SmartStyle

Software Engineering

EPOKA UNIVERSITY

SmartStyle Requirements Specification

Version 2.0

May 07, 2020

TEAM MEMBERS:

Eni FEJZO

Enejda DOKO

Fabjan KODRA

Keli KASHARAJ

Klintist DYRMISHI

Sardi SHEHU

Table of Contents

1. 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 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 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 bill 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 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:

A D M I N

- 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.
- 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.

SECRETARY

- 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.

ACCOUNTANT

- The Accounting 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.

EMPLOYEE

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

CLIENT

- A 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 for logs in or uses the web application and make 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 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 following:

- It requires large database.

- It requires 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 output that the system is expected to exhibit in the case of a certain input.

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.

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.

3.1 Functional Requirements

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		
LOGIN AND IDENTIFICATION					
BR_02	The system should allow all the user to be able to access is by a log in interface.	By imputing unique username and password, all users can enter their respective pages.	1		
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		
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		
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		
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 of admin.	1		
A D M I N					
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		
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		
BR_09	The admin menu will redirect towards all the system: Appointments, Employees, Client, Accounting and each their info and statistics.	With drop down buttons, the admin can go and view each labels main feature or a specific interface to edit or generate specific content.	1		

Req #	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
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		
BR_11	A section with quick reports in order to, when clicked, generate 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.	2		
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 coupon or discounts as popup/email to these clients.	3		
BR_13	The system allows the admin to add appointments to the calendar or reserved free slots for vacation or breaks.	Appointments can be not only generated by the system from the clients, but also by the admin.	2		
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		
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.	1		
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		
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 which analysis the times schedules and moments when appointment are mostly booked, etc.	3		
BR_18	The admin 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		
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		

Req #	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
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		
BR_21	The admin can access the clients table with their respective info.	On top will be the clients that are most loyal and those less active.	2		
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		
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 user in the system.	3		
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		
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		
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		
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		
BR_28	The admin can view in tabular form all the bills from the precious 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		
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		
BR_30	The admin can change their password in the settings.	Only their password and not other users.	3		
BR_31	The admin can obviously log out of the system.	All users can and should log out for their own security.	1		

Req #	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
S E C R E T A R Y					
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		
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		
BR_34	The system will show a small table with the shifts of the employee and can even change them.	The system will notify the employees for the changes in the shifts.	2		
BR_35	The secretary can assign appointment to employees working that shift.	The secretary can view the shifts and assign each employee accordingly.	2		
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 cancelled.	2		
BR_37	In a tabular form, the secretary can view the new changed or rescheduled appointments.	They can recheck with the other staff about the changes to confirm it on the most adequate time for all.	2		
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		
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		
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		
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 coupon or discounts as per messages or email to these clients.	3		
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		
BR_43	The secretary can obviously log out of the system.	All users can and should log out for their own security.	1		

Req #	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
ACCOUNTANT					
BR_44	The accountant can view the statement of financial performance.	They can select the period and print the statement.	1		
BR_45	The accountant can created new invoices to record the expenses incurred by the business.	The invoice will be recorded by the system and expenses directly calculated.	1		
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		
BR_47	In tabular form, all of the invoice (revenue and expenses) will be listed so the accountant can mark as paid or unpaid.	This is important for the accountant to view and group invoices.	2		
BR_48	The system will generate reports for the accountant to view and download.	Reports are important to verify the systems records and for declarations.	2		
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		
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		
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		
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		
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		
BR_54	The accountant can obviously log out of the system.	All users can and should log out for their own security.	1		
EMPLOYEE					
BR_55	The employee can view and edit their personal information.	They can only change their own personal info, but not their salary.	1		

Req #	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_56	The employee can view and edit their shift for the current day.	The today’s shift will be shown in a one day calendar mode.	1		
BR_57	The employee can view and edit their schedule for the month.	In a calendar for the current month will be shown the work and vacation days.	2		
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		
BR_59	The employee can change their password.	After the first login, they can change the default one.	1		
BR_60	The employee can obviously log out of the system.	All users can and should log out for their own security.	1		
C L I E N T					
BR_61	The client can register into the system by giving same personal information.	They must enter a unique username, name, password and few relevant data.	1		
BR_62	The client can view and edit their personal information and even password.	They can change their own personal information.	1		
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 to through the system.	1		
BR_64	The system will show automatic messages regarding pending appointments or other status, and other info.	This is a feature to show the approved future appointments and other messages from the system.	2		
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.	3		
BR_66	Previous appointments will be stored for the client to view.	It might be useful for the next appointment’s time.	3		
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		
BR_68	The client can obviously log out of the system.	All users can and should log out for their own security.	1		

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, IPad 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 it 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 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 this reasons we need a lot of storage space. The PC should have a powerful CPU and fast internet speed that the system can respond 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 a very high performance and with less space.

