

# SmartStyle

Software Engineering  
Project



Accepted by: Igli HAKRAMA

# **SmartStyle Requirements Specification**

**Final Version**

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## **Executive Summary**

### **1.1 Project Overview**

SmartStyle project is determined to offer the core management and sale activities support in regards to an actual Spa & Hairdresser salon stationed in Tirana, Albania. In this project, our team will design and build a Web-based Application based on the salon's management system. The application will not only be a simple appointment booking and user supper regarding the C2B aspect, but also a fairly complex and completely secure management and accounting system, encompassing all the needs of specifically this type of business. The system's users are divided into five main characteristics, each with their own functionalities and support: Admin, Accountant, Secretary, Employee, and Client.

### **1.2 Purpose and Scope of this Specification**

The main purpose of SmartStyle Salon Management System is to track inventory, booking, personnel, in-store sales, accounting, and marketing, to then collect all of this data from various sources, processes and to organize it, so that ultimately it generates a user-friendly report that the owners can consult while making decisions.

## **2. Product/Service Description**

A Spa and Hairdresser salon management provides valuable tools to simplify the management of different operations. The system keeps track of all the activities that are carried out on a daily basis within the salon. It maintains stock of inventory coming in and going out. Another feature is the management of individual employee salary. The system is even equipped to manage customer billing and data storage, with a nice retouch to show a special bonus reminder to each client on their special day. SmartStyle will help improve the scheduling process by managing client appointments and regulating staff members'

availability, which will be transparent to the customer. This fully equipped system alone is able to manage the entire operations of a spa and hairdresser salon, including the accounting aspect.

## **2.1 Product Context**

The system is automated in the sense that it does not require human efforts in calculating bills and maintain the details of clients and employees and in the accounting records. Also, it maintains records of all the employees along with their salary information so the payments will be correct both with the employee and the government. This feature makes the link between owner and accountant that more transparent. It saves efforts and time and it is cost-effective. Within the business, this system is a single unique data pool with no connection to other systems and it is independent. As a management system, it will be firstly used by the actors inside the business, and then as a web application, it will be used also by the clients of the business.

## **2.2 User Characteristics**

The users of the system will be Admin, Secretary, Accountant, Employee, and Client, and which will include the following functions:

### **ADMIN**

- The Administrator can login in the system.
- S/he may manage and check the employees and their salaries.
- S/he may manage and check the inventory and read reports regarding it.
- S/he may check the client list.
- S/he may manage and check the products and services provided.

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- S/he may manage and check the appointments calendar.
- S/he may check bills/invoices.
- S/he may access various financial reports of the business.
- S/he may create or delete accounts for her/his employees in the system.

### **S E C R E T A R Y**

- The Secretary can login in the system.
- S/he may manage and check the appointments calendar.
- S/he may arrange the employees' weekly or monthly schedule.
- S/he may manage and print bills/invoices for clients.

### **A C C O U N T A N T**

- The Accountant can login in the system.
- S/he may manage and check the employees and their salaries.
- S/he may manage and check the inventory.
- S/he may check bills/invoices.
- S/he may create and access various financial reports of the business.

### **E M P L O Y E E**

- Employee can login in the system.
- They may check and ask for a change in their schedule.
- They may check their own salaries and contributions.
- They may request for vacations and/or paid leave.

## **C L I E N T**

- Client can sign up and login in the system.
- They may access their own page and see their information.
- They may create and change their own appointments online.

### **2.3 Assumptions**

- It is assumed that all the actions are performed regularly according to the law.
- It is assumed that the admin will create the accounts of every employee.
- It is assumed that the information added in the system is checked prior by the admin or other users of the system.
- It is assumed that full access is handled only by the admin and no other user.
- It is assumed that anyone who logs in or uses the web application and makes an appointment to the system and therefore each appointment is assumed to be checked by either the admin or the secretary.
- It is assumed that personal information of the users can be viewed themselves, the admin or a user that has the necessity to such information such as the accountant for salary expenses or the secretary for marketing.
- It is assumed that no one can access the application externally, they must login the system and so leave a print.

### **2.4 Constraints**

Some of the calculated constraints or disadvantages of our Salon Management System are as follows:

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- It requires a large database.
- It requires a stable internet connection.
- The admin or the accountant has to manually manage the inventory

section in the system like what items have been used and what items are coming.

## ***2.5 Dependencies***

The system as a web application will perform most tasks and processes by itself; however, it is not autonomous. Therefore, it requires the input of the human user to input some of the data and to choose some reports and items to be generated, apart from other necessities such as the device and internet for it to function properly.

## **3. Requirements**

A requirement, in software and systems engineering, is a declaration of the intended function of a system and its components. Based on functional requirements, the team shall determine the output that the system is expected to exhibit in the case of a certain input.

### ***3.1 Functional Requirements***

#### **Priority Definitions**

The following definitions are intended as a guideline to prioritize requirements.

- Priority 1 – The requirement is a "must-have" as outlined by policy/law.
- Priority 2 – The requirement is needed for improved processing, and the fulfillment of the requirement will create immediate benefits.
- Priority 3 – The requirement is a "nice to have" which may include new functionality.

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It may be helpful to phrase the requirement in terms of its priority, e.g., "The value of the employee status sent to DIS **must be** either A or I" or "It **would be nice** if the application warned the user that the expiration date was 3 business days away". Another approach would be to group requirements by priority category.

Req #	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_01	The system is designed in the form of five functional user modules: Admin, Secretary, Accountant, Employee, and Client.	As a web application, and to be useful to the users, the communication between users and their functionality is the scope of the system.	1	31 May 2020	Keli Kasharaj
<b>LOGIN AND IDENTIFICATION</b>					
BR_02	The system should allow all the users to be able to access is by a login interface.	By imputing a unique username and password, all users can enter their respective pages.	1	31 May 2020	Keli Kasharaj
BR_03	A database shall be connected to the interface, in order to hold and access all the data.	The data shall be well structured to be easily used and contained	1	31 May 2020	Keli Kasharaj
BR_04	Each user in the database will be identified by a unique primary key and accompanied by their role in the company.	This will make each user uniquely identified and not duplicated.	1	31 May 2020	Keli Kasharaj
BR_05	The system should check with the database if the user exists by checking the username and password.	No two users can have the same username, so a red text shall appear to the user if they have imputed something wrong.	1	31 May 2020	Keli Kasharaj
BR_06	After login, each user should have their unique pages and all user categories have different views.	Each user has bounded access based on their respective roles in the business, except for admin.	1	31 May 2020	Keli Kasharaj
<b>ADMIN</b>					
BR_07	The admin dashboard shall have full access to the system, which is limited only by the Law.	Admin can view everything in the system and can edit most of the information.	1	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_08	The dashboard will generate small statistical numbers regarding the business data in the system.	The main data totals of the system shall be shown in the dashboard, such as no. of employees, clients or products, etc.	2	31 May 2020	Keli Kasharaj, Eni Fejzo

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Req #	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_09	The admin menu will redirect towards all the system: Appointments, Employees, Client, Accounting, and each of their info and statistics.	With dropdown buttons, the admin can go and view each label's main feature or a specific interface to edit or generate specific content.	1	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_10	A calendar with today's appointments is a must to have, in order to calculate the day's workload. It can be as a calendar or tabular format.	It is an important feature to show the day's appointments and the people responsible for each one.	2	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_11	A section with quick reports in order to, when clicked, generates a few basic but very important business reports for the month or year.	As the adjective "quick" dictates, it is to save admin time for some of the most needed reports of the everyday management.	3	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_12	Another section will show the most loyal clients and their respective special days for rewarding.	With this info, the admin might decide to send coupons or discounts as popup/email to these clients.	3	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_13	The system allows the admin to add appointments to the calendar or reserve free slots for vacation or breaks.	Appointments can be not only generated by the system from the clients, but also by the admin.	2	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_14	The admin has full access to the booking calendar, in order to accept, modify, or cancel appointments.	The booking calendar shall show both approved and pending appointments for confirmation or change.	1	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_15	The admin will have also a Bride section in the booking calendar since the admin is also the main stylist of the salon, who does the brides.	It is to see all the info and schedule for the bride(s) in order to free them as a stylist to be picked for the day.	3	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_16	Completed Appointments table is an additional feature for the admin. A report of the table can be saved.	By grouping and searching by the table, the admin can use the info for decision making.	2	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_17	Graphical or tabular data will be generated by the system regarding the appointments info for interpretation by the admin.	This is an optional but nice feature that analysis the times' schedules and moments when appointments are mostly booked, etc.	3	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_18	The admin can access the employee's CRUD table with their respective info, salaries, and taxes to be paid.	A report can be printed at the end and the totals of the salaries and expenses are shown too.	1	31 May 2020	Keli Kasharaj, Eni Fejzo

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Req #	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_19	The system must allow the admin to register the new employees hired because they cannot give themselves the corresponding status.	As employees cannot register themselves, admin needs to give them the corresponding access to the system.	1	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_20	The admin can provide a username and password to the employees. The username can be assigned by the admin.	The starting password will be the same for every employee which they can change later, once they login.	2	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_21	The admin can access the client's table with their respective info.	On top will be the most loyal clients and those less active.	2	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_22	A client can only be deactivated by the admin if they haven't been active for long.	The client won't show on the table, and they can re-activate by login in.	3	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_23	The admin can add Clients but only to store their information, for those loyal clients not familiar with tech.	No client account will username or password will be generated as a user in the system.	3	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_24	The admin can view the inventory in a tabular form with CRUD integration and sort the data as the items with low quantity will be automatically shown first.	In this way, the admin can easily navigate and change the information of each product. Totals of the inventory value will be shown for major info.	1	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_25	The addition of items in the inventory will be done in the form of an invoice with more info than just the one shown in the inventory.	So, the admin can not only enter the new/old items but also recalculate their prices and provide additional info.	2	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_26	The admin can diminish the quantity of used items in the inventory.	This will calculate the used products as costs to the business.	2	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_27	The admin can view, generate, and download accounting reports, files, and statistics.	This will be important to generate quick or detailed reports for interpretation and decision making.	2	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_28	The admin can view in tabular form all the bills from the previous clients, put them in time frames, and see important overall info on the revenues.	This will be important to create a deeper understanding of revenues and frequency to different time frames and to generate a report on it.	2	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_29	The admin accounting reports will be able to be downloaded in the format of an Excel file.	The feature will help both the admin and accountant to use some data for state declarations.	3	31 May 2020	Keli Kasharaj, Eni Fejzo

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Req #	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_30	The admin can change their password in the settings.	Only their password, not other users.	3	31 May 2020	Keli Kasharaj, Eni Fejzo
BR_31	The admin can obviously log out of the system.	All users can and should log out for their own security.	1	31 May 2020	Keli Kasharaj, Eni Fejzo
<b>SECRETARY</b>					
BR_32	The secretary dashboard has limited access to the system, only in regards to booking settings and clients' bills.	The access is limited within the responsibilities of her role in the business, namely the works of a secretary	1	31 May 2020	Keli Kasharaj, Enejda Doko
BR_33	A schedule in either calendar or tabular form will show the appointments scheduled or to be approved by the secretary.	The main task of the secretary is to view, accept, edit/reschedule or cancel appointments.	1	31 May 2020	Keli Kasharaj, Enejda Doko
BR_34	The system will show a small table with the shifts of the employee names and job, with additional options on it.	Making it easier for the secretary to view shifts, she may later edit the employees appointed to the shifts she views.	2	31 May 2020	Keli Kasharaj, Enejda Doko
BR_35	The secretary can assign shift to employees and wait for their confirmation.	The secretary can view the shifts and assign each employee accordingly.	2	31 May 2020	Keli Kasharaj, Enejda Doko
BR_36	In a tabular form, the secretary can view the new canceled appointments.	They can message the client in order to ask why they canceled.	2	31 May 2020	Keli Kasharaj, Enejda Doko
BR_37	In a tabular form, the secretary can add, accept, cancel or reschedule the new appointments waiting for confirmation.	They can create new appointments, approve or disapprove them, change the time of appointment.	1	31 May 2020	Keli Kasharaj, Enejda Doko
BR_38	The secretary will generate and print bills for the clients. This applies if no additional services or products are purchased at the salon.	A bill is generated by the system and can be directly printed.	2	31 May 2020	Keli Kasharaj, Enejda Doko
BR_39	The secretary will generate a new bill for clients that come in without an appointment.	A bill form is filled by the secretary and can be directly printed.	2	31 May 2020	Keli Kasharaj, Enejda Doko
BR_40	The secretary will generate and add items to a client's bill for additional services or products purchased in the salon.	The system will generate a bill based in the appointed services, which the secretary can edit and then print.	2	31 May 2020	Keli Kasharaj, Enejda Doko
BR_41	Another section in the secretary dashboard will show the most loyal clients and their respective special days for rewarding.	With this info, the secretary can send coupons or discounts as per messages or email to these clients.	3	31 May 2020	Keli Kasharaj, Enejda Doko

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Req #	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_42	The secretary can change their password and personal info in the settings.	They can only change their own personal info, but not their salary.	3	31 May 2020	Keli Kasharaj, Enejda Doko
BR_43	The secretary can obviously log out of the system.	All users can and should log out for their own security.	1	31 May 2020	Keli Kasharaj, Enejda Doko
<b>A C C O U N T A N T</b>					
BR_44	The accountant can view the statement of financial performance.	They can select the period and print the statement.	1	31 May 2020	Keli Kasharaj, Klintist Dyrmishi
BR_45	The accountant can create new invoices to record the expenses incurred by the business.	The invoice will be recorded by the system and expenses directly calculated.	1	31 May 2020	Keli Kasharaj, Klintist Dyrmishi
BR_46	A graphical view of the revenues and expenses as a bar chart will be displayed in the accountant dashboard.	This is to makes it easier for the accountant to interpret the revenue and expenses for each month.	3	31 May 2020	Keli Kasharaj, Klintist Dyrmishi
BR_47	In tabular form, all of the invoices will be listed so the accountant can group them by and/or edit them.	This is important for the accountant to view, group and edit invoices.	2	31 May 2020	Keli Kasharaj, Klintist Dyrmishi
BR_48	The system will generate reports for the accountant to view and download.	Reports are important to verify the system's records and for declarations.	2	31 May 2020	Keli Kasharaj, Klintist Dyrmishi
BR_49	The accountant can view the inventory in a tabular form with CRUD integration and sort the data as the items with low quantity will be automatically shown first.	In this way, the accountant can easily navigate and change the information of each product. Totals of the inventory value will be shown for major info.	1	31 May 2020	Keli Kasharaj, Klintist Dyrmishi
BR_50	The addition of items in the inventory will be done in the form of an invoice with more info than just the one shown in the inventory.	So, the accountant can not only enter the new/old items but also recalculate their prices and provide additional info.	2	31 May 2020	Keli Kasharaj, Klintist Dyrmishi
BR_51	The accountant can diminish the quantity of used items in the inventory.	This will calculate the used products as costs to the business.	2	31 May 2020	Keli Kasharaj, Klintist Dyrmishi
BR_52	The accountant can access the employees CRUD table with their respective info, salaries, and taxes to be paid.	A report can be printed at the end and totals of the salaries and expenses are shown too.	1	31 May 2020	Keli Kasharaj, Klintist Dyrmishi
BR_53	The accountant can change their password and personal info in the settings.	They can only change their own personal info, but not their salary.	3	31 May 2020	Keli Kasharaj, Klintist Dyrmishi
BR_54	The accountant can obviously log out of the system.	All users can and should log out for their own security.	1	31 May 2020	Keli Kasharaj, Klintist Dyrmishi

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Req #	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
<b>E M P L O Y E E</b>					
BR_55	The employee can view and edit their personal information.	They can only change their own personal info, but not their salary.	1	31 May 2020	Keli Kasharaj, Sardi Shehu
BR_56	The employee can view and edit their shift for the current day.	Today's shift will be shown in a one-day calendar mode.	1	31 May 2020	Keli Kasharaj, Sardi Shehu
BR_57	The employee can view and edit their schedule for the month.	In a calendar for the current month will be shown work and vacation days.	2	31 May 2020	Keli Kasharaj, Sardi Shehu
BR_58	The system will show messages regarding changes in the shift by either the admin or secretary.	This is an optional feature to let there be communication regarding changes between them.	3	31 May 2020	Keli Kasharaj, Sardi Shehu
BR_59	The employee can change their password.	After the first login, they can change the default one.	1	31 May 2020	Keli Kasharaj, Sardi Shehu
BR_60	The employee can obviously log out of the system.	All users can and should log out for their own security.	1	31 May 2020	Keli Kasharaj, Sardi Shehu
<b>C L I E N T</b>					
BR_61	The client can register into the system by giving the same personal information.	They must enter a unique username, name, password, and few relevant data.	1	31 May 2020	Keli Kasharaj, Fabjan Kodra
BR_62	The client can view and edit their personal information and even password.	They can change their own personal information.	1	31 May 2020	Keli Kasharaj, Fabjan Kodra
BR_63	The client can book an appointment in an assigned time with the desired services.	The client will enter the info they want for the appointment and it will be sent through to the system.	1	31 May 2020	Keli Kasharaj, Fabjan Kodra
BR_64	The system will show automatic messages regarding pending appointments or other statuses, and other info.	This is a feature to show the approved future appointments and other messages from the system.	2	31 May 2020	Keli Kasharaj, Fabjan Kodra
BR_65	For each appointment, the client will gather points which he or she can later redeem.	The points can be converted to discounts for the client.	2	31 May 2020	Keli Kasharaj, Fabjan Kodra
BR_66	Previous appointments will be stored for the client to view.	It might be useful for the next appointment's time.	2	31 May 2020	Keli Kasharaj, Fabjan Kodra
BR_67	A slide show gallery with photos of the client or salon will appear on the client dashboard.	This feature is to give a personal touch and experience to each client who came to the salon.	3	31 May 2020	Keli Kasharaj, Fabjan Kodra
BR_68	The client can obviously log out of the system.	All users can and should log out for their own security.	1	31 May 2020	Keli Kasharaj, Fabjan Kodra

## **3.2 Non-Functional Requirements**

### **3.2.1 Product Requirements**

#### **3.2.1.1 Usability**

For making a good web application for our smart style salon we are going to follow some key principles.

##### **Availability and Accessibility**

Our web application should always work and ensure the users don't get an error trying to load the site. The system that we will create for SmartStyle should be active 24/7, and it will be reachable to anyone who owns a digital device like a phone, laptop, desktop, tablet, etc. We won't limit the accessing by only one browser even though Google Chrome is the most used browser we will be available also on Firefox, Microsoft Edge, safari, etc. In this way, people won't feel limited on the offered ways to access the website. The website will be used by customers but also by the staff and admin which means it will be available in 2 languages Albanian and English and also considering that there is sensitive data we will try to avoid any failure in the system which will make it go down be it scheduled or unscheduled maintenance.

##### **Clarity and Simplicity**

The web application should be easy to utilize, clear for the users, and to focus on what is important. In the simplicity of construction, the web application is designed mainly using a two-tier architecture, in which a client communicates directly with a server.

##### **Usability Defects to Avoid**

A usability defect has one or more of the following characteristics. It irritates or confuses the user. It makes a system hard to install, learn, or use. It causes mental overload of the user. (For example, the user may have to think a lot as the required action or feedback from the system may not be obvious or sufficient.) It causes poor user performance. It violates design standards or guidelines. It reduces the trust or credibility of the system.

### **3.2.1.2 Efficiency**

SmartStyle will be a very efficient web application meaning that each user can accomplish every task easily and also every client will have their own account where he can enter and see his own data. The website will also be very efficient for the owner to manage his business because all the finances and products will be posted on the system. Efficiency is reached when the application is easy to learn and navigate with buttons and when its messages will be very easy to understand by all users.

### **Performance requirement**

SmartStyle system's performance is determined by the internet connection and the strength of the devices. For a good performance, we need, first of all, the storage space. We are going to have a lot of appointments, products, invoices or bills, employee and client data, accounting data, etc. and for these reasons, we need a lot of storage space. The PC should have a powerful CPU and fast internet speed that the system can respond to the user as fast as we can. Also, very important is the way of building of our web application. This means building and coding an efficient web application with very high performance and with less space.

### **Space requirement**

- The system should be able to deal with at least 150 users at the same time.
- The website will be able to handle at least 25 requirements per second.
- RAM storage will be at least 4 GB.
- Processor 2 x 1.6 GHz.
- The maximum simultaneous user: 150.

### **3.2.1.3 Dependability**

#### **Monitoring and control**

Monitoring and Controlling are processes needed to track, review, and regulate the progress and performance. It also identifies any areas where changes are required and initiates the required changes. In case of any error, the admin and users will all be notified with particular notifications where they will be notified for how long the system will be down. The system will be built to be reliable and trustworthy.

#### **Maintenance**

It appears after the user has created his/her account on SmartStyle. Maintenance is basically making sure that the system works correctly. It is easier to maintain the system with high-quality coding which is easily readable. The website will be built in a way that can be ever updated and extended with new features that will keep SmartStyle ever interesting.

#### **Maintainability**

Software maintainability is defined as the degree to which an application is understood, repaired, or enhanced. Understanding software maintainability allows us to identify improvement areas as well as determine the value supplied by current applications or during development changes. We will also be able to update, upgrade, and extend/change our features easily.

#### **Operations**

SmartStyle software should be 24/7 online. Users are all able to login in to the system of SmartStyle. Their passwords will be encrypted and impossible to be accessed by someone else. All the data will be secured in the system. Admin or any authorized user will be able to edit, delete or change information.

## **Threats and error removal**

*Fault Prevention:* it deals with prevention faults being incorporated into the system. This can be accomplished by development methodologies and good implementation techniques.

*Fault Removal:* it can be divided into two sub-categories: Removal during Development and Removal during Use.

*Removal:* during development verification is required so that faults can be found or detected and removed before the system is put in production. Once our system has been put in production, then we will need another system to record failures and remove them via a maintenance cycle.

*Fault Forecasting:* predicts likely faults so that they can be removed or their effects can be prevented.

### **3.2.1.4 Security**

#### **Authentication and password management**

Authentication and password are some of the most important requirements that we will apply on our website. This will be the best way to be a trustworthy website. Authentication will always notify the user if something is wrong or not valid and according to the password we will try and make it invisible in the database like showing apteryx "\*" instead of numbers and letters. This way the password will be protected all the time and known only by the user. There will be a function that will check if:

- Your email is valid.
- Your password is valid.
- Your username is valid.

If they are not than there will be a warning that the username or password is not correct.

## **Authorization and role management**

Authorization and role management will separate the users from employees and administrators where every account will have their limits with administrator being the main account which has access in the databases. It will allow us to add new employees, to inform us when a time is scheduled for which employee; all this ofcourse will be accessed by administrator or authorized users.

## **Audit logging and analysis**

By logging we mean recording information which is not sensitive or has anything to do with the privacy of the user. For example, how active an account is in our website or which part of the website is used less than the other parts in order for us to improve it. Auditing, however, is more complex. Auditing is the practice of inspecting logs for the purpose of verifying that the system is in a desirable state or to answer questions about how the system arrived at a particular state. In this way we will be able to see where our website stands and how well it is going and how we can improve on certain fragments or even extend our system.

## **Network and data security**

Network and data security means that we need to protect our data and information from being infected or reached from a third party. This is a worldwide problem and customers get more and more aware of these issues and demand their privacy protected and defended which is one of the main points we will focus on our site.

### **3.2.2 Organizational Requirements**

#### **3.2.2.1 Environmental Requirements**

SmartStyle application is planned to be stored in a Mac computer inside the salon on the second floor, where the office of the salon owner is located. The attributes of the Mac seem favorable enough towards being energy efficient to prevent accidents from happening from causes such as overheating of the computer's hardware, etc. As the system will firstly start as an inner Salon management system, with few to no clients, the current conditions are more than adequate to make the application work perfectly for the few employees. The power supply to the computer server will be uninterrupted as a small battery will be connected to it in case of energy blackouts and reinforced by standard and adequate cables.

When clients will be allowed to register and use the web application, additional hardware might be advised to increase performance in proportion to the number of users and information generated by the system. Periodical check-ups by the team will be performed to the system and the server will be secured from outside/physical occurrences, as well as internal occurrences such as malwares and other attacks, which will be secured with firewalls and antivirus, apart from the usual password-protected user.

#### **3.2.2.2 Operational Requirements**

The main basis of the operations of the SmartStyle web application is: **(1)** the CRUD operations on the tabular forms accessed mainly by the admin and accountant; **(2)** creating, approving and editing of appointments booked or to be booked; **(3)** operations with forms to get client data and perform with information called from invoices/bills; and **(4)** viewing various information and statistics in different formats from the database. The overall system of the application will be responsible to maintain and collect all the data, and demonstrate them in the adequate instances within it.

### **3.2.2.3 Development Requirements**

#### **Client-Side Programming (Front-end)**

Technologies to be used in client-side web development will be Hypertext Markup Language (HTML), Cascading Style Sheets (CSS), JavaScript (JS) and bootstrap as they make it easier for us to build this web application.

#### **Server-Side Programming (Back-end)**

Technologies to be used in client-side web development PHP, since we are more familiar with it. To begin with, it is easier to use, and you can build a web app with fewer lines of code. Furthermore, it is open source and it is supported by a large community. PHP supports popular databases such as MySQL and is platform independent with regard to operating systems and major web servers. As for the database decided to be used is MySQL, which is very easy to install, and thanks to a bevy of third-party tools that can be added to the database, setting up an implementation is a relatively simple task. In addition, it is also an easy database to work with. Although MySQL's popularity has waned somewhat in recent years, it remains one of the most-used database systems in the world. It is compatible with virtually every operating system, and is more or less an industry standard. MySQL stored procedures are secure because the database administrator can grant appropriate permissions to applications that access stored procedures in the database without giving any permissions on the underlying database tables.

### **3.2.3 External Requirements**

#### **3.2.3.1 Ethical Requirements**

##### **Software**

The software should deliver a quality solution to the customer, which is in line with the original specification made by him/her. It also has to provide users with clear information about

how their information issued. To conclude, the software should allow users to export their data and respect the confidentiality of every stakeholder even though a previous agreement might not have been signed.

## **Developers**

The developers should not take any steps that would unnecessarily force the customer to award business to them again in future. They have to make sure that they use standard approaches and fully document their solution, so as to make it easily maintainable by others. Moreover, no steps should be taken that might put the customer's business interests at risk, even if it was an action that would benefit their own organization. Everything should be done by respecting the rights and entitlements of other developers, avoiding plagiarism or the unethical or even illegal use of software components built by others.

### **3.2.3.2 Regulatory Requirements**

#### **Privacy policy**

As the software will be web based, it is a must to have a privacy policy, a clear disclosure of how you'll be using any data that you collect.

#### **E-Commerce policy**

The software will probably include e-commerce, and as a result it should follow the rules for selling things online.

#### **Copyrighted content**

Software's content should be protected from copyright infringement through use of symbols and notices of conditions of any reproduction of content.

### **3.2.4 Legislative Requirements**

#### **3.2.4.1 Accounting Requirements**

All action, accounting records and reports will be done in accordance with the National Accounting Standards (NAS). According to Law Nr. 8438, dated 28.12.1998 about Taxation on Income amended Minimum wage decided 26000 decided in 2019. Albania makes use of three-bracket progressive income; for income in range (0-30'000 lekë) 0% taxation, (30'001-150'000 lekë) 13% taxation; more than 150'000 lekë, 23% taxation. Social security and health contributions are taken into consideration. Social security tax is 11.2 % from employee contribution, 16.7% for employer, 23% for self-employed. Health contribution is 1.7% for both employer and employee, 6% for self-employed.

The currency that the software will use is Albanian currency. Although payments can be performed in other currencies on cash, they will be registered in 'lekë' taking into consideration proper exchange rates on the day when transaction took place. In addition to this we will take into account VAT (Value added tax) which has value of 20%. System will handle VAT value according to law on taxation specifications. The Income Statement or otherwise known as the Statement of Financial Performance is one of the main financial instruments to generate profits and loss of the business. The system should allow recording data on Sales and Purchases Ledger (2018 format base), which accompanies the document on declaration of VAT, complying the regulation on it by the Tax Office.

#### **3.2.4.2 Safety Requirements**

The goal of safety requirements engineering is to identify protection requirements that ensure that system failures do not cause injury or death or environmental damage. Our safety requirements are constructed to meet national and international standards, regulations and directives mentioning:

*Defense Standard for safety Critical Software* addresses simplicity as a governing technical principal of software design.

*DEF STAN 00-55*: “The system functional and interface requirements that are allocated to software should be analyzed for ambiguities, inconsistencies and undefined conditions”.

*IEC 61508-3:1998 \*International Electro technical Commission* is an international standard for the “functional safety” of electrical, electronic, and programmable electronic equipment, which focuses attention on risk-based safety-related system design, that should result in far more cost-effective implementation.

*The General Data Protection Regulation (EU) 2016/679 (GDPR)* is a regulation in EU law on data protection and privacy in the European Union (EU) and the European Economic Area (EEA), contains provisions and requirements related to the processing of personal data of individuals who reside in the EEA.

*Copyright regulations*: Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs (15) The unauthorized reproduction, translation, adaptation or transformation of the form of the code in which a copy of a computer program has been made available constitutes an infringement of the exclusive rights of the author.

*Data protection*: Law Nr. 2/2017 for Cybernetic Security. This law applies to communication networks and information systems, the violation or destruction of which would affect health, safety, economic well-being of citizens and the effective functioning of the economy in the Republic of Albania. The processing of personal data, in order to implement this law, must be carried out in accordance with the provisions of law no. 9887, dated 10.3.2008, "On the protection of personal data", as amended.

## Safety-related process activities

- Appointment of project safety engineers who have explicit responsibility for system safety;
- Extensive use of safety reviews;
- Creation of a safety certification system where the safety of critical components is formally certified;
- Detailed configuration management.
- Simple architecture
- Safe software should be verifiable and testable
- Verification includes self-test and diagnosis
- Strong compile time checking
- Strong run time checking
- Support for encapsulation and abstraction
- Exception handling
- Forward recovery via robust (redundant) data structures
- Monitor channel redundancy
- Remove redundant code
- Ensure the environment is safe (e.g., freezing of actuators) while restarting
- Ability to trap anomalies as they occur for later diagnosis

## 4. Software Design

### 4.1 *User Scenarios*

A user scenario is the fictitious story of a user's accomplishing an action or goal via a product. It focuses on a user's motivations, and documents the process by which the user might use a design. There are in total 56 Scenarios.

## **Admin Scenarios (14)**

### *1. Admin Login*

- a. Admin enters his/her credentials.
- b. If credentials proven correct, admin is redirected to the Admin Dashboard.
- c. Otherwise, an error message pops up and the administrator is asked to re-enter accurately his/her credentials.
- d. Once logged in, the Admin Dashboard including a dropdown menu, business statistics, the appointments calendar for the current day, quick reports generation, information regarding employees having their birthday, and a sign out button, reveals itself. This would be the Home section of the menu.
- e. Admin can generate PDF files of the reports listed under the Quick Reports section.

### *2. Admin Appointments*

- a. Admin can navigate through the Appointments section of the menu by choosing whether to check the Booking Calendar, Completed Appointments table, or the Appointment Statistics.

### *3. Admin Booking Calendar*

- a. Admin is redirected to a three-day Booking Calendar, showing all the bookings for the current day and the two following days.
- b. Admin can add a new appointment by filling in the required information.
- c. Admin can check the information with respect to any appointment by selecting that specific appointment, and a textarea with the data reveals itself.
- d. Admin can either choose to edit this information by writing on the textarea and then clicking the Modify button to save the editing, or not to edit.
- e. Admin can either choose to Accept, Reject or Reschedule the pending appointments, since every New Appointment has a pending status until Admin decides to reschedule, reject, or just go on with it.
- f. Admin can Reject or Reschedule the appointment. Following that, Admin can confirm the rejection and remove the appointment from the booking calendar.
- g. Admin can also choose to reschedule by filling in the updated information.
- h. Except the Appointments Calendar, the To Do Lists for every bride including their name, the number of days the bride has been receiving the services from the salon, the employees assigned to her, and the schedule for the services to be taken, also show up.
- i. Admin can add another bride and filling in the required data.

**4. Admin Completed Appointments**

- a. Admin is redirected to a table of the data regarding all past completed appointments.
- b. If the Admin wants to see the past appointments of a certain service, then he/she should group appointments by that specific service. For example, if the administrator wants to see the past appointments that received a haircut, he should choose Haircut under the services dropdown list.
- c. When the Admin selects one of the employees, then he will see all past appointments that that employee has offered his/her service to.
- d. Admin can also search through the Search Bar for a specific appointment.
- e. There may be many past appointments, so the Next & Previous serve for when the admin decides to go forth and back through the appointments.
- f. Admin can also generate a PDF file with the table of all the past appointments by deciding to print the generated table.

**5. Admin Appointments Statistics**

- a. Admin is represented to several statistics regarding the employees that had the most appointments, or the services that customers received the most.

**6. Admin Employees**

- a. Admin can check all the registered Employees.
- b. Admin can use the search bar if they want to search for a specific employee or employees with common information (e.g. all hairstylists).
- c. Admin can generate a PDF file with a table of employees.

**7. Admin Delete Employee**

- a. Admin can delete any employee, who is automatically erased from the employees' database and cannot login in the software anymore.
- b. The deleted employee will not be shown in the employees' table anymore and this employee cannot access the system anymore.

**8. Admin Add Employee**

- a. Admin goes through the Add button on top of the Employees page.
- b. Admin enters all the credentials required for the employee, including the username and the password that the employee will be using to login into the system.
- c. Admin can choose to save the entered data and register the employee, or just end the process through the cancel button.
- d. If Admin decides to register the employee, then the employee is added to the users' database, and he/she can now access the software with the username and password that admin has assigned to him/her.

**9. Admin Accounting**

- a. Admin can navigate through the Accounting section of the menu by choosing whether to check the Inventory, the Revenue, or the Accounting Reports.

**10. Admin Inventory**

- a. Admin clicks can check all the available products and their quantities, with products with limited quantities being ranked first.
- b. Admin can use the Search Bar to look for a specific product.
- c. Admin can generate a PDF file showing the table of products to save or print.

**11. Admin Add Item**

- a. Admin can increase the inventory by creating a new invoice.
- b. Admin fills the Supplier & Date input boxes, generating in this way an invoice line.
- c. To add the product to inventory, Admin confirms the purchase and the product is added to the inventory database.

**12. Admin Revenues**

- a. Admin can check revenues & bills for a specified time frame by navigating through the Revenues page.
- b. As admin chooses a time frame (e.g. 1 year), the revenues for that year and a table of full information regarding bills recognized for that year are generated.
- c. Admin can print the generated, or they can use another time frame to track its revenues and expenses.

**13. Admin Accounting Reports**

- a. To get an accountant report such as a Statement of Financial Position, the Admin can navigate through the Accounting Reports section.
- b. Admin can select the year and the period (monthly/quarterly) in which he/she wants to check the financial position of the salon.
- c. The Statement of the Financial Position will be created for that period.
- d. Admin can download this report.

**14. Admin Clients**

- a. Admin can go through a table of all registered clients and their respective credentials.
- b. The clients that have been inactive for a considerable period of time will be shown first.
- c. The administrator can deactivate their accounts through the deactivate button that every client has.
- d. Once deactivated, the client will not be able to login.
- e. Admin can choose to reactivate a client's account and giving him/her the ability to login again into their accounts.

## **Secretary Scenarios (14)**

1. *Secretary Calendar View*
  - a. Secretary logs in.
  - b. In the main dashboard she can see the calendar of appointments.
  - c. The calendar gives information on the appointments arranged on the timeline of three days (today-tomorrow-after tomorrow).
2. *Secretary Cancelled Appointments View*
  - a. After being logged in secretary, can see cancelled appointments appearing on the main dashboard, in case there are any.
3. *Secretary Changed Appointments View*
  - a. She logs in.
  - b. After logging in, she can see the section of changed appointments in the dashboard.
4. *Secretary Employees Shift View*
  - a. Secretary logs in.
  - b. On a specific section in dashboard she can have a view of employees and their shifts.
5. *Secretary creates Appointment*
  - a. Secretary logs in.
  - b. In the section of appointments, she has the responsibility to create an appointment for clients who have not booked online.
  - c. Appointment form is filled with all the necessary data: full name of client, phone number, email, time of appointment, etc.
6. *Secretary deletes Appointment*
  - a. Secretary logs in.
  - b. In the section of appointments, she can select an appointment and perform desired change to it, namely deletion, if a client calls her and cancels the appointment.
  - c. After seeing that an appointment is no longer valid, she can delete it from the calendar.
7. *Secretary dis/approves Appointment*
  - a. Secretary logs in.
  - b. In her dashboard, she can view bookings made by clients online that are waiting to be approved (or rejected).
  - c. According to the situation and the timetable, she decides whether she will approve or reject the requested appointment.

**8. Secretary reschedules Appointment**

- a. If an appointment made by the client is not at a convenient time the pending appointments, a request can be sent to the client to reschedule the meeting.
- b. The appointment date cannot be rescheduled, only the time slot within the day of the originally created appointment.

**9. Secretary changes Employee Shift**

- a. Secretary logs in.
- b. In the employees' shifts section, she can easily make a change in their shifts, for scheduling purposes.
- c. By changing shift, she will also be sending a notification to the responsible employee as well. With their approval, the shift will be changed.

**10. Secretary sends Email to Loyal Clients**

- a. Secretary logs in.
- b. After viewing special clients, she will send them an email to notify them on gifts, bonuses, and discounts they have received.
- c. These are the clients who have their birthday on a specific day or those who are part of a reward program.

**11. Secretary sends Email to Clients who have canceled Appointments**

- a. Secretary logs in.
- b. Secretary checks section "Cancelled Appointments".
- c. She looks at the data of the client to find the phone number or email.
- d. She proceeds to send a message or email enquiring politely about the reason for canceling.

**12. Secretary creates Bills**

- a. Secretary can create a bill by herself with all the required information in the form, in the instance of the customer not having booked online.
- b. She can print the created Bill.

**13. Secretary edits Bills**

- a. Secretary logs in.
- b. She searches for the bill and changes or adds the parts she wants.
- c. She can print the edited Bill.

**14. Secretary searches Bill**

- a. Secretary logs in.
- b. In the bill section, she can view all the bills of clients.
- c. To make her search simpler a functionality to search them by "name of the client" or "time of issue of the bill" will be added.

**Accountant Scenarios (11)**

**1. Accountant Login**

- a. Enters email and password.
- b. Accountant logs in.
- c. If the email and password are correct and match the data in the database, they are redirected to the accountant's home page.

**2. Accountant Login fails**

- a. Enters email and password.
- b. Accountant logs in.
- c. If they do not match with the data in the database, then an error notification displays letting them know something is incorrect.

**3. Accountant Financial Performance Statement**

- a. The accountant accesses the Statement of Financial Performance.
- b. Revenues, expenses, margin/ratio is shown.
- c. Accountants may select the period of time they want to observe it will show the periods very easily.

**4. The accountant creates new Invoice**

- a. The accountant can create a New Invoice.
- b. A new page is opened as a table.
- c. A New Invoice is created to record the expenses.
- d. All expenses are entered and recorded by the system; they all are directly calculated.
- e. After the accountant saves it, a green highlighted notification that says expenses are saved.
- f. Accountant can choose to create another invoice or go back to dashboard.

**5. Accountant Graphical View**

- a. The dashboard has a graphical view which includes revenues and expenses.
- b. The graph is separated in months.
- c. Accountant can easily check the months.

### ***SmartStyle Requirements Specification***

- d. The graphical view makes it easier for the accountant to interpret the revenue and expenses for each month.

#### ***6. Accountant Reports***

- a. Accountant has access to the CRUD table of employees where they can get information regarding salaries and taxes to be paid and is directed to employees' page.
- b. They can generate reports to view or download in PDF.

#### ***7. Accountant Inventory***

- a. The accountant is able to access inventory.
- b. The accountant can view the inventory tabular form with CRUD integration and sort the data so that the items that are low on inventory show first.
- c. Easier to navigate and update or change the information for each product.
- d. Accountant can add or remove items.
- e. Accountant calculates the most used products.
- f. Recalculates the prices of items and provides additional information.

#### ***8. Accountant Invoices***

- a. Accountant can access all invoices in the system.
- b. Accountant selects invoices and he can determine what type of invoices he is checking.
- c. For the selected invoices totals of paid and unpaid are shown.

#### ***9. Accountant Revenues / Expenses***

- a. Accountant can check the income earned by the business.
- b. Redirected to another page where income is shown.
- c. Accountant can check the expenses done by the business.
- d. Redirected to the page that shows all the expenses.

#### ***10. Accountant Settings***

- a. Accountant has the right to change their password and personal info.
- b. Settings make this possible and the page directs them to the settings of the account.
- c. They can change their password and/or personal info.
- d. However, they cannot change their salary.

#### ***11. Accountant Logout***

- a. Logout on the top left side of the page.
- b. For their security, password is not saved.
- c. They can choose to remember the username/email for the next login.

## **Employee Scenarios (9)**

1. *Employee Login*
  - a. Enters email and password.
  - b. If the email and password are correct and match the database, they are redirected to the employee home page.
2. *Employee Login fails*
  - a. Enters email and password.
  - b. If they do not match in database than error notification displays letting you know something is incorrect.
3. *Employee Information*
  - a. User logs in their Employee Dashboard.
  - b. Displayed will be all their information in a nice aesthetic design.
  - c. Salary and Vacation Days will be displayed in two information boxes.
4. *Employee Settings*
  - a. Employee has the right to change their password and personal info.
  - b. By going on to the settings, the page directs them to where they can change their info if they wish so.
  - c. Enters the new password and/or personal info.
  - d. For security issues, they are required to reenter their (old) password if they want to save the changes to their information.
  - e. The restriction is that they cannot change their salary.
5. *Employee Messages*
  - a. On the dashboard, there is a messages section that shows messages from either the secretary or admin.
  - b. Employee can view and/or respond to the messages displayed.
  - c. When they hover over it, the messages to be selected will be displayed in a different color from the other messages.
  - d. A window form will pop up and so they can send the response by the system when filled and sent.
6. *Employee Shift Schedule*
  - a. They can view their own daily shift.
  - b. They can change it and both the admin and secretary will be notified about the change by the system.
  - c. If the shift change is approved, the new shift will appear on the schedule.

### ***SmartStyle Requirements Specification***

- d. If the shift change is not approved, a message from the admin or secretary will be displayed to notify them in the messages section.

#### ***7. Employee Calendar***

- a. Employee can view their monthly calendar.
- b. The calendar displays the employee's working days.
- c. The calendar displays the employee's vacation or free days.

#### ***8. Employee Day Calendar scheduling***

- a. The calendar month can be changed by the employee by selecting the month they want to view.
- b. They can change the purpose of the day in either one of these three modalities: work, vacation, or sick-leave. This will make the day color grey.
- c. If approved, the day's tab color will change to one of the designated colors for the purpose taken. Otherwise, it will be left the color it previously was.

#### ***9. Employee Logout***

- a. The employee can freely logout from their account.
- b. For their security password is not saved.

### **Client Scenarios (8)**

#### ***1. Client Register and Login***

- a. The client accesses the system.
- b. The platform asks for a username, password, and relevant data.
- b. The client enters the data.
- c. If the data are correct, the client is registered successfully and if the data are incorrect, an error message pops up.

#### ***2. Client Settings***

- a. The client logs into her account.
- b. After she clicks push the settings button in the menu, she inserts the data that she wishes to update and/or the new password on a ready-made form.
- c. The system will ask for the password (the old one if she is changing it).
- d. After entering the password, she saves the changes and the page reloads so that she can see the newly updated data that she inserted previously.

**3. Client Appointment Booking:**

- a. The client logs in with her personal account.
- b. In her personal account, there is a calendar where she can see which day and hour is free so that she can book an appointment.
- c. The client finds the date on which she will leave the appointment and selects it on the calendar.
- d. An appointment data form will be displayed, which she completes with the time and services she wants to receive and then simply sends it.
- e. In the end, her appointment status will be pending.

**4. Client Approval / Disapproval of Appointment**

- a. If the appointment is approved, the client will receive a successfully booked message.
- b. If the appointment is not approved, the client will receive a disapproval message.
- c. In the second case, either the appointment is completely canceled due to overbooking, or by clicking the message, the client can reschedule the appointment at a time specified in the message.

**5. Client Discount Points**

- a. After every service and purchase, the client will receive bonus points.
- b. Those points will be sent and displayed on her account by the system where she can use or redeem them later on.
- c. With those points, she will receive discounts or other benefits.

**6. Client Appointment Stored**

- a. The client can find her stored appointments in her account.
- b. She should enter the previous appointments displayed on the menu and there can find all the stored previous appointments that she has already completed.

**7. Client Gallery**

- a. After log in her account, the client will see a good size of the screen that is dedicated to photos and pictures, maybe even short videos.
- b. The client can find there her own photos or photos of the salon.
- c. Photos will be directly appearing in the dashboard as a slideshow gallery; therefore, she will not need to do anything in order to see the photos.

**8. Client Logout**

- a. Presses Logout on the top left side of the page in order to lock out of her account.
- b. For their security, the password is not saved.

## 4.2 Use Cases

A use case is a list of actions or event steps typically defining the interactions between a role and a system to achieve a goal. The actor can be a human or other external system. In systems engineering, use cases are used at a higher level than within software engineering, often representing missions or stakeholder goals. The codification of each use case box is of the following format: UC\_No. UC stands for Use Case; No. is for the number of the case.

<b>UC_01</b>	<b>Login</b>
Summary	Every user enters his/her credentials to log in his/her account.
Actor	Admin, Client, Employee, Accountant, Secretary
Description	Users can be logged in into their accounts if the data entered was proven correct.
Precondition	Every user should have previously been registered by himself/herself (Client), or by the Admin (Employees & Admin).
Alternatives	If the credentials entered were incorrect, then the user is notified and asked to reenter the right credentials.
Postcondition	Users are logged into their accounts

<b>UC_02</b>	<b>Settings</b>
Summary	Every user has the right to change their password/personal info.
Actor	Admin, Accountant, Secretary, Employee, Client
Description	User can change his/her password/personal information on settings.
Precondition	Users must be logged in and enter settings.
Alternative	The user doesn't change the password/personal info.
Postcondition	The user has a new password/ updated personal info.

<b>UC_03</b>	<b>Logout</b>
Summary	Every user has the right to logout from the system.
Actor	Admin, Accountant, Secretary, Employee, Client
Description	User can logout from the system easily as it is their right and for their security to do so. After some time, the session end and user are forced into logout.
Precondition	User must be logged in.
Alternative	-
Postcondition	The user has logged out and is on the login page where his or her credentials might have been previously saved from the time of the first login.

<b>UC_04</b>	<b>Create Appointment</b>
Summary	The actor can create an appointment by filling a form with data
Actor	Admin, Secretary, Client
Description	They can fill a form to create an appointment which will then be added to the timetable. The appointment contains the data of the customer and the service, the time they want.
Precondition	They must be logged in and have an existing account and the time slot should be free in order to do the booking.
Alternative	-
Postcondition	The calendar is updated with the new appointment

<b>UC_05</b>	<b>Accept Appointment</b>
Summary	Admin or secretary decides to approve the appointments made by clients online.
Actor	Admin, Secretary
Description	In order to approve them, they look at the appointments and make sure they fit in the calendar at a convenient time in accordance with workers' shifts as well. If there is no free time at all, they will be rejected immediately.
Precondition	They must be logged in and have an existing account. The client must have made an appointment online.
Alternative	The appointment will be considered for a rejection or reschedule.
Postcondition	The calendar is updated with the new appointments.

<b>UC_06</b>	<b>Reject Appointment</b>
Summary	Admin or secretary decides to reject the appointments made by clients online.
Actor	Admin, Secretary
Description	In order to approve them, they look at the appointments and will see that either no employee can cover the shift or other circumstances arise that, although the slot is free, the salon has no space to welcome the client. If so, they will be rejected immediately.
Precondition	They must be logged in and have an existing account. The client must have made an appointment online.
Alternative	The appointment will be considered for rescheduling. The actor can also choose to create a fictive appointment to fill this void.
Postcondition	The request is declined. Appointment cannot be set; therefore, the appointment is deleted.

<b>UC_07</b>	<b>Reschedule Appointment</b>
Summary	Admin or secretary sends requests for possible rescheduling
Actor	Admin, Secretary
Description	They look at the section of appointments. In case when the appointment cannot be accepted, but not rejected either there is room for rescheduling. In this section, they can send a request to the client who has made an appointment to ask for rescheduling, suggesting two alternative time slots (at max) of the same day.
Precondition	They must be logged in and have an existing account. The client must have made a booking online.
Alternative	The user does not agree on proposed changes and cancels for good.
Postcondition	The appointment is rescheduled to another time and added automatically in calendar.

<b>UC_08</b>	<b>Accept Rescheduled Appointment</b>
Summary	The client decides to approve the appointments rescheduled by the secretary or admin online.
Actor	Client
Description	In order to approve them, the client must choose between two free slots that the secretary has sent to them for rescheduling purposes.
Precondition	They must be logged in and have an existing account. Secretary must have decided to reschedule the appointment at another time.
Alternative	The client might decline the rescheduling and as such deleting the appointment altogether.
Postcondition	Calendar is updated with the new appointments.

<b>UC_09</b>	<b>Delete appointment</b>
Summary	Client deletes appointments they are not available to come or even the secretary can do this if they have created an appointment too and the client calls to cancel.
Actor	Client, Secretary
Description	Secretary or client deletes the appointment so it can be added in the canceled appointments list.
Precondition	The appointment must exist online on the calendar.
Alternative	They choose not to cancel.
Postcondition	The appointments are deleted from the calendar.

<b>UC_10</b>	<b>View Employee Table</b>
Summary	Admin and accountant can see the table of employees
Actor	Admin, Accountant
Description	The admin and accountant can view a tabular form of the list of all the employees currently working in the business.
Precondition	They must be logged in and have an existing account. Employees must exist in the system's database.
Alternative	-
Postcondition	All of the employees' information will be shown. From there, this info can be edited or deleted.

***SmartStyle Requirements Specification***

<b>UC_11</b>	<b>Add Employee</b>
Summary	Admin and accountant can add an employee
Actor	Admin, Accountant
Description	The admin and accountant can add an employee by filling in a form preferably in the employee table list, so they can see which employee they need to add.
Precondition	They must be logged in and have an existing account. The data of the employee must be inserted in the correct type required.
Alternative	They can always choose to go back and perform this action.
Postcondition	The new employee's information will be shown in the table after being saved in the database.

<b>UC_12</b>	<b>Edit Employee</b>
Summary	Admin and accountant can edit an employee's information.
Actor	Admin, Accountant
Description	The admin and accountant can edit an employee by changing the existing data. This can be due to changing the title of the job or salary of the employee.
Precondition	They must be logged in and have an existing account. The changed data of the employee must be inserted in the correct type required.
Alternative	They can always choose to go back and perform this action.
Postcondition	The changed information of the employee will be shown in the table after being saved in the database.

<b>UC_13</b>	<b>Delete Employee</b>
Summary	Admin and accountant can delete an employee from the list.
Actor	Admin, Accountant
Description	The admin and accountant can delete an employee if their contract with the business is terminated or finished.
Precondition	They must be logged in and have an existing account and that the employee they want to terminate, must already exist in the list.
Alternative	They can always choose to go back and perform this action.
Postcondition	The employee will not be shown in the table anymore after being deleted from the database.

<b>UC_14</b>	<b>Change Employee Shift</b>
Summary	When necessary, employee or secretary request to make changes to shift.
Actor	Secretary, Employee
Description	One of the above-mentioned actors makes changes to a shift of employee, and by doing that the other actor is immediately notified for the request. They have to accept the change in the shift in order for this action to be completed.
Precondition	Secretary and employee must be logged in and have existing accounts and shifts for the date they want to change.
Alternative	They might not accept the request. The shift might be assigned to another employee or day of the week.
Postcondition	They agree on shift change. The shift time is changed.

<b>UC_15</b>	<b>Set Day Off in Employee Calendar</b>
Summary	Employee may request a day off from their calendar.
Actor	Employee
Description	Employee requests a day off for the month, which is sent to the secretary as a request to be accepted or declined.
Precondition	Employee must be logged in and have existing accounts and the day they want to change should be a workday and they must have a day off to request.
Alternative	-
Postcondition	A request is sent to the secretary which needs to be accepted or not

<b>UC_16</b>	<b>Approve/Reject Employee requests</b>
Summary	In a specific section, secretary can agree on possible arrangements or requests proposed by the employee regarding their job time.
Actor	Admin, Secretary
Description	Secretary or admin makes a change to a shift of employee, and by doing that the employee will be notified of the change and will be clearly shown to them.
Precondition	Secretary and admin must be logged in and have existing accounts. Employee must view and accept request.
Alternative	-
Postcondition	Their shift time is updated to the chosen one.

<b>UC_17</b>	<b>Register Inventory Item</b>
Summary	Admin or accountant can register new items for the first time in the system.
Actor	Admin, Accountant
Description	Admin or accountant registers a new item for the first time with actual zero quantity and no other information but the name and description. This is to create the item in the database so to later if the item is bought, it can be directly added in the invoice.
Preconditions	They must be logged in and the item must not previously exist.
Alternatives	They can cancel the addition of this item or delete it after registering.
Postcondition	The item shows in the list as an item that needs to be supplied immediately due to low quantity. Now the quantity and current buying price can be added by invoice.

<b>UC_18</b>	<b>Add Inventory Item through Invoice</b>
Summary	Admin or Accountant can choose to increase their quantity of one or several items through completing the invoice of purchase.
Actor	Admin, Accountant
Description	Admin or accountant is redirected to the invoice page and there they enter all the required information of the purchase invoice and the items bought to be used in the salon.
Preconditions	They must be logged in and the items need to already exist in order to select them and increase their quantity.
Alternatives	They can add another item to that invoice by creating a new invoice line, or cancel the purchase altogether.
Postcondition	The quantity of specific item(s) is increases and the price is recalculated based on the average inventory method.

<b>UC_19</b>	<b>Modify Item Invoice</b>
Summary	Admin or Accountant can choose to modify the registered purchase invoices in case a mistake was made or something was forgotten.
Actor	Admin, Accountant
Description	Admin or accountant can access invoices and modify them in case s/he has made a mistake or has forgotten to add or remove something.
Preconditions	They must be logged in and the invoice needs to already exist in order to be modified.
Alternative	No mistakes are made and nothing is forgotten to be added.
Postcondition	The new modified invoice will be saved and shown.

<b>UC_20</b>	<b>Diminish Inventory Item</b>
Summary	Admin or accountant can diminish the quantity of Items.
Actor	Admin, Accountant
Description	Admin or accountant can diminish the quantity of consumed items during the everyday activity of the business and record them as expenses.
Preconditions	They must be logged in and the item must previously exist and have quantity.
Alternatives	They can decide to not go through with this action.
Postcondition	The quantity of the item will decrease and the expenses incurred will be calculated in the statement of performance and other relevant reports.

***SmartStyle Requirements Specification***

<b>UC_21</b>	<b>View Revenues</b>
Summary	Accountant or admin can access and check on revenues on a selected period of time
Actor	Admin, Accountant
Description	They access revenues and select a time period that s/he is going to check. After selecting the time period revenues are shown and the accountant can get the information s/he wants.
Precondition	They must be logged in and access revenues.
Alternative	-
Postcondition	The revenues reports are generated and shown.

<b>UC_22</b>	<b>View Expenses</b>
Summary	Accountant or admin can access and check on expenses on a selected period of time
Actor	Admin, Accountant
Description	They access expenses and select a time period that s/he is going to check. After selecting the time period expenses are shown and the accountant can get the information s/he wants.
Precondition	They must be logged in and access expenses.
Alternative	-
Postcondition	The expenses reports are generated and shown.

<b>UC_23</b>	<b>Generate new Expense Invoice</b>
Summary	Accountant or admin keeps track of every expense and records them on invoices. S/he can create new invoices every time one is needed so they can continue keeping track of the expenses.
Actor	Admin, Accountant
Description	Accountant or admin creates new invoice with the help new invoice button and saves there all the operational expenses.
Precondition	They must be logged in and select new invoice where all expenses should be entered.
Alternative	There are no new expenses
Postcondition	The expense invoice is saved and is shown in the expenses page. They can continue to create yet another new invoice or go back.

<b>UC_24</b>	<b>View Accounting Statistics &amp; Reports</b>
Summary	Accountant and admin can view a graphical or tabular view of expenses, revenues and other business financial factors in time periods of their choosing.
Actor	Accountant, Admin
Description	The graphical view makes it easier for them to see the expenses and revenues for each month because the graphical view period is divided in such way(months).They can see the financial performance and other reports on different time periods so they can see how each period is doing. They can see revenues, expenses and margin.
Precondition	Accountant and admin must be logged in the account in order to have access on the graphical view and financial reports.

***SmartStyle Requirements Specification***

<b>UC_24</b>	<b>View Accounting Statistics &amp; Reports</b>
Alternative	They may choose to print these reports.
Postcondition	They may choose to save these graphical or tabular reports.

<b>UC_25</b>	<b>Print Reports</b>
Summary	Accountant and admin can print reports.
Actor	Accountant, Admin
Description	The graphical or tabular reports of the business can be printed in order to use them for different purposes.
Precondition	They must be logged in to have access to these reports for print.
Alternative	-
Postcondition	They may choose to save these graphical or tabular reports.

<b>UC_26</b>	<b>Create personal Account</b>
Summary	Client can create their personal account only with some basic data.
Actor	Client
Description	The client can create a personal account by writing some basic data after clicking the log in button. And in this account, they will have all the information and service they need.
Preconditions	-
Alternatives	-
Postcondition	User can login their account.

<b>UC_27</b>	<b>View Completed Appointments</b>
Summary	All clients have their previous appointment stored in their account.
Actor	Client
Description	This area on the website is to help the client to have all their appointment organized and they will receive notification for service that they need to make in the salon.
Preconditions	All clients must have an account and have previously booked an appointment through the system and their current accessed account.
Alternatives	Client might choose to rebook that appointment on a future date or ask the secretary to remind them of the appointment of a repetitive schedule-
Postcondition	-

<b>UC_28</b>	<b>Redeem Client Discount Points</b>
Summary	Client can choose to redeem their points for various discount coupons.
Actor	Client
Description	After every service that a client completes, the system will calculate automatically discount points. These points can be redeemed by the client for a discount coupon or other packages and products.

***SmartStyle Requirements Specification***

<b>UC_28</b>	<b>Redeem Client Discount Points</b>
Preconditions	The client must have an active account and accumulated a certain amount of points in order to redeem them.
Alternatives	With these discount points, the client can choose to have between different options s/he can redeem.
Postcondition	The points will be decreased afterward and the client must start accumulating them again.

<b>UC_29</b>	<b>Use Coupon in Appointments for Discount</b>
Summary	All clients can use their coupons when creating an appointment.
Actor	Client
Description	In their accounts, the client can obviously create appointments, and in these appointments, they can choose to use a coupon to get a discount on the overall price of the appointment.
Preconditions	All clients must have an account and valid coupons to use.
Alternatives	They can choose to save their coupon to use in other appointments.
Postcondition	The coupon cannot be reused and the discount will show in the final bill.

<b>UC_30</b>	<b>View Client Gallery</b>
Summary	All clients will have their own slideshow photo gallery.
Actor	Client
Description	In their accounts, the client will have their own gallery where they can see their pre and after photos of themselves, make-up or hairstyles pictures of themselves or most popular of the saloon, and also, they will have the photo of the salon.
Preconditions	All clients must have an account.
Alternatives	The client can upload or delete their photo if they want to.
Postcondition	-

<b>UC_31</b>	<b>Bill Generation</b>
Summary	Secretary generates bill of a specific customer
Actor	Secretary, Admin
Description	Secretary clicks on the bills section and searches a specific bill by entering as a keyword name of the client or day of issue.
Precondition	Secretary must be logged in and have an existing account. Bill must exist; therefore, the client must have made an online appointment.
Alternative	Secretary has entered the wrong keyword and cannot find the bill. The customer has not made an online appointment so the bill must be created.
Postcondition	Bill is searched and found.

***SmartStyle Requirements Specification***

<b>UC_32</b>	<b>Bill Creation</b>
Summary	Secretary creates a bill by filling a form in case an appointment has not been set online.
Actor	Secretary, Admin
Description	Secretary clicks on the bill's section and creates a new bill, by entering all the necessary data on the form.
Precondition	Secretary must be logged in and have an existing account. The client has not made an online appointment.
Alternative	-
Postcondition	Bill is created.

<b>UC_33</b>	<b>Bill Edit</b>
Summary	Secretary edits an existing bill.
Actor	Secretary, Admin
Description	Secretary looks at the section of bills. In this section, she can select a bill and perform desired changes to it.
Precondition	Secretary must be logged in and have an existing account.
Alternative	No changes in bill are made.
Postcondition	Bill is edited.

<b>UC_34</b>	<b>Bill Print</b>
Summary	Secretary finds the bill of a specific customer and prints it.
Actor	Secretary, Admin
Description	Secretary clicks on the bill's section and searches a specific bill by entering as a keyword name of the client or day of issue. After being found, it can be printed in a click.
Precondition	Secretary must be logged in and have an existing account. Bill must exist.
Alternative	For any technical problems, bill cannot be printed.
Postcondition	Bill is printed successfully.

<b>UC_35</b>	<b>View Special (loyal), clients</b>
Summary	Secretary can see a list of so-called special clients
Actor	Secretary
Description	Secretary logs in and in the main dashboard she can look at those clients who are considered "special", this title is either due to them having their birthday on that specific day or them being loyal to the salon and being rewarded by our reward program.
Precondition	Secretary must be logged in and have an existing account. There should be customers who have their birthdays or receive discounts
Alternative	There are no special clients to be displayed.
Postcondition	Secretary proceeds by sending a message via the system to this client.

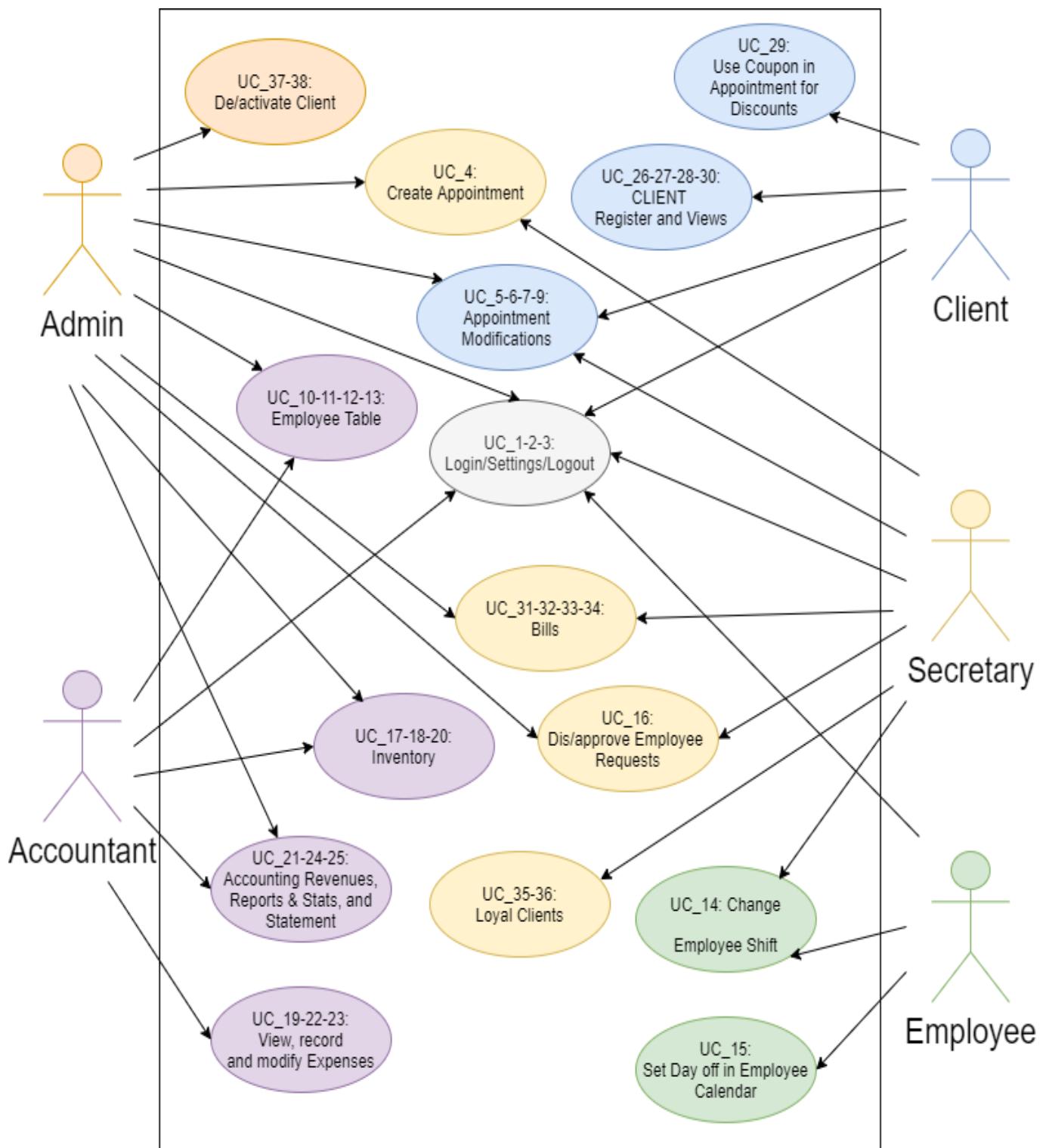
<b>UC_36</b>	<b>Send Messages to clients (for Birthday)</b>
Summary	Secretary sends messages to special clients who win bonuses
Actor	Secretary,Client
Description	Secretary will check data of the client/s on the special clients list and will send a message to inform them about the bonus.
Precondition	Secretary must be logged in and have an existing account. Client has their birthday or is a loyal client.
Alternative	There are no birthdays and no loyal customers
Post Condition	Client receives a message which informs them that they have received a coupon or discount.

<b>UC_37</b>	<b>View Client Table</b>
Summary	Admin is the only user who can see the table of clients.
Actor	Admin
Description	The admin can view a tabular form of the list of all the clients currently working in the business.
Precondition	Admin must be logged in and have an existing account. Clients must exist in the system's database.
Alternative	-
Postcondition	All the clients' information will be shown. From there, this info can be edited or deleted.

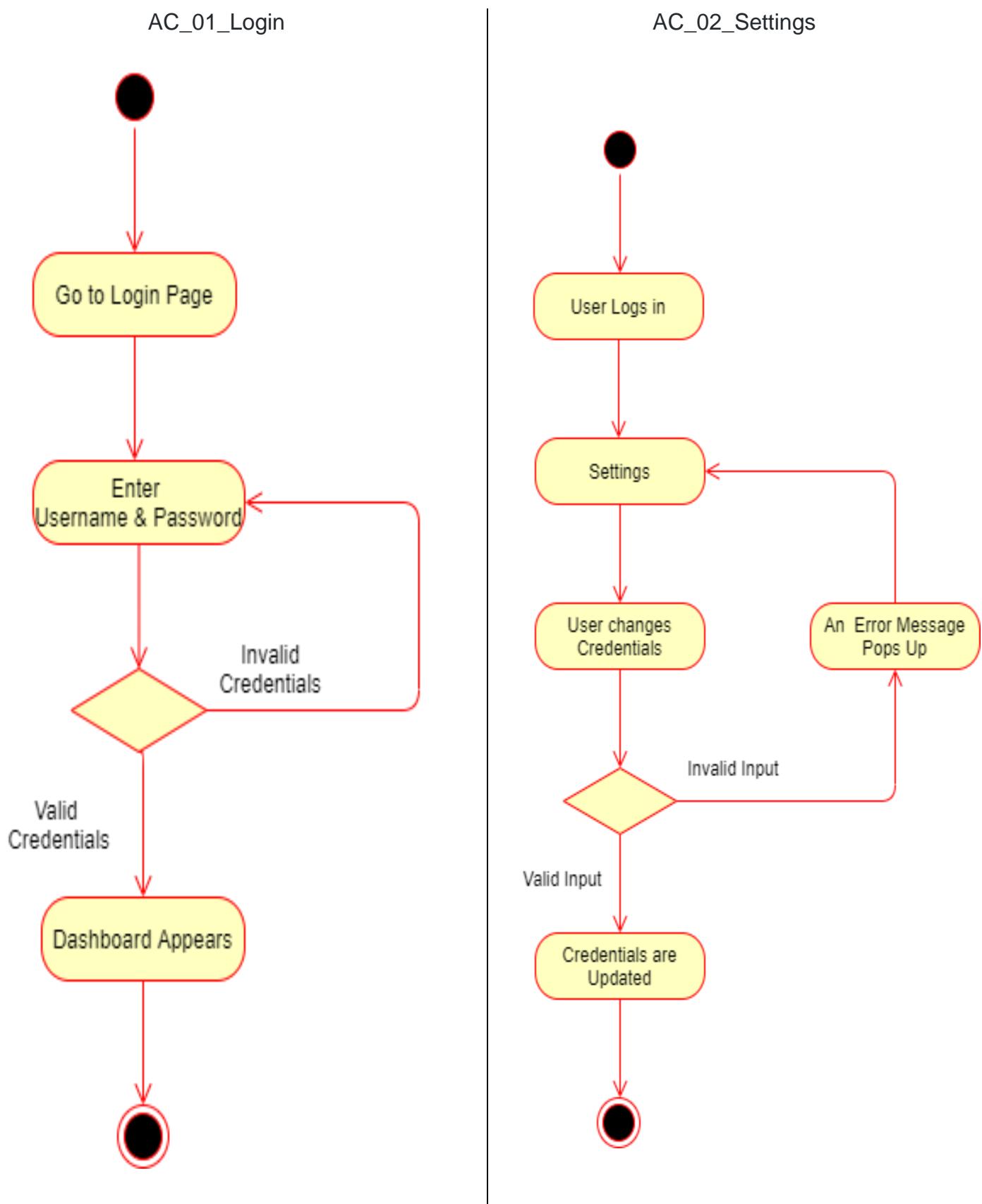
<b>UC_38</b>	<b>De/activate Client</b>
Summary	Admin can choose to deactivate the account of a client that has not been active for a long period of time.
Actor	Admin
Description	There is a deactivate button alongside every registered client, and Admin can choose to deactivate a specific client. The client will be temporarily unable to log into his/her account, but it's not deleted from the database. Admin can then choose to activate his/her account.
Precondition	Admin should have been logged in. The client that is about to be de/activated must appear on the clients table.
Alternatives	After deactivating, Admin can choose to reactivate the client again, which becomes active after the deactivation process has come to an end for that specific client.
Postcondition	The client is deactivated and they can no longer login unless the Admin reactivates them again.

## 4.3 UML Diagrams

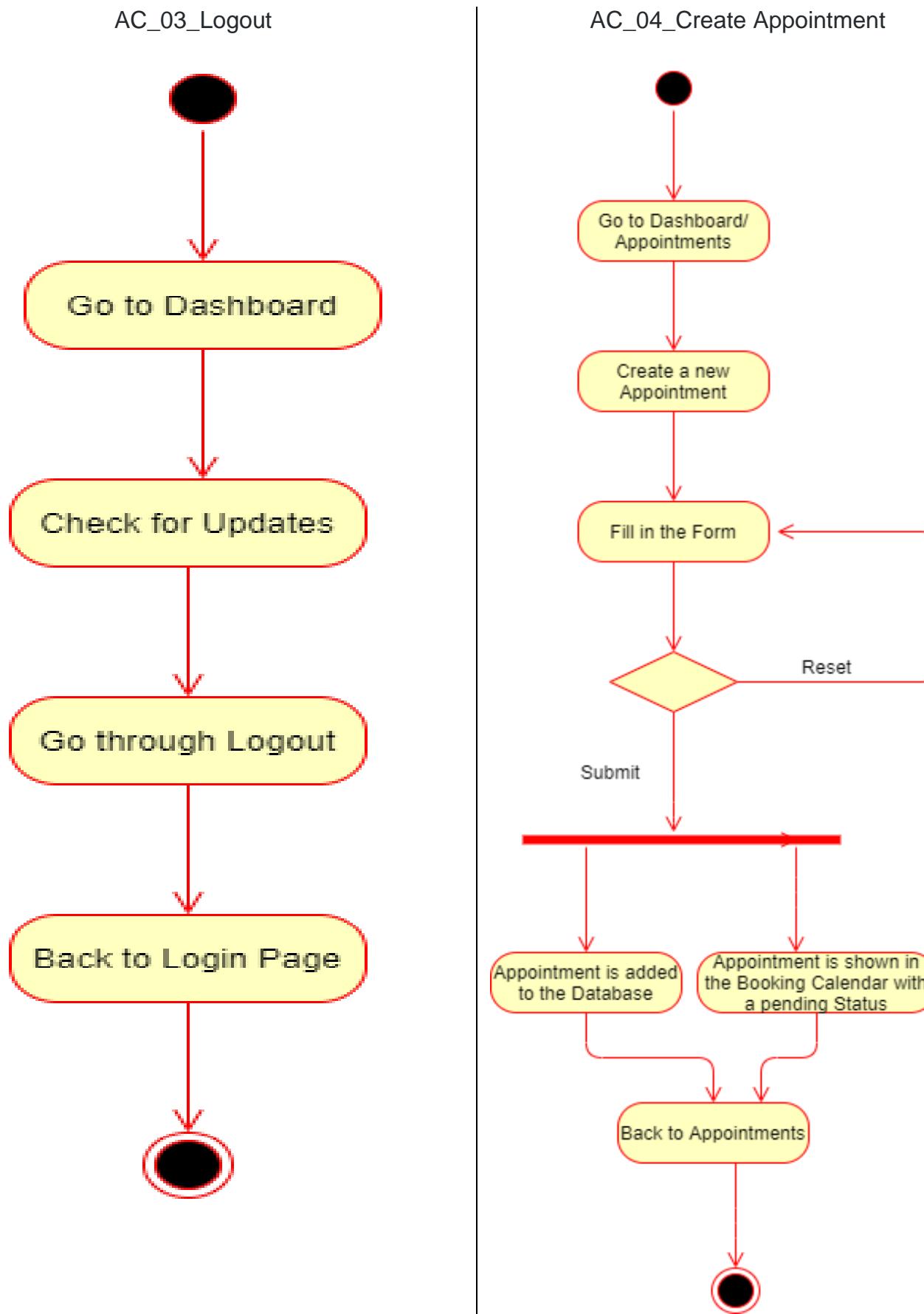
### 4.3.1 Use Cases Diagram



#### 4.3.2 Activity Diagrams

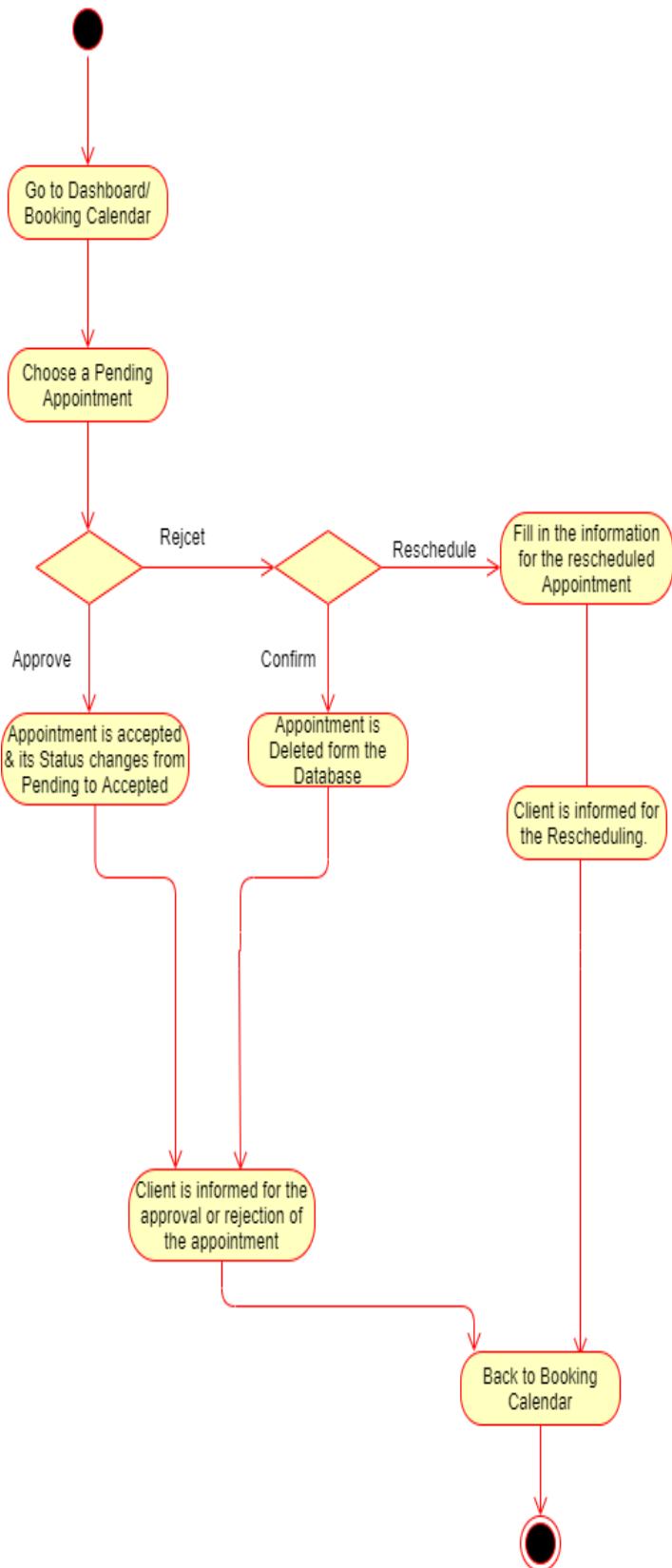


*SmartStyle Requirements Specification*

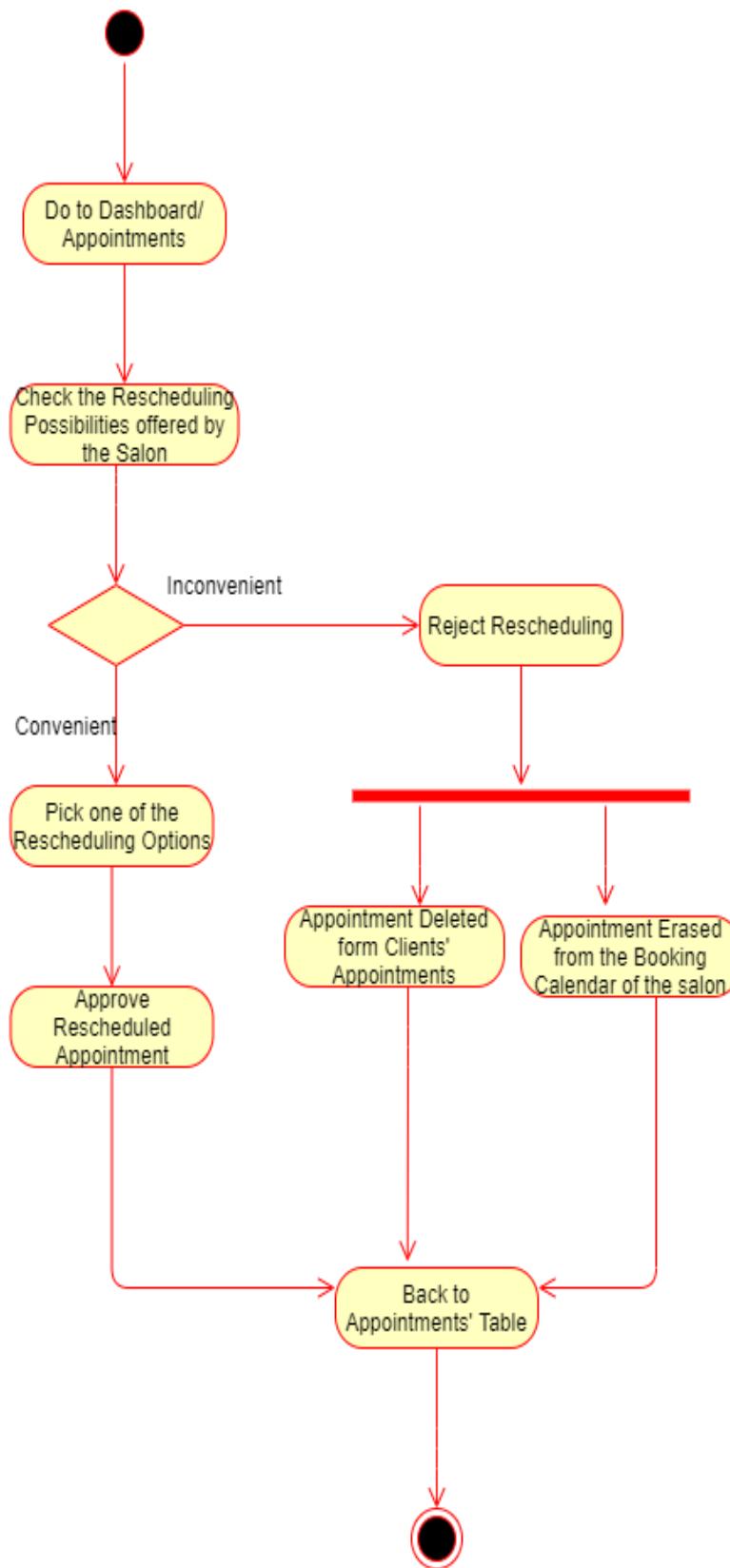


### SmartStyle Requirements Specification

#### AC\_05-06-07\_Accept Reschedule Reject Appointment

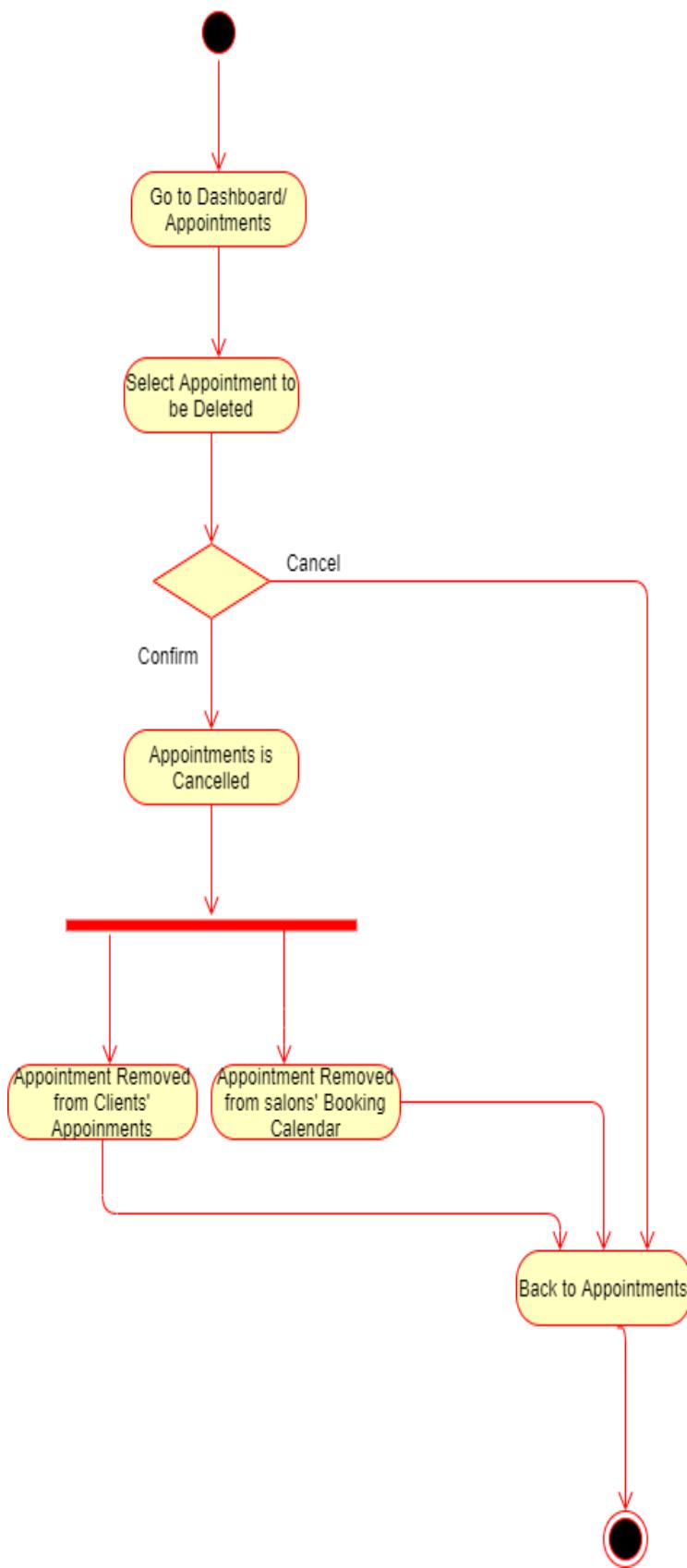


#### AC\_08\_Accept or Reject Rescheduled Appointment

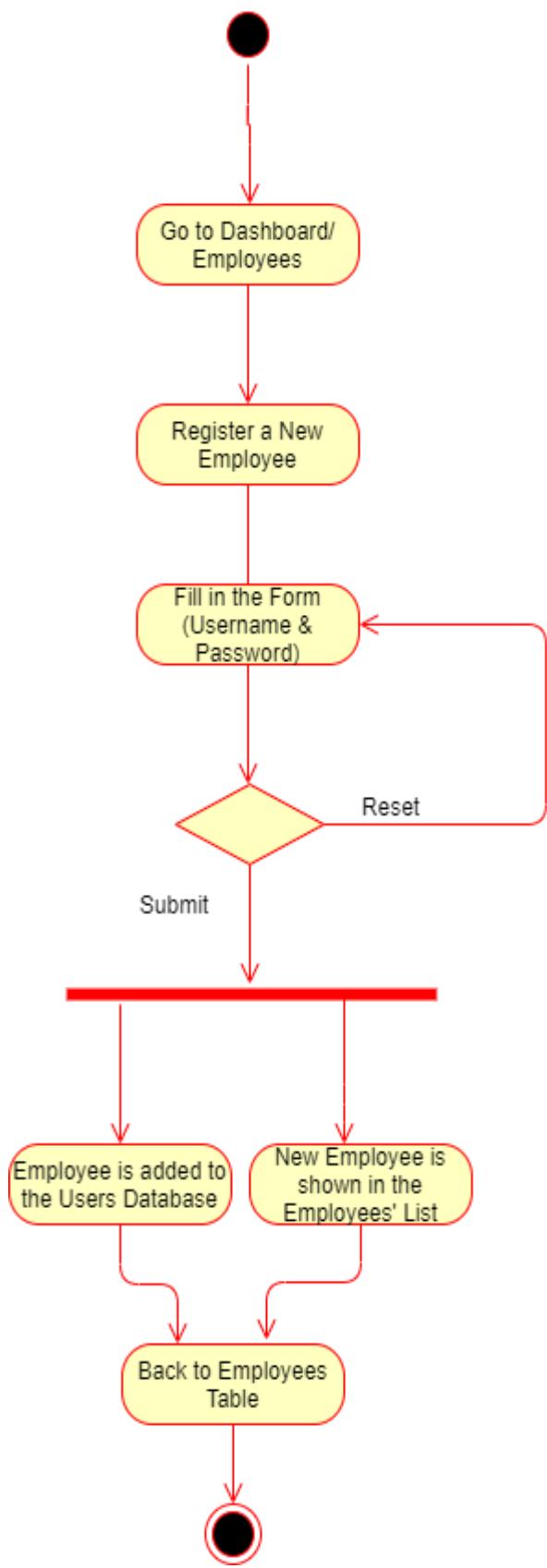


***SmartStyle Requirements Specification***

AC\_09\_ Delete Appointment

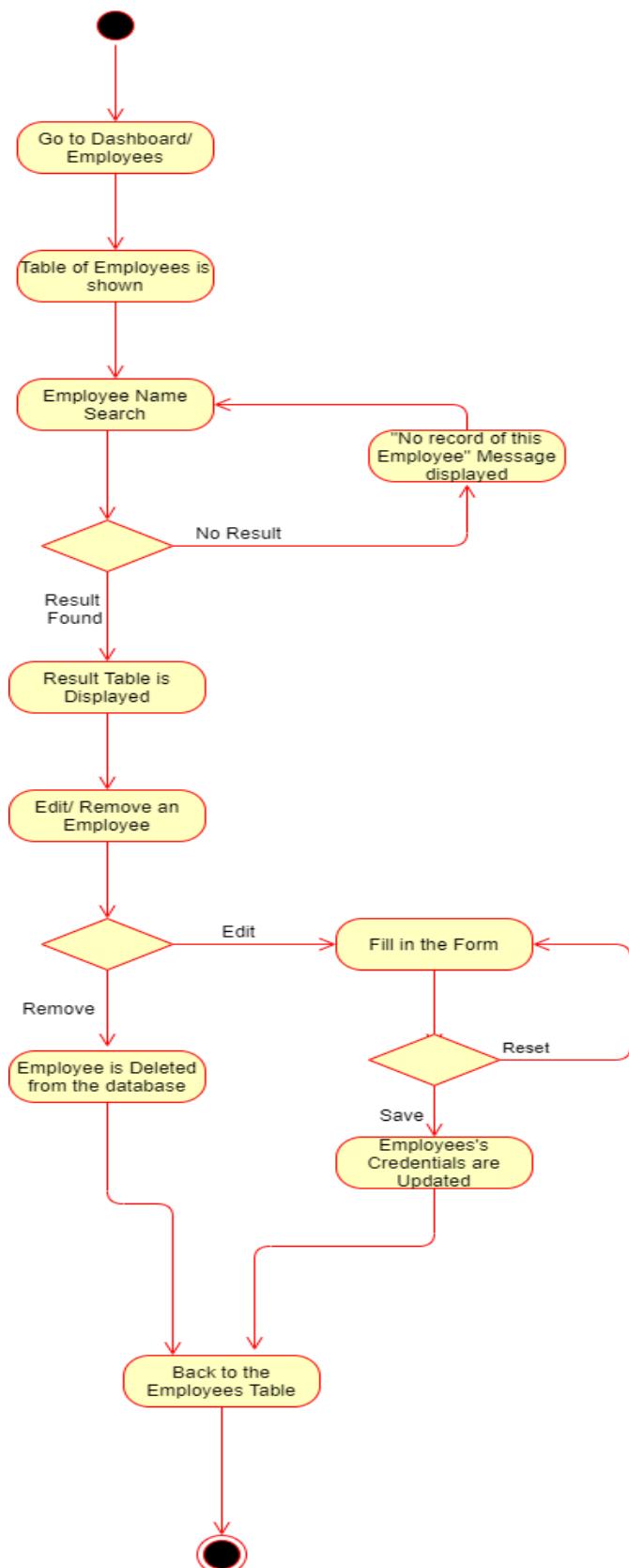


AC\_10\_ Register Employee

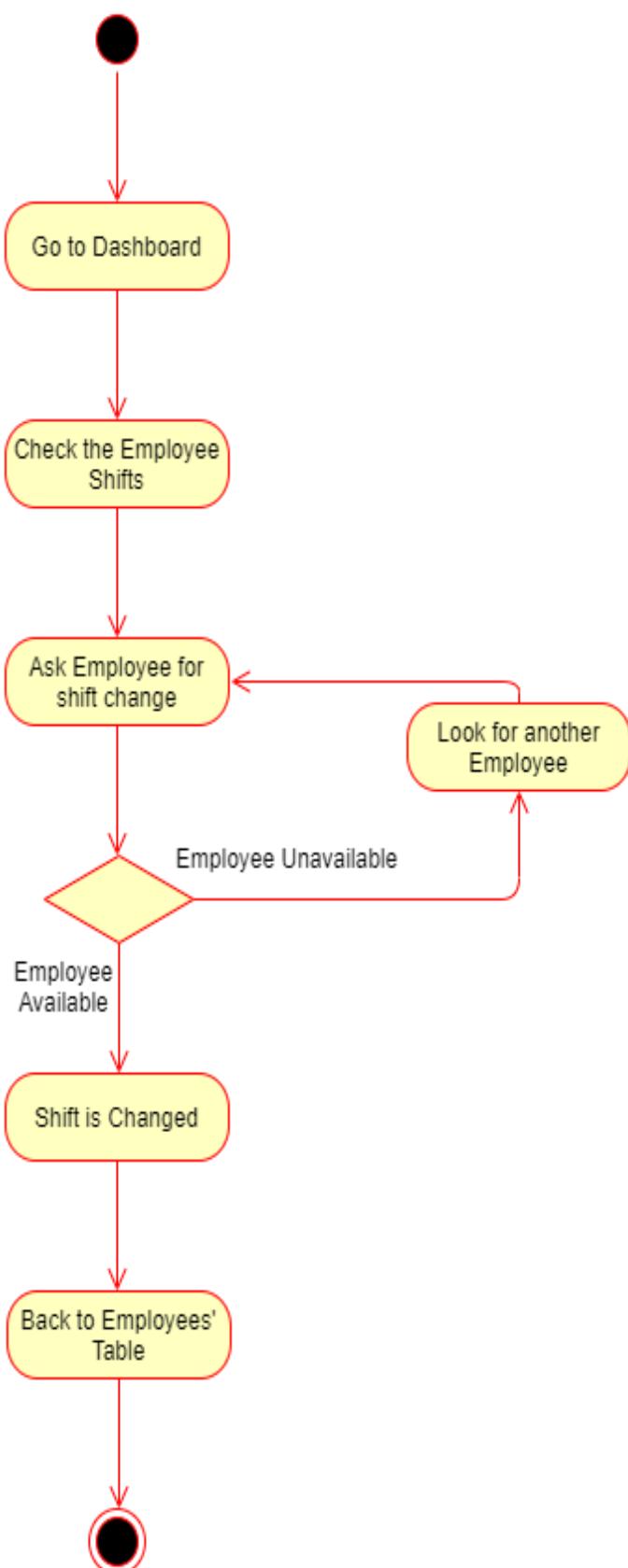


### SmartStyle Requirements Specification

AC\_11-12-13\_ View Edit Remove Employee

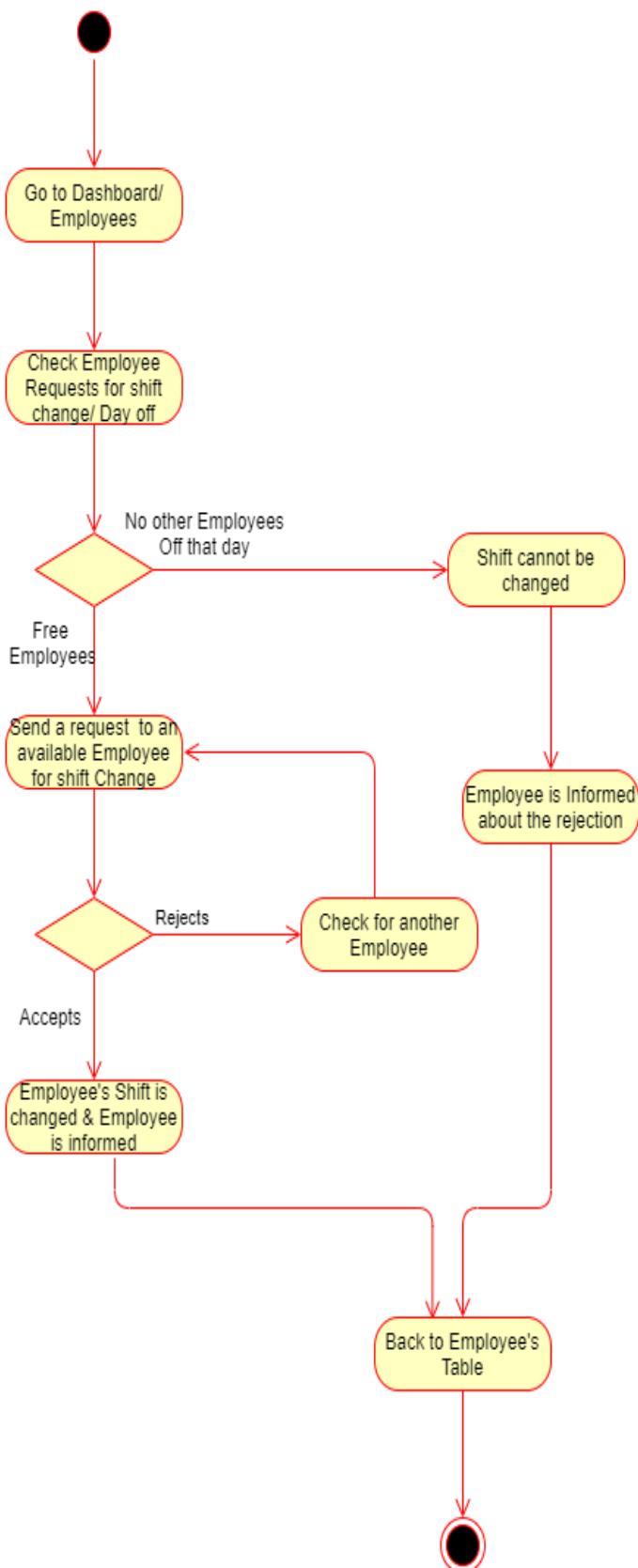


AC\_14\_Change Employee Shifts

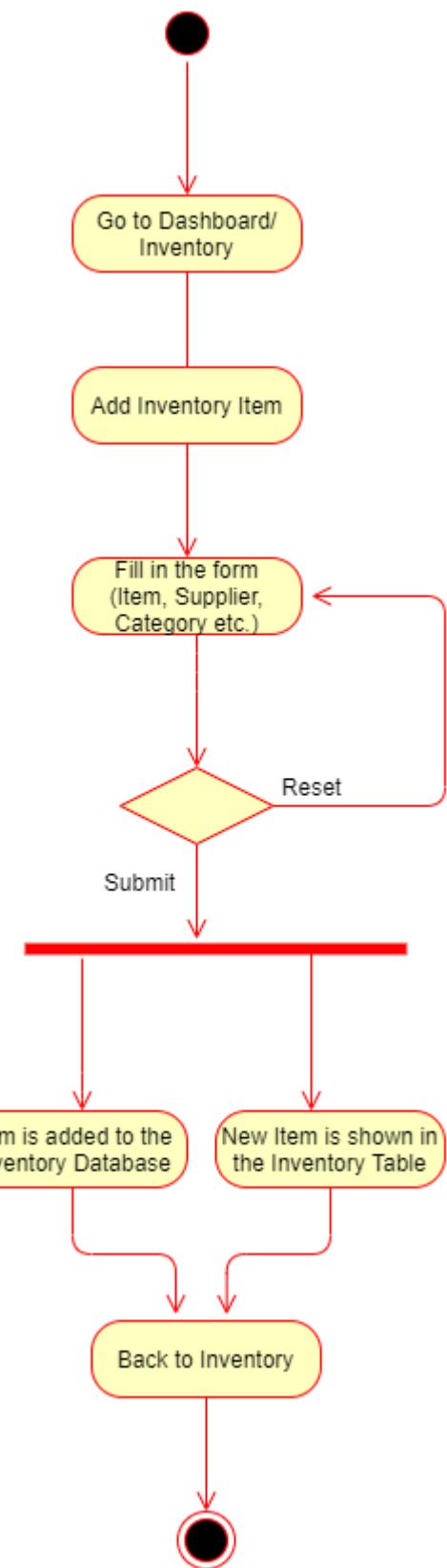


**SmartStyle Requirements Specification**

**AC\_15-16\_Accept Reject Employee Requests**

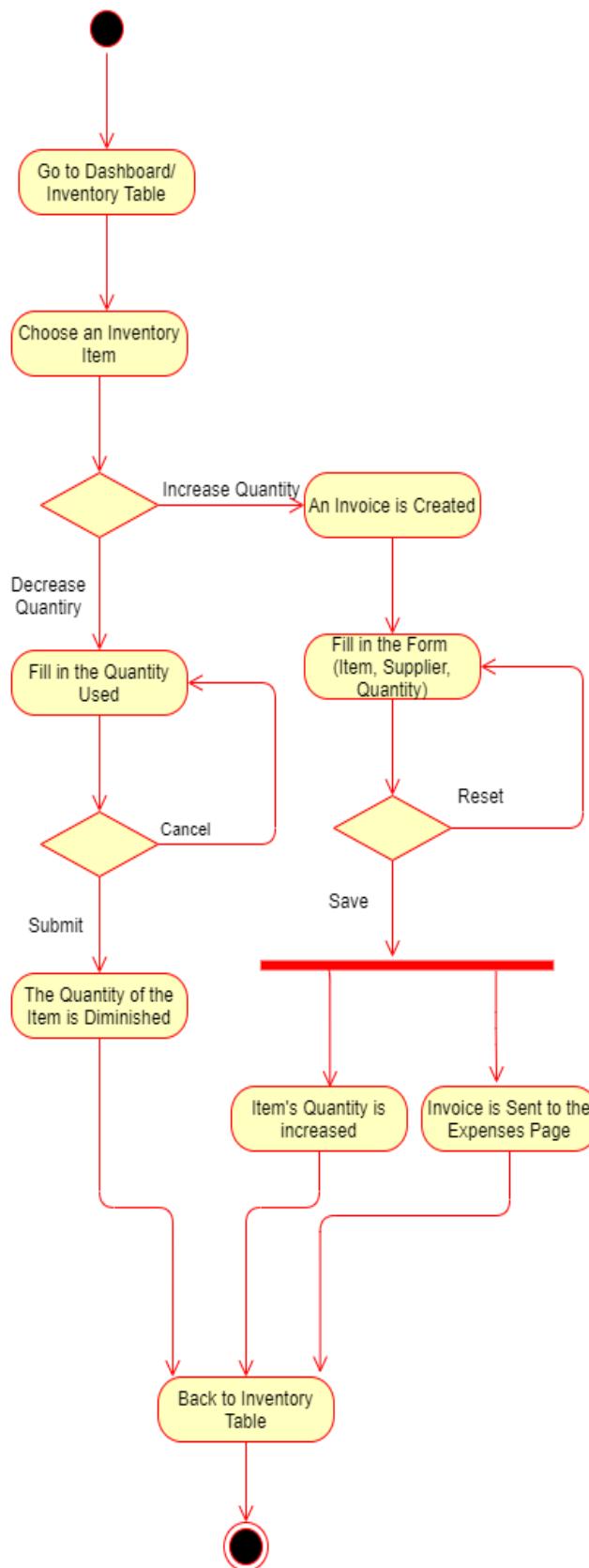


**AC\_17\_Register Inventory Item**

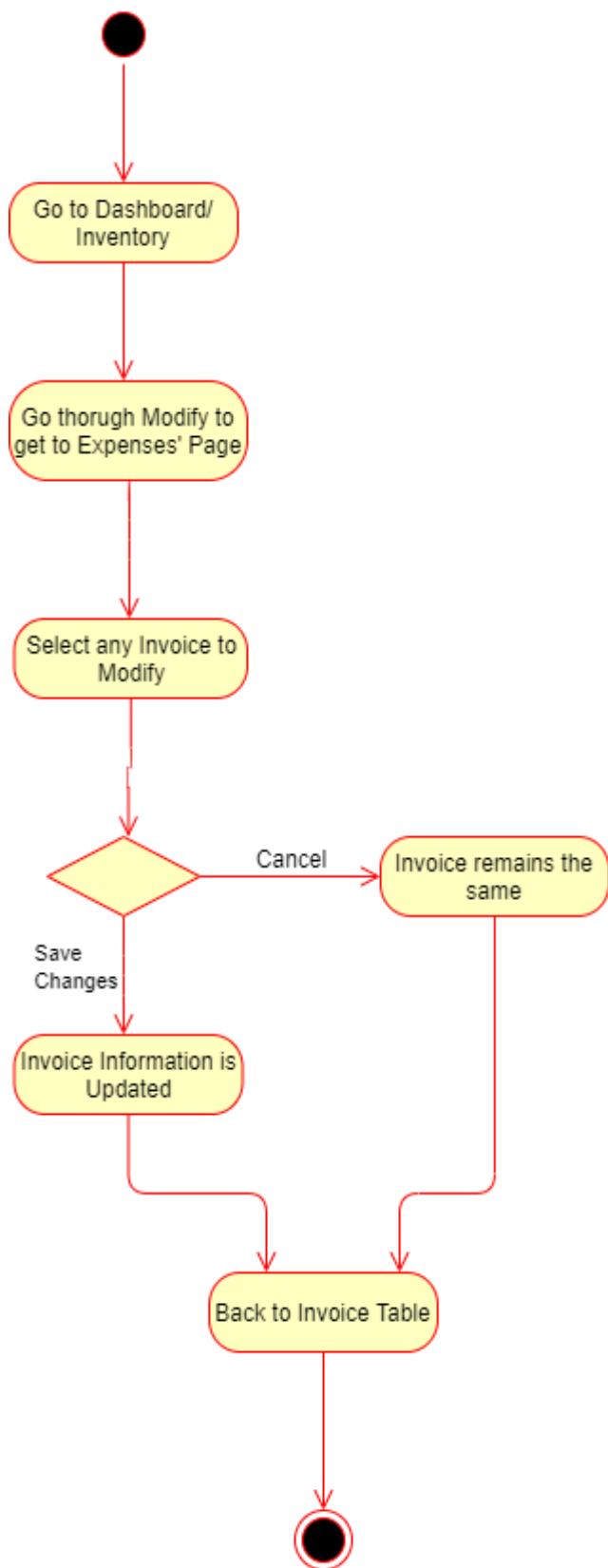


### SmartStyle Requirements Specification

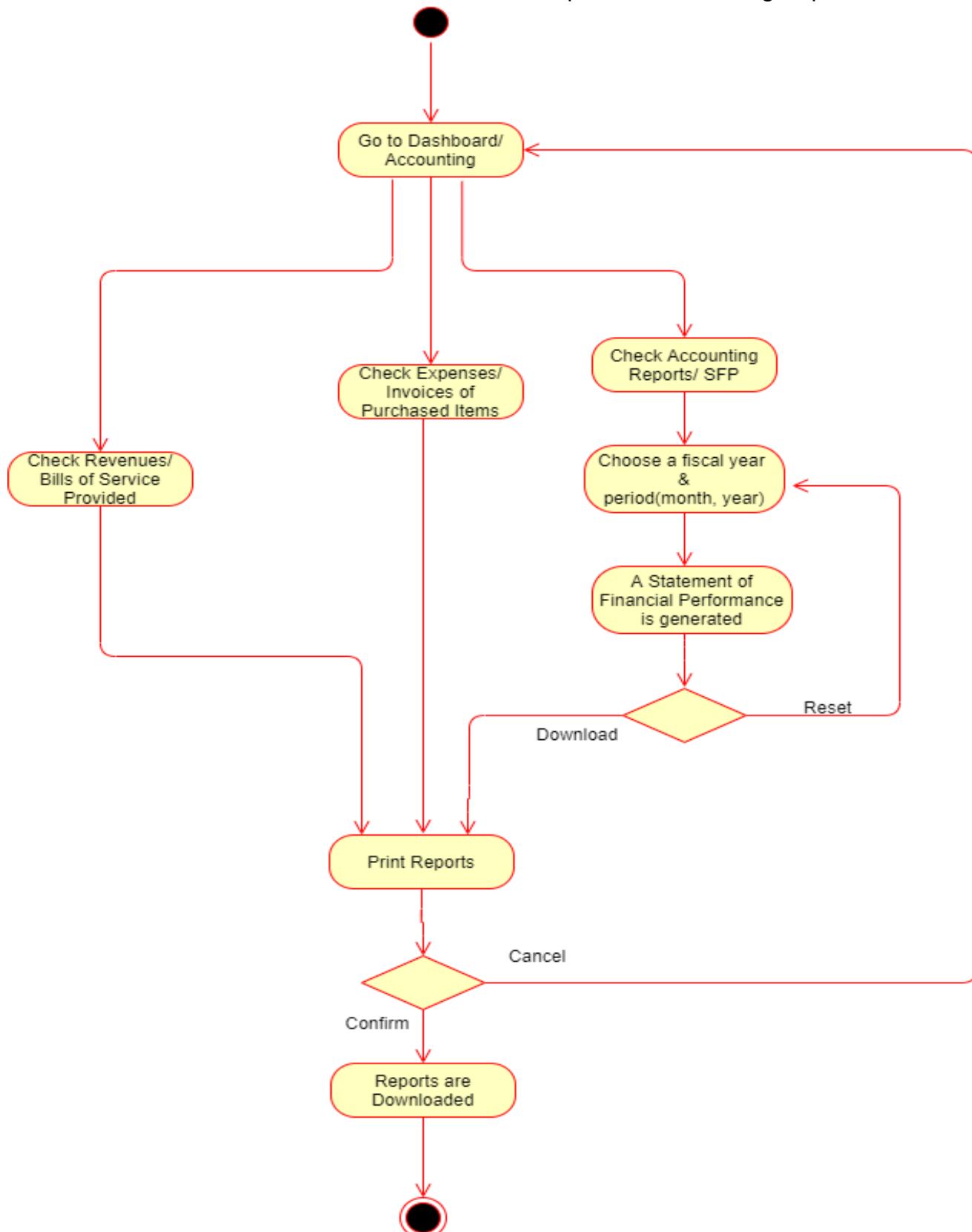
AC\_18\_20 Add Diminish Inventory Item



AC\_19\_Modify Invoice

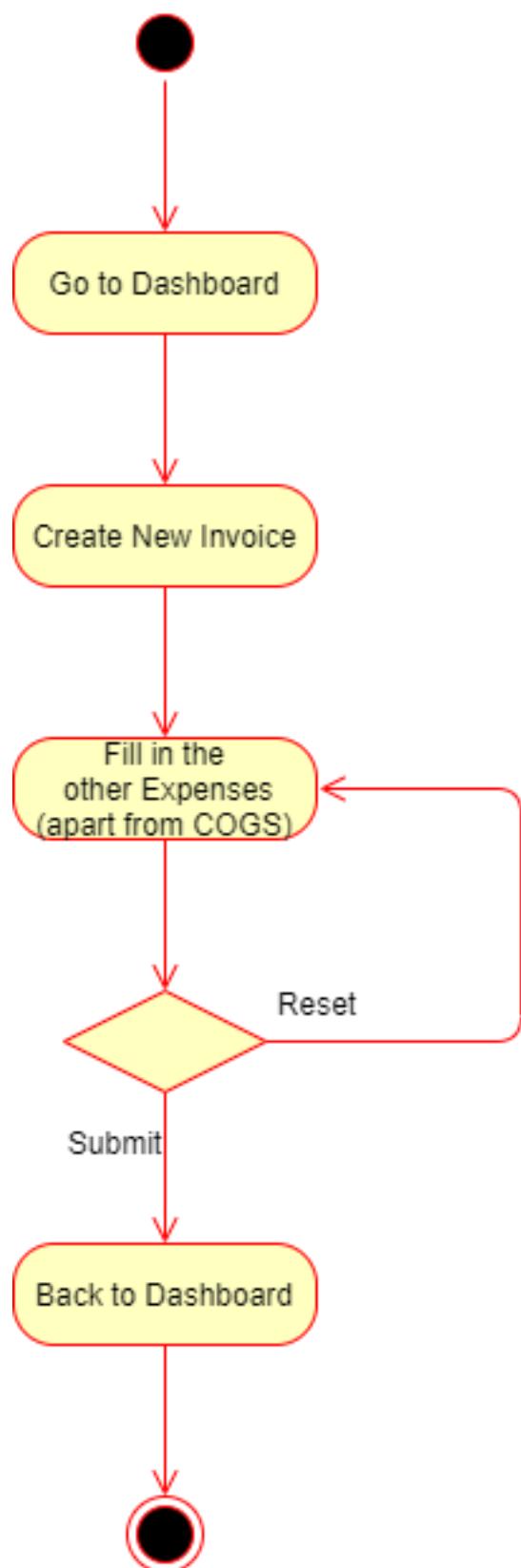


AC\_21-22-24-25 View Print Revenues Expenses, Accounting Reports

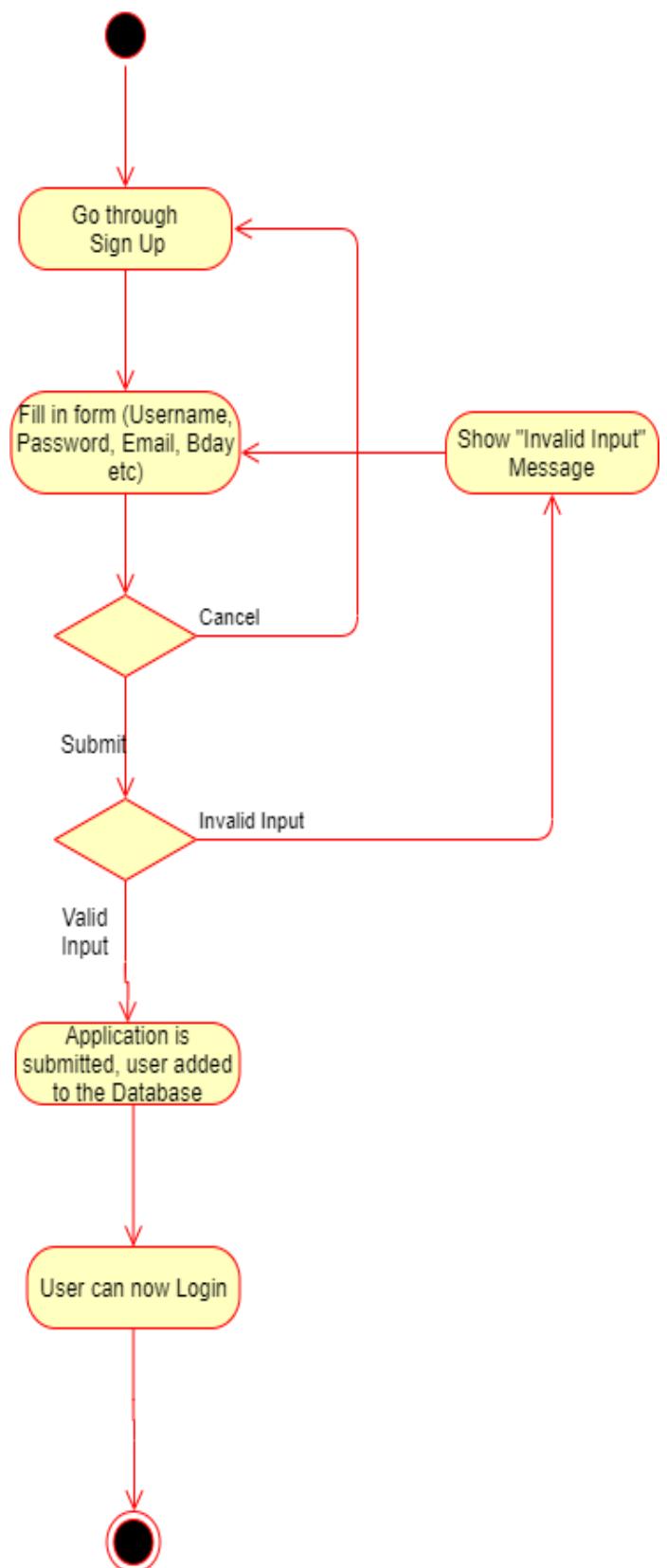


**SmartStyle Requirements Specification**

AC\_23\_Generate Invoice

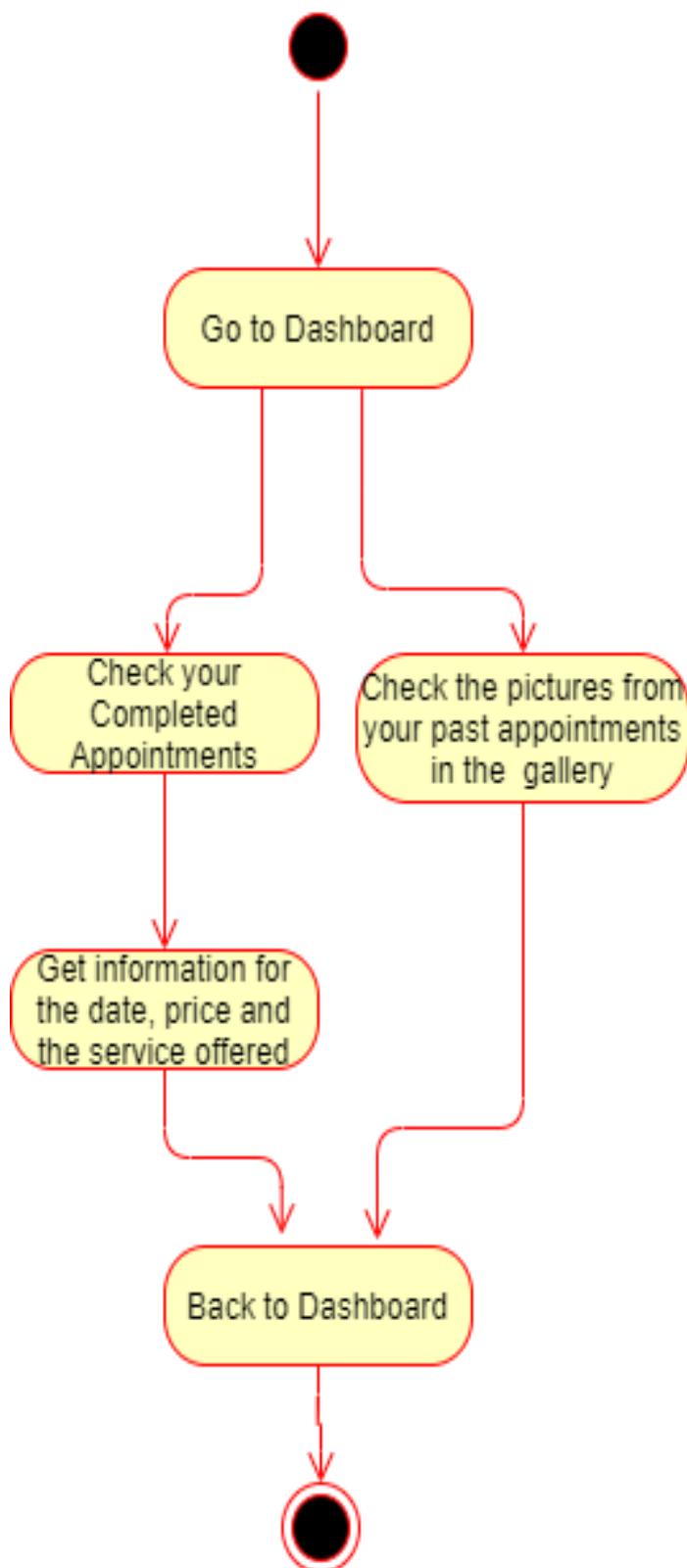


AC\_26\_Create Personal Account

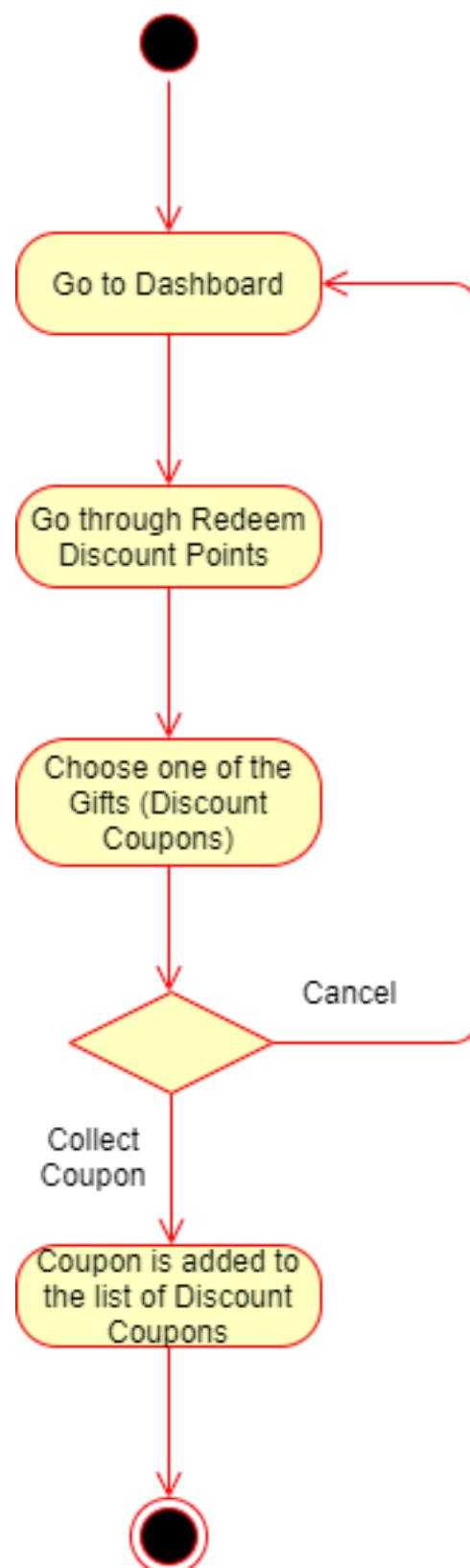


**SmartStyle Requirements Specification**

AC\_27-30\_View Completed Appointments, Client Gallery

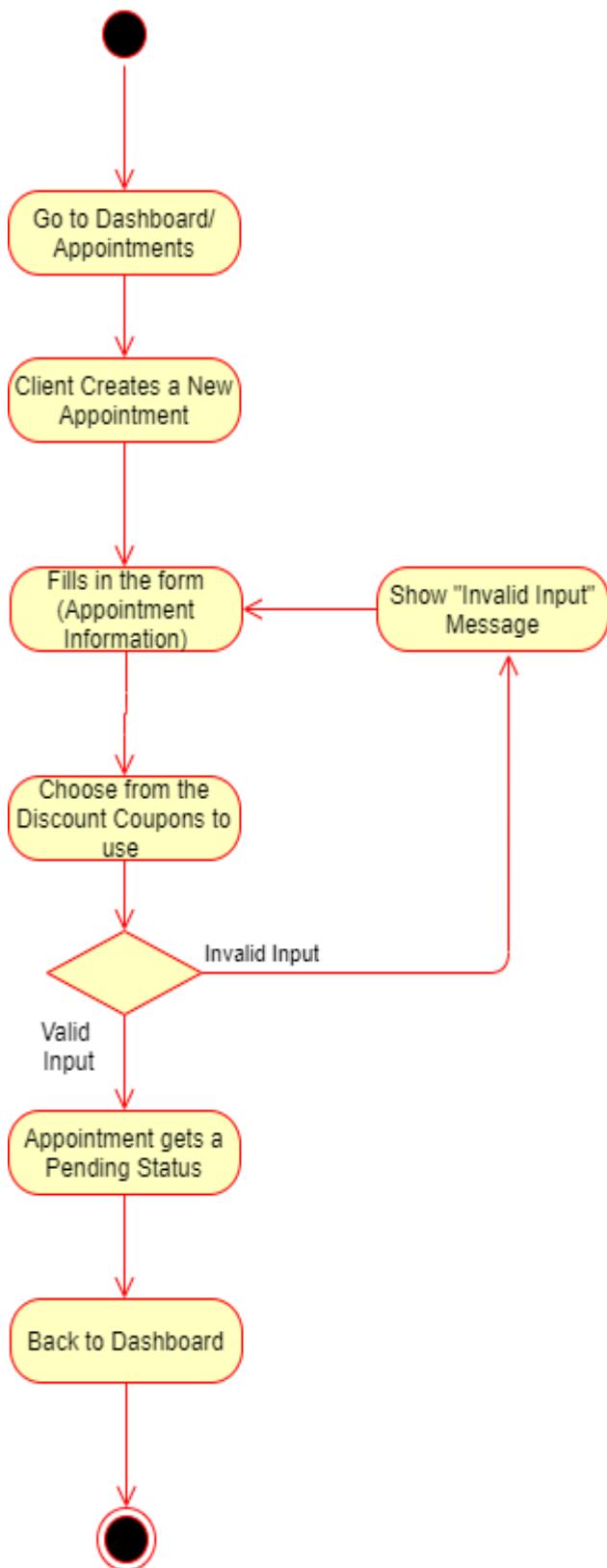


AC\_28\_Redeem Discount Points

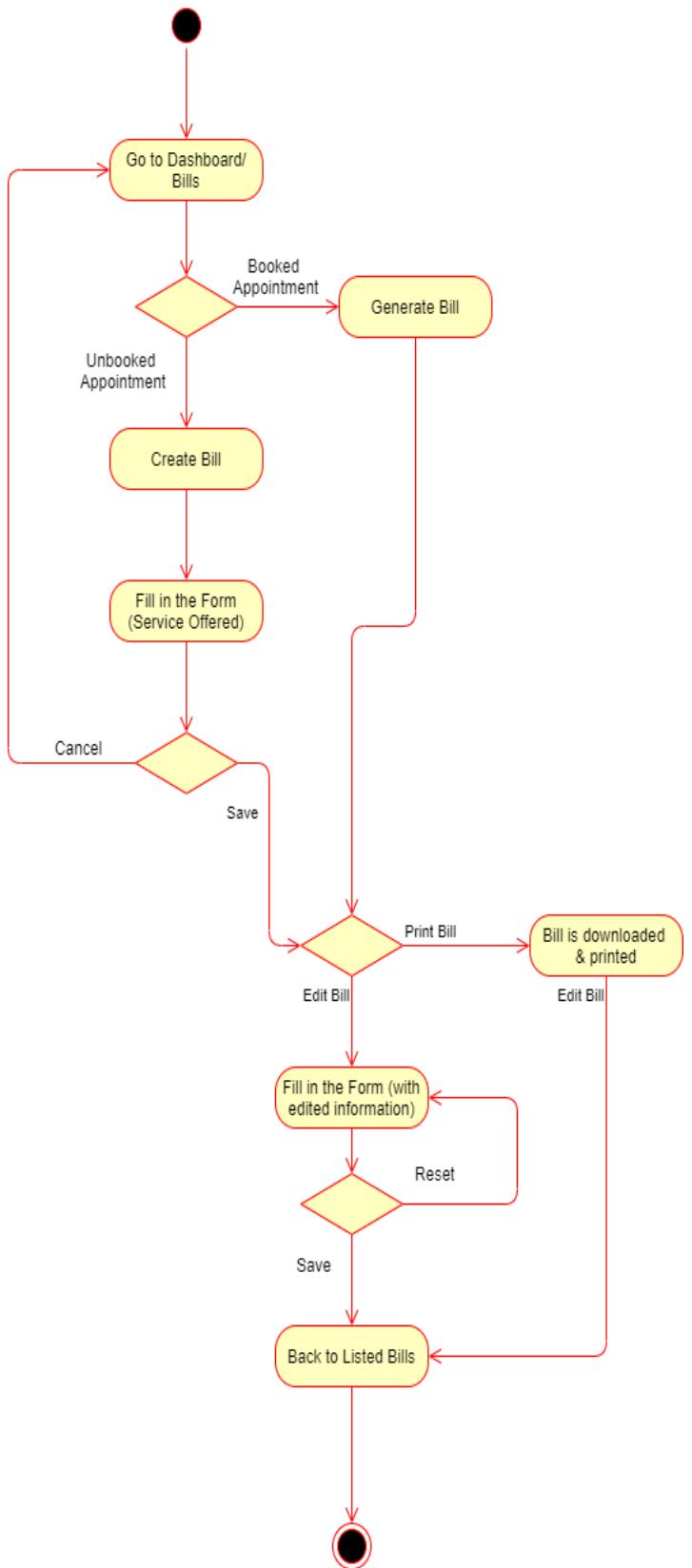


### SmartStyle Requirements Specification

AC\_29\_Use Coupon

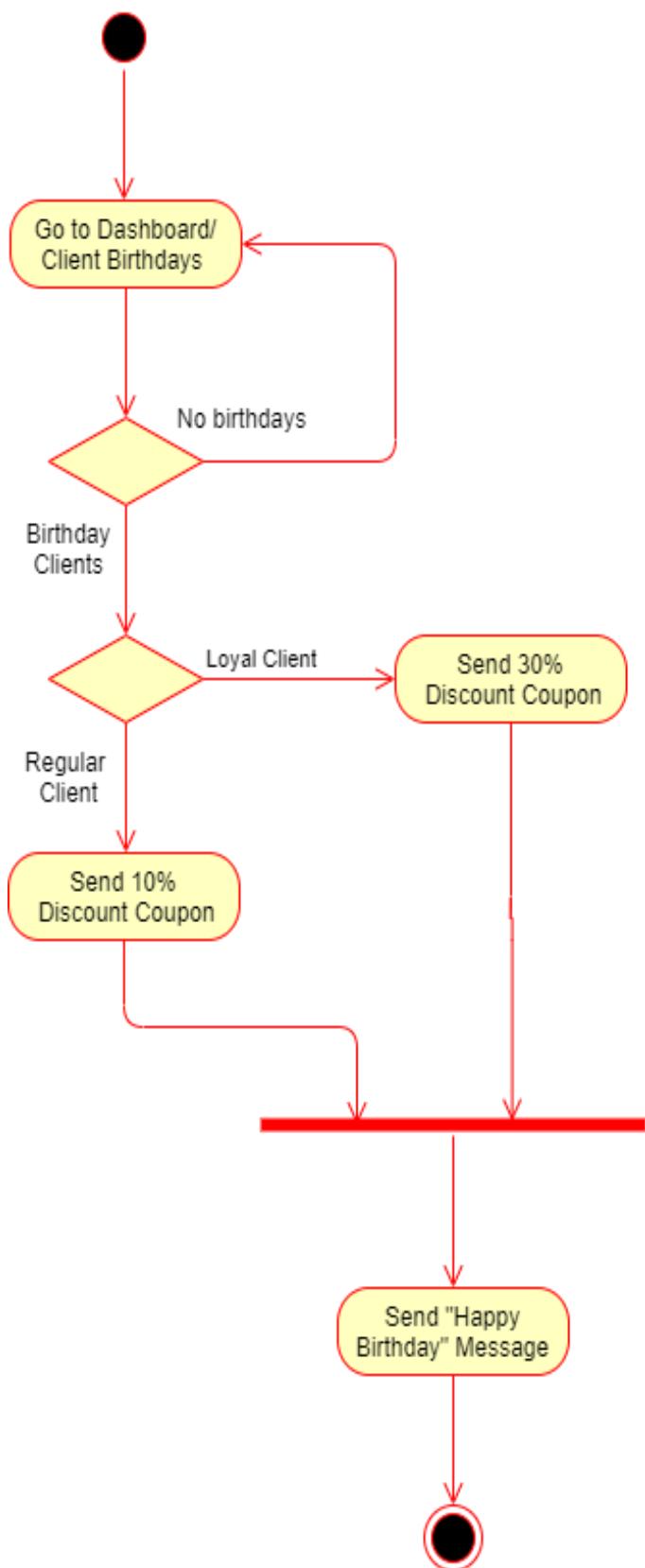


AC\_31-32-33-34 Generate Create Edit Print Bill

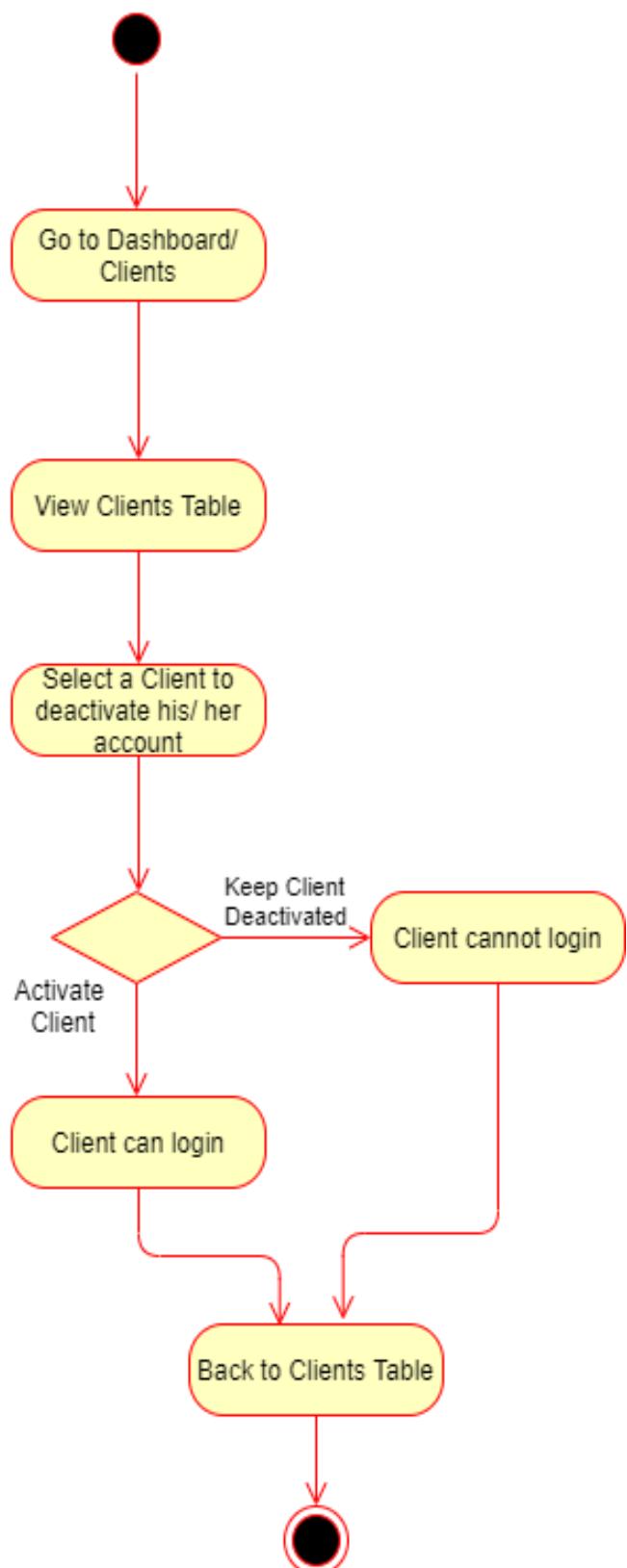


**SmartStyle Requirements Specification**

AC\_35-36\_Send Bday Message

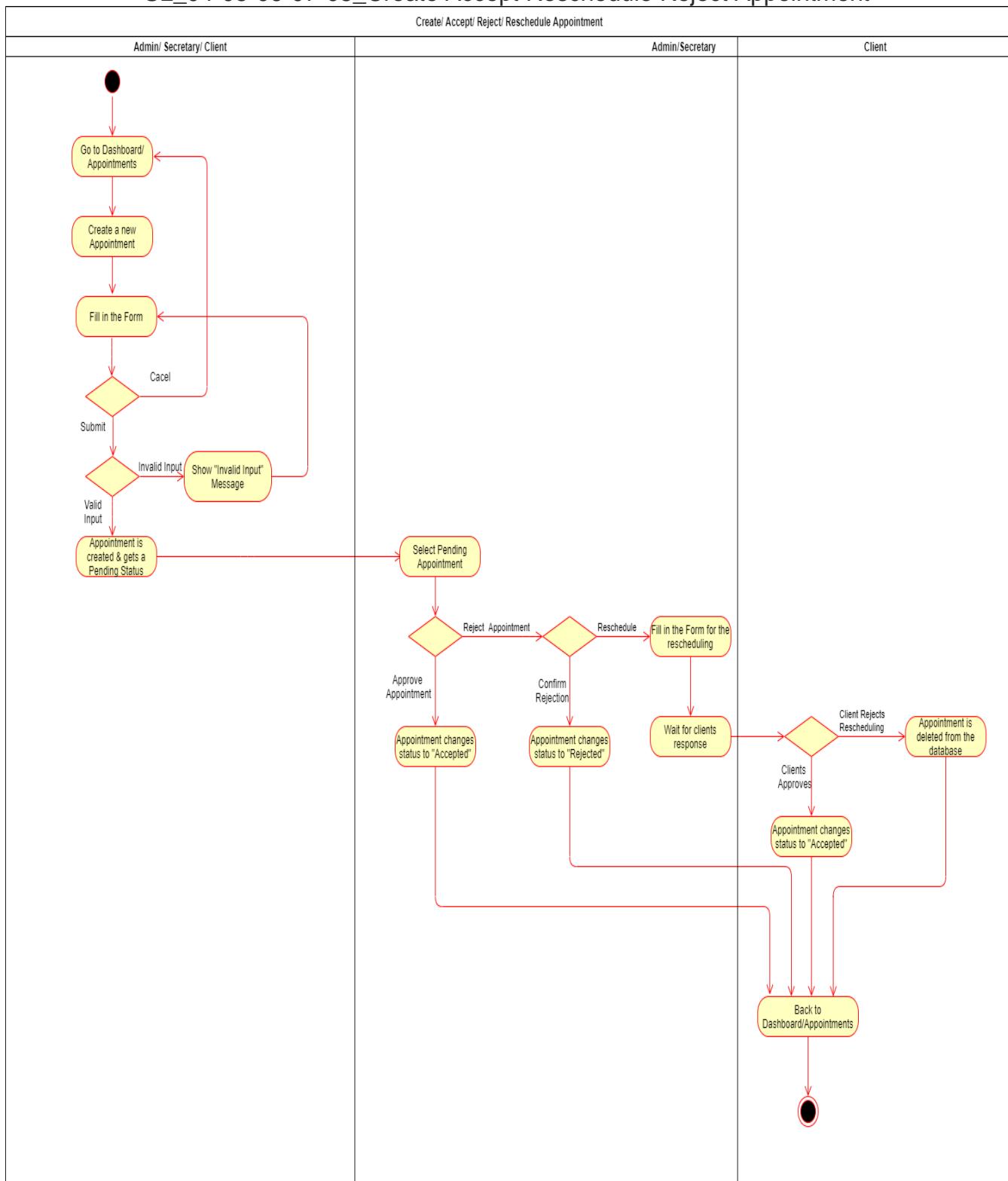


AC\_37-38\_View Deactivate Activate Client

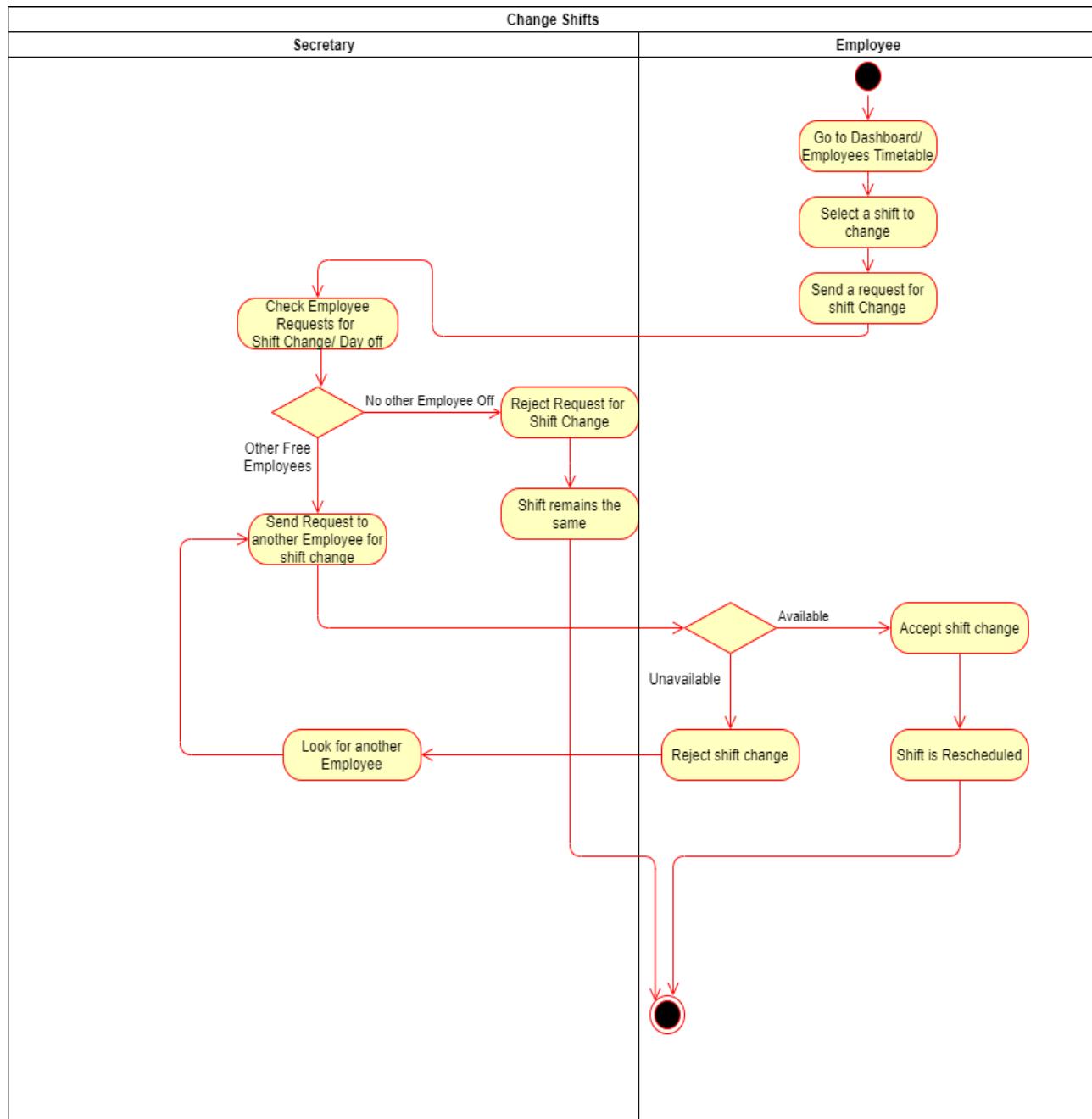


### 4.3.3 Swim Lane Diagrams

**SL\_04-05-06-07-08\_Create Accept Reschedule Reject Appointment**

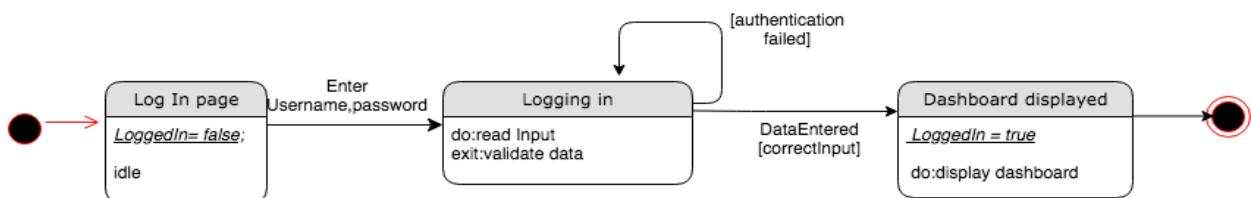


## SL\_14-5-16\_Change Employee Shifts

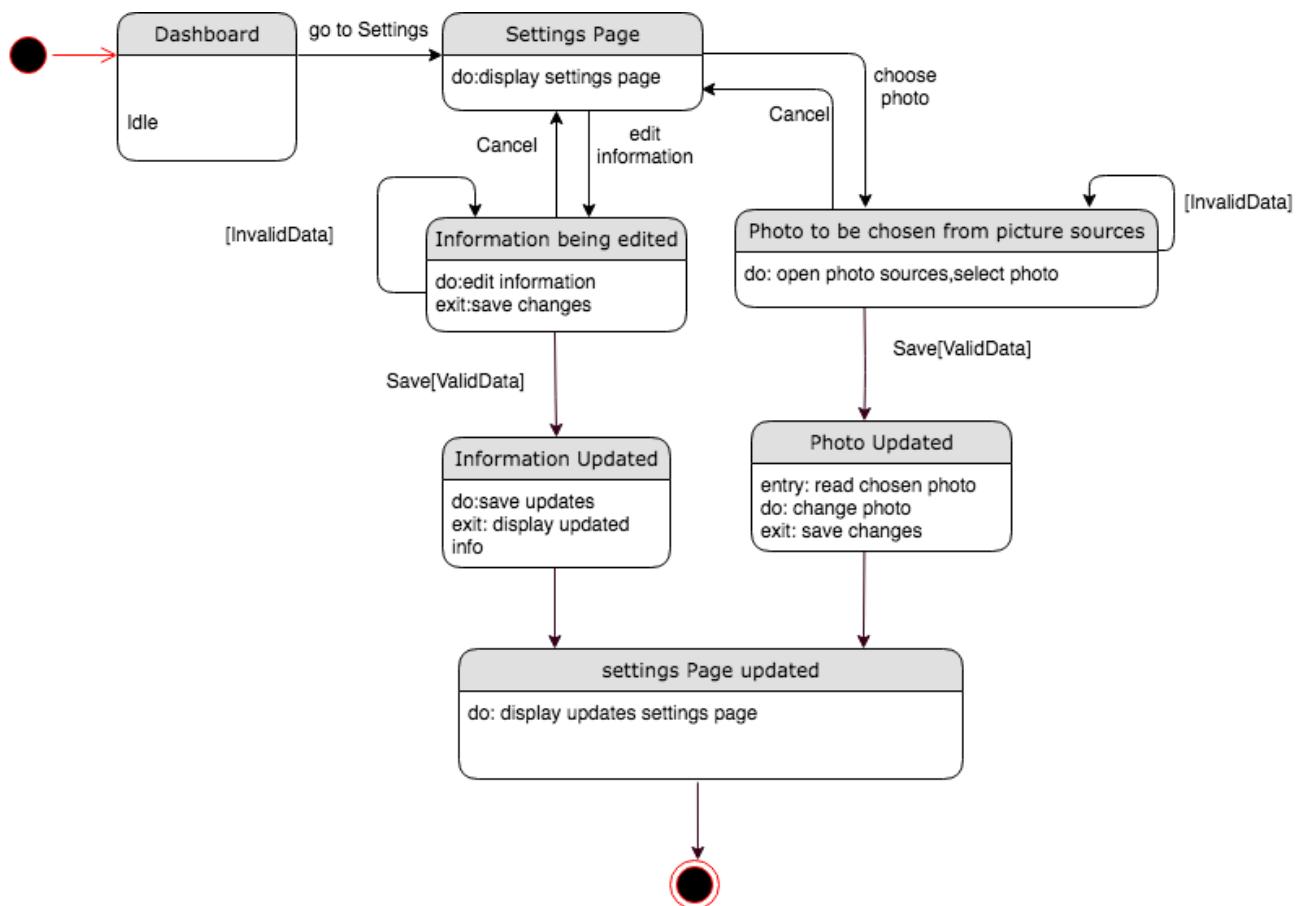


#### 4.3.4 State Chart Diagrams

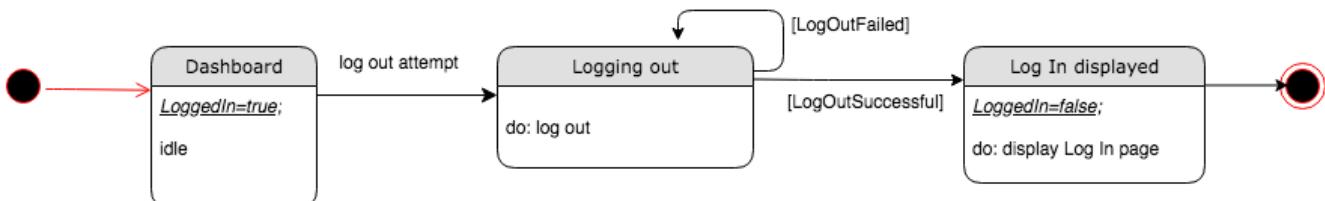
ST\_01 Login



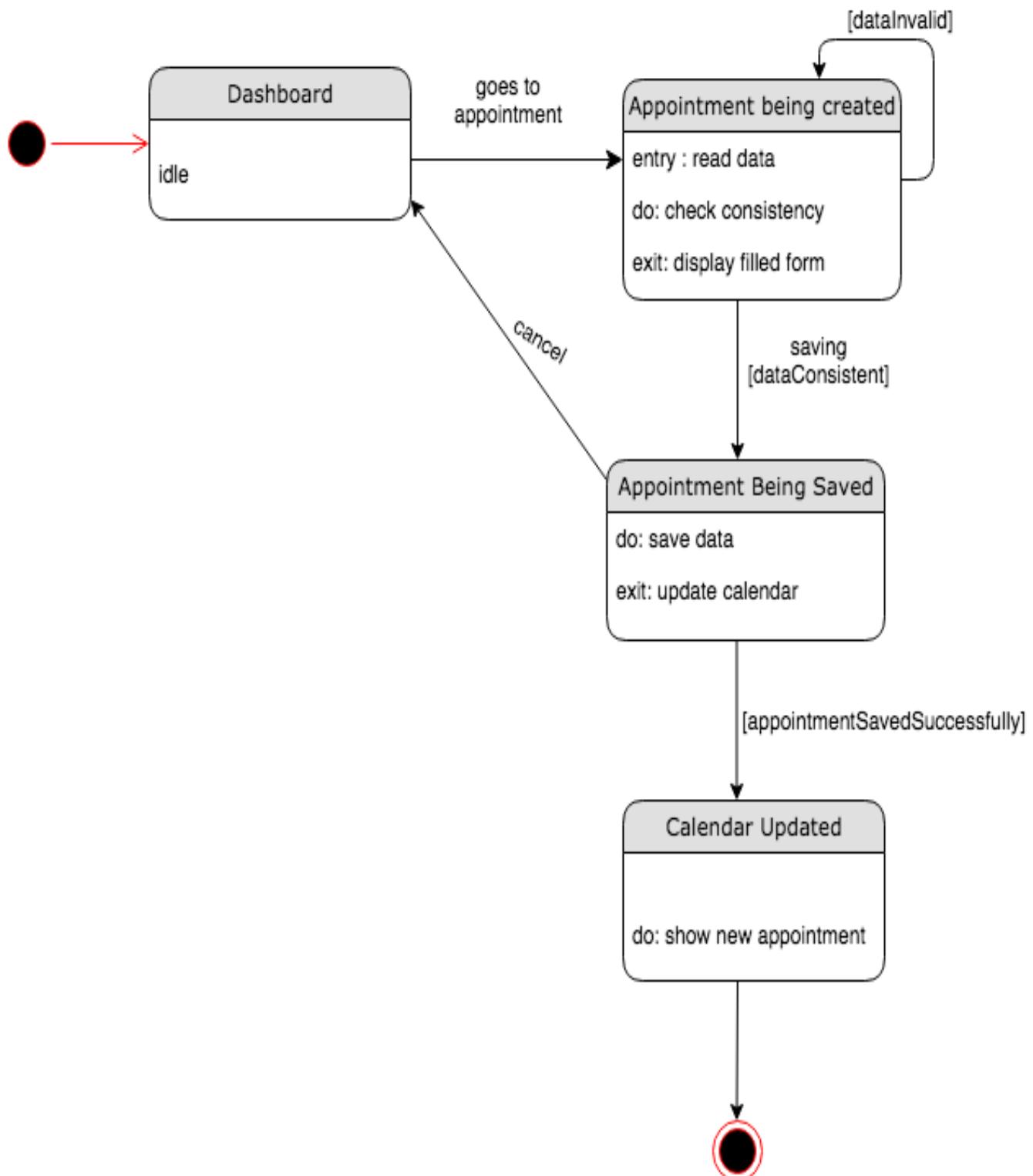
ST\_02 Settings Update



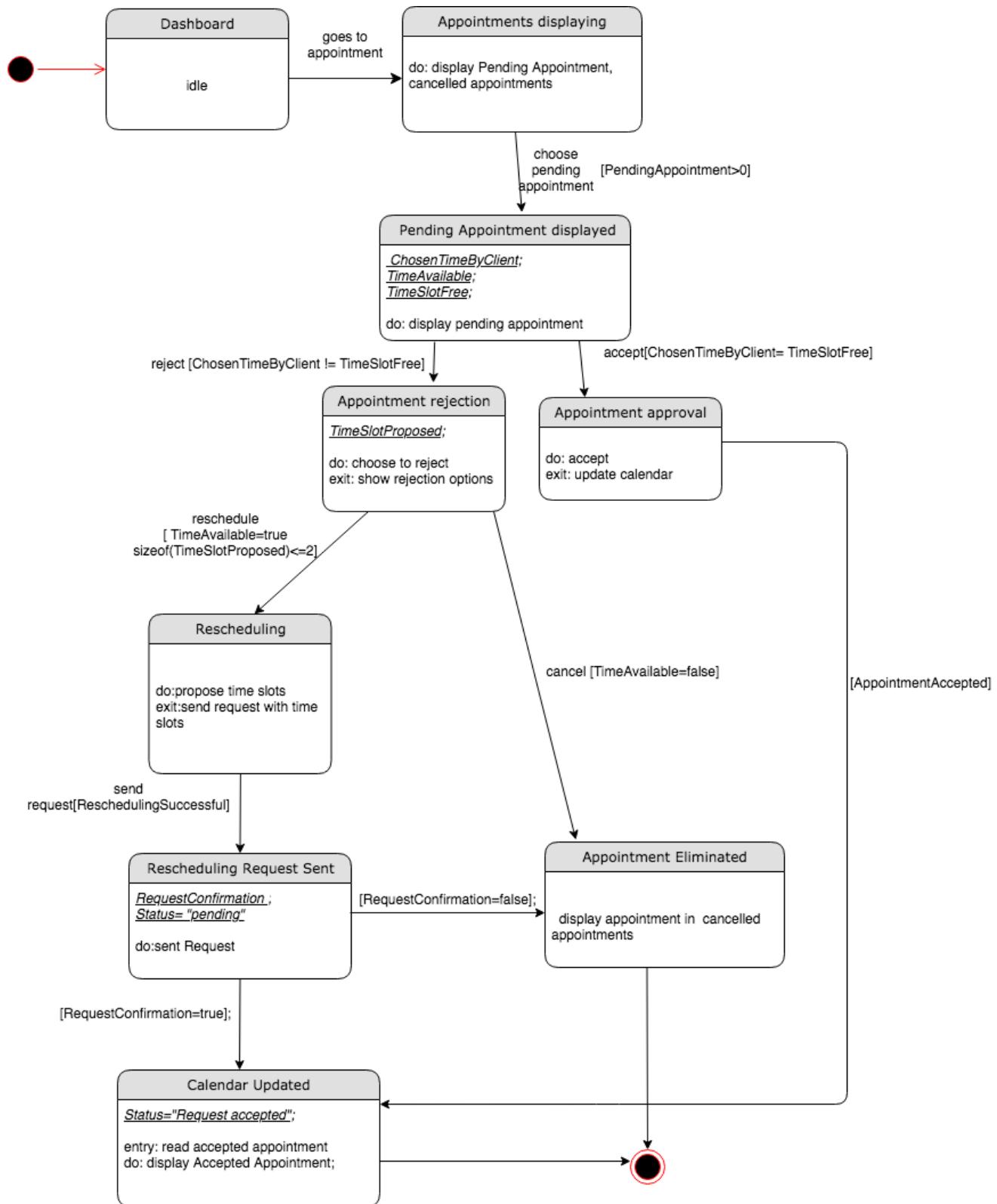
ST\_03 Log Out



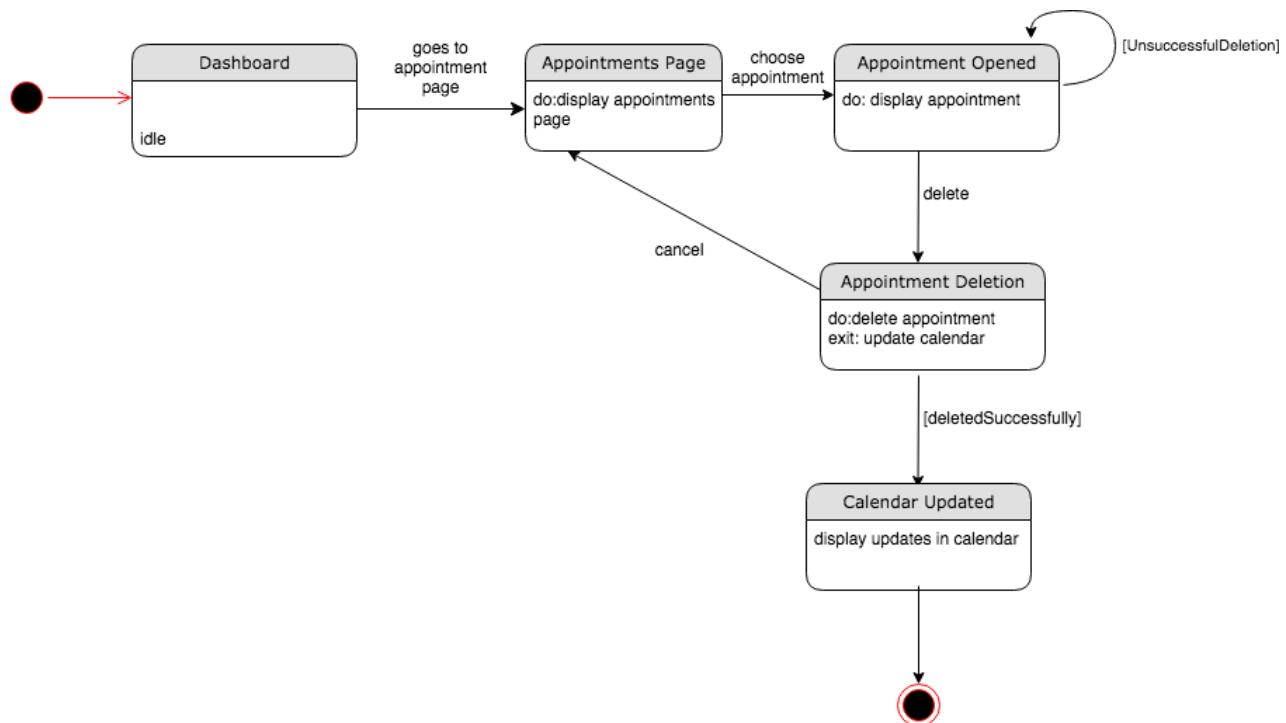
ST\_04 Create Appointment



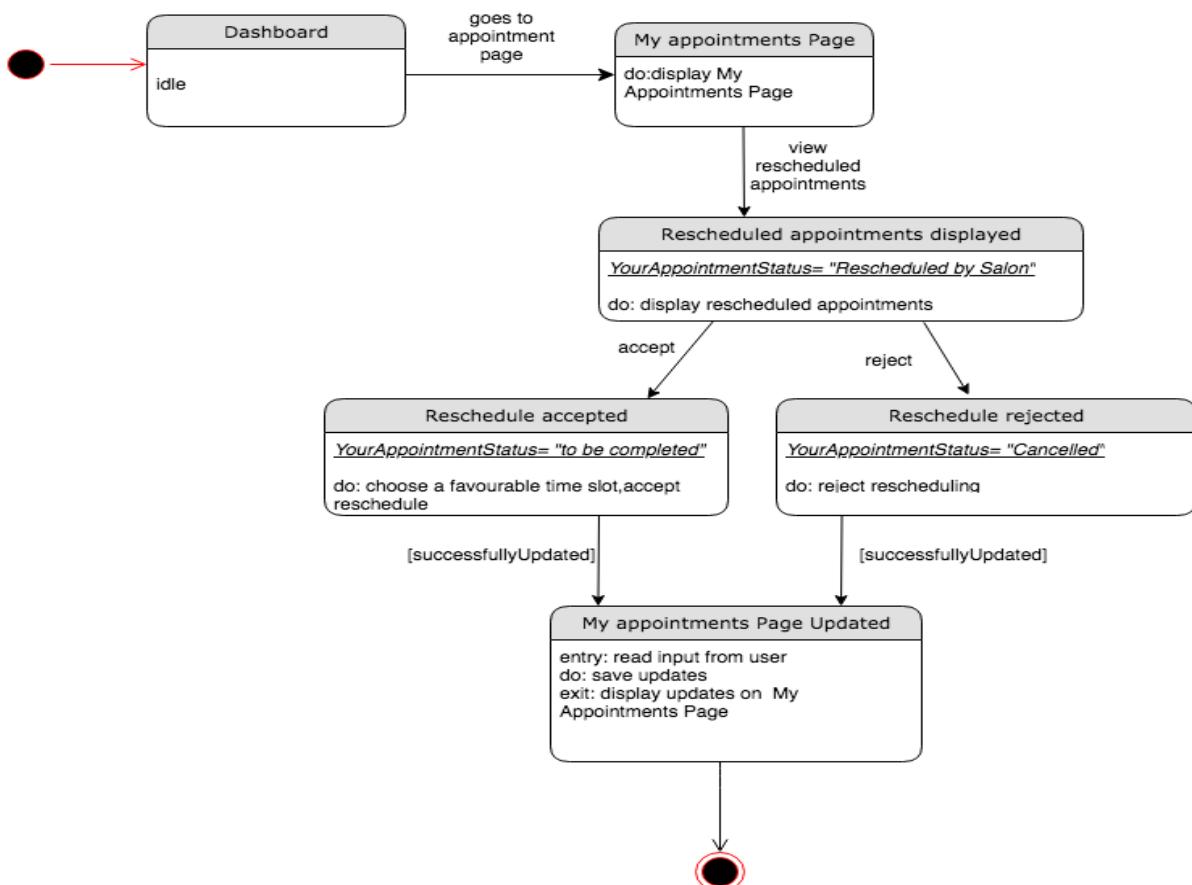
ST\_05-06-07 Accept, Reject, Reschedule Appointment



### ST\_08 Accept, Reject Rescheduling

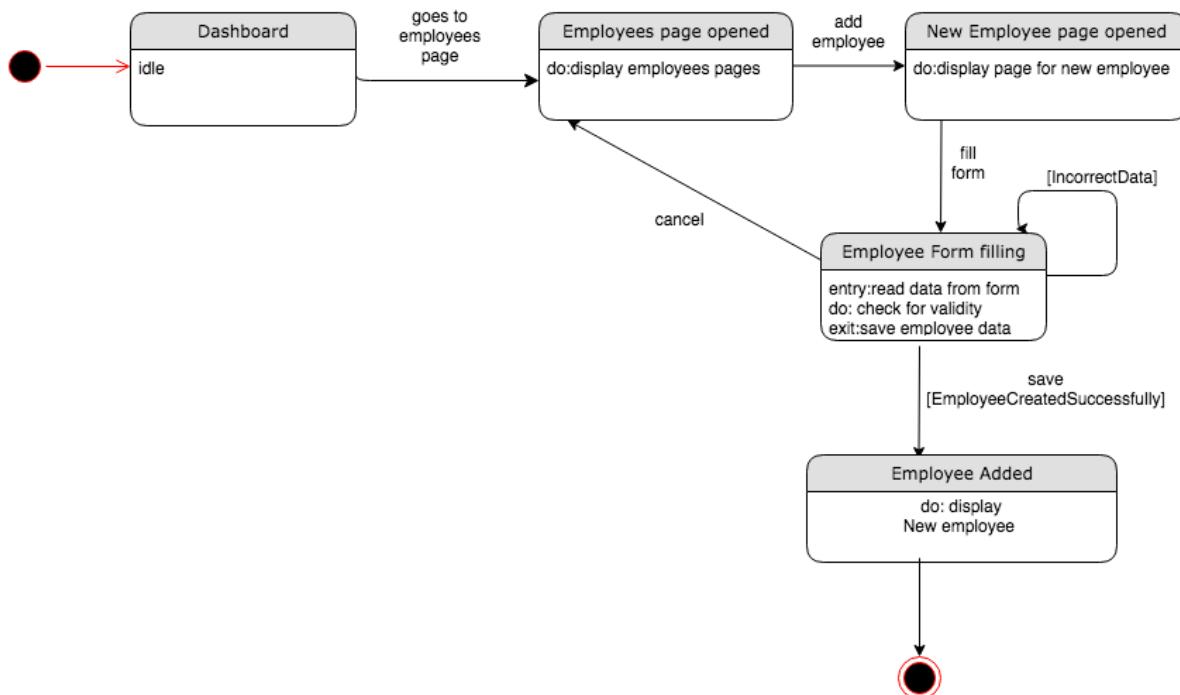


### ST\_09 Delete Appointment

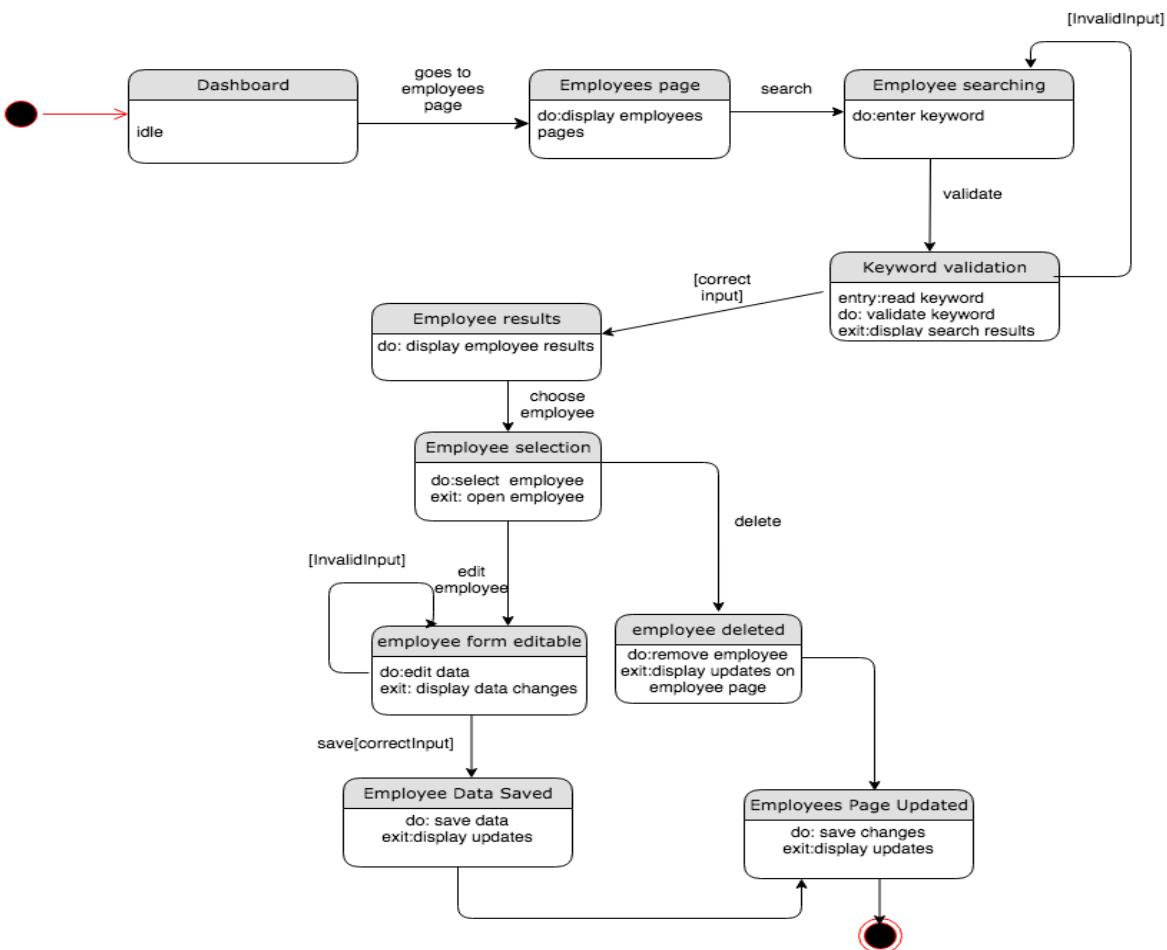


## SmartStyle Requirements Specification

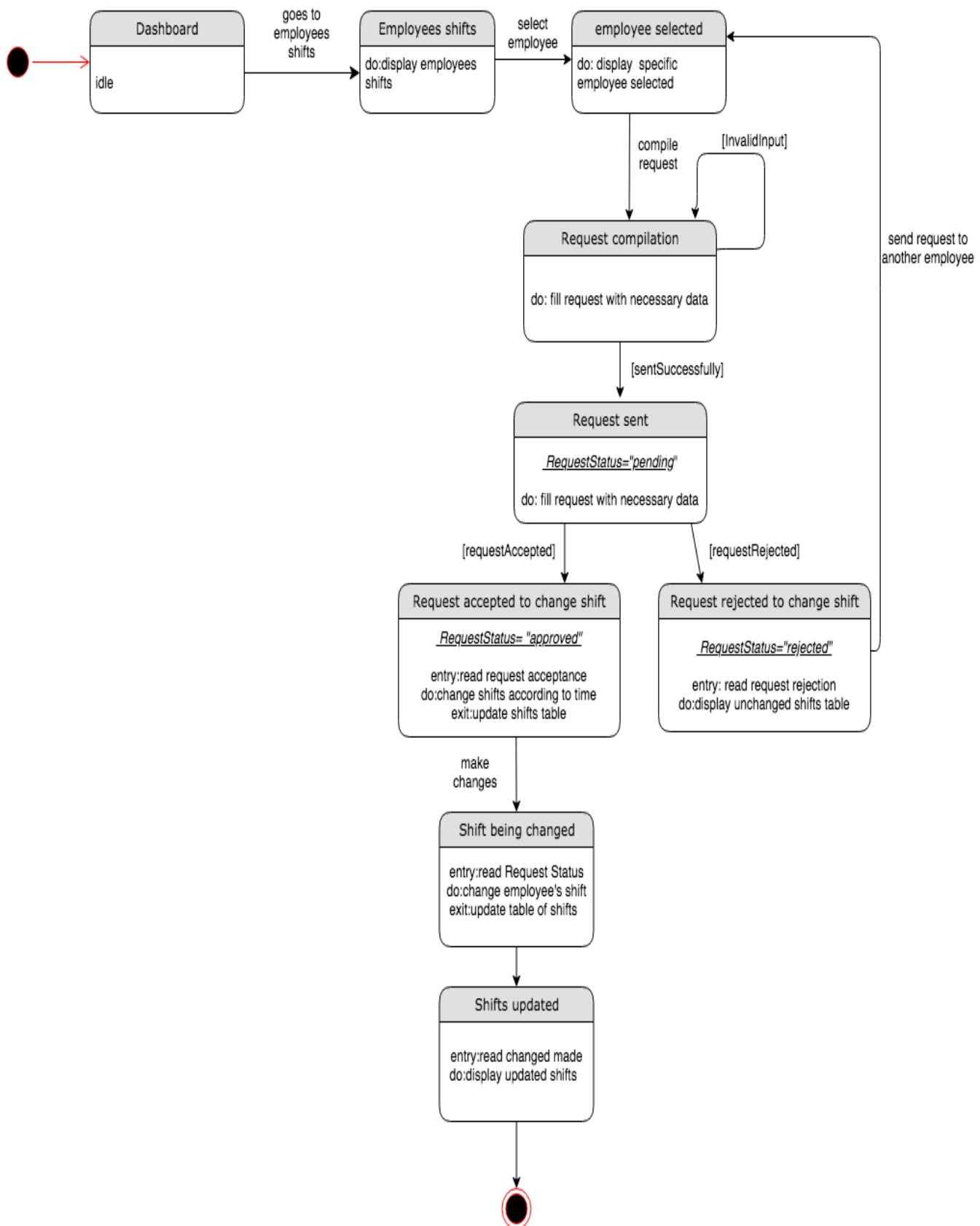
### ST\_10 Register Employee



### ST\_11-12-13\_View Edit Remove Employee

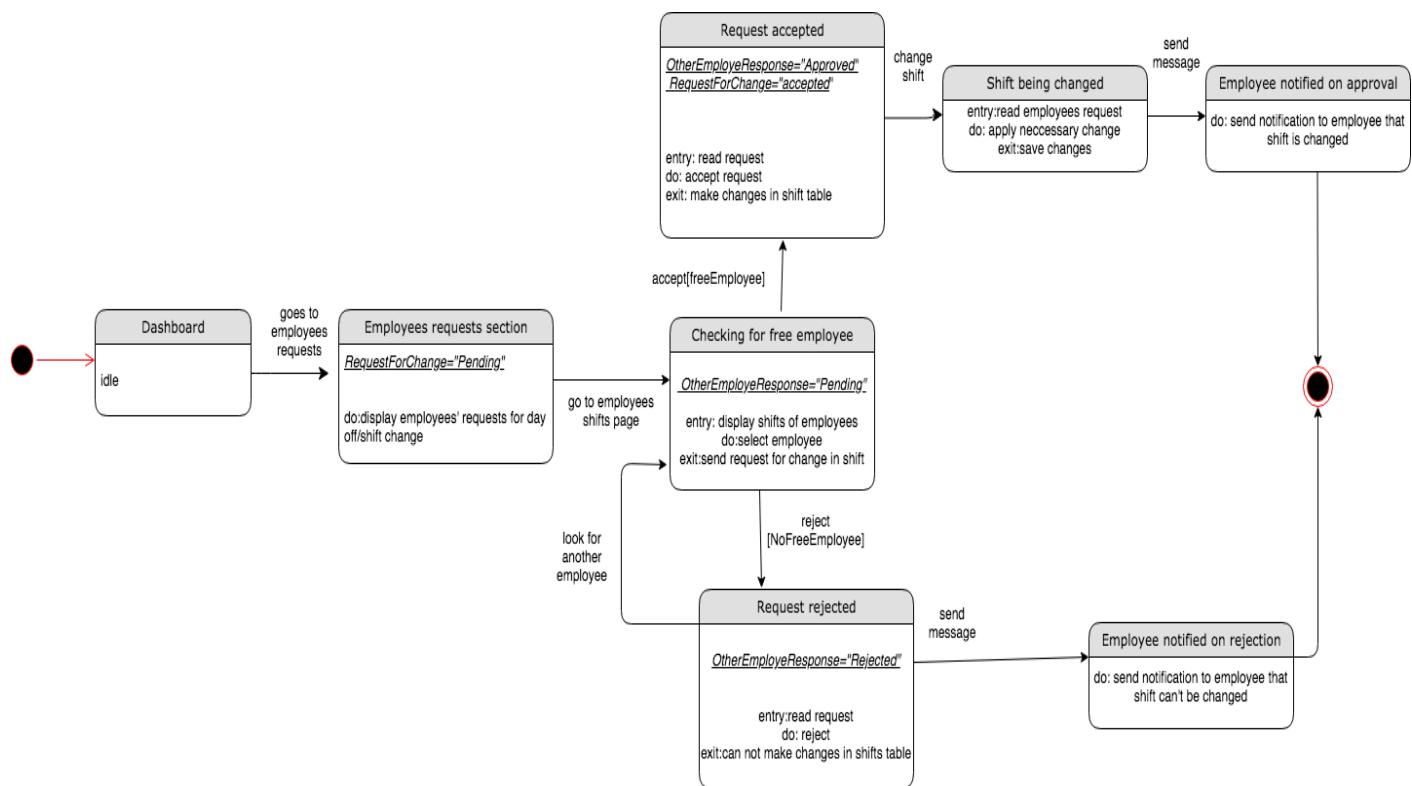


**ST\_14 Change Employee Shift**

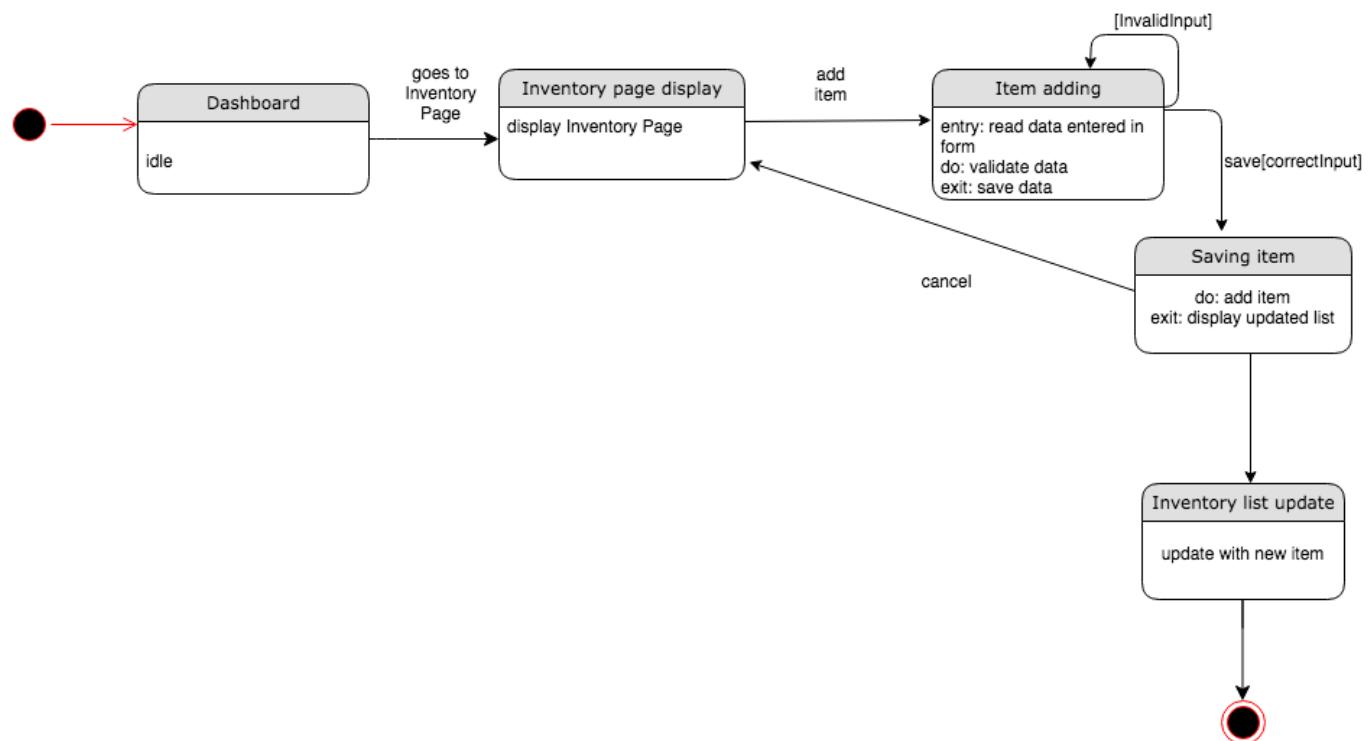


## SmartStyle Requirements Specification

### ST\_15\_16 Accept, Reject Employee Request

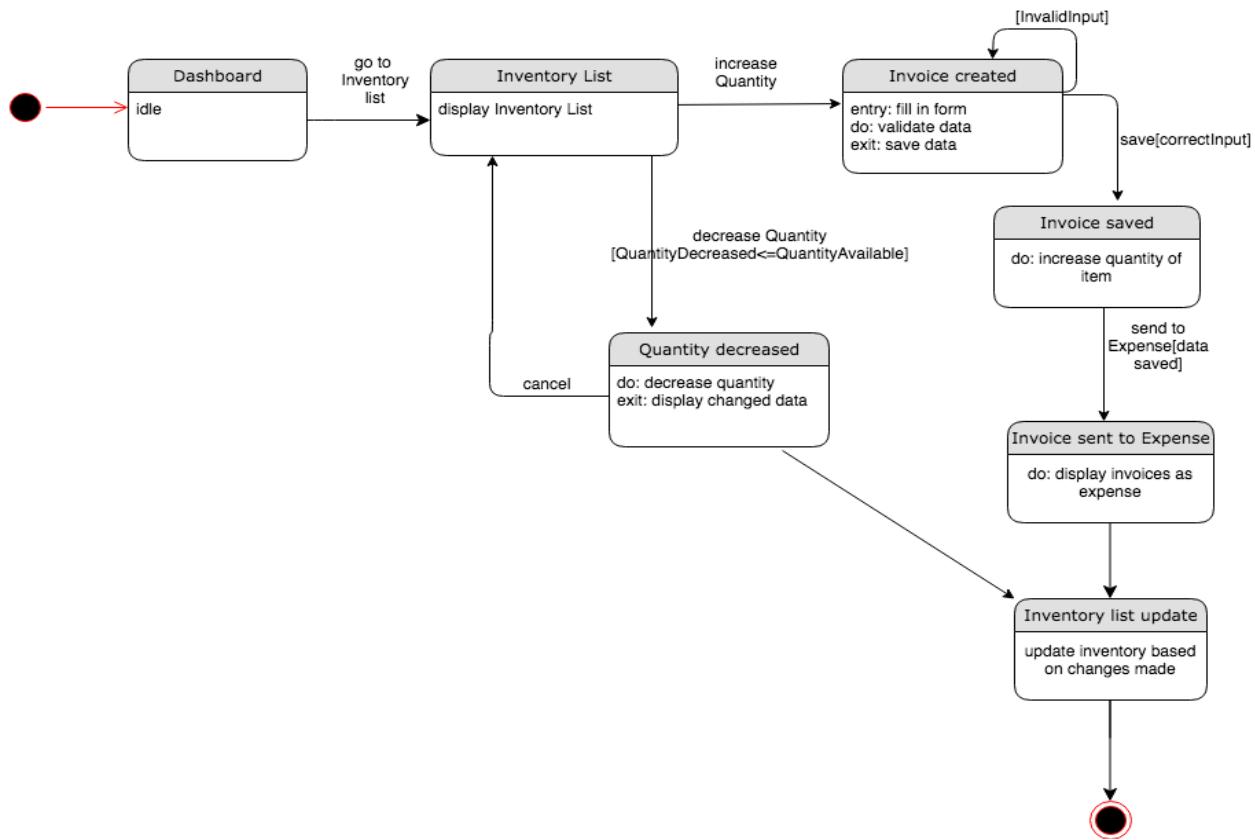


### ST\_17 Register Inventory

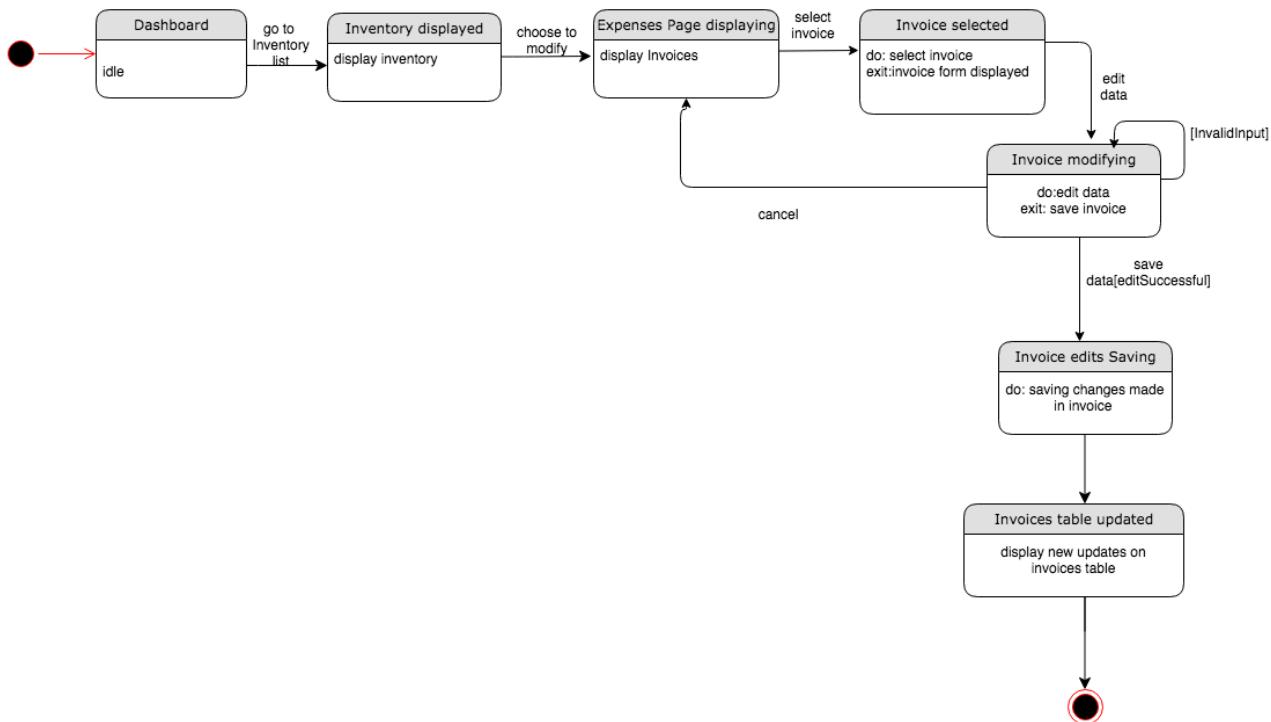


## SmartStyle Requirements Specification

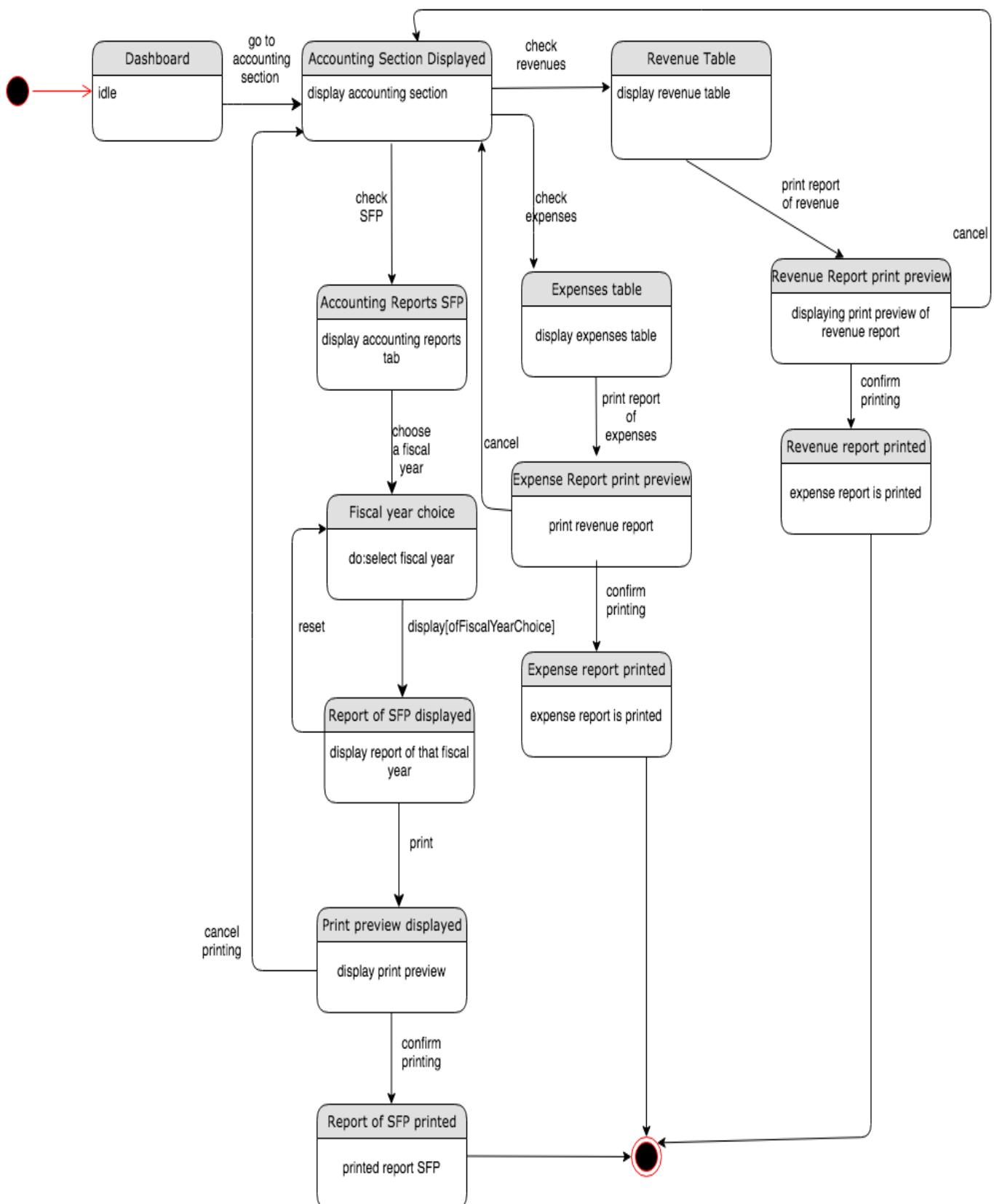
### ST\_18\_20 Add Diminish Inventory



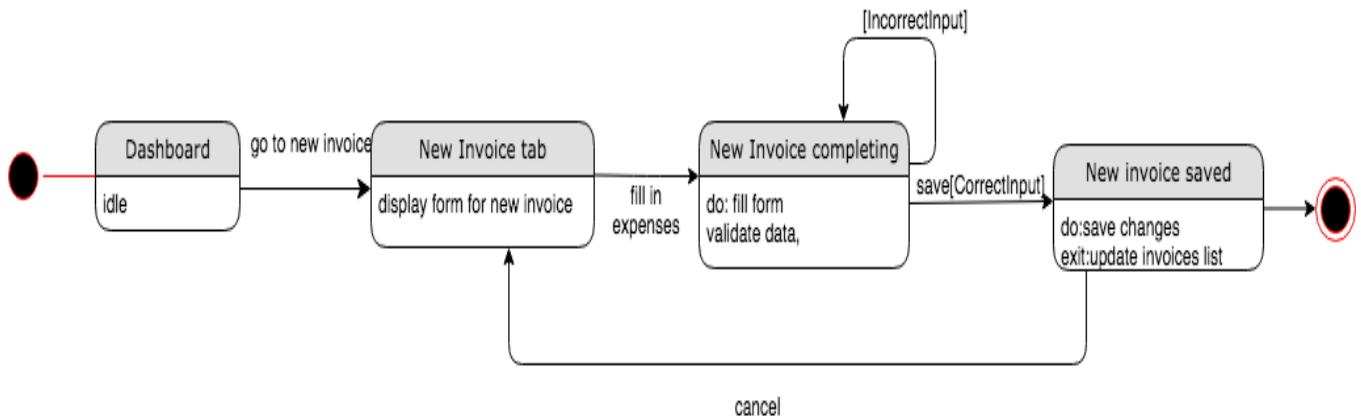
### ST\_19 Modify Invoice



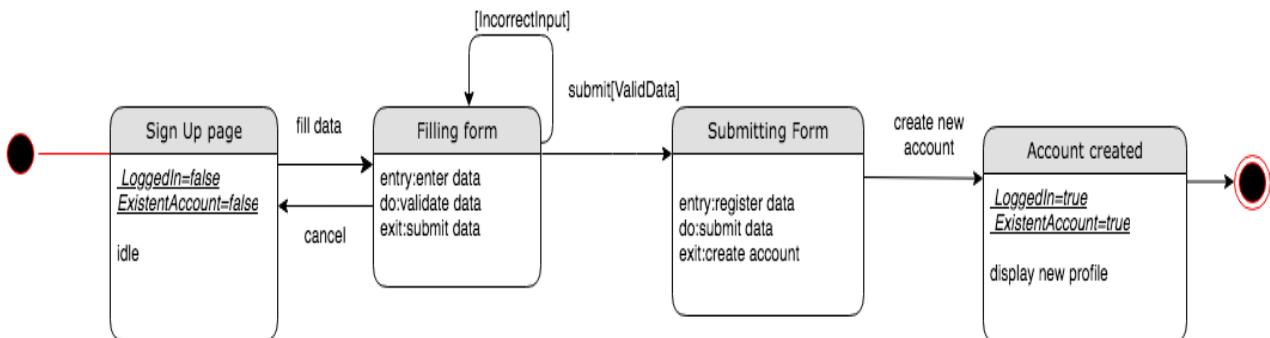
**ST\_21\_22\_24\_25 View Print Revenues, Expense, Accounting Reports**



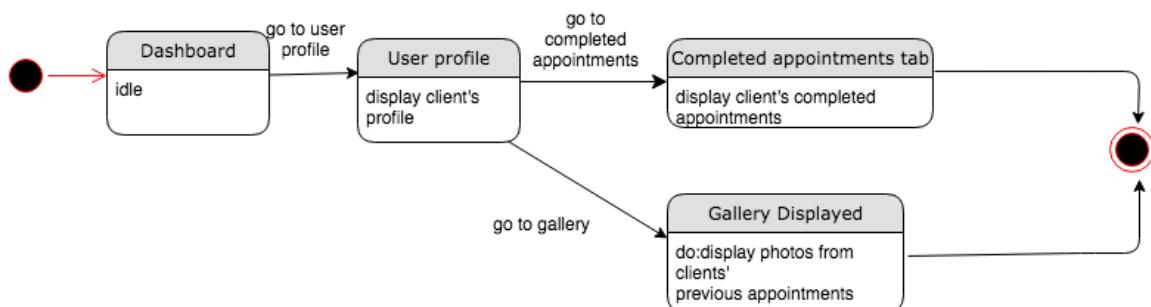
### ST\_23 Generate Invoice



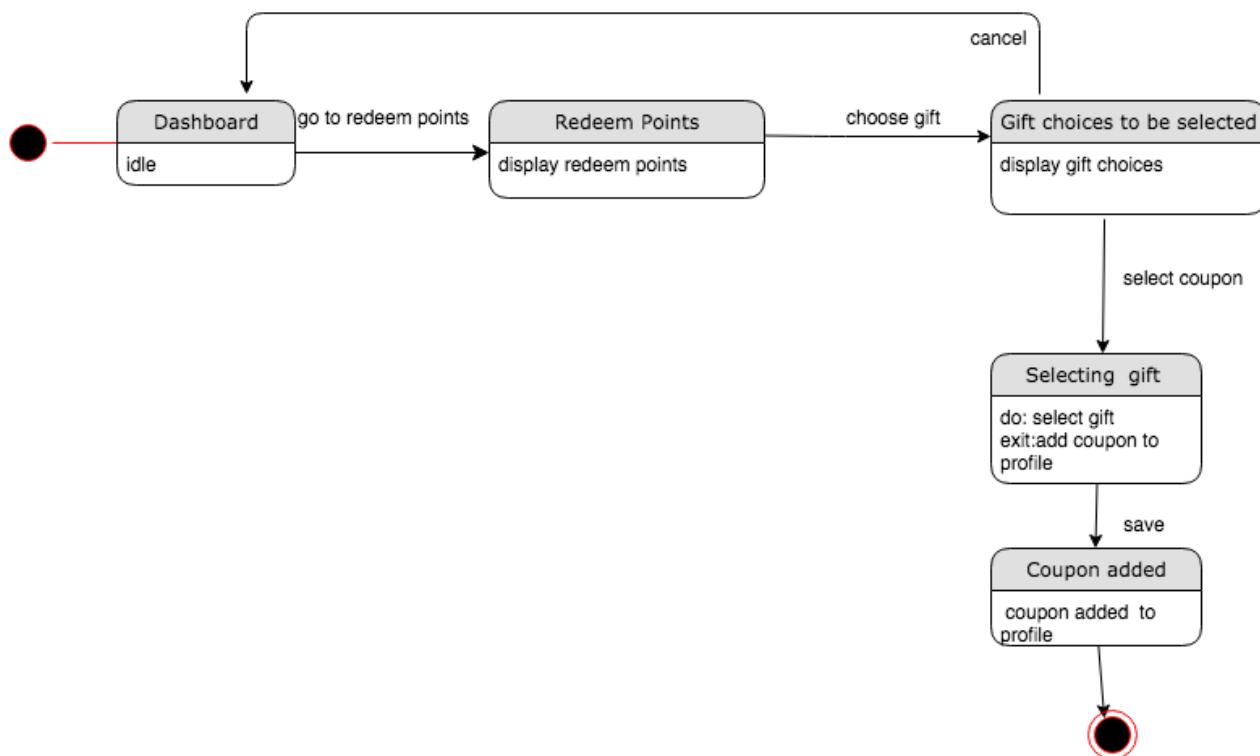
### ST\_26 Create Personal Account



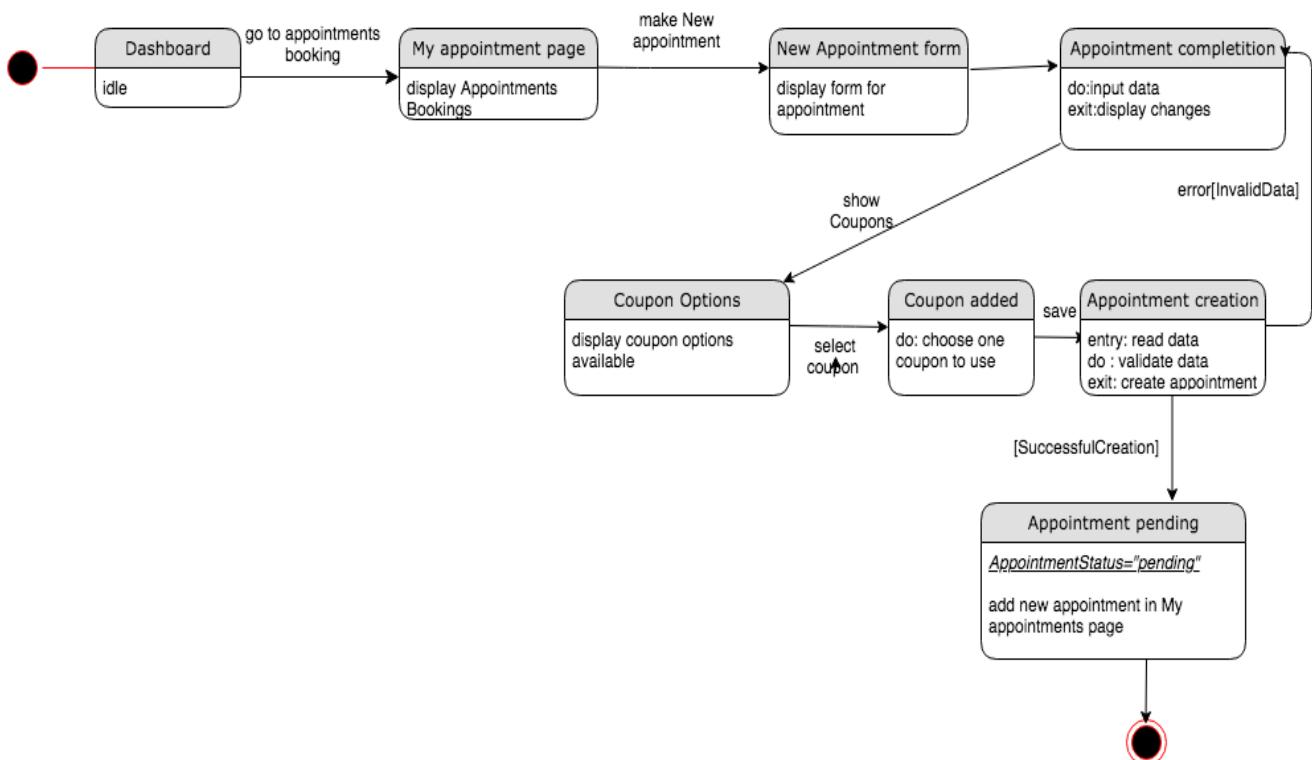
### ST\_27\_30 View Completed Appointment, Client Gallery



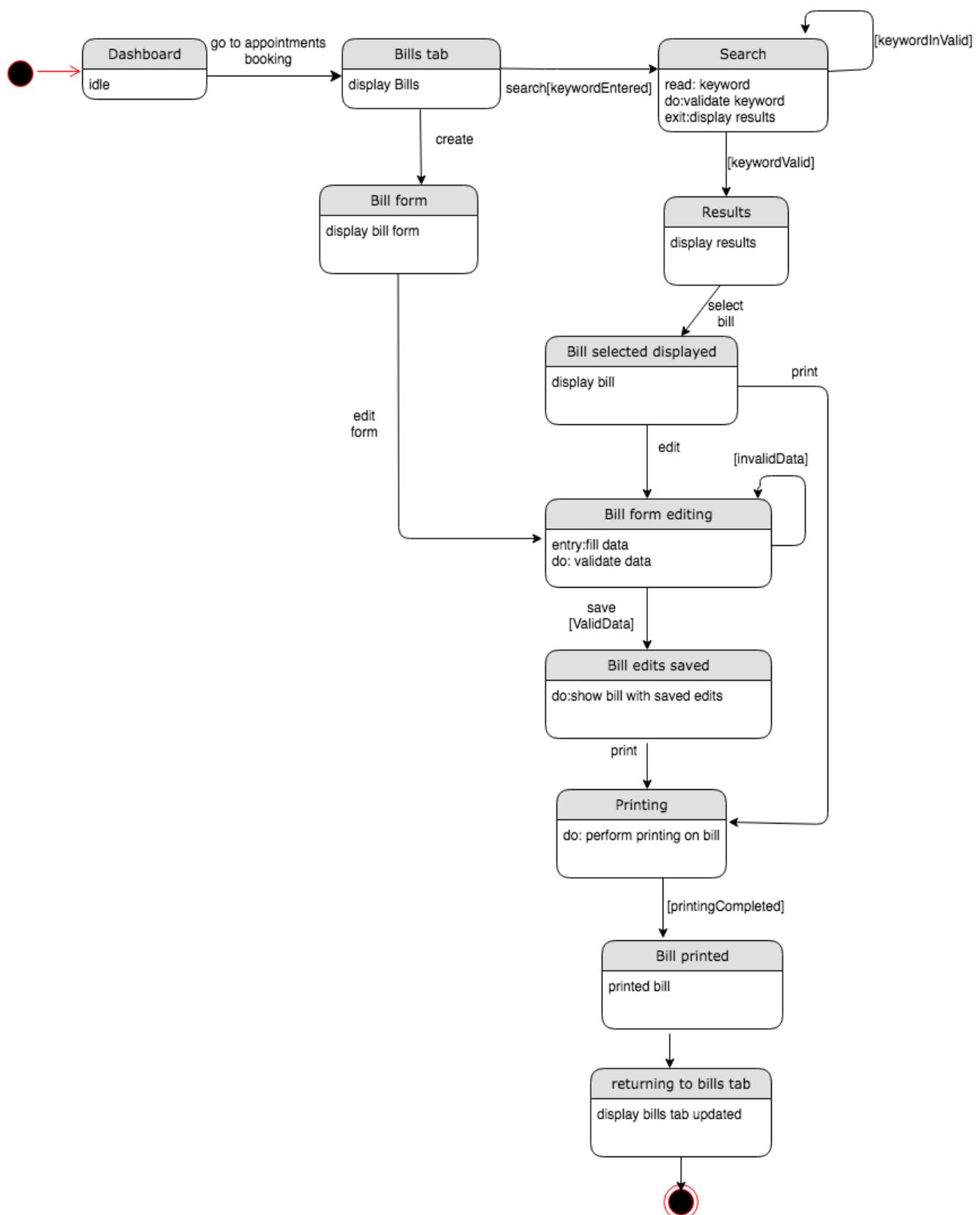
### ST\_28 Redeem Discount Points



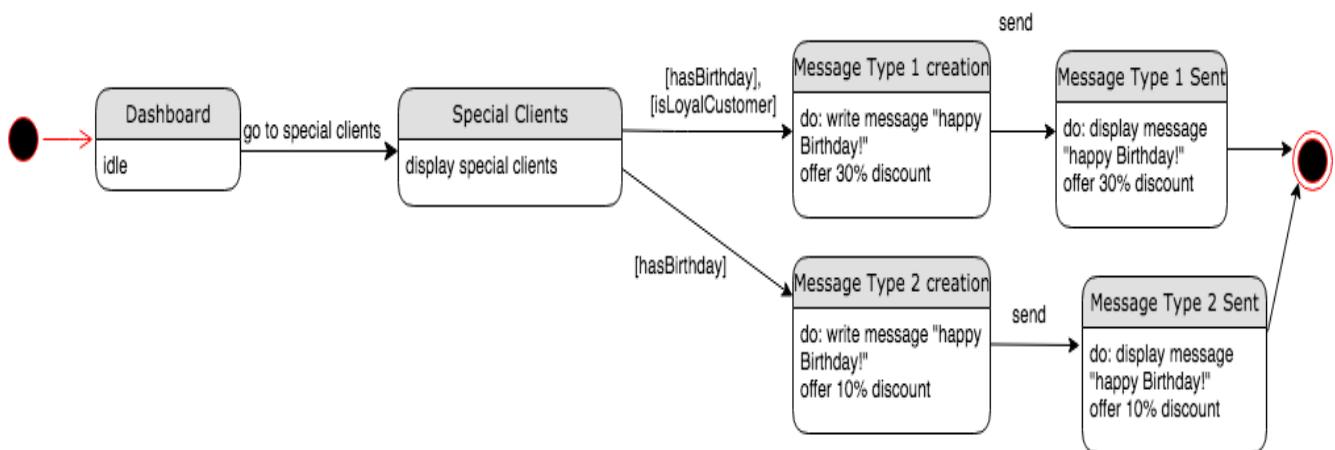
### ST\_29 Use Coupon



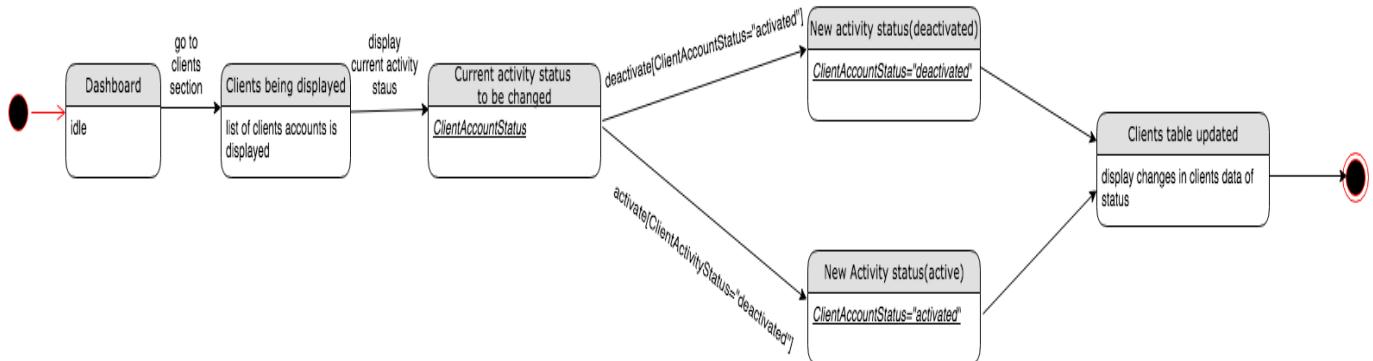
**ST\_31\_32\_33\_34 Generate, Create, Edit, Print Bill**



**ST\_35\_36 Send B-Day Message**

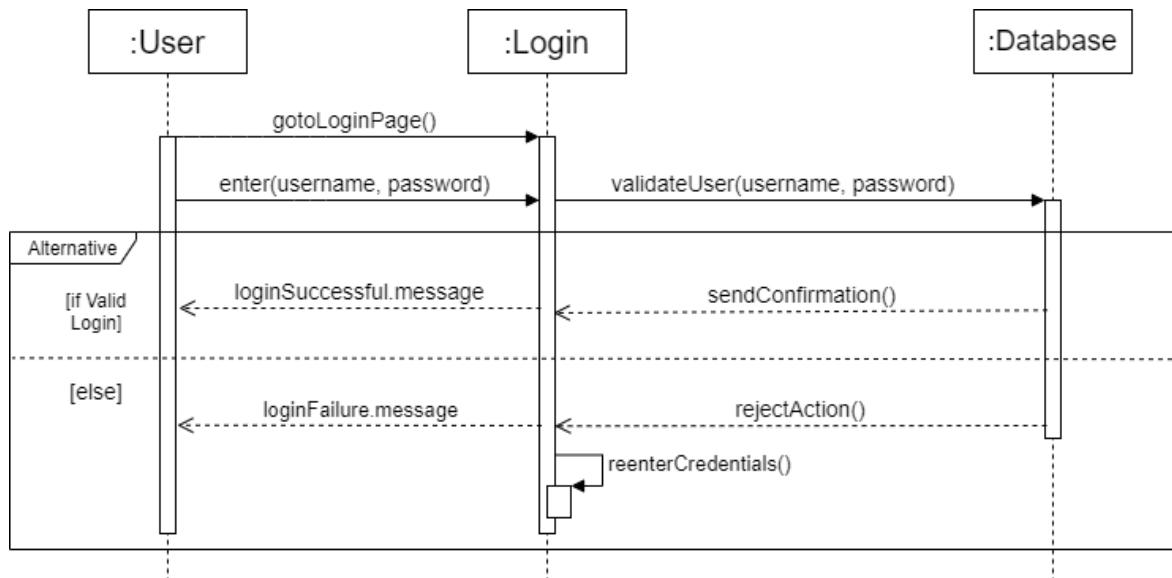


**ST\_37-38 View Activate Deactivate Client**

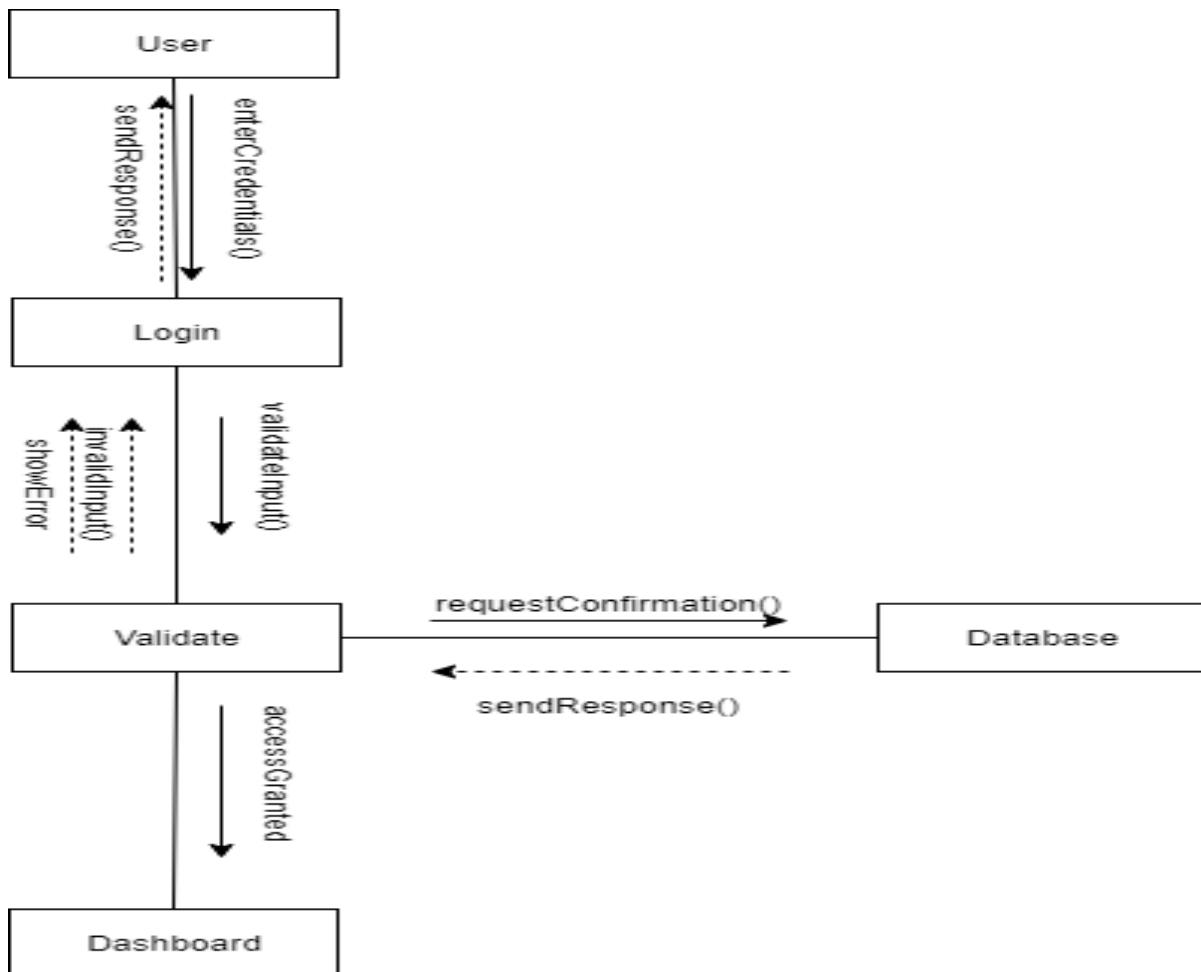


#### 4.3.5 Sequence and Collaboration Diagrams

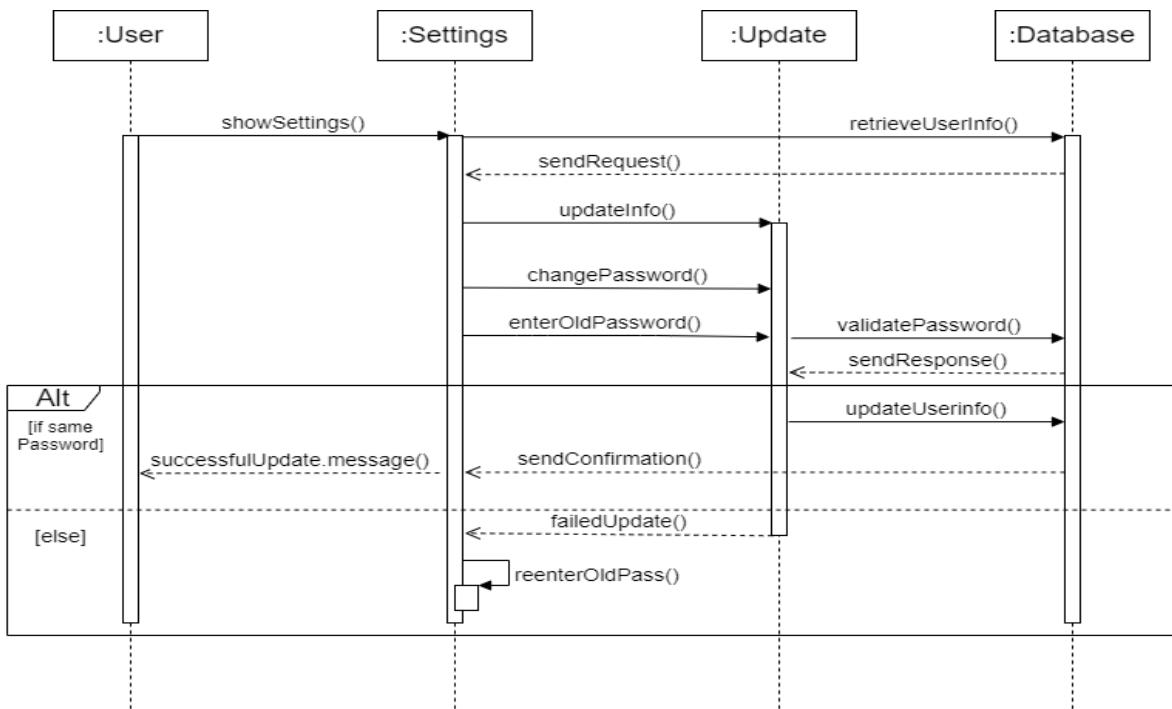
SEQ\_01\_Login



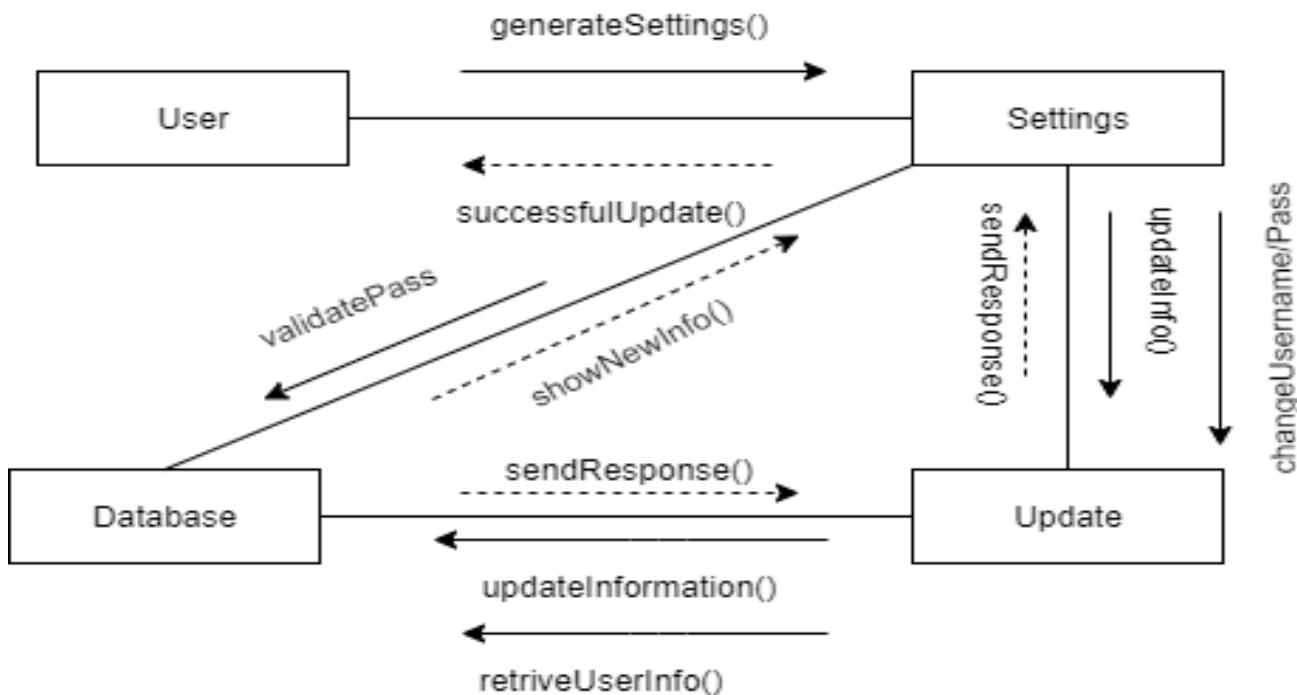
COL\_01\_Login



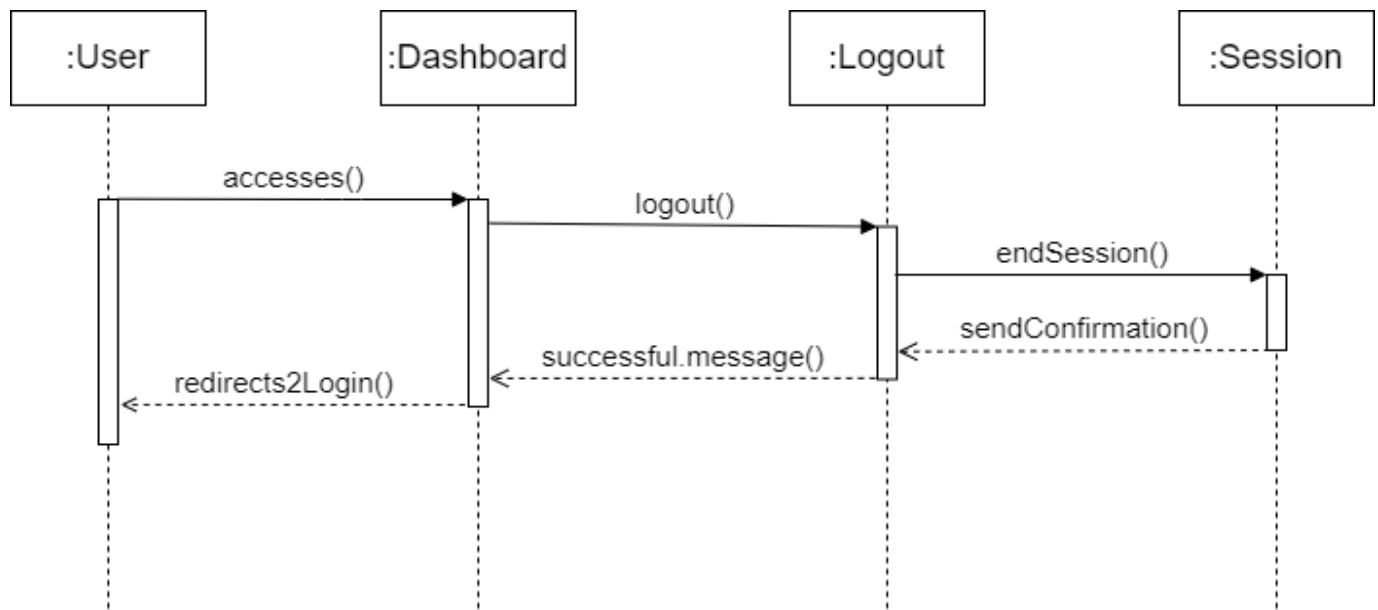
## SEQ\_02\_Settings



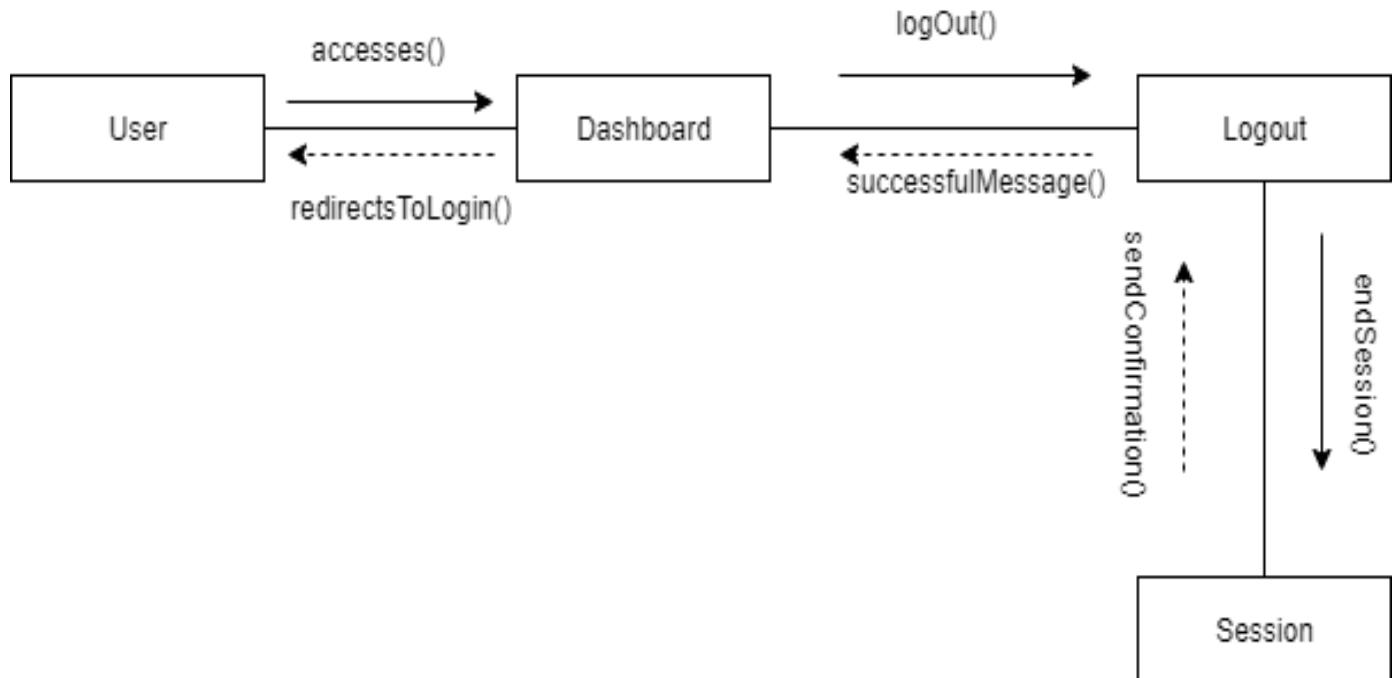
## COL\_02\_Settings



SEQ\_03\_Logout

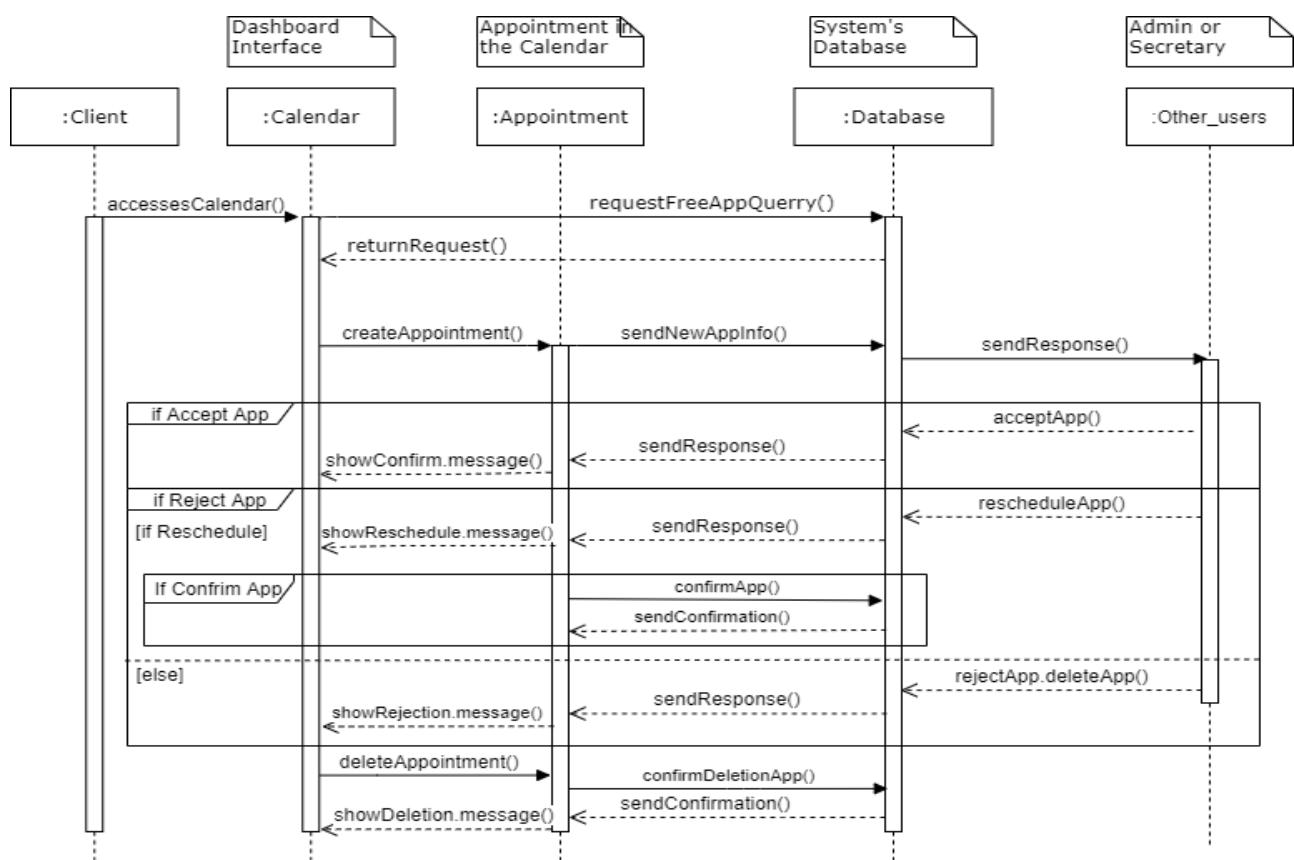


COL\_03\_Logout

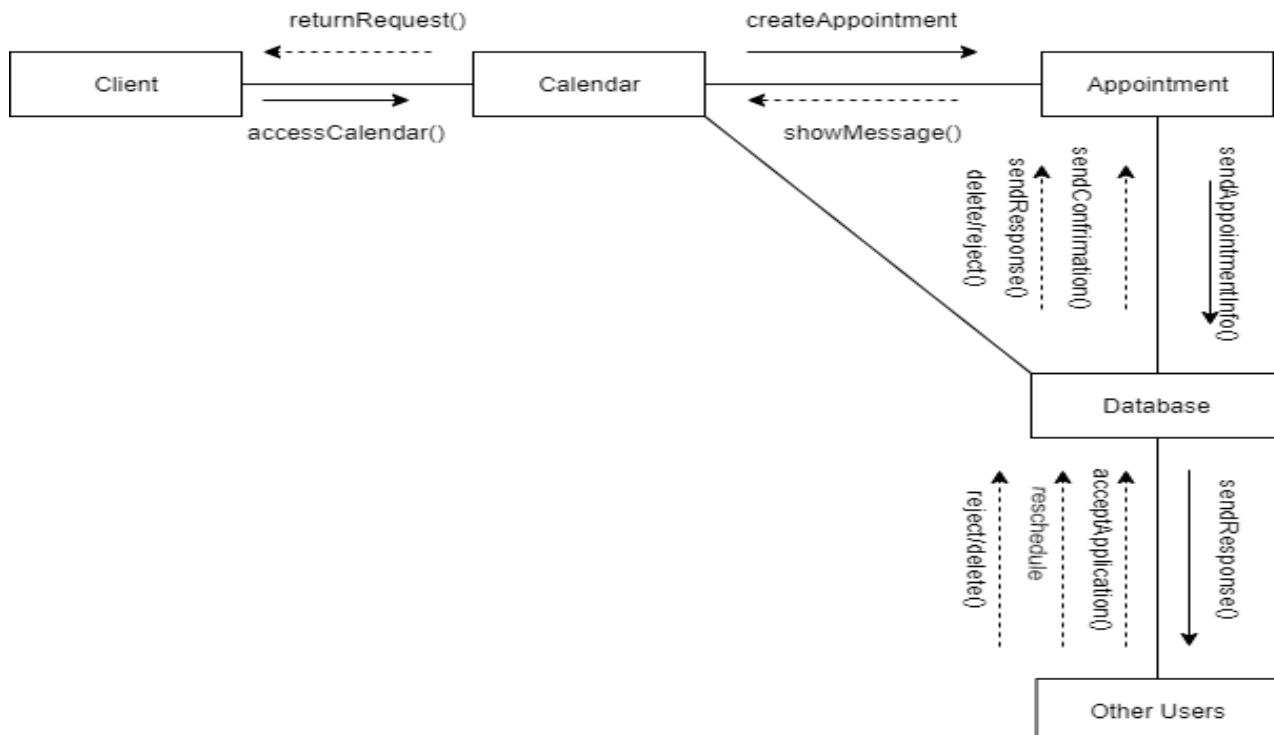


## ***SmartStyle Requirements Specification***

SEQ\_04-5-6-7-8-9\_Create Approve Reject Reschedule Delete Appointment

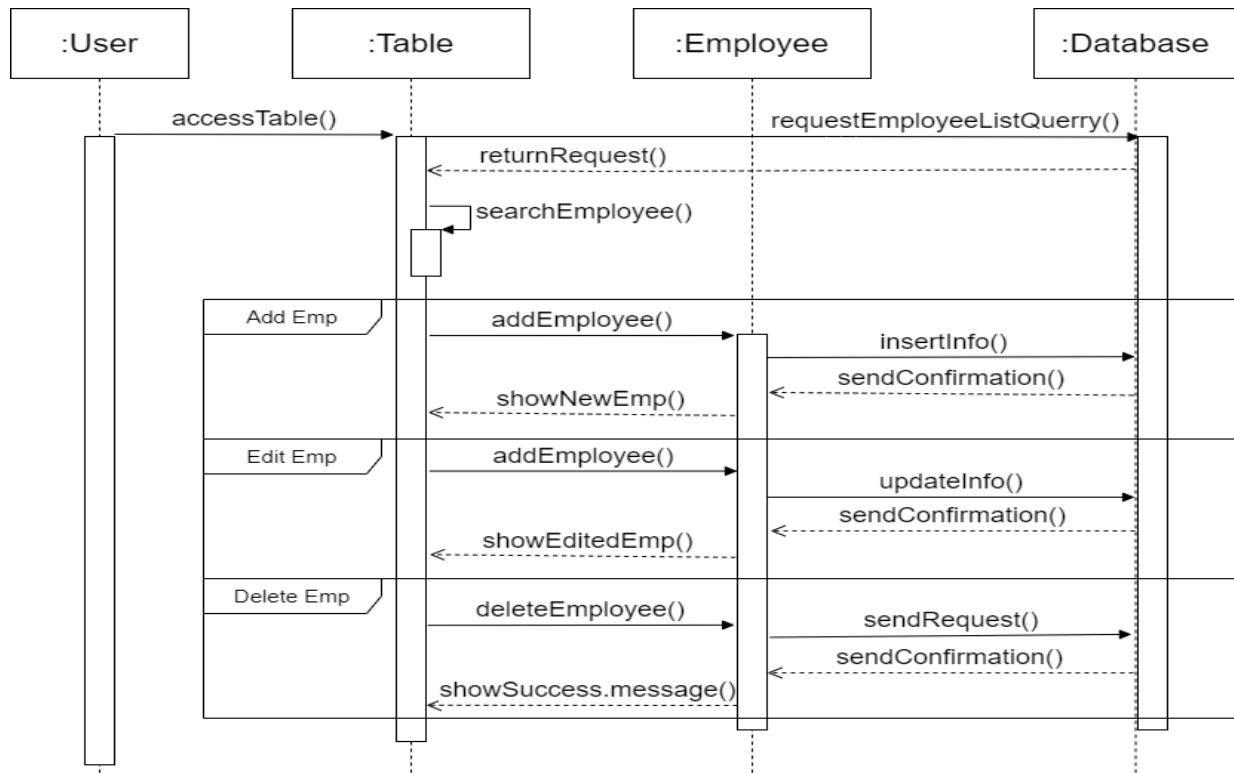


COL\_04-5-6-7-8-9\_Create Approve Reject Reschedule Delete Appointment

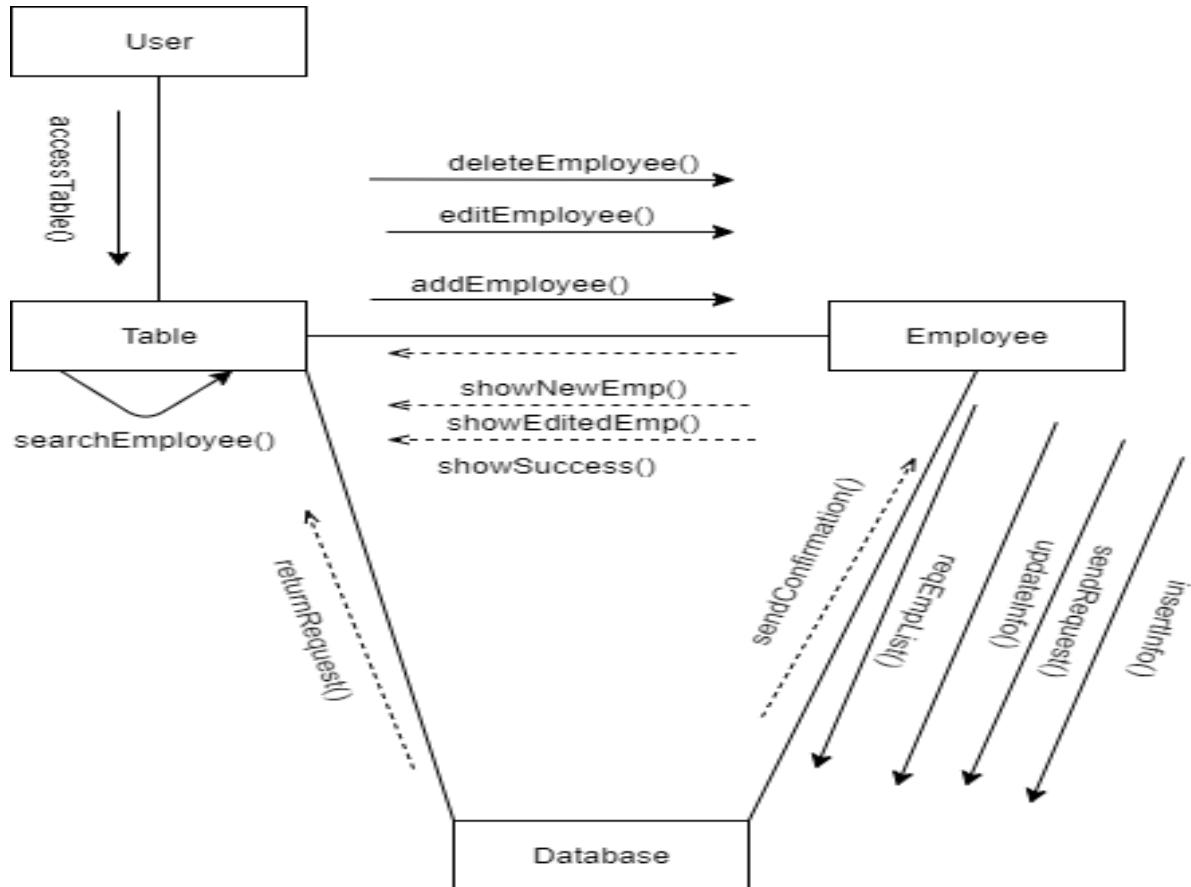


### SmartStyle Requirements Specification

SEQ\_10-11-12-13\_Add View Edit Delete Employee

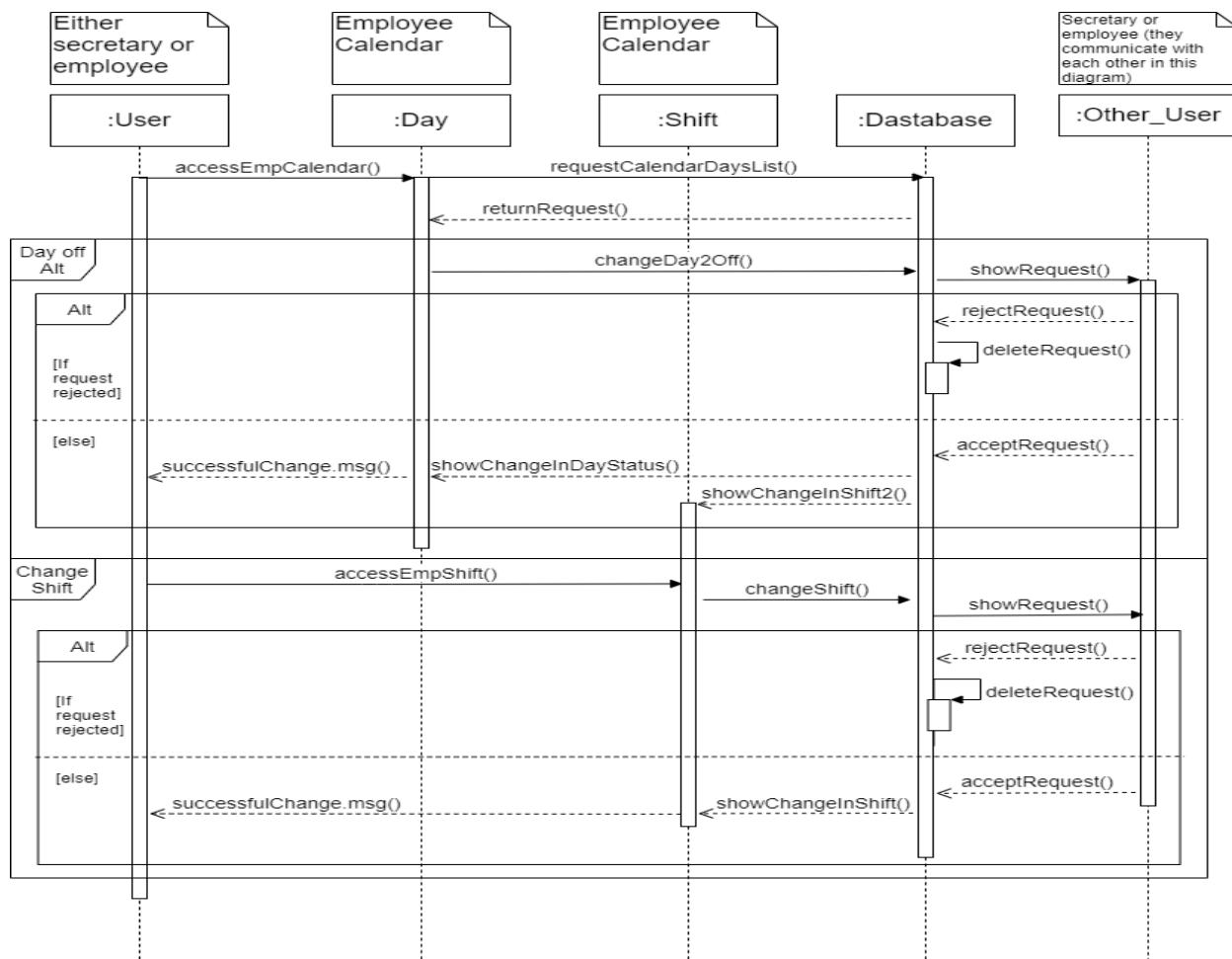


COL\_10-11-12-13\_Register view edit remove employee

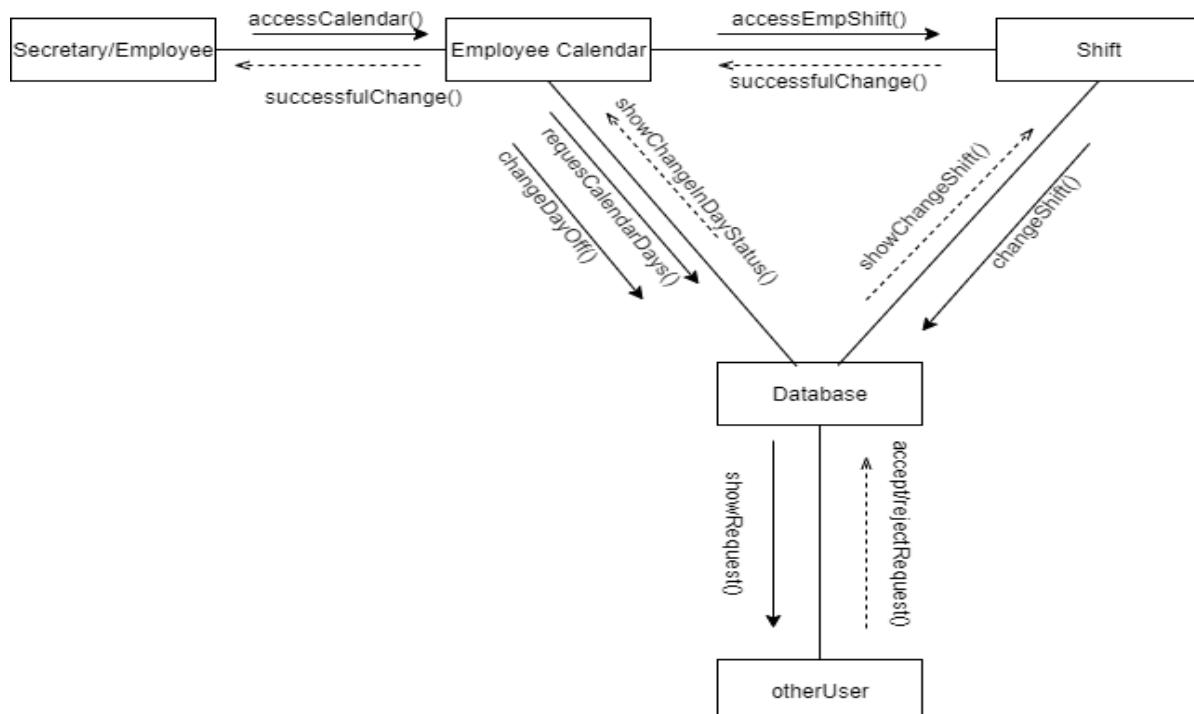


## SmartStyle Requirements Specification

### SEQ\_14-15-16\_Change Approve Reject Employee Calendar

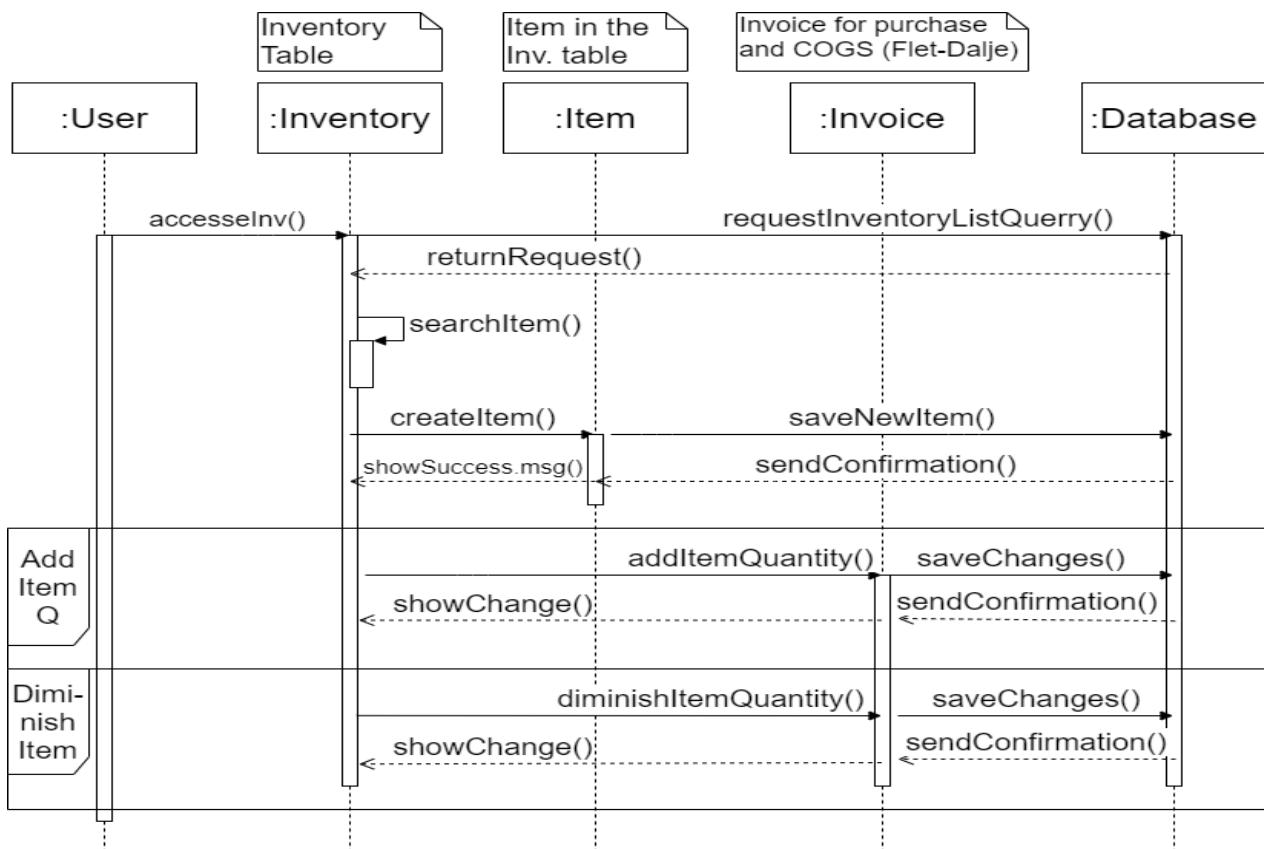


### COL\_14\_15\_16\_Changeshift-Accept-Reject Employee Calendar

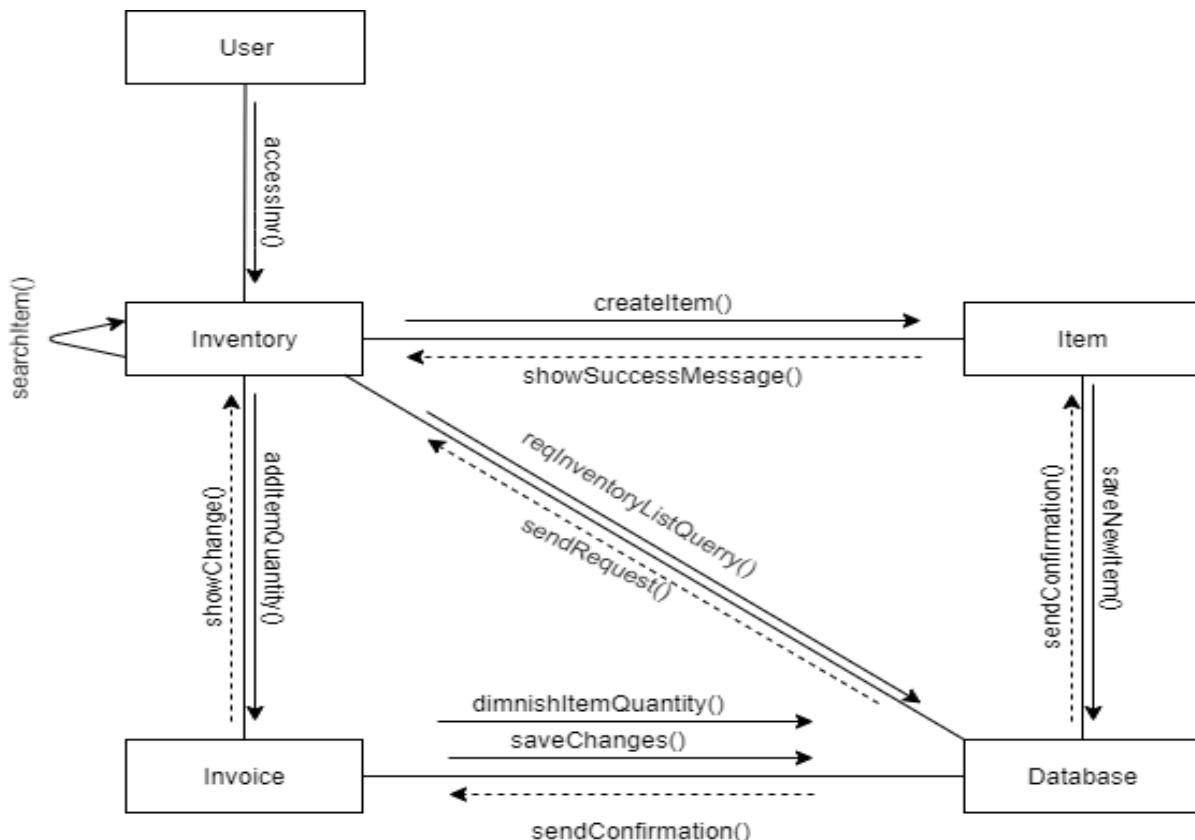


## SmartStyle Requirements Specification

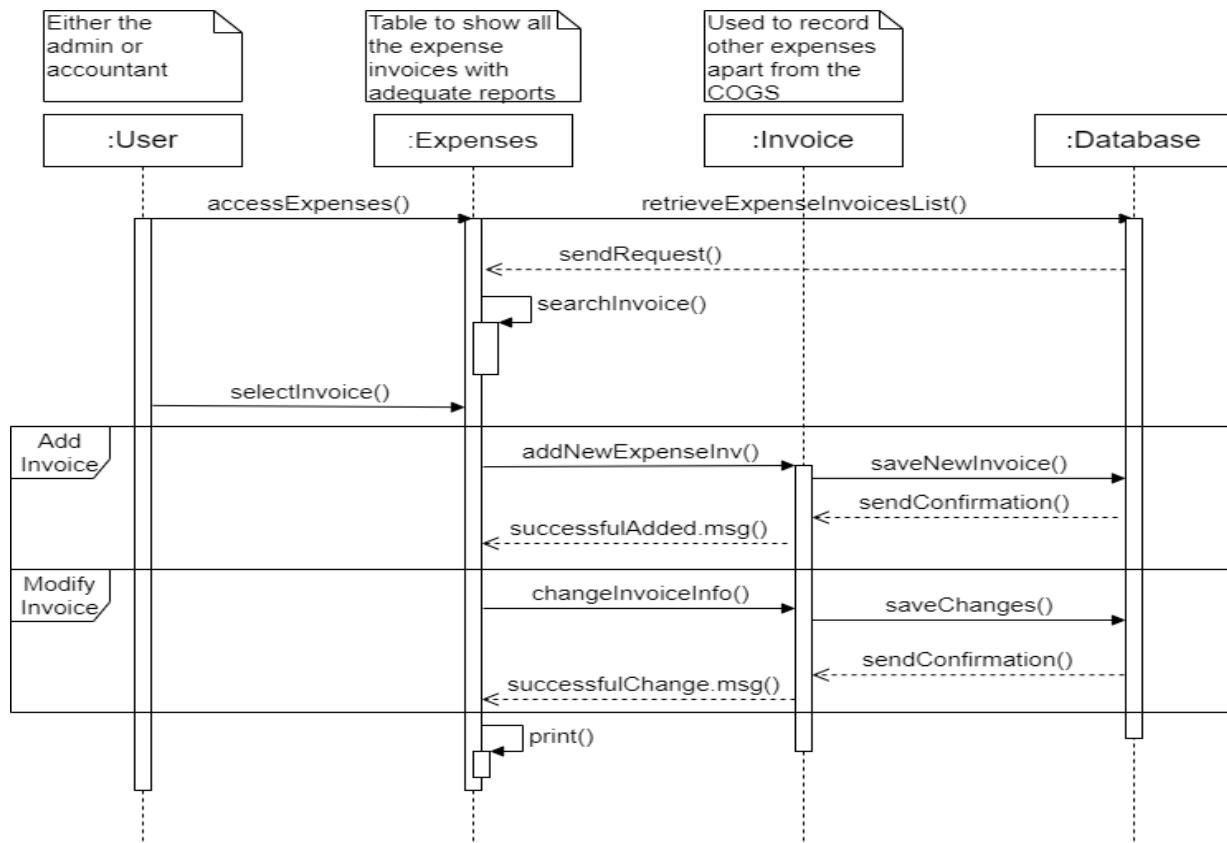
### SEQ\_17-18-20\_Register Add Diminish Inventory Items



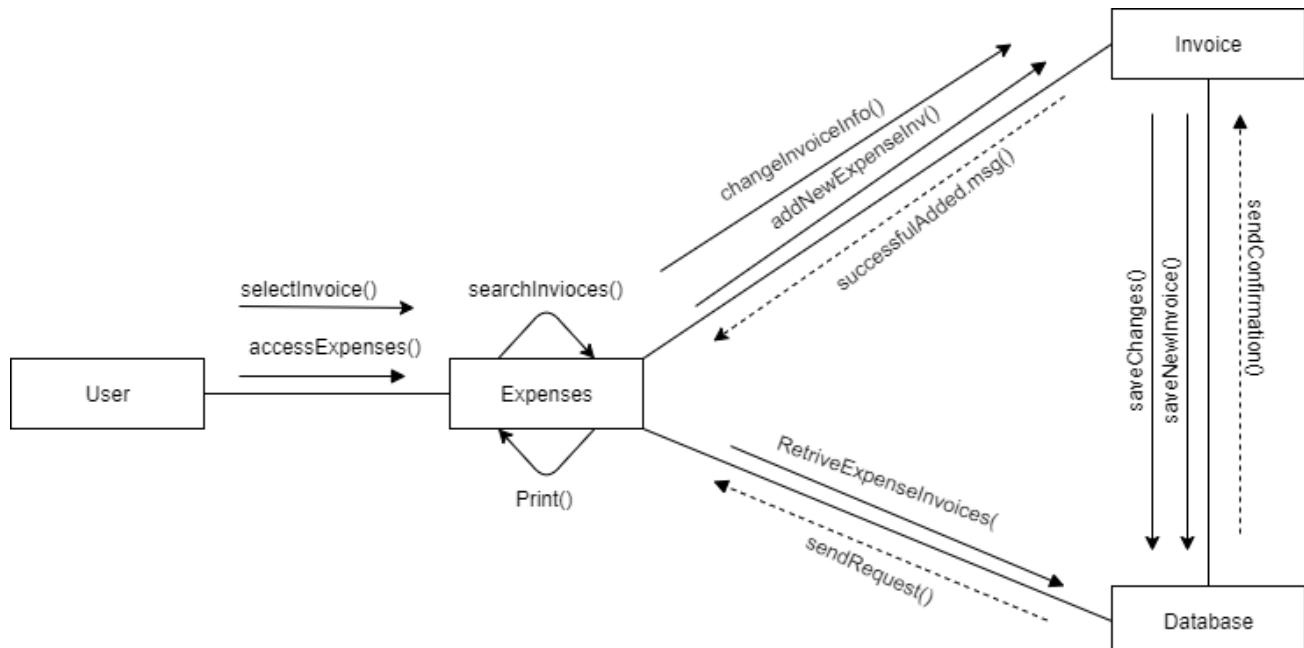
### COL\_17\_18\_20\_Create-Add-Dimnishi Inventory Item



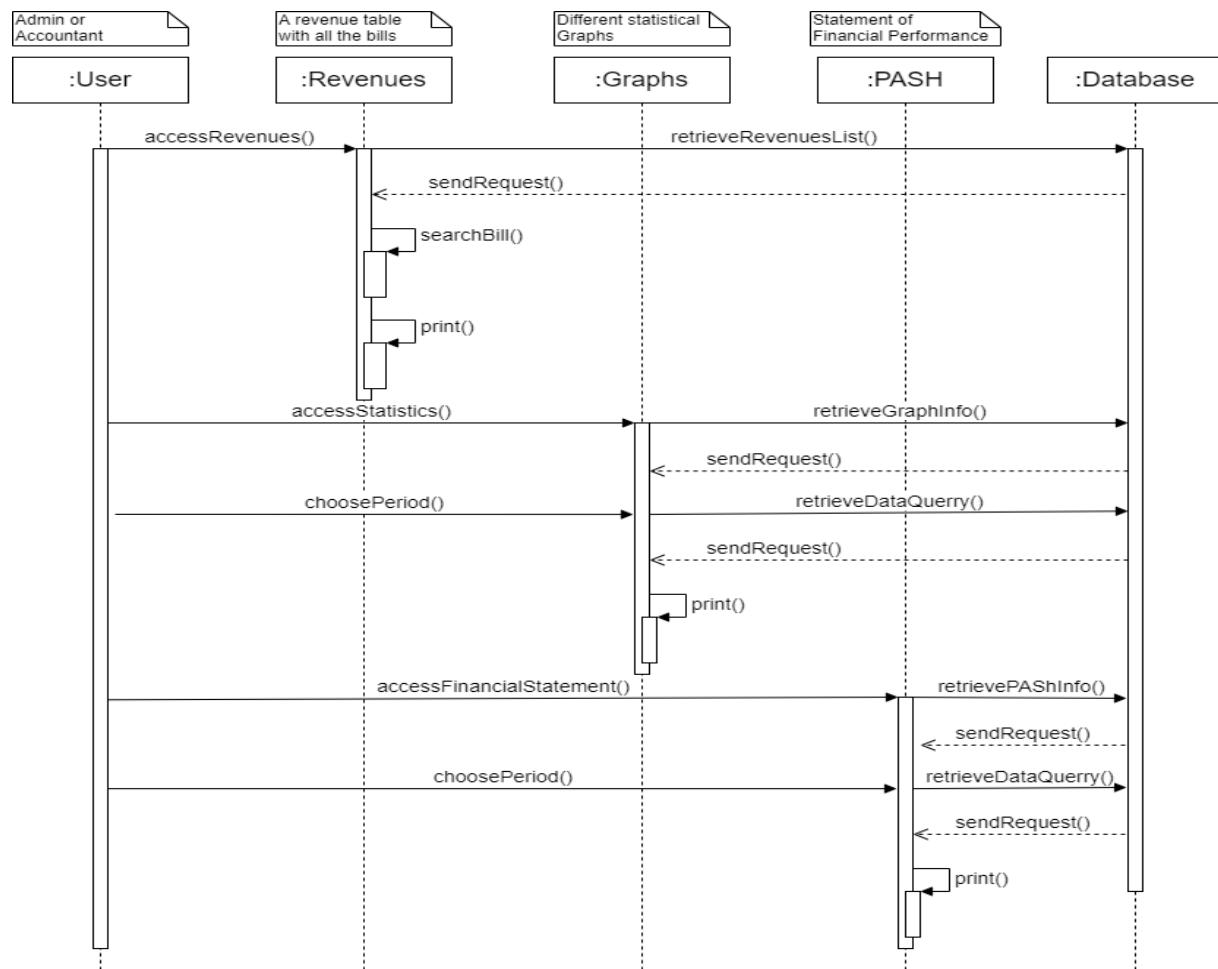
**SEQ\_19-22-23-25\_View Generate Modify and Print Expenses Invoice**



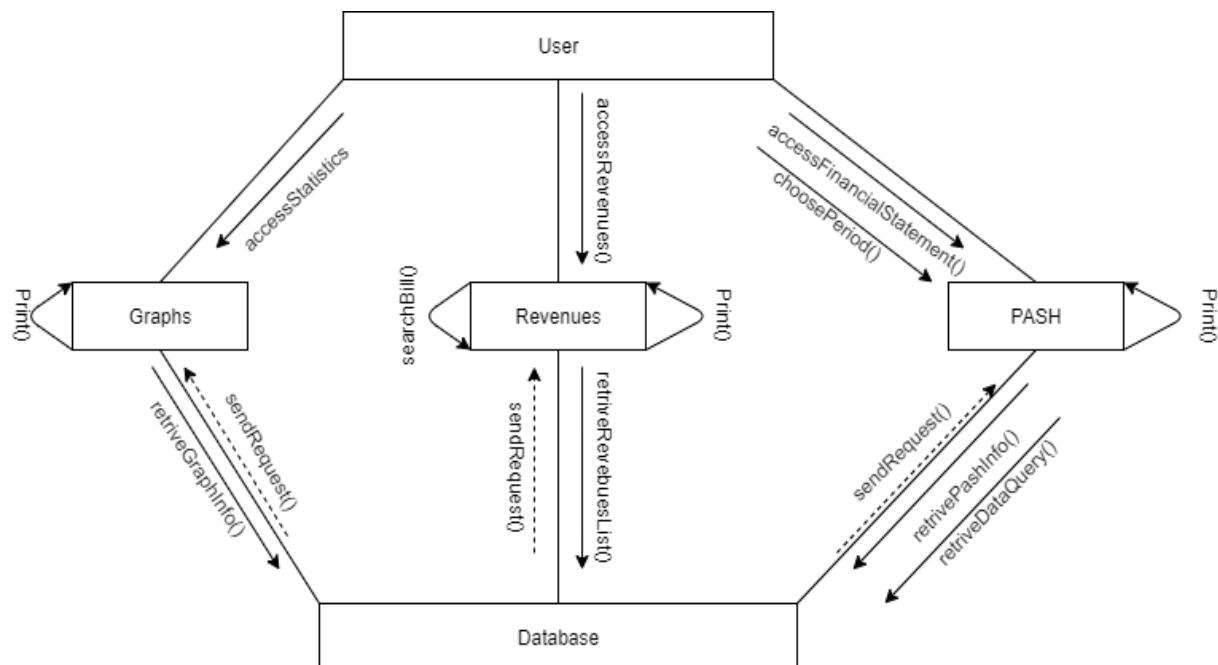
**COL\_19\_22\_23\_25\_View-Generate-Modify-Print Invoices**



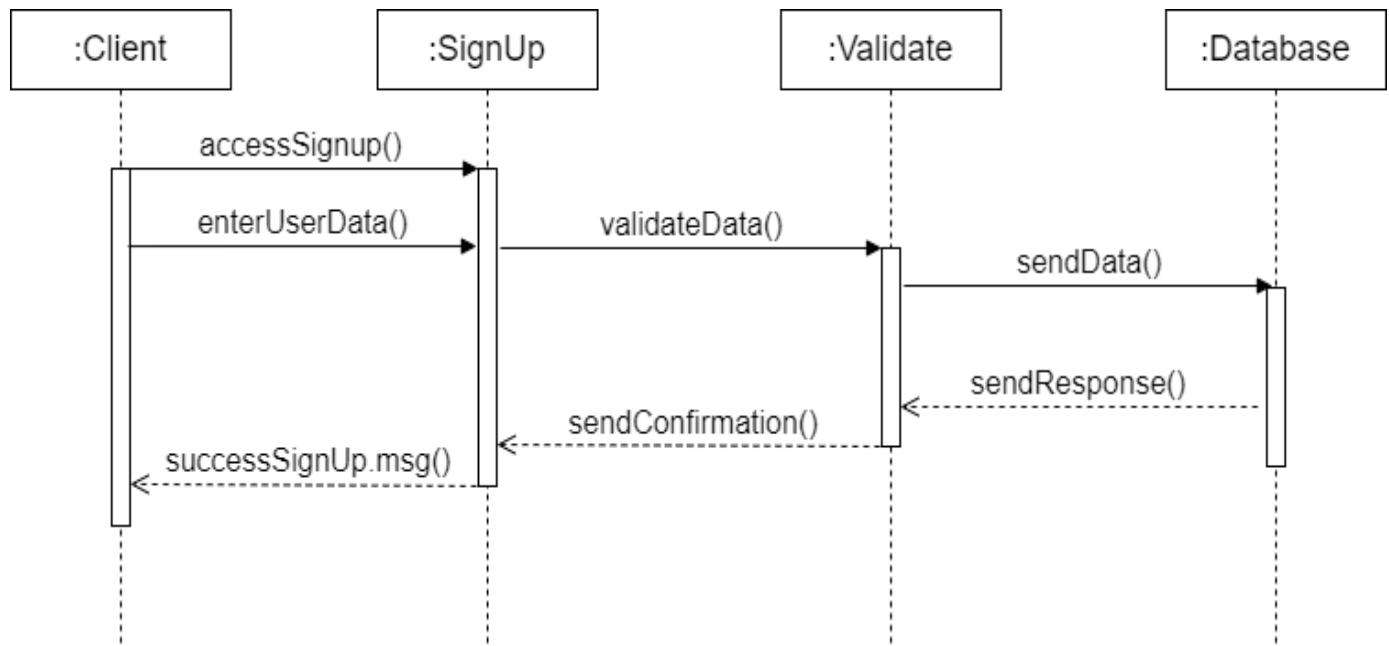
**SEQ\_21-24-25\_Revenues, Statistics and Reports (Accounting)**



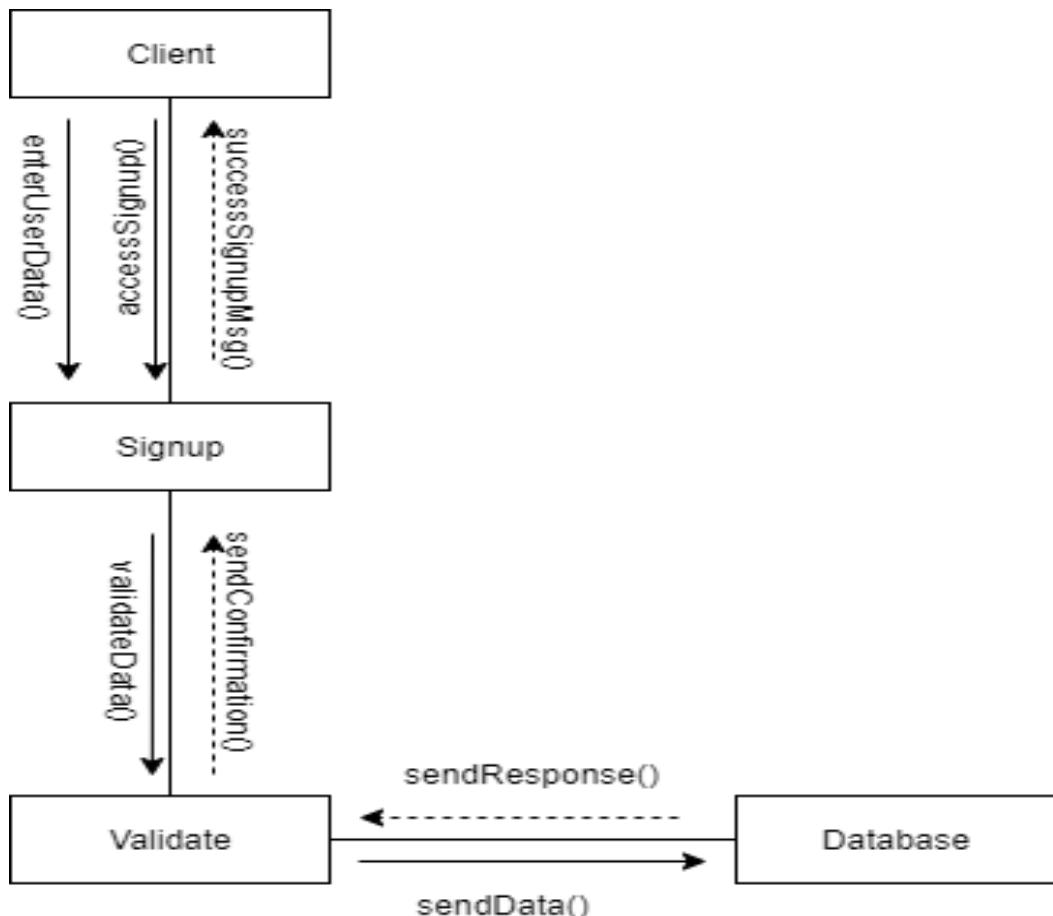
**COL\_21\_24\_25\_Revenues-Statistics-Reports (accounting)**



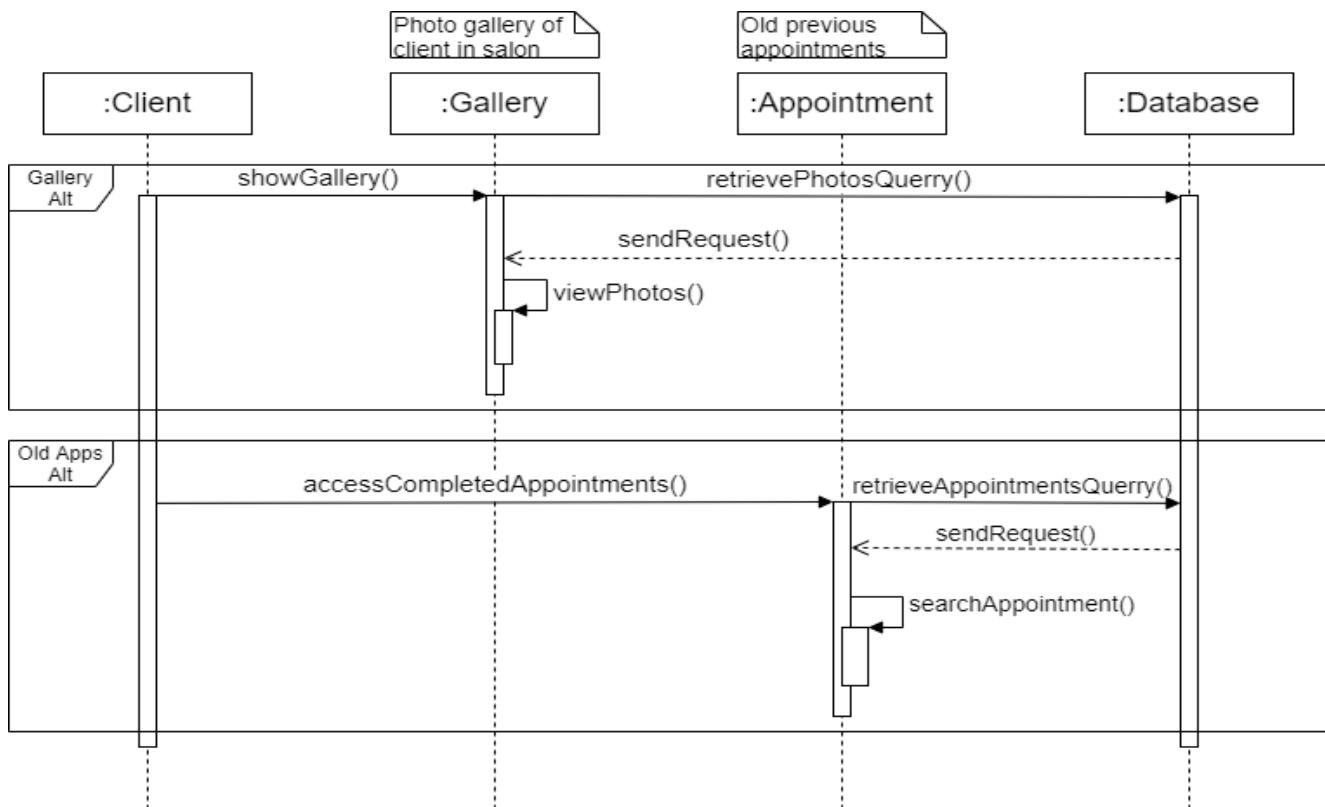
SEQ\_26\_Register Client Account



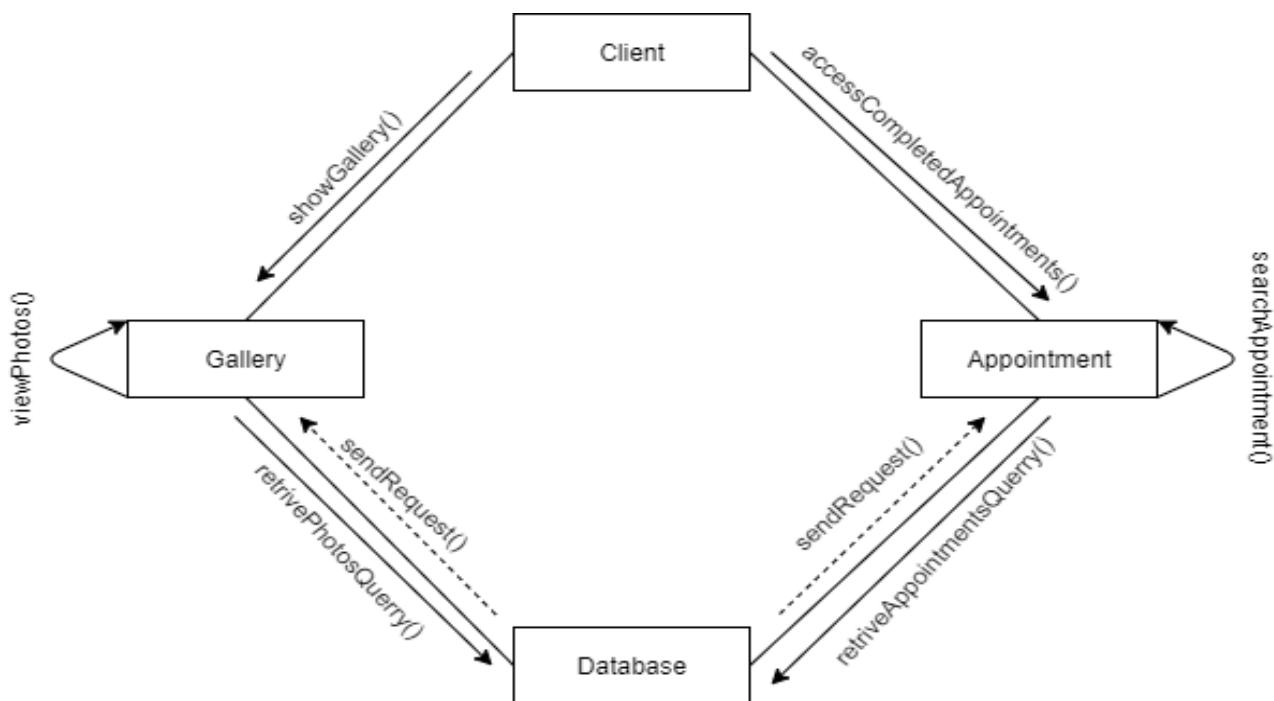
COL\_26\_Create Account



**SEQ\_27-30\_View Completed Appointments and Gallery by CLIENT**

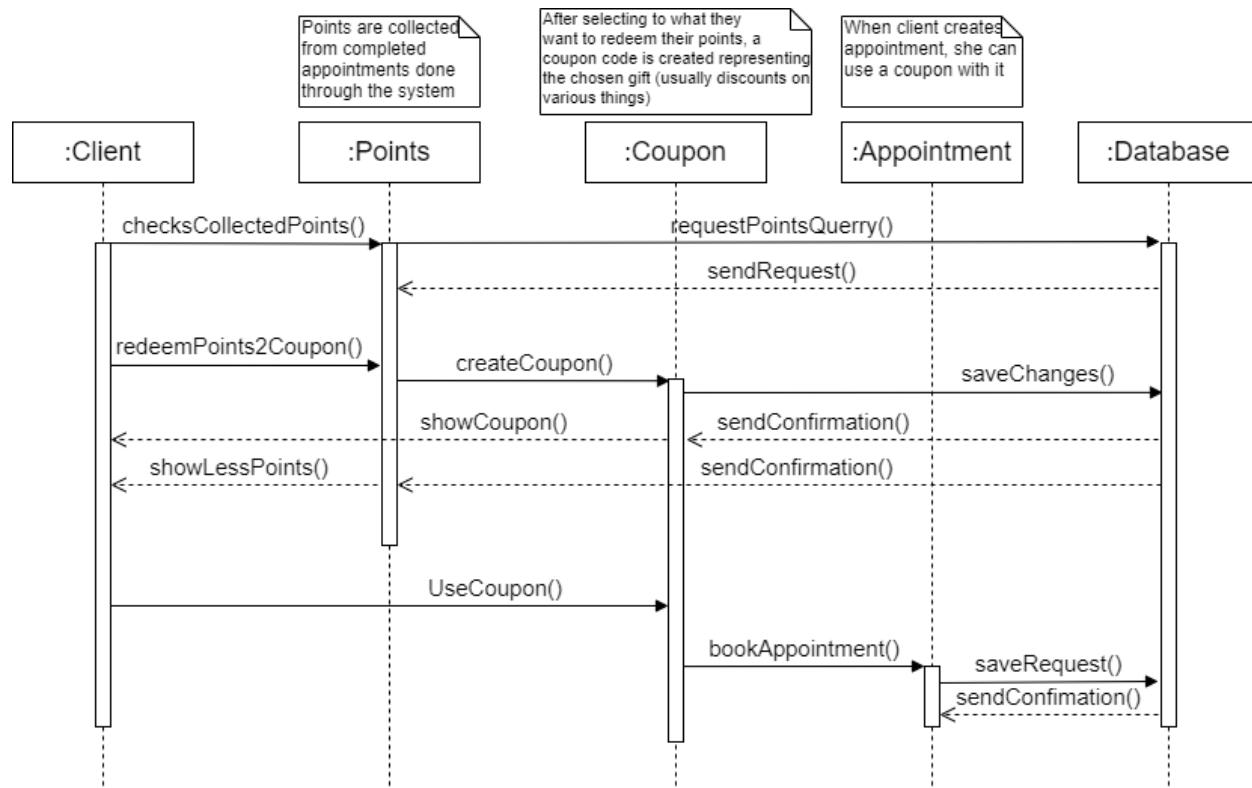


**COL\_27\_30\_View Completed Appointments and Gallery by CLIENT**

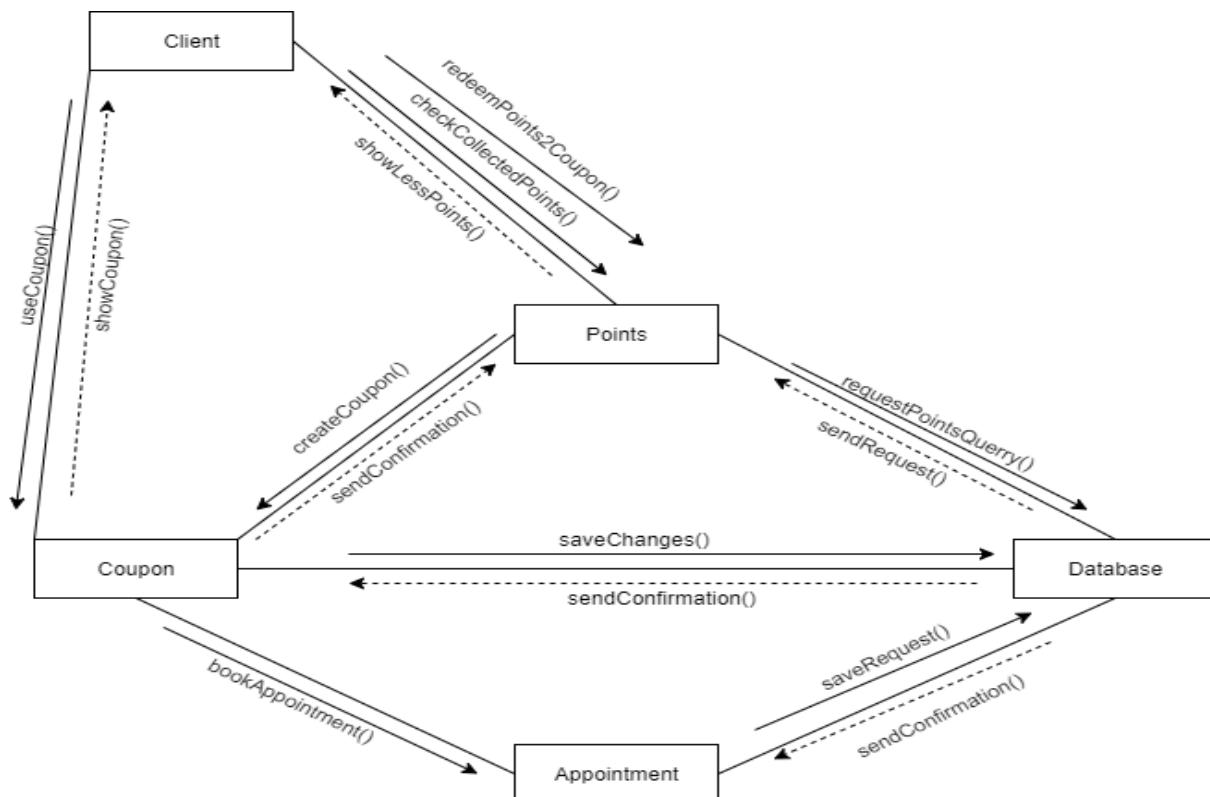


## SmartStyle Requirements Specification

### SEQ\_28-29\_Discount Points-Use Coupon

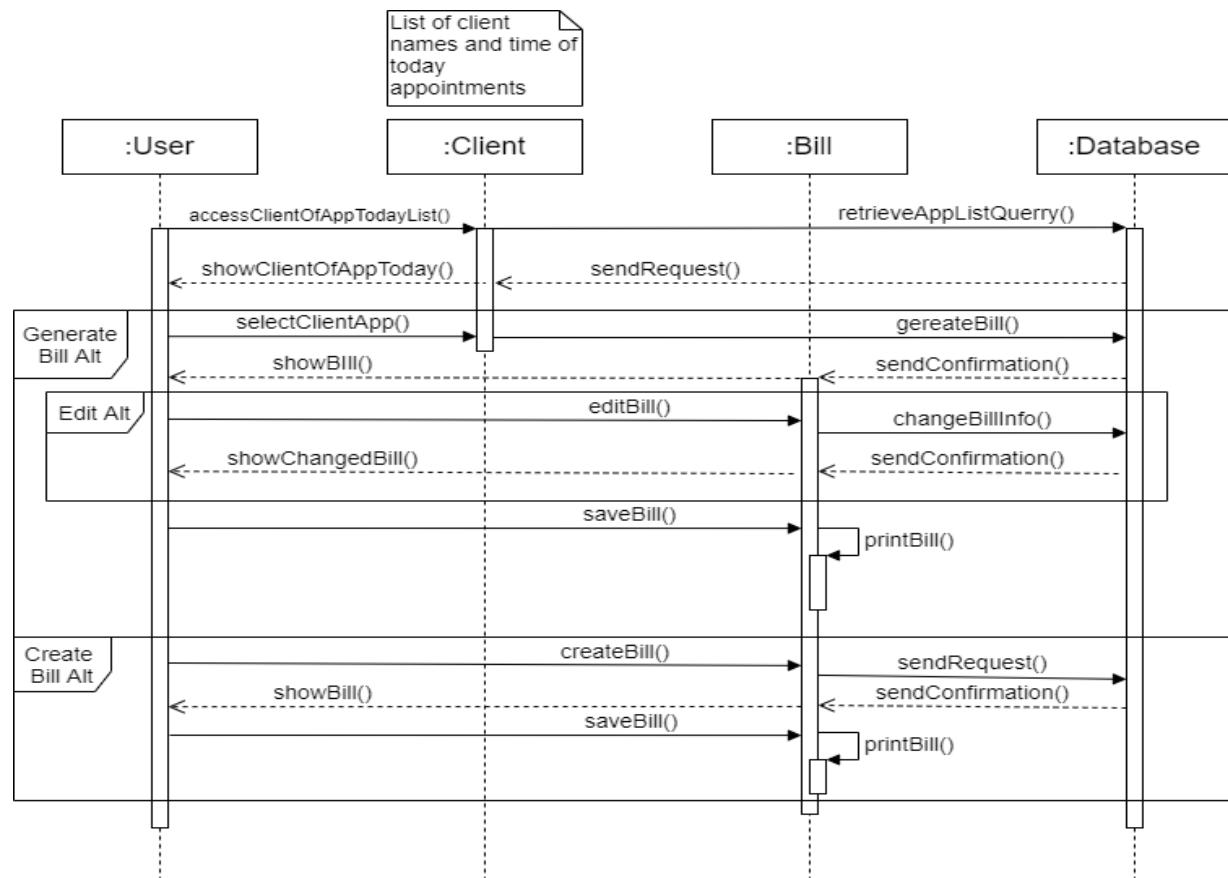


### COL\_28\_29\_Discount Points-Use Coupon

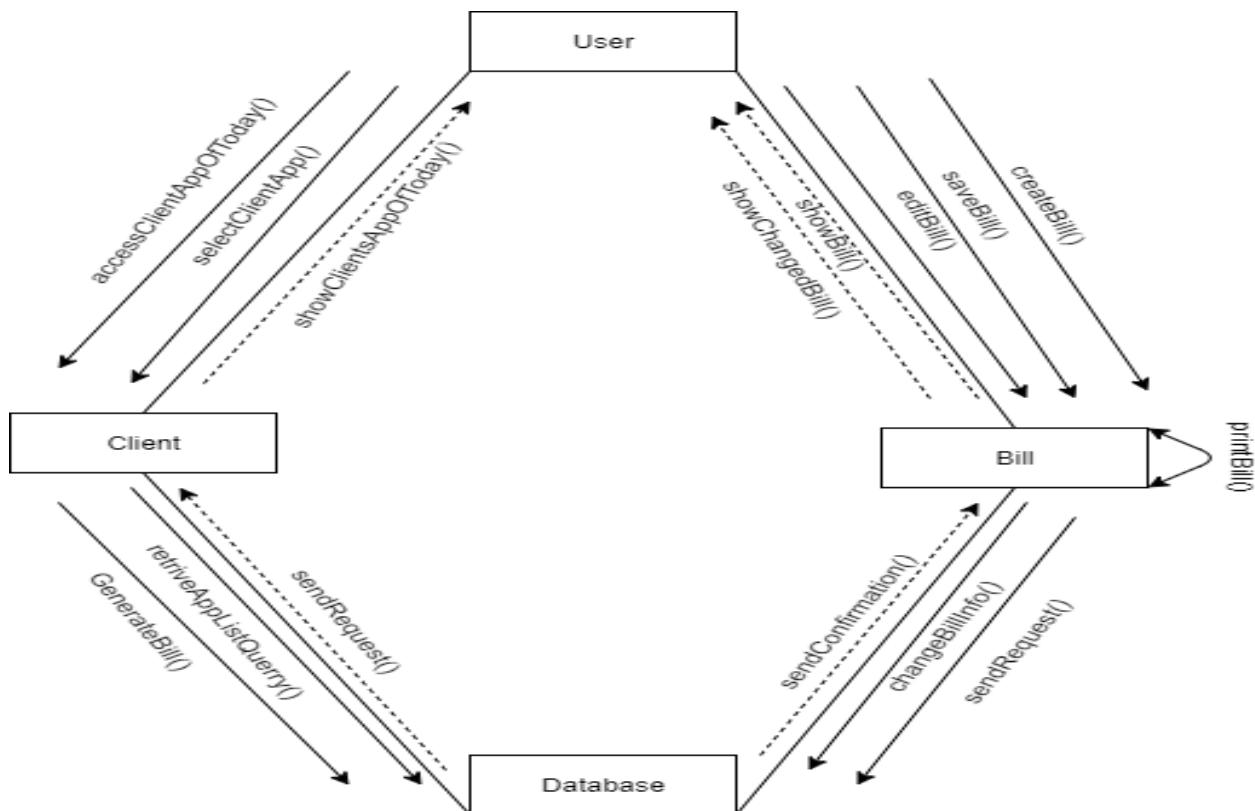


## SmartStyle Requirements Specification

SEQ\_31-32-33-34\_Bill generation, creation, edit, and print

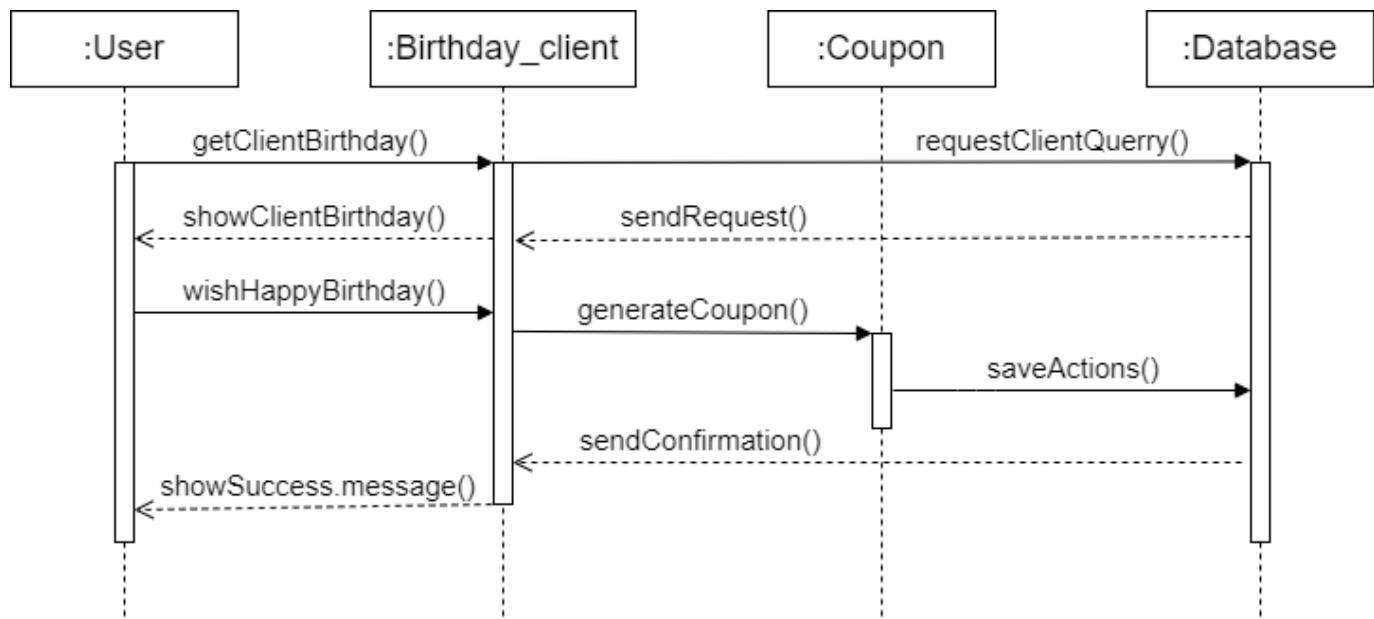


COL\_31\_32\_33\_34\_Generate-Edit-CREATE-Print Bills

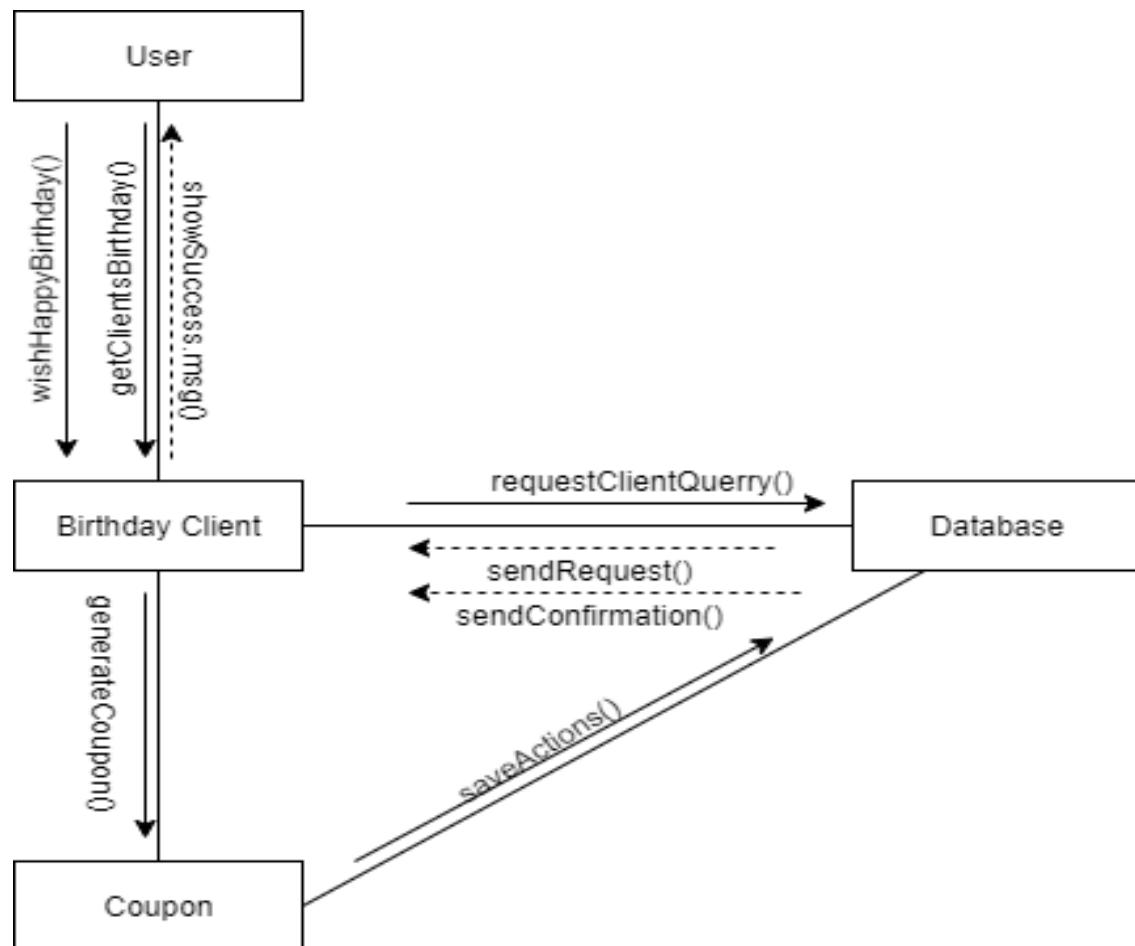


**SmartStyle Requirements Specification**

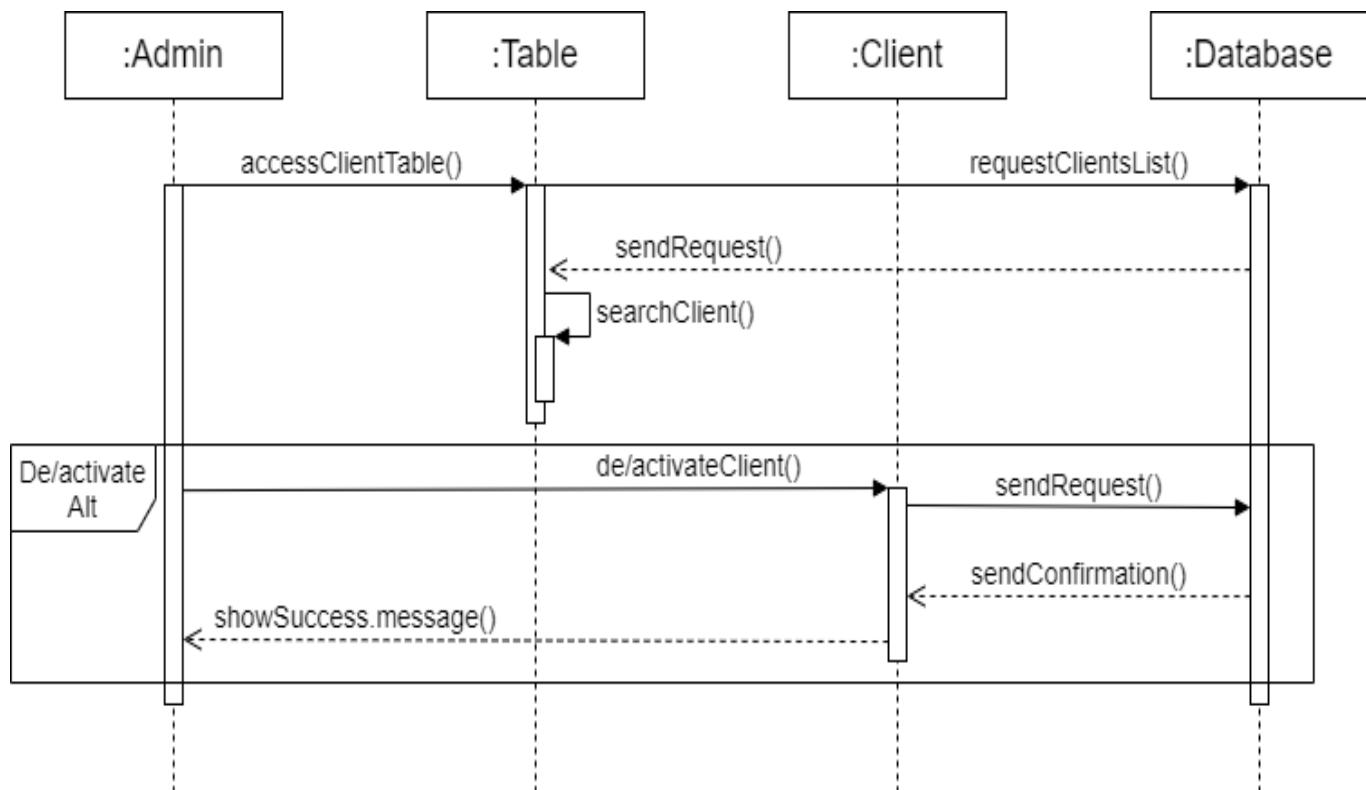
SEQ\_35-36\_View and send Birthday Message



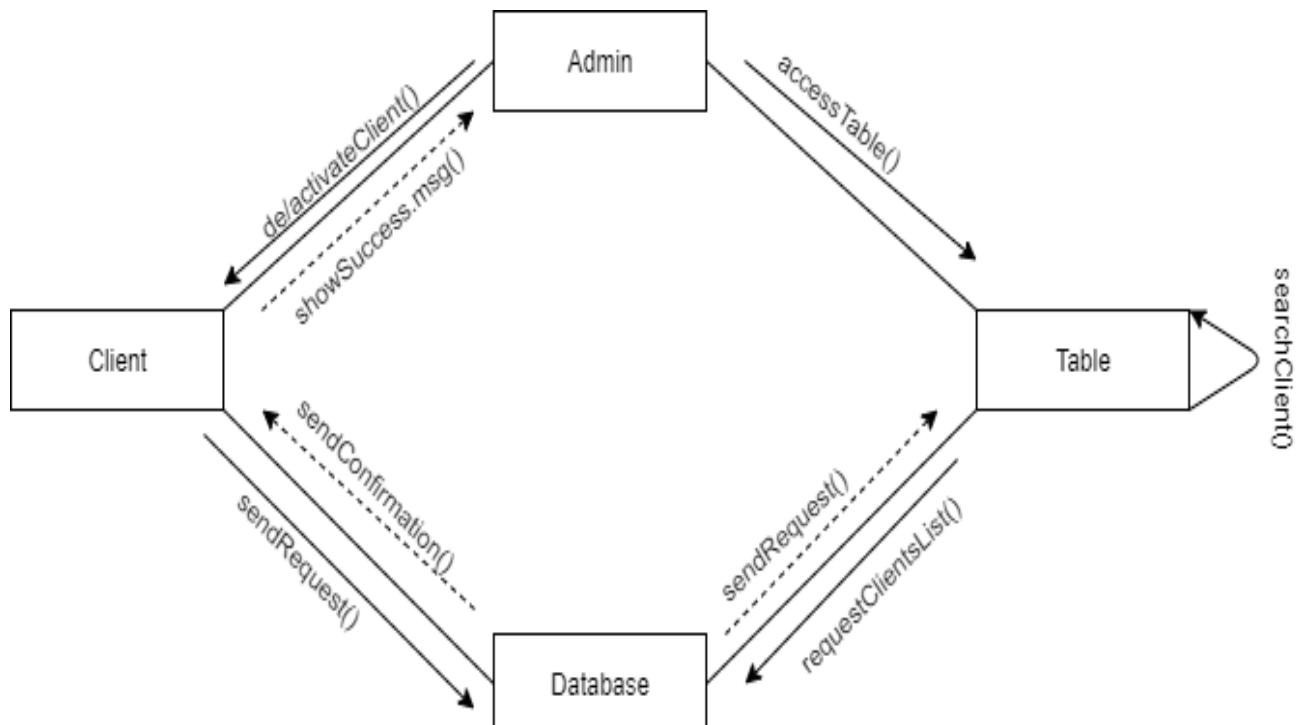
COL\_35-36\_View and send Birthday Message



**SEQ\_37-38\_View and Deactivate Clients**

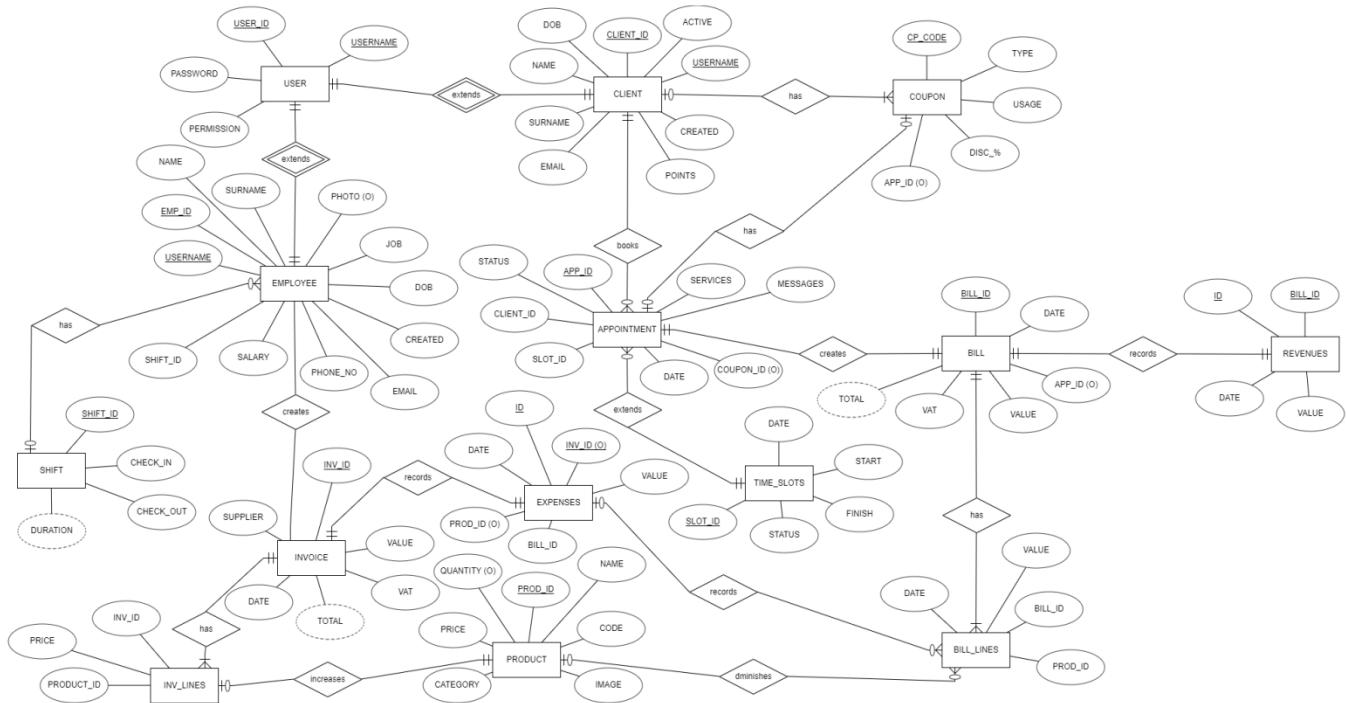


**COL\_37-38\_View and Deactivate Clients**



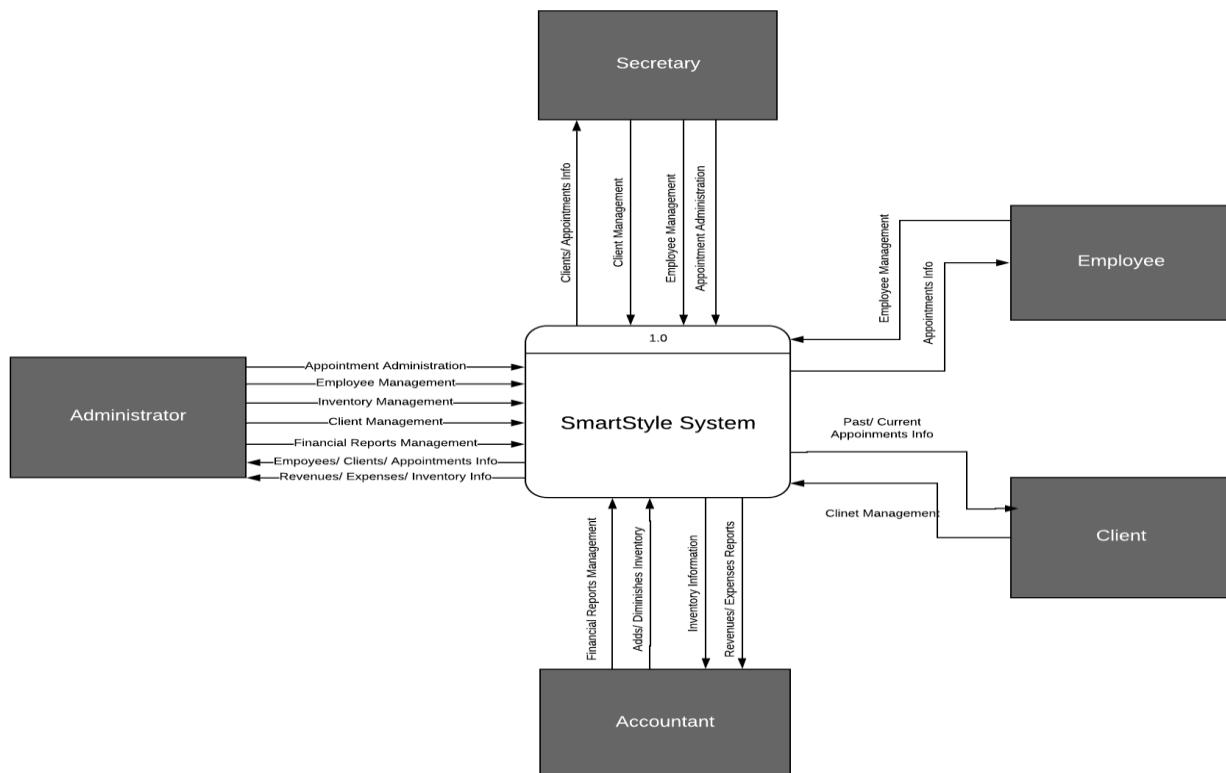
## ***SmartStyle Requirements Specification***

#### **4.3.6 Entity Relation Diagram**

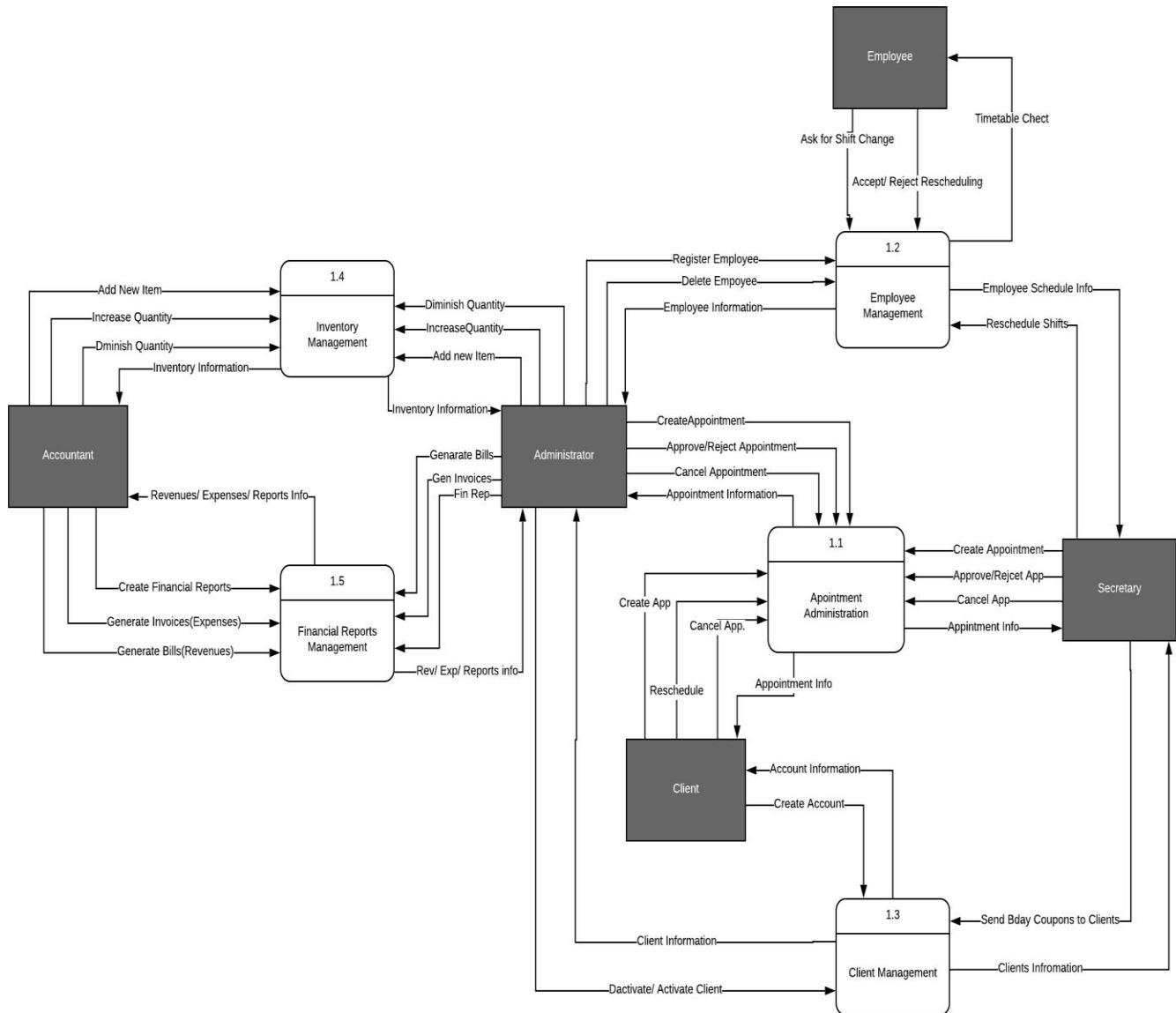


### 4.3.7 Data Flow Diagrams

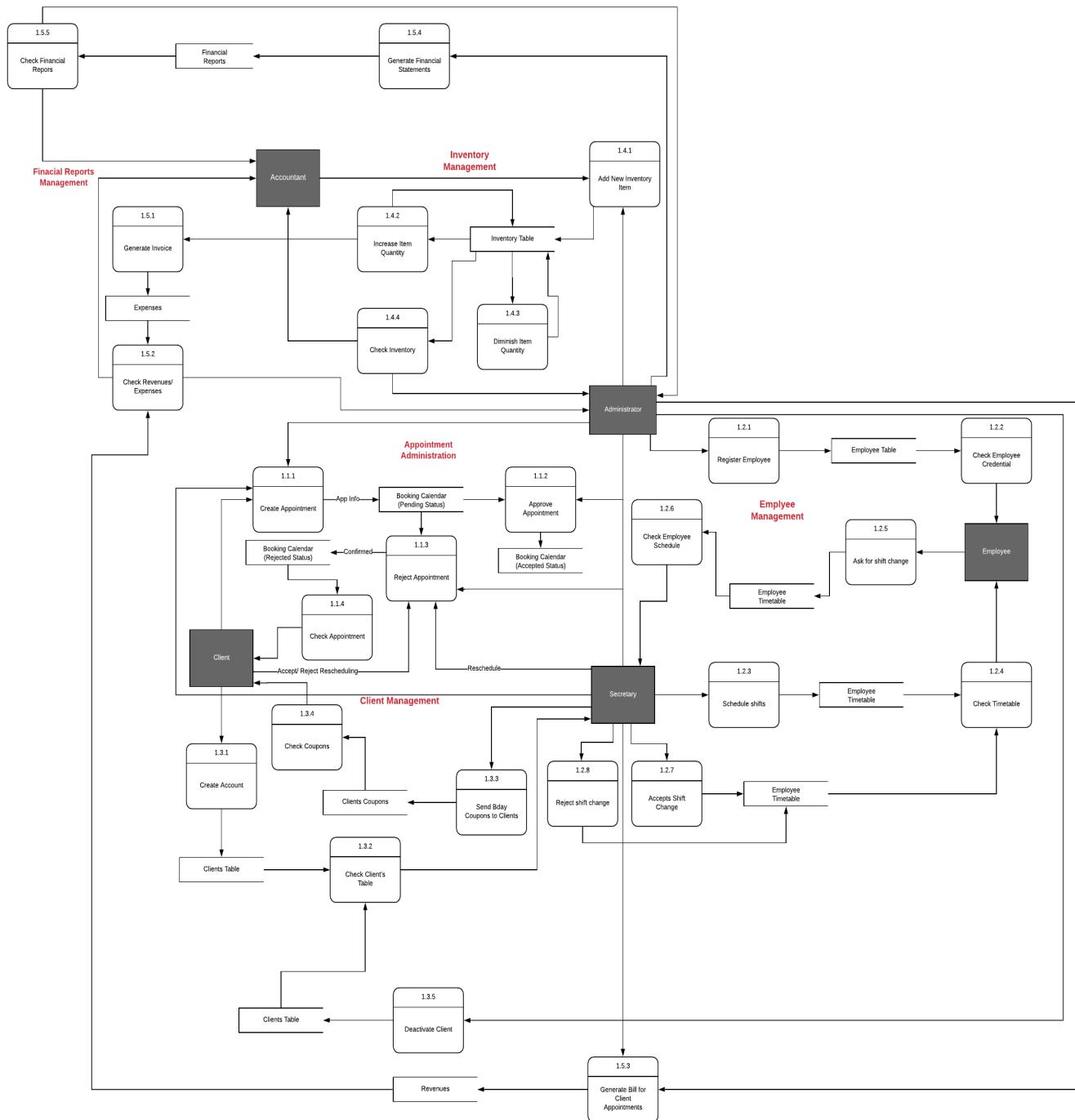
## DFD: Level Zero



**DFD: Level One**

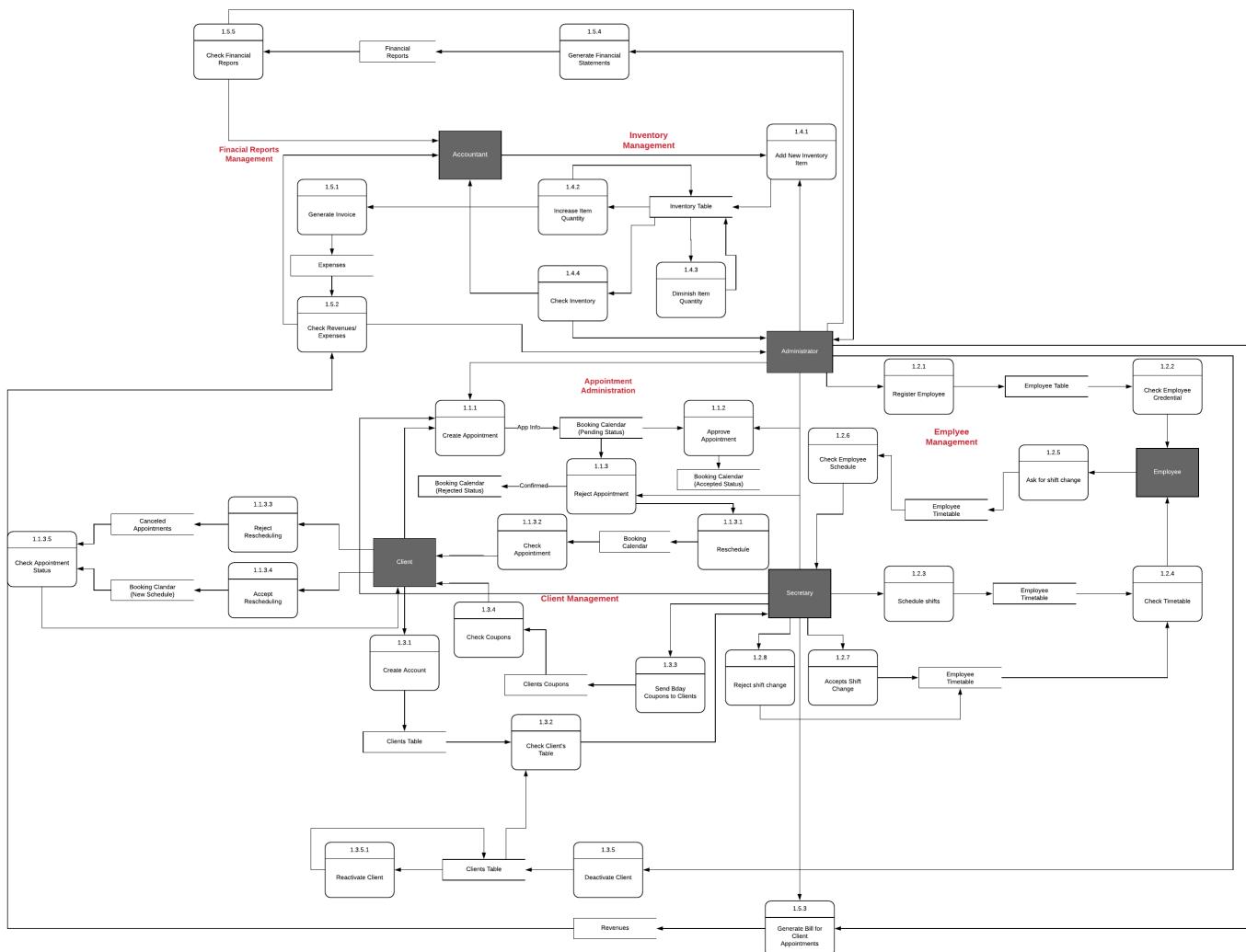


## DFD: Level Two



## SmartStyle Requirements Specification

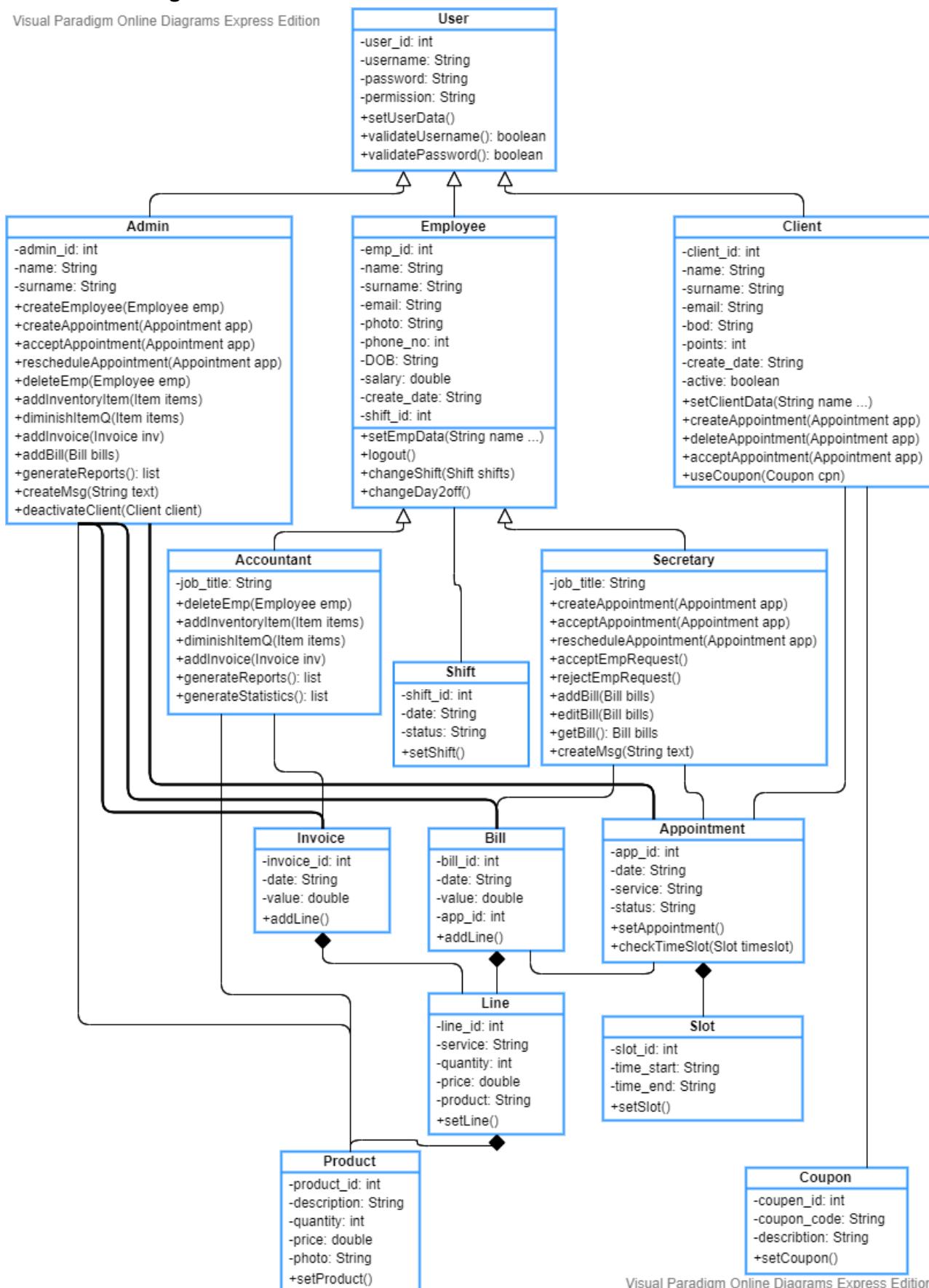
### DFD: Level Three



## SmartStyle Requirements Specification

### 4.3.8 Class Diagram

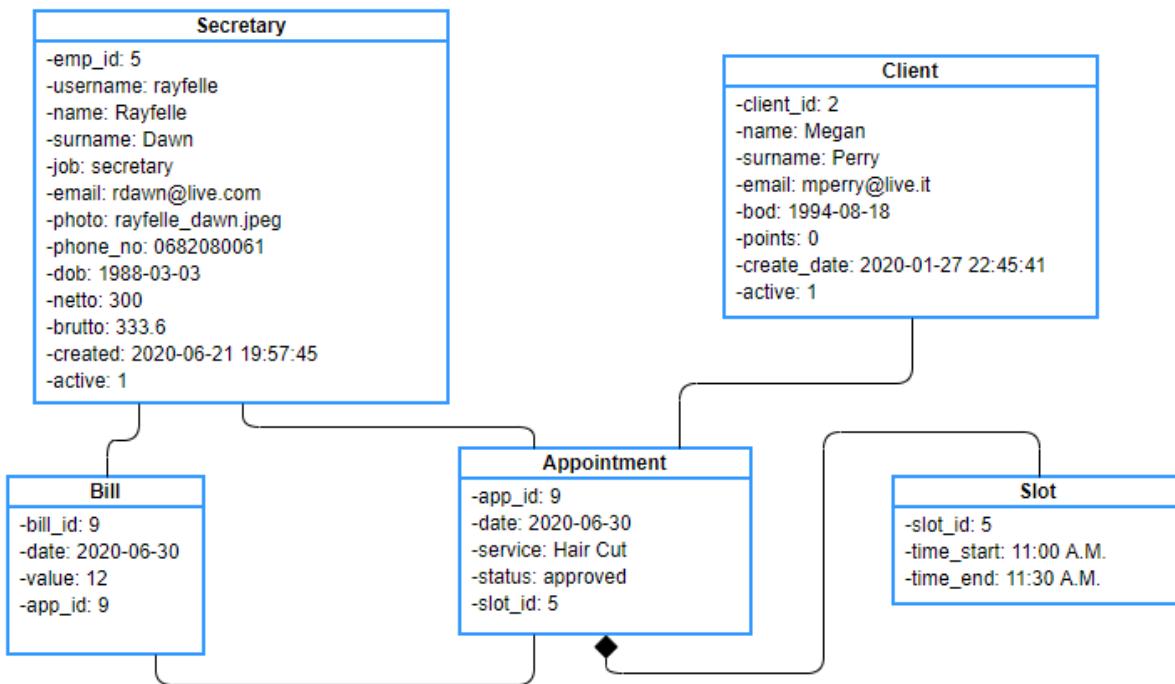
Visual Paradigm Online Diagrams Express Edition



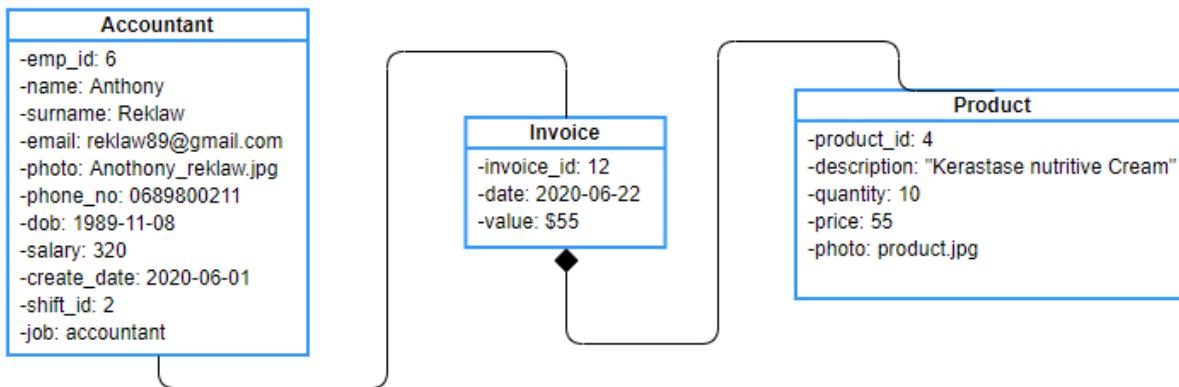
Visual Paradigm Online Diagrams Express Edition

#### 4.3.9 Object Diagrams

##### Approved Appointment



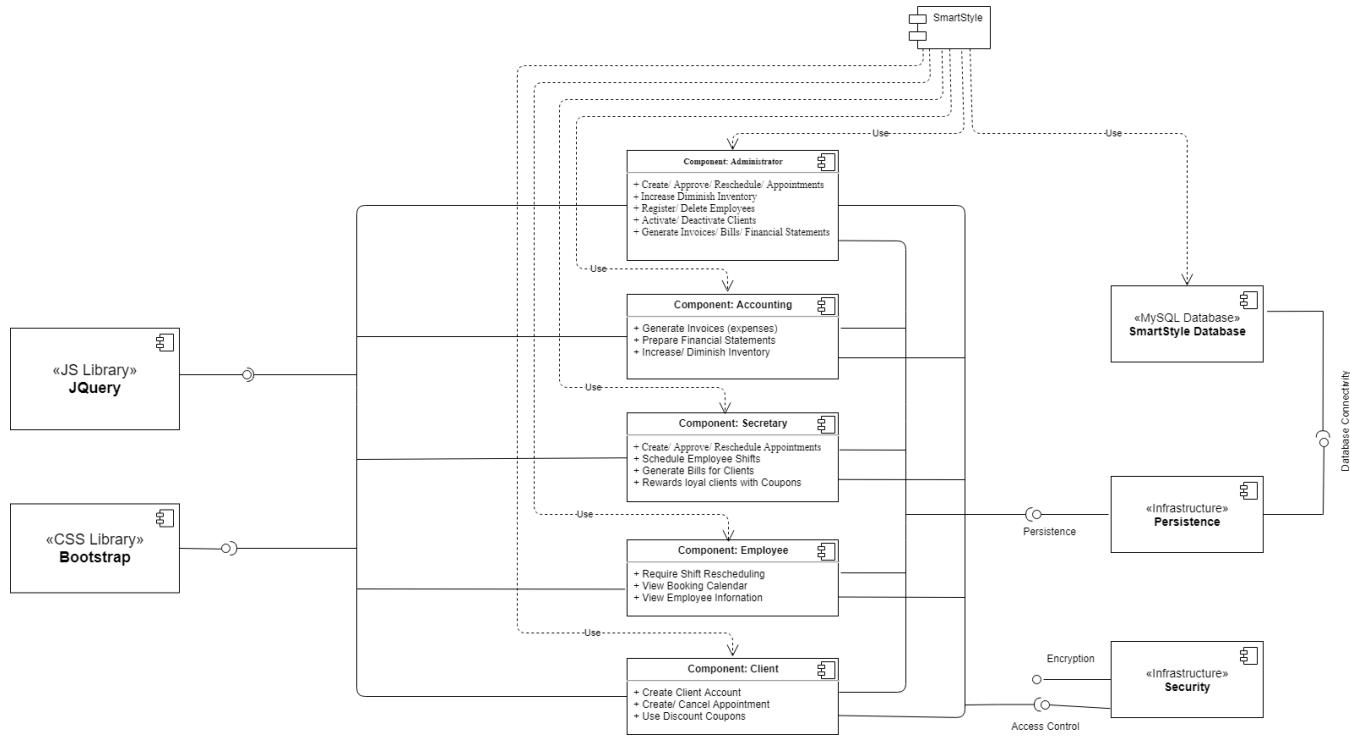
##### Adding Product with Invoice



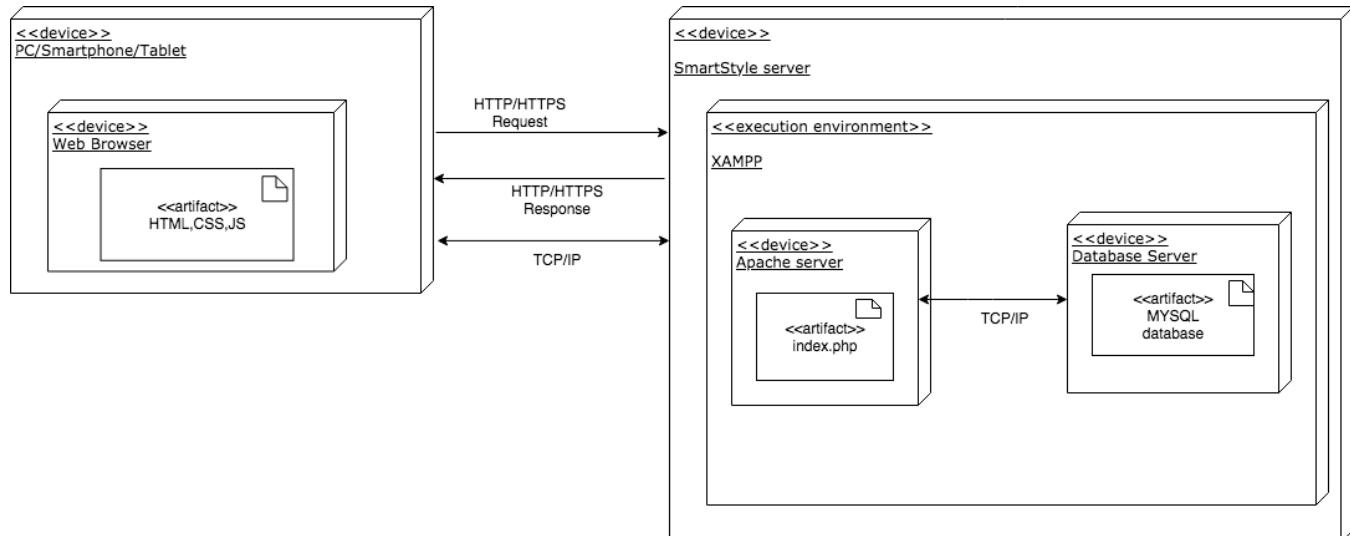
## SmartStyle Requirements Specification

### 4.3.10 Component and Deployment Diagrams

#### Component Diagram



#### Deployment Diagram



## 5. IMPLEMENTATION

### 5.1 *Technologies used*

#### **Frontend**

There were several technologies used to build the SmartStyles' frontend. HTML5 was incorporated in order to create a solid structure for the software. CSS3 was added to that structure to generate a visually pleasant content. In order to have more progressive design with extensive functionalities with respect to the frontend, JavaScript programming language was used. After an initial design of the software, more expectations needed to be met. That is why we incorporated Bootstrap, a CSS library, which presented a more innovative perspective for the software design. JQuery, a JavaScript library, came in handy when we needed to extend the software functionalities with respect to the frontend.

#### **Backend**

With respect to the backend, we tried to keep the things simple, and that is why we chose to build the backend only by using simple PHP programming language. We failed to find necessary using a PHP framework or library, as we strongly supported the concept of "To do it right, do it simple." Since PHP as a scripting language is well-known for its vulnerabilities with respect to the security component, we made sure to provide the maximum security for the web-app, in order to prevent all sorts of malware attacks.

#### **Database**

Following the logic of "To do it right, do it simple", we chose to incorporate the MySQL database in building this software. Being more familiar to this database management system, while considering it straightforward and not so demanding, making it handy definitely made our lives easier. We didn't need to put much effort in providing a secure environment while using this relational database, since MySQL database is well-known for the data security it provides.

By adding the flawless performance to the flexibility of being open source, MySQL seemed the ideal choice to be made.

## **5.2 Installation Manual**

There are several steps that need to be followed in order to install SmartStyle software and make use of it.

- Firstly, you need to make sure that you have XAMPP installed in your computer. If you do not, then go ahead and install XAMPP.
- Secondly, download the SmartStyle folder, which you can find under this link:  
<https://github.com/kkasharaj17/SmartStyle>.
- Continue by opening XAMPP and starting MySQL and Apache.
- Under XAMMP folder, manage to find the htdocs folder, and insert the SmartStyle downloaded folder inside the htdocs folder.
- In order to use the database of the system, you need to firstly create a database called web18\_kkasharaj17, and then import the SQL script web18\_kkasharaj17.sql, which can be found under the web20 folder.
- You can open the software using this link: <http://localhost/web20>.

## **5.3 User Manual**

This software has 5 users, being Administrator, Accountant, Client, Secretary, and Employee. Each of these users has its own view of the system. To check the system design and functionalities that the system provides for each user, you can use one of the following accounts.

Use the following usernames and passwords to enter into the desired user's account.

1.     **Username:** admin, **Password:** Admin123 ==> Admin view of the system.
2.     **Username:** Tony, **Password:** User12345 ==> Accountant view of the system.

3. **Username:** rayfelle, **Password:** User12345 ==> Secretary view of the system.
4. **Username:** C\_Lulu, **Password:** User12345 ==> Employee view of the system.
5. **Username:** MeganPM, **Password:** MP123perry==> Client view of the system.

Each one of these users has different functionalities, but sometimes they do share a common ground. To perform the following actions, stick to this user manual and chose the right user.

1. To create, modify, or cancel an appointment, you can either choose to be logged in as an admin, client, or a secretary.
2. To add, diminish inventory, you can either be logged into an admin or an accountant account.
3. To register employees, you need to use an admin account.
4. To check revenues, or generate financial statements, you need to be logged in as an accountant.
5. To activate/ deactivate clients, you need to be logged in as an admin.
6. To check registered clients, and scheduled appointments, you need to be either logged in as an admin, or secretary.
7. To check the appointments assigned to you as an employee, you need to have access to your employee account.

More functionality will appear to you, as you explore the system and embrace every possible scenario. We hope you find our SmartStyle software utterly useful, and may your experience with it be a journey filled with surprises and good vibes.

## 5.4 Software Screenshots

### Admin Dashboard

The screenshot displays the Admin Dashboard interface. At the top, there is a navigation bar with links: admin's Dashboard, Home, App Calendar, Employees, Users, Inventory, Statements, and a Logout button. Below the navigation bar are four summary cards:

- Total Products in Inventory: 5 (Green card with shopping bag icons)
- Number of Active Users: 5 (Yellow card with user icons)
- Number of Employees: 3 (Teal card with user and gear icons)
- Number of Completed Appointments: 0 (Red card with calendar icon)

Below these cards is a section titled "Incoming Appointments" containing a table with the following data:

Client Username	Appointed Service	Appointment date	Appointment time	Duration	Price	Vat	Total	Accept	Delete
Kellykm	Full Body Waxing	2020-06-19	09:30:00	90	20	4	24		

At the bottom of this section, it says "Showing 1 to 1 of 1 entries".

Below the appointment list is a section titled "23/06/2020's Appointments" with a table showing one entry:

Appointment time	Client Username	Appointed Service	Duration	Price	Vat	Total	Complete	Report
18:38:00	MeganPM	Full Body Waxing	90	20	4	24		

At the bottom of the dashboard are four colored buttons:

- List of All Employees (Blue)
- List of All Users (Red)
- List of All Products (Green)
- Financial Statements (Yellow)

## SmartStyle Requirements Specification

### Employee Table

EMPLOYEES TABLE												
<span style="float: right;"><a href="#"> Add Employee</a> <a href="#"> Generate Excel</a></span>												
<span style="float: left;">Show <select style="width: 20px;">10</select> entries</span> <span style="float: right;">Search: <input type="text"/></span>												
Photo	Username	Name	Surname	Job Position	E-mail	Phone number	Date of Birth	Employee since	Nett Salary	Bruto Salary	Edit	Delete
	C_Lulu	Lucy	Carlton	NailArtist	lulu_c@gmail.com	0692456789	1996-03-24	2020-01-27 23:17:29	\$260	\$289.12	<a href="#"></a>	<a href="#"></a>
	rayfelle	Rayfelle	Dawn	Secretary	rdawn@live.com	0682080061	1988-03-03	2020-06-20 19:57:45	\$300	\$333.6	<a href="#"></a>	<a href="#"></a>
	Tony	Anthony	Reklaw	Accountant	reklaw89@gmail.com	0689800211	1989-11-08	2020-06-20 20:04:21	\$320	\$355.84	<a href="#"></a>	<a href="#"></a>

Showing 1 to 3 of 3 entries

Previous 1 Next

### Users Table

USERS TABLE											
<span style="float: right;">Logout</span>											
<span style="float: left;">Home / Users</span> <span style="float: right;">Search: <input type="text"/></span>											
Photo	Username	Name	Surname	E-mail	Date of Birth	Points	User since	Status	De-Activate User		
	MeganPM	Megan	Perry	mperry@live.it	1994-08-18	0	2020-01-27 22:45:41	<span style="background-color: green; color: white; padding: 2px 5px;">Active</span>	<span style="background-color: red; color: white; padding: 2px 5px;">Deactivate</span>		
	andreaMK	Andrea	McKey	andrea@gmail.com	1989-05-03	0	2020-01-27 22:57:46	<span style="background-color: green; color: white; padding: 2px 5px;">Active</span>	<span style="background-color: red; color: white; padding: 2px 5px;">Deactivate</span>		
	Kita_straw	Kita	Walker	kita@live.com	1998-10-27	0	2020-01-27 22:59:53	<span style="background-color: green; color: white; padding: 2px 5px;">Active</span>	<span style="background-color: red; color: white; padding: 2px 5px;">Deactivate</span>		
	ChelseaSS	Chelsea	Swan	chels@gmail.com	2019-12-18	0	2020-01-28 09:40:24	<span style="background-color: green; color: white; padding: 2px 5px;">Active</span>	<span style="background-color: red; color: white; padding: 2px 5px;">Deactivate</span>		
	Sshehu98	Sardi	Shehu	anxhgerg@gmail.com	2020-01-08	0	2020-01-28 18:47:31	<span style="background-color: green; color: white; padding: 2px 5px;">Active</span>	<span style="background-color: red; color: white; padding: 2px 5px;">Deactivate</span>		

## SmartStyle Requirements Specification

### Product Inventory Table

Manage Product Inventory										
<a href="#" style="color: #007bff; margin-right: 10px;">+ Add Product</a> <a href="#" style="color: #007bff; margin-right: 10px;">Invoice</a> <a href="#" style="color: #007bff;">Print Inventory</a>										
Show <input style="margin-right: 5px; border: 1px solid #ccc; padding: 2px 5px;" type="button" value="10"/> entries <input style="width: 150px; margin-left: 10px; border: 1px solid #ccc; padding: 2px 5px;" type="text"/> <span style="margin-left: 10px;">Search:</span> <input style="width: 150px; border: 1px solid #ccc; padding: 2px 5px;" type="text"/>										
Image	Product Name	Product Code	Brand	Category	Quantity	Purchase Price in \$	Selling Price in \$	Edit	Delete	
	DERMALOGICA CLEARING SKIN WASH	DCSW00001	DERMALOGICA	CLEANSERS SKIN	6	\$55.00	\$60.00	<a href="#">Edit</a>	<a href="#">Delete</a>	
	MATRIX ROUGE	MR00001	MATRIX	MAKE UP	2	\$5.00	\$8.00	<a href="#">Edit</a>	<a href="#">Delete</a>	
	PAUL MICHAEL TEA TREE SPECIAL	PMUTTS0001	PAUL MICHAEL	HAIR SHAMPOO	10	\$14.00	\$20.00	<a href="#">Edit</a>	<a href="#">Delete</a>	
	WETBRUSH TIME RELEASE DETANGLER FOR KIDS	WWWWW	WETBRUSH	CONDITIONER	3	\$8.00	\$12.00	<a href="#">Edit</a>	<a href="#">Delete</a>	
	Ciment Anti-Usure Conditioner	CAUC2020	Kerastase	Hair Conditioner	5	\$15.00	\$20.00	<a href="#">Edit</a>	<a href="#">Delete</a>	

### Services Table

Manage Services List					
<a href="#" style="color: #007bff; margin-right: 10px;">+ Add Service</a>					
Show <input style="margin-right: 5px; border: 1px solid #ccc; padding: 2px 5px;" type="button" value="10"/> entries <input style="width: 150px; margin-left: 10px; border: 1px solid #ccc; padding: 2px 5px;" type="text"/> <span style="margin-left: 10px;">Search:</span> <input style="width: 150px; border: 1px solid #ccc; padding: 2px 5px;" type="text"/>					
Service Category	Service Description	Price in \$	Duration	Delete	
Esthetics	Deep Face Cleaning	\$30.00	60 min	<a href="#">Delete</a>	
Esthetics	Dermoabrasion Treatment	\$50.00	80 min	<a href="#">Delete</a>	
Esthetics	Chromotherapy	\$30.00	80 min	<a href="#">Delete</a>	
Esthetics	Anticelulit Massage	\$30.00	90 min	<a href="#">Delete</a>	
Esthetics	Full Body Waxing	\$20.00	90 min	<a href="#">Delete</a>	
Hairdressing	Hair Cut	\$10.00	50 min	<a href="#">Delete</a>	
Hairdressing	Hair Straightening	\$10.00	30 min	<a href="#">Delete</a>	
Hairdressing	Simple Hair Colouring	\$30.00	120 min	<a href="#">Delete</a>	
Hairdressing	Advanced Hair Colouring	\$50.00	240 min	<a href="#">Delete</a>	

## SmartStyle Requirements Specification

### Accountant Dashboard

Tony's Dashboard Home Employees Inventory Statements Logout

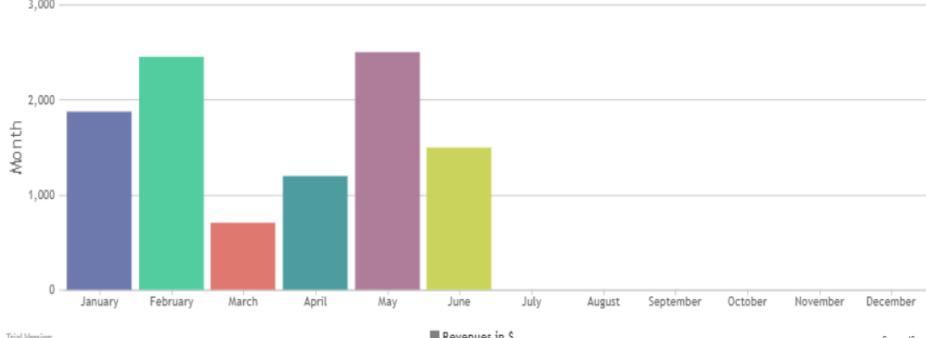
Home / Edit Profile



Anthony Reklaw  
Accountant  
reklaw89@gmail.com  
0689800211  
1989-11-08  
\$320

### Revenues Chart

#### Revenues per Month 2020



The chart displays monthly revenues in US dollars. The Y-axis ranges from 0 to 3,000. The X-axis lists months from January to December. The bars show revenues for January (~2,000), February (~2,500), March (~700), April (~1,200), May (~2,500), and June (~1,500). Other months are shown as thin grey lines.

Month	Revenue (\$)
January	~2,000
February	~2,500
March	~700
April	~1,200
May	~2,500
June	~1,500
July	~0
August	~0
September	~0
October	~0
November	~0
December	~0

Trial Version | Revenues in \$ | CanvasJS.com

### Secretary Dashboard

rayfelle's Dashboard Home Logout

Home / Edit Profile



Rayfelle Dawn  
Secretary  
rdawn@live.com  
0682080061  
1988-03-03  
\$300

### Incoming Appointments

Show 10 entries Search:

Client Username	Appointed Service	Appointment date	Appointment time	Duration	Price	Vat	Total	Accept	Delete
Kellykm	Full Body Waxing	2020-06-19	09:30:00	90	20	4	24		

Showing 1 to 1 of 1 entries Previous 1 Next

### 23/06/2020's Appointments

Appointment time	Client Username	Appointed Service	Duration	Price	Vat	Total	Complete	Report
18:38:00	MeganPM	Full Body Waxing	90	20	4	24		

## SmartStyle Requirements Specification

### Employee Dashboard

C\_Lulu Dashboard Home [Logout](#)

[Home](#) / [Edit Profile](#)



Lucy Carlton  
NailArtist  
lulu\_c@gmail.com  
0692456789  
1996-03-24  
\$260

### 23/06/2020's Appointments

Show 10 entries Search:

Appointment time	Client Username	Appointed Service	Duration
18:38:00	MeganPM	Full Body Waxing	90

Showing 1 to 1 of 1 entries [Previous](#) [1](#) [Next](#)

### Client Dashboard

MeganPM's Dashboard Home [Logout](#)

WELCOME MeganPM

### My Appointments 😊

[Create an Appointment](#)

Show 10 entries Search:

Appointed Service	Appointment date	Appointment time	Duration	Price	Vat	Total	Status
Full Body Waxing	2020-06-23	18:38:00	90	20	4	24	<a href="#">To be completed</a>

Showing 1 to 1 of 1 entries [Previous](#) [1](#) [Next](#)

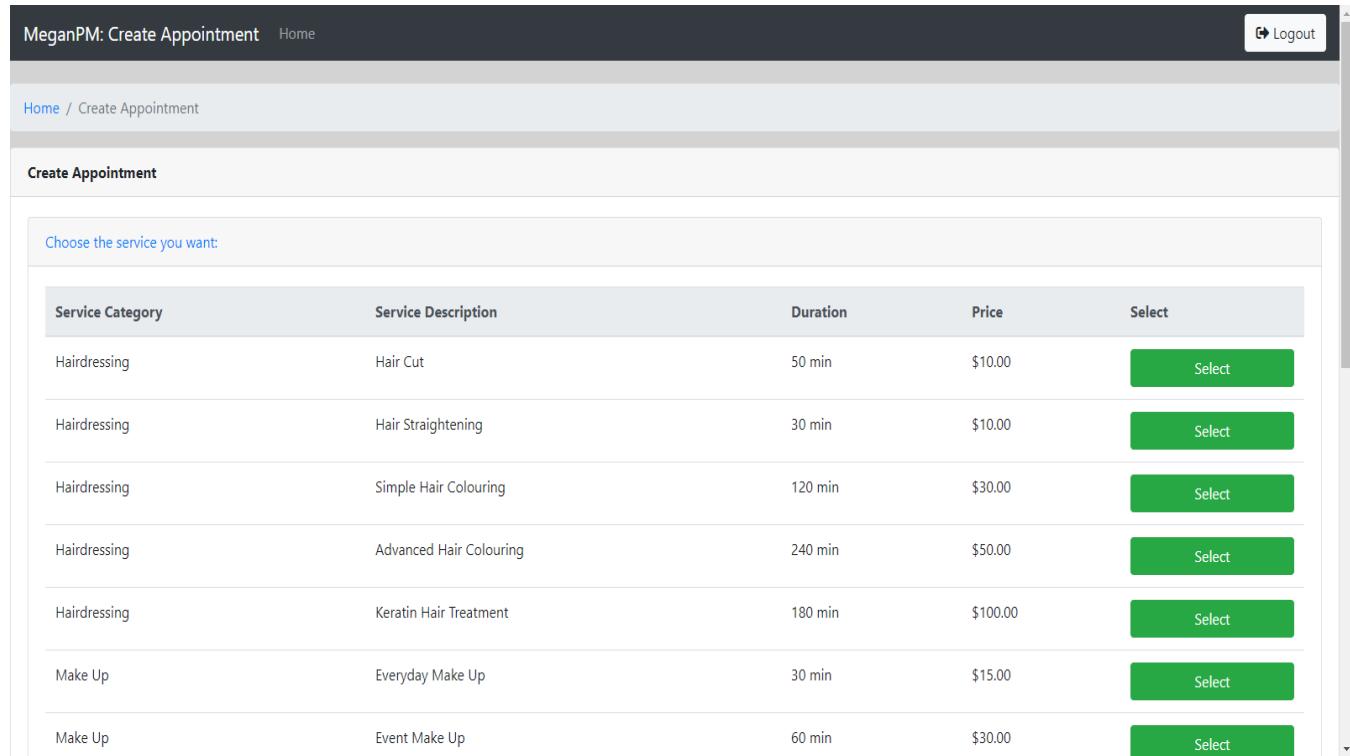


Megan Perry  
mperry@live.it  
1994-08-18  
0 points

## **SmartStyle Requirements Specification**

### **Create Appointment**

**Part 1:** Select Service Client wants to make an appointment on:



MeganPM: Create Appointment Home

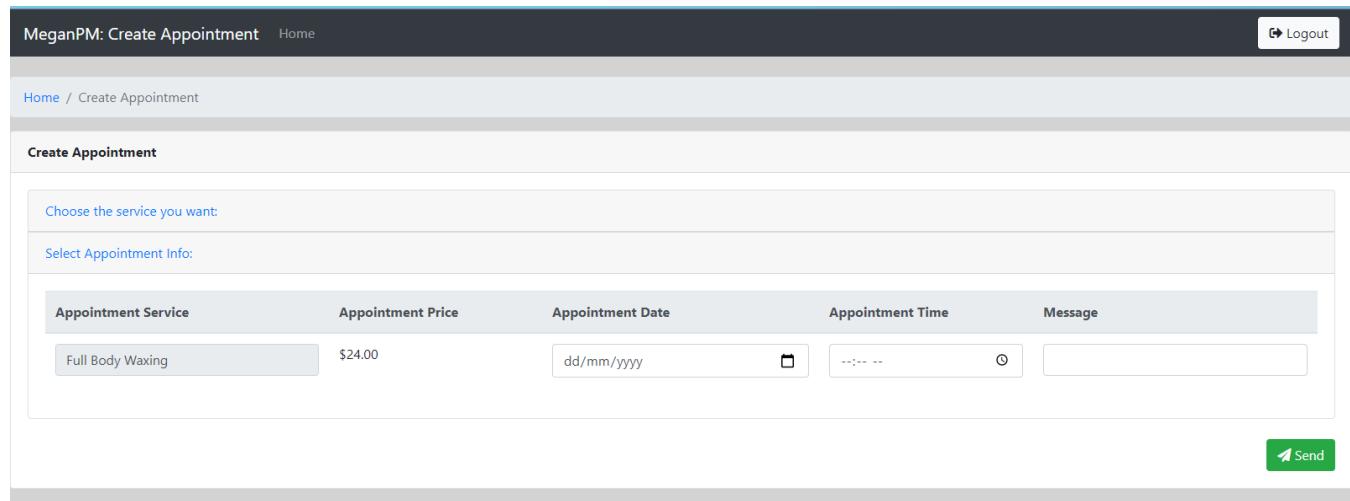
Home / Create Appointment

Create Appointment

Choose the service you want:

Service Category	Service Description	Duration	Price	Select
Hairdressing	Hair Cut	50 min	\$10.00	Select
Hairdressing	Hair Straightening	30 min	\$10.00	Select
Hairdressing	Simple Hair Colouring	120 min	\$30.00	Select
Hairdressing	Advanced Hair Colouring	240 min	\$50.00	Select
Hairdressing	Keratin Hair Treatment	180 min	\$100.00	Select
Make Up	Everyday Make Up	30 min	\$15.00	Select
Make Up	Event Make Up	60 min	\$30.00	Select

**Part 2:** Client input the Appointment information:



MeganPM: Create Appointment Home

Home / Create Appointment

Create Appointment

Choose the service you want:

Select Appointment Info:

Appointment Service	Appointment Price	Appointment Date	Appointment Time	Message
Full Body Waxing	\$24.00	dd/mm/yyyy <input type="button" value="Calendar"/>	--:-- -- <input type="button" value="Clock"/>	<input type="text"/>

## 6. APPENDIX

### APPENDIX A: *Project Planning*

**Start Date:** 26 March 2020

**End Date:** 02 July 2020

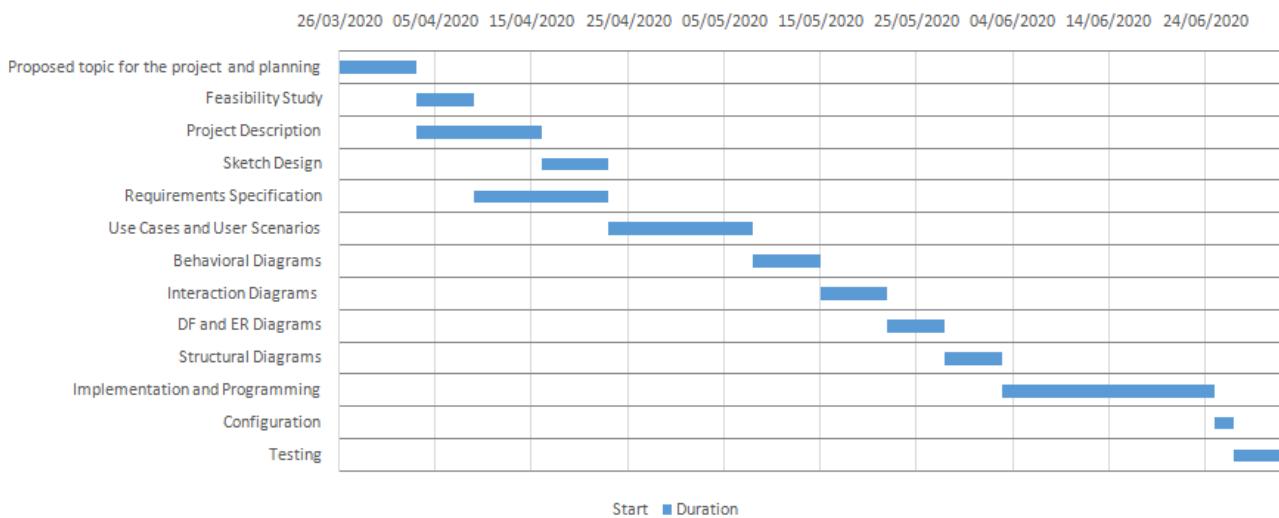
**Duration:** 98 days or 14 weeks

No.	Activities	Start	End	Duration
1	Proposed topic for the project and planning	26/03/2020	03/04/2020	8
2	Feasibility Study	03/04/2020	09/04/2020	6
3	Project Description	03/04/2020	16/04/2020	13
4	Sketch Design	16/04/2020	23/04/2020	7
5	Requirements Specification	09/04/2020	23/04/2020	14
6	Use Cases and User Scenarios	23/04/2020	08/05/2020	15
7	Behavioral Diagrams	08/05/2020	15/05/2020	7
8	Interaction Diagrams	15/05/2020	22/05/2020	7
9	DF and ER Diagrams	22/05/2020	28/05/2020	6
10	Structural Diagrams	28/05/2020	03/06/2020	6
11	Implementation and Programming	03/06/2020	25/06/2020	22
12	Configuration	25/06/2020	27/06/2020	2
13	Testing	27/06/2020	02/07/2020	5
				98 days
				14 weeks

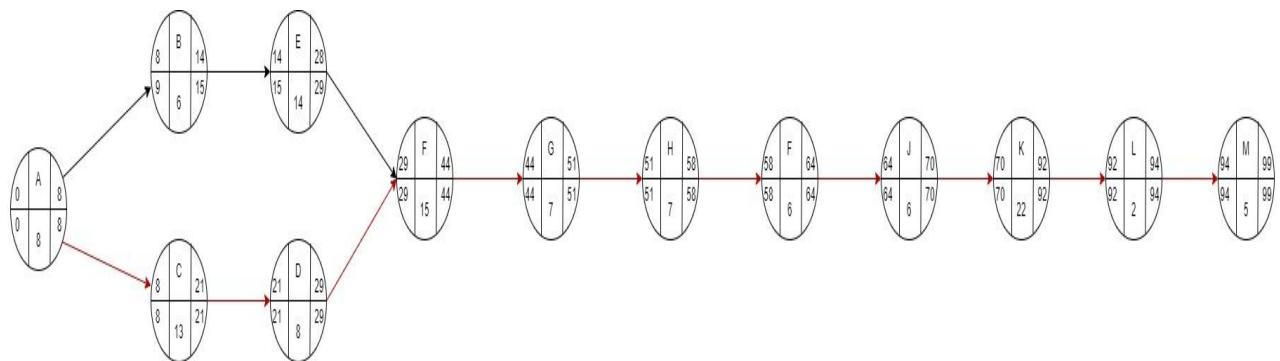
Nr	Activities	Duration (Days)	Dependencies
10	Proposed topic for the project and Planning	8	-
20	Feasibility Study	6	10
30	Project Description	13	10
40	Sketch Design	8	30
50	Requirements Specification	14	20
60	Use Cases and User Scenarios	15	40, 50
70	Behavioral Diagrams	7	60
80	Interaction Diagrams	7	70
90	DF and ER Diagrams	6	80
100	Structural Diagrams	6	90
110	Implementation and Programming	22	100
120	Configuration	2	110
130	Testing	5	120

## SmartStyle Requirements Specification

### Gantt chart

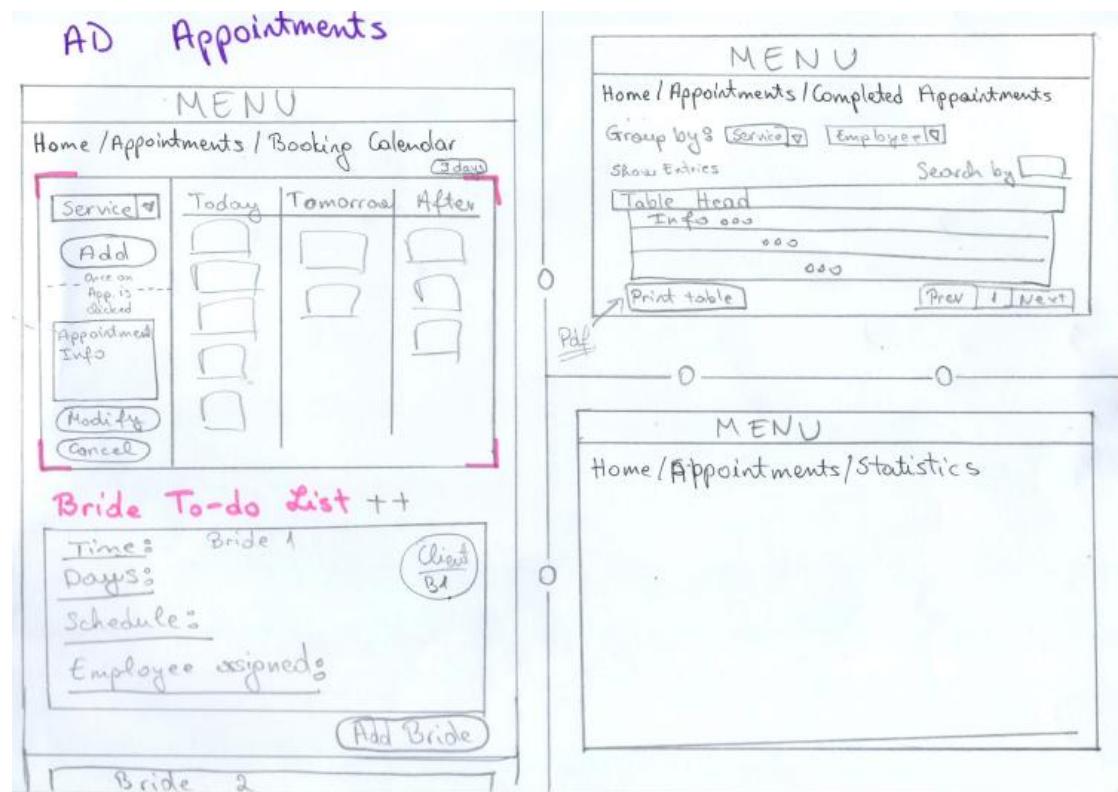
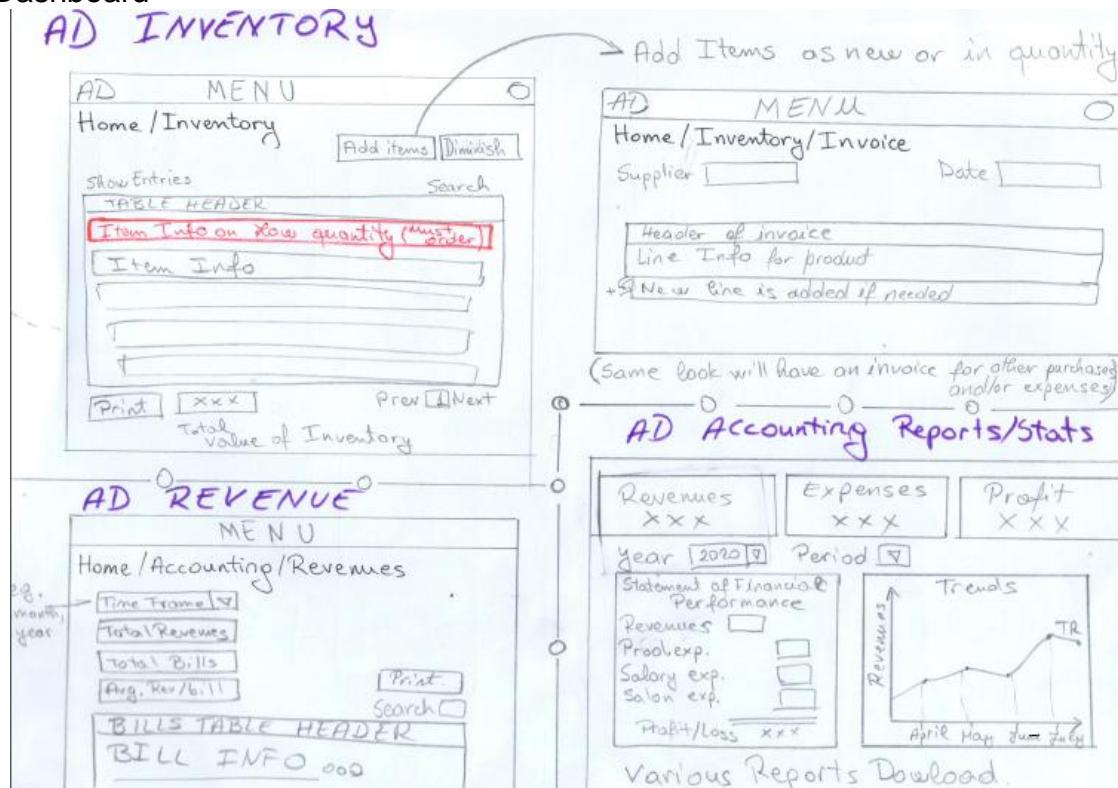


### Network Diagram



## APPENDIX B: Sketches

### Admin Dashboard



## Admin Dashboard (AD)

AD Home | Appointments | Employees | Accounting | Clients

---if each menu button is clicked ---  
Appointments → 1) Booking Calendar / 2) Completed App. table  
                          3) Appointment Statistics

Employees → directs directly to Employees table

Accounting → Inventory / Invoice / Revenue Table  
Statistics & Reports

Clients → directs directly to Client table

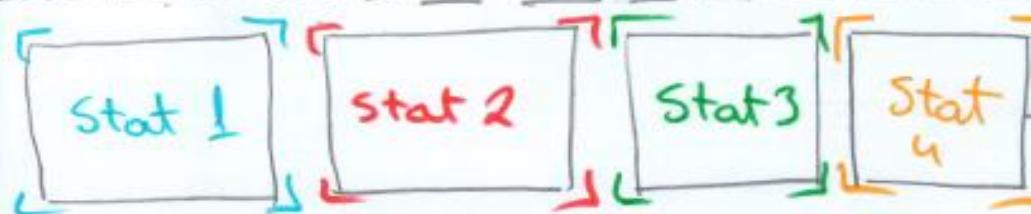


Diagram illustrating the structure of a user interface:

- A horizontal line represents the main interface.
- Two vertical lines branch off from the left side, representing sections or components.
- The top section is labeled "Clients" and contains a "Sign Out button".
- The middle section is labeled "Menu" and contains a "Sign Out button".

menu  
directions  
and drop -  
down  
buttons

Total  
statistics  
of business

→ Calendar will show a list of all appointments for today.

→ Shows clients either by birthday or more specific points

→ Generates quick excel or pdf. reports to view.

## AD Employees

MENU

Home / Employees

Show entries      Search

Add       Delete

Employee Table Header

INFO 000

Total     Monthly     Bruto     Tax     Total     Print

(or 3 months)

## AD Clients

MENU

Home / Clients

Show Entries      Search

Client Table Header

Client's Info 000

Prev  Next

At the top will be users with high priority and those who haven't been active in a long time.

## Secretary Dashboard

### Secretary Dashboard

Hello Secretary! Home | Settings | Sign Out

**BILLS** Create Generate

Info	Client name	No. Phone
ooo		

Info	Client Name	Phone
ooo		

**CALENDAR**

Service	Today	Tomorrow	After
Add			
if app selected			
Appointment Info			
Cancel			
Edit			

**Most loyal Clients**  
Client with today

**Employees Shifts**

Today	Tomorrow	After
9-13-14, 15	-/-/-	-/-/-
(30/30) CII	-/-/-	-/-/-

With a pop-up form secretary can change the shifts.

## Accountant Dashboard

### Accountant Dashboard

Hello, Accountant! Home | Inventory | Reports | Settings | Employees | Sign Out

**Statement of Financial Performance**

Period	Revenues	Expenses	Margins/Ratios
ooo	ooo	ooo	\$ xxx

**New Invoice**

**Print SFP**

**Income & Expenses**

Month	Income	Expenses
Jan	10000	8000
Feb	10000	8000
Mar	10000	8000

**All invoices**

**Paid** xx

**Not Paid** xx

**Table Header**

**Table Info** ooo

ooo  
ooo  
ooo  
ooo

For selective invoices totals of paid and unpaid are shown.

## Employee Dashboard

### Employee Dashboard

Hello, Employee! Home | Settings Sign Out



Name: \_\_\_\_\_

Info: \_\_\_\_\_  
o  
o  
o  
o  
o

Today's Schedule

9-	000 Shift	13	000 Noshift
10	000 Shift	14	000 -11-
11	000 Shift	15	000 -11-

Messages on Shift changes

000

SALARY	Vacation Days
\$ Neto	Yearly 20 days

Calendar June (2)

1	2	(3)	(4)	(5)	000
○	○				

Work day  
X  
Free day  
No work day  
(Vacation)

## Client Dashboard

### Client Dashboard

Hello, Client! Home | Previous Appointments | Settings Sign Out

Appointment Booking

Either a form or a calendar

Messages/Delayed Appointments

None (Happy Birthday!) e.g.

Foto

Name \_\_\_\_\_  
Points \_\_\_\_\_  
Redeem \_\_\_\_\_

Client Info

o  
o  
o  
o

Gallery slide-show of either Client Pic or Hair Models done in the Salon