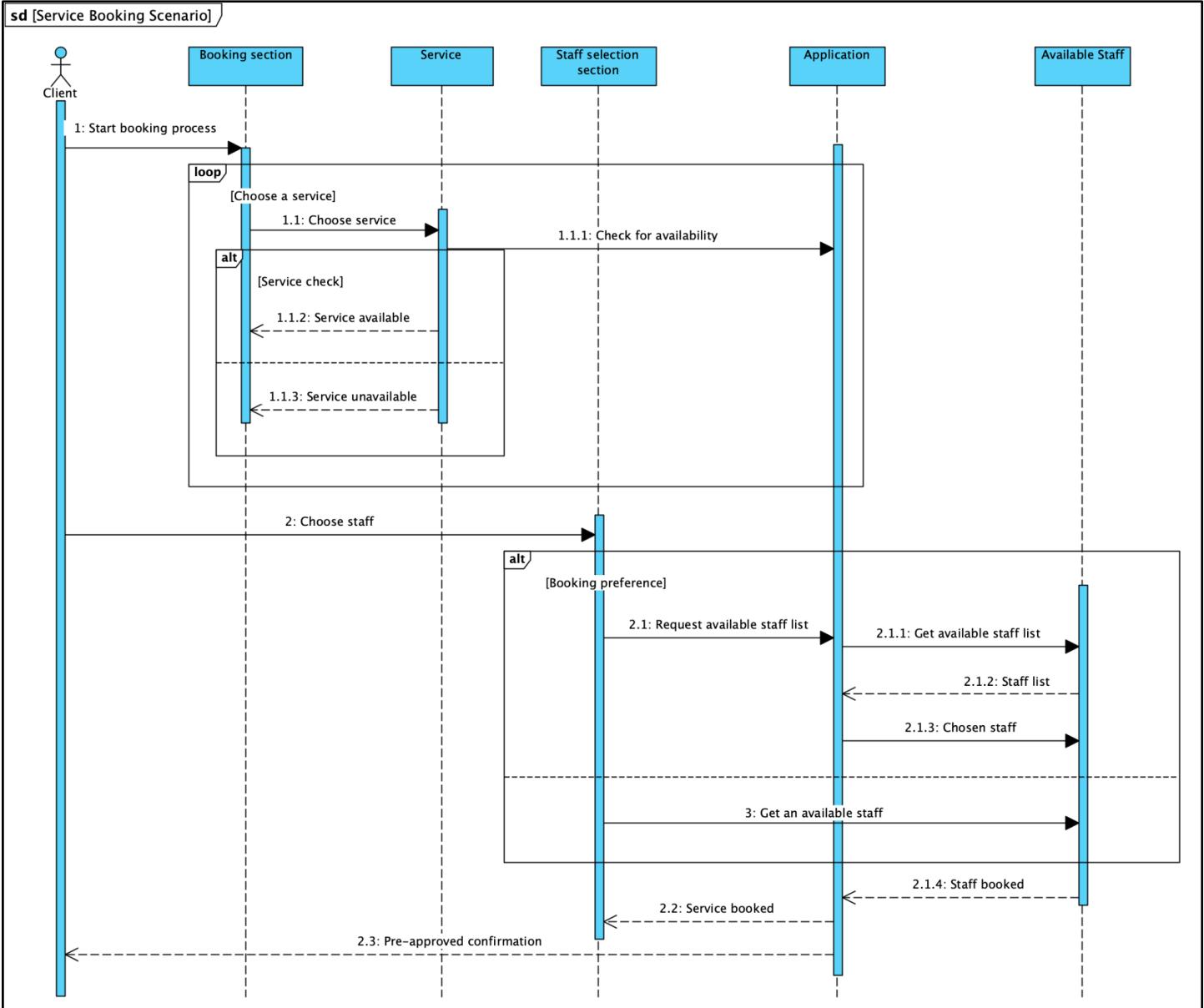


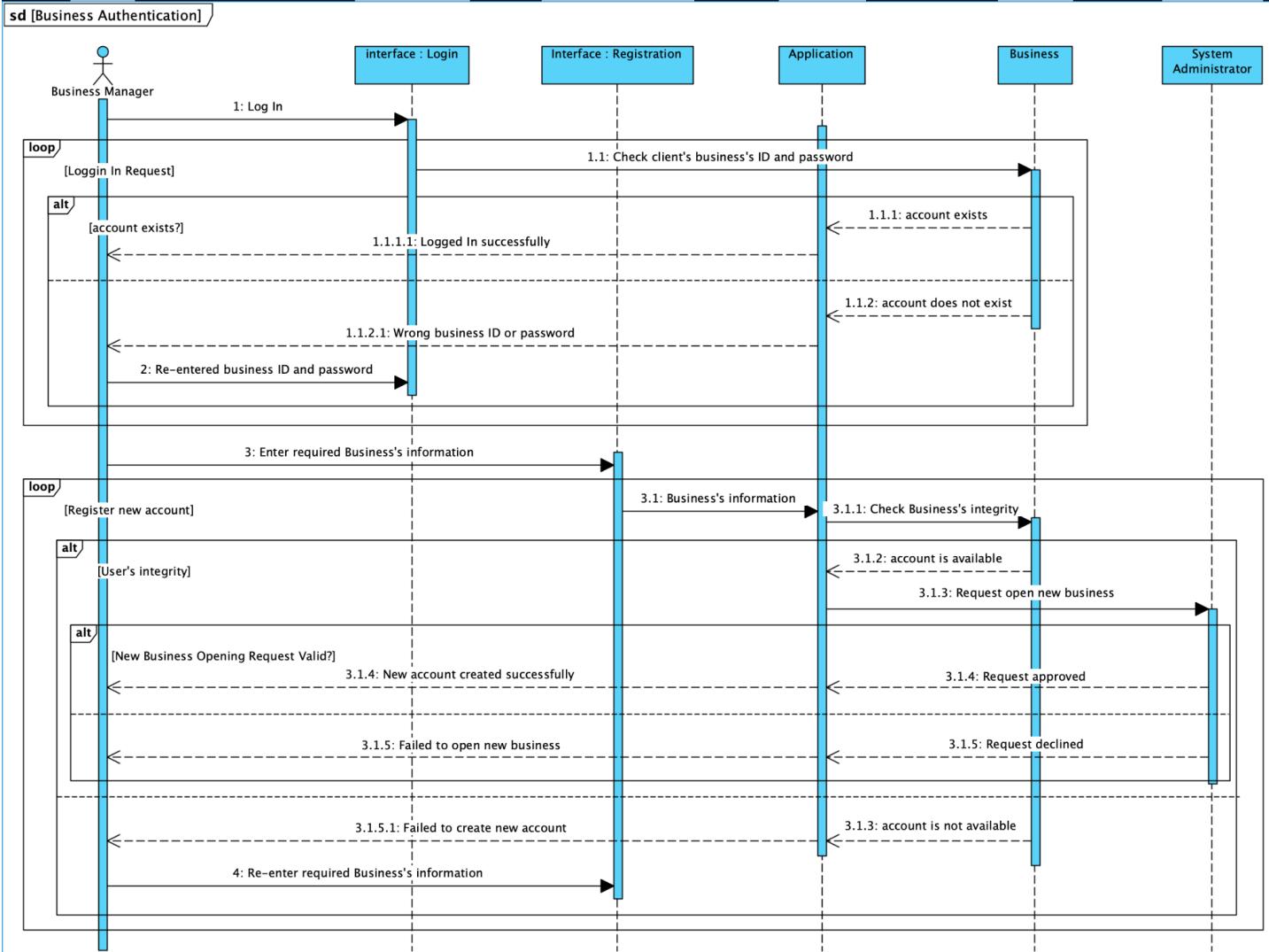


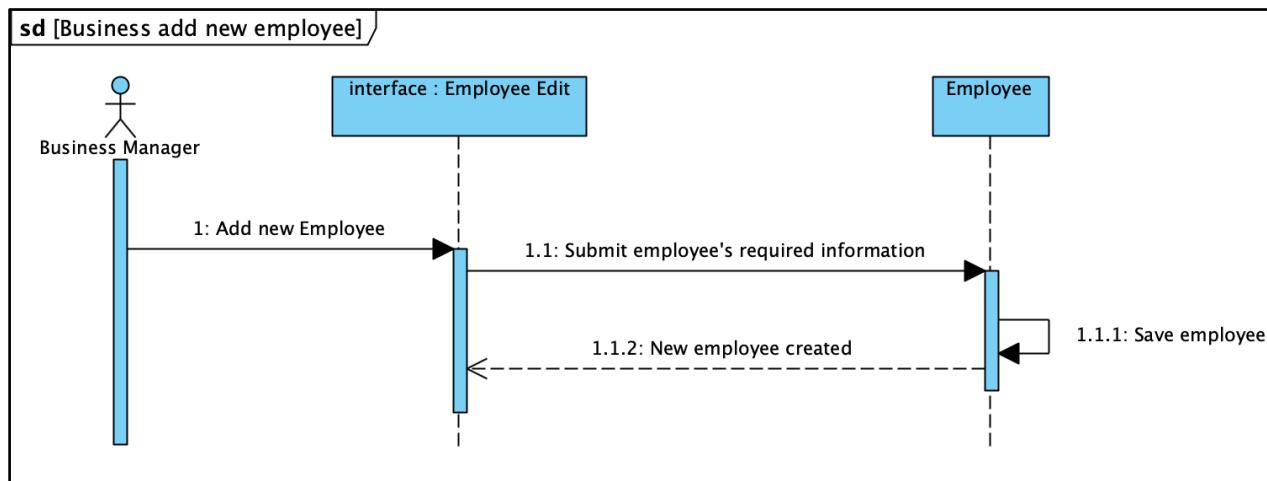
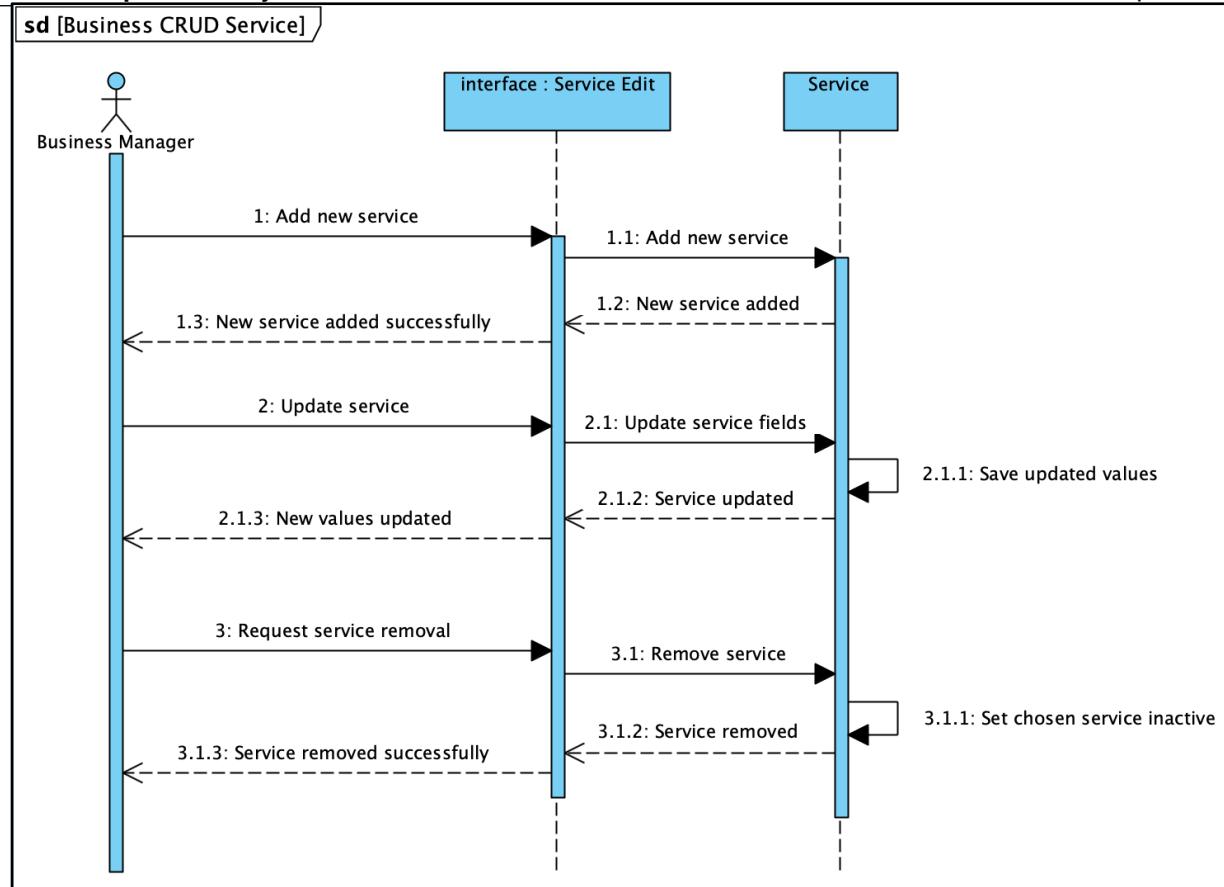


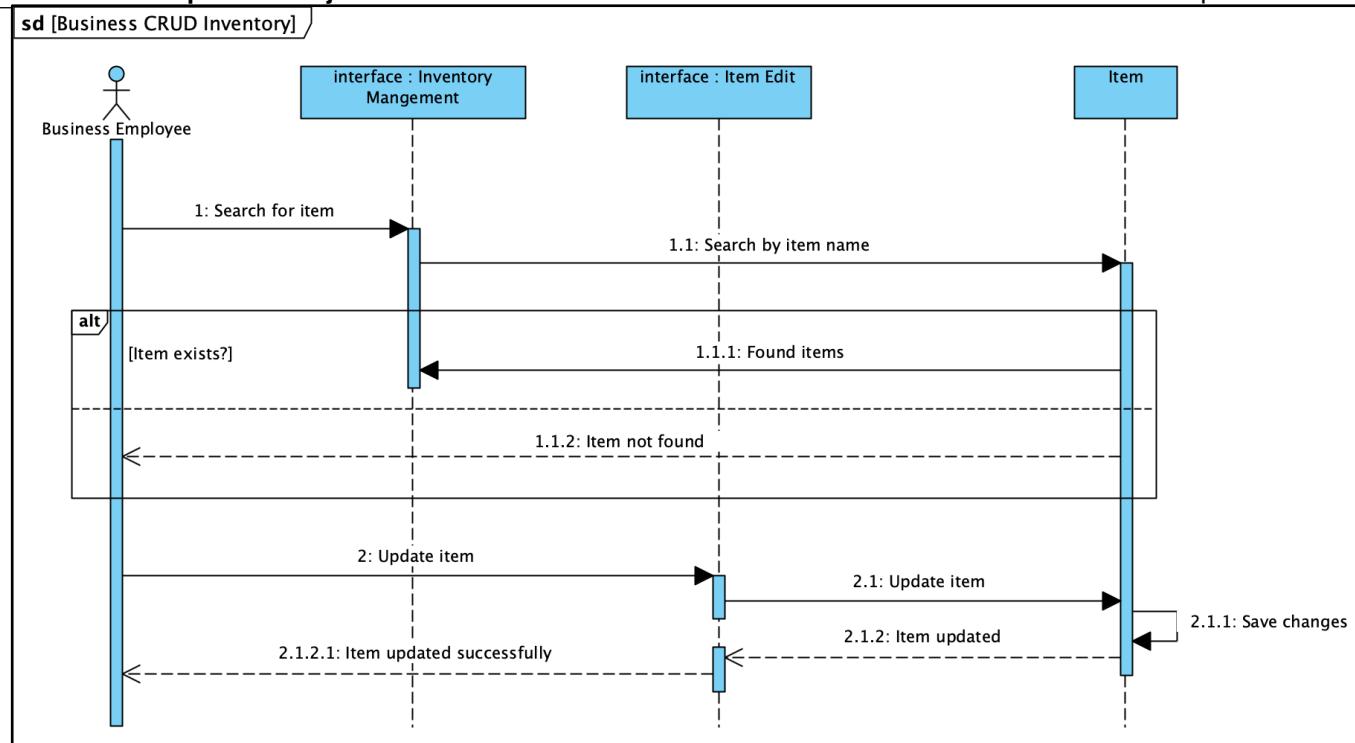
### 3.3.3 Sequence Diagrams



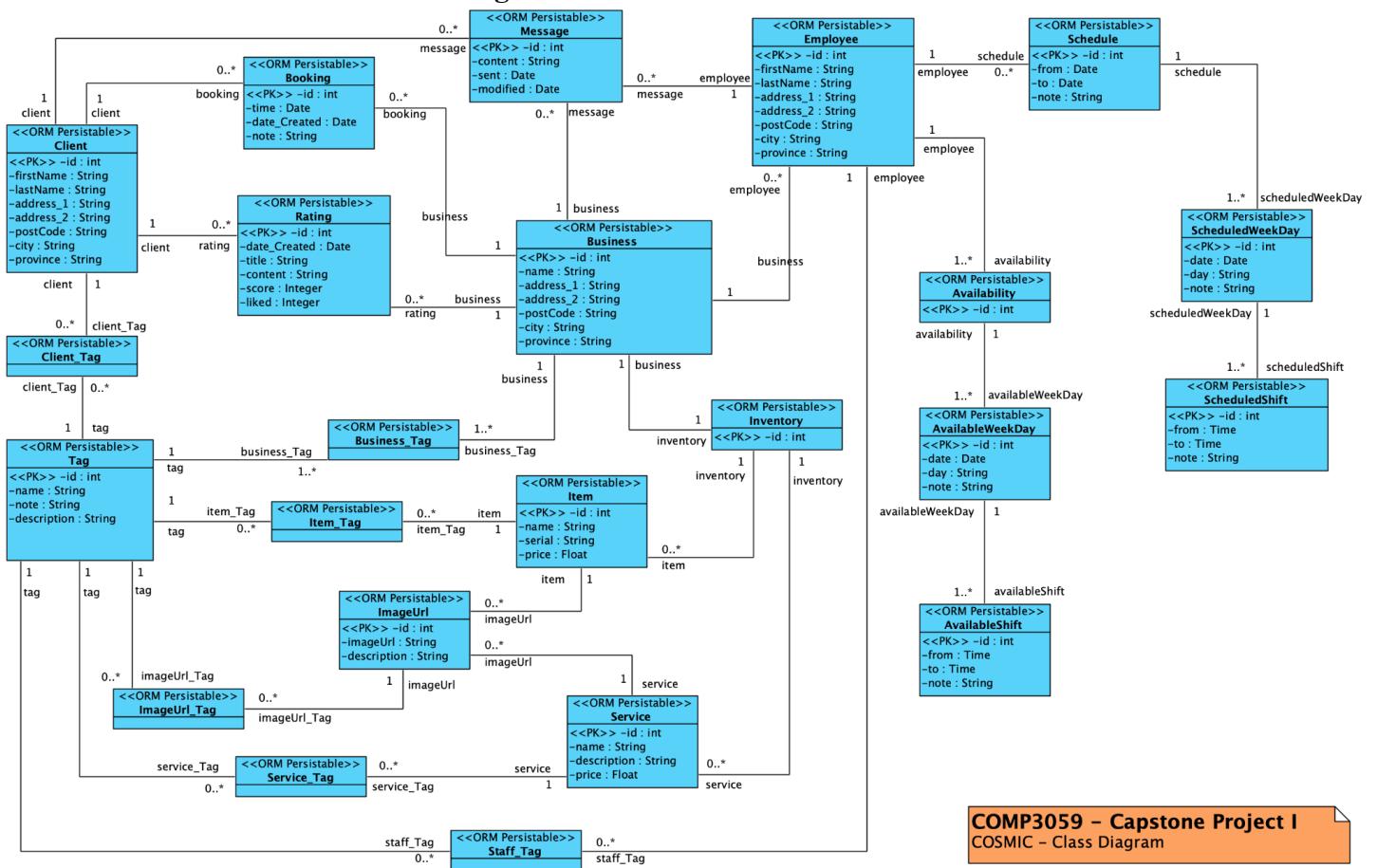


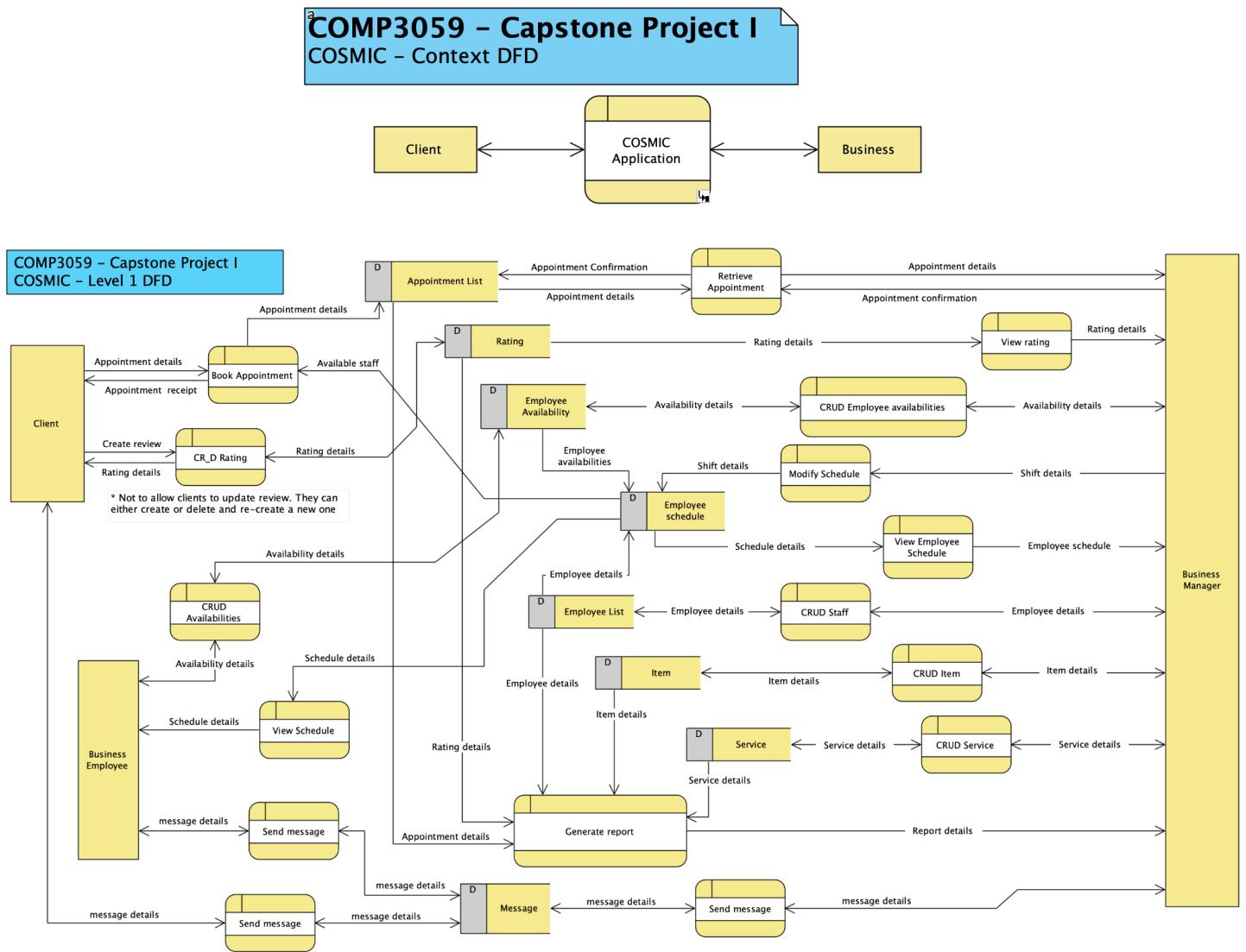






## 3.3.4 UML Class Diagram

COMP3059 – Capstone Project I  
COSMIC – Class Diagram

*ii. 3.4 Process Modelling***3.4.1 Data Flow Diagram**

## b. 4.0 Non-Functional Requirements

### **Availability**

All businesses listed on the search results page will only be active businesses. This could be done by filtering the inactive ones based on their activity and how active they are with interacting with their customers. This will promote a positive experience for the customers trying to book an appointment within the app, since they will not have a downtime getting response from the business.

Businesses can also distinguish active customers from the no-shows through a rating system. Customers with a history of booking an appointment and not showing up will have their rating decreased every time. This way, businesses can decide who to accept in situations where two people book for the same time slot.

### **Maintenance**

Backend and frontend maintenance are independent from one another. Changes in the backend will not result in re-doing the frontend, as well as any minor changes in the frontend side will not require a new structure for the backend. Updates in the Android platform will be done whenever it is required, in cases such as better UX and UI implementation.

Maintenance for this project should be done monthly, as it will give the team enough time to gather information on bugs and other areas that need fixing. For instance something is not working as intended, the team will attend to it as soon as possible.

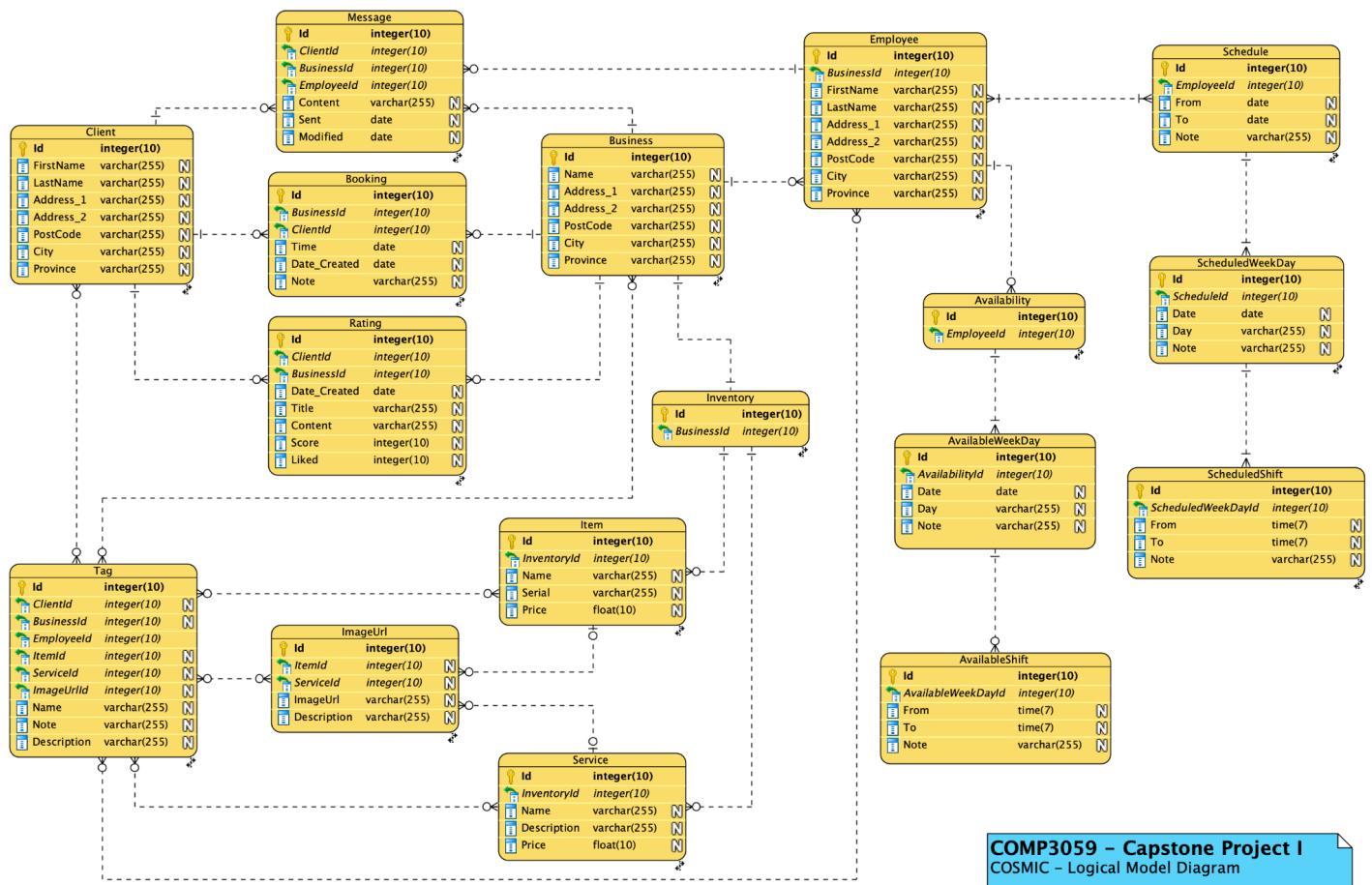
### **Operation**

The team will utilize the scripts that are accessing the database to make it capable of handling thousands of SQL queries when users are trying to access the database at the same time.

## c. 5.0 Logical Database Requirements

This Cosmic Booking System will be hosted on Google Cloud Platform (GCP) running Ubuntu VM with:

- Logical Data Model as shown in the UML below.

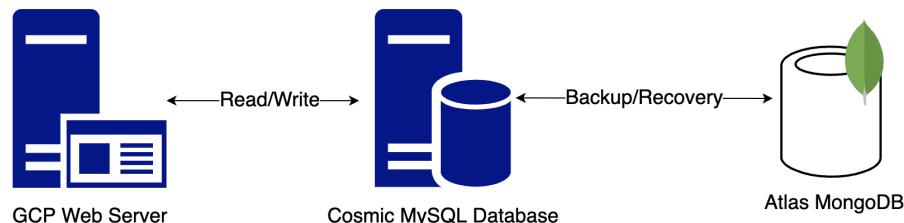


COMP3059 – Capstone Project I  
COSMIC – Logical Model Diagram

- Storage capacity has 100GB (as described in attached image) using MySQL 8.0.

Summary	
Region	us-central1 (Iowa)
DB Version	MySQL 8.0
vCPUs	4 vCPU
Memory	26 GB
Storage	100 GB
Network throughput (MB/s) <span style="color: #0070C0;">?</span>	1,000 of 2,000
Disk throughput (MB/s) <span style="color: #0070C0;">?</span>	Read: 48.0 of 240.0 Write: 48.0 of 240.0
IOPS <span style="color: #0070C0;">?</span>	Read: 3,000 of 15,000 Write: 3,000 of 15,000
Connections	Public IP
Backup	Automated
Availability	Multiple zones (Highly available)
Point-in-time recovery	Enabled

- Data will be backed up on a weekly basis using Atlas MongoDB as a backup database server.




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\* All of the items listed above are estimated for developing phases and the beginning of the deployment. By using Google Cloud Platform as a PaaS, all items are scalable when needed.

### d.6.0 Approval

The signatures below indicate their approval of the contents of this document.

Project Role	Name	Signature	Date
Project Manager	Angela Efremova		11/08/2022
Team Member	Le An Nguyen		11/08/2022
Team Member	Renzzi Adorador		11/08/2022
Team Member	Ronak Gala		11/08/2022