Space requirement

- The system should be able to deal with at least 150 users in 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 build 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 which can be ever updated and extended with new features which 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

The SmartStyle software should be 24/7 online. Users are all able to login in 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 the 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 of course 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 seems 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's 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's 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 is used. 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) 13% taxation; more than 150’000, 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 KIBERNETIC 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 the occur for later diagnosis

3.3 Project's Diagrams

3.3.1 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 text area with the data reveals itself.
   d. Admin can either choose to edit this information by writing on the text area 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 edits / deletes Appointment*

    a. Secretary logs in.
    b. In the section of appointments she can select an appointment and perform desired changes to it.
    c. After seeing that an appointment is no longer valid she can delete it from the calendar.

7. *Secretary approves / rejects 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 accepts / rejects Changed Appointment*

   a. In her dashboard she can view bookings made by clients online that have been changed to a different time.
   b. According to the situation and the timetable, she decides whether she will approve or reject the requested change.

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, 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 birthday on a specific day or those who are part of a reward program.

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

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

12. *Secretary creates Bills*

    a. Secretary can create a bill by herself with all the required information in the form, in the instance of 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 client" or "time of issue of 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 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, than an error notification displays letting them know something is incorrect.

3. *Accountant Financial Performance Statement*

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

4. *Accountant creates new Invoice*

    a. Accountant can create 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 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.
    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. The can generate reports to view or download in PDF.

7. *Accountant Inventory*

    a. 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 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 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 info 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. 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.
    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 selected 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 color 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 in the system.
    b. The platform asks for 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 in 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 readymade 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 new updated data that she inserted previous.

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 it will be pending.

4. *Client Approval / Disapproval of Appointment*

    a. If the appointment is approved, the client it 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 cancelled due to over booking, 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 to 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 it is dedicated to photos and pictures, maybe even short videos.
    b. The client can find there her own photos or the 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.

3.3.2 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.

Name	**Login**
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.
Post condition	Users are logged into their accounts

Name	**Add / Modify / Cancel Appointment**
Summary	Admin can create a new appointment for a certain client by adding the necessary information after clicking the Add Appointment button. Admin can also modify the information regarding a specific scheduled appointment, or he can cancel it if a client requests to.
Actor	Admin
Description	Admin clicks the Add Appointment button & a new window where he can enter the data regarding the service required, the time & data, and the employee that will offer its services to this newly created appointment. When clicking a specific appointment, Admin can modify the previously added information that appears in a text area, and then click the Modify button to save the changes. Admin can also click the Cancel Appointment button to cancel an appointment
Precondition	Admin must be previously logged in. He/she should have navigated through the Appointments section on the menu bar, to the Booking Calendar. To Modify & Cancel an appointment, the appointment should have previously been scheduled and shown in the Booking Calendar.
Alternatives	Admin can either: (1) Add a new appointment, (2) Modify an existing appointment, or (3) Cancel a current appointment.
Post condition	Admin has created a new appointment in the Booking Calendar, modified an existing one, or deleted an appointment that is no longer shown in the Booking Calendar.

Name	**Add / Delete Employee**
Summary	Admin is the only user who can register or delete an employee. With the Add Employee button, admin can register a new employee, while with the Delete button he/she can delete an existing Employee.
Actor	Admin
Description	Admin clicks the Add Employee button on the top of the employee page. He enters the credentials required for the registration of the employee along with a username and a password for the new employee. The Delete button stays alongside every registered employee and when Admin clicks on it, the employee is deleted from the database, so he cannot login.
Precondition	Admin must have been logged in, navigated through the Employee section on the menu bar to the Employee dedicated page. To delete an employee, he/ she must have previously registered that employee
Alternatives	Admin can either choose to Add a new Employee, or delete an existing one. When clicking either of these buttons, Admin can always choose to go back and perform none of these actions by clicking the Cancel/ Back button that shows after he clicks on the Add & Delete buttons.
Post condition	Admin has registered a new employee or deleted from the database an existing employee.

Name	**Add Inventory**
Summary	The limited quantity products are listed first in the inventory table. Admin can choose to increase their quantity by clicking on the Add Inventory button.
Actor	Admin
Description	Admin clicks on the Add Inventory button, and is redirected to the invoice page. He/she chooses the supplier and the quantity of the product he/she wants to purchase, and a new invoice line is created.
Preconditions	Admin must be logged in, have navigated through the Accounting button on the menu to the Inventory dedicated page. The supplier admin wants to purchase products from to increase his/her inventory, must have previously been recorded.
Alternatives	After clicking the Add Inventory button, Admin can either choose to make the purchase by clicking on the Confirm button, add another product to that invoice by creating a new invoice line, or cancel the purchase by hitting the Cancel button.
Post condition	Admin increases the quantity of a specific product.

Name	Deactivate Client
Summary	Admin can choose to deactivate the account of a client that has not been active for a long period of time. Those clients, that have been inactive the longest, appear first on the clients' table.
Actor	Admin
Description	There is a deactivate button alongside every registered client, and Admin can choose to deactivate a specific client. When clicking the deactivate button, the client will be temporarily unable to log into his/her account, and gets the 'inactive' status on the database, but it's not deleted from the database. Admin can activate his/her account through the activate button.
Precondition	Admin should have been logged in and navigated through the Clients section on the menu to the Clients page. The client he is about to deactivate must have previously been registered and appears on the clients table.
Alternatives	After deactivating, Admin can choose to reactivate the client again, through the Activate button that becomes active after the deactivation process has come to an end for that specific client.
Post condition	The client is deactivated and they can no longer login, unless the Admin reactivates them again.

Name	Appointment creation
Summary	Secretary can create appointment by filling a form with data
Actor	Secretary
Description	Secretary 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, time they want.
Precondition	Secretary must be logged in and have an existing account. Client has not made an online booking.
Alternative	-
Post condition	Calendar is updated with the new appointment

Name	Appointment approve/reject changed appointments
Summary	Secretary decides if it is possible to rearrange the changed appointments on the calendar
Actor	Secretary
Description	Secretary looks at the changed appointments and makes sure they fit in the calendar in a convenient time in accordance with workers shifts as well
Precondition	Secretary must be logged in and have an existing account
Alternative	No changes in appointment are made
Post condition	Calendar is updated with the changed appointments/Request is declined, appointment cannot be set

Name	Appointment editing
Summary	Secretary edits an existing appointment
Actor	Secretary
Description	Secretary looks at the section of appointment. In this section she can select an appointment and perform desired changes to it.
Precondition	Secretary must be logged in and have an existing account
Alternative	No changes in appointment are made
Post condition	Appointment is edited.

Name	Online appointment approve/reject
Summary	Secretary decides whether to approve or reject an appointment made by client online
Actor	Secretary
Description	Secretary looks at the timetable and accepts an appointment if there is free time in timetable.
Precondition	Secretary must be logged in and have an existing account.
Alternative	There are no new appointments made online.
Post condition	Calendar is updated with the new appointments / Request is declined, appointment cannot be set.

Name	Delete appointment
Summary	Secretary deletes appointments which are no longer valid or cancelled.
Actor	Secretary
Description	Secretary presses a specific button than enables the deletion of the appointment.
Precondition	Secretary must be logged in and have an existing account. Client must have cancelled the appointment
Alternative	There are no cancelled appointments
Post condition	The invalid appointments are deleted from the calendar.

Name	Secretary changes shifts
Summary	When necessary secretary makes changes to shifts of employees.
Actor	Secretary, Employee
Description	Secretary makes change to a shift of employee, and by doing that the employee is immediately notified for the request. They have to accept the change in their shift in order for this action to be completed.
Precondition	Secretary and employee must be logged in and have existing accounts. Employee must view and accept request.
Alternative	Employee does not accept request. Shift might be assigned to another employee.
Post condition	Employee agrees on shift change. Their shift time is changed in the table.

Name	**Bill generating**
Summary	Secretary generates bill of a specific customer
Actor	Secretary
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 wrong keyword and cannot find bill. Customer has not made online appointment so bill must be created.
Post condition	Bill is searched and found.

Name	**Bill creation**
Summary	Secretary creates a bill by filling a form in case an appointment has not been set online.
Actor	Secretary
Description	Secretary clicks on the bills 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. Client has not made an online appointment.
Alternative	-
Post condition	Bill is created.

Name	**Bill editing**
Summary	Secretary edits an existing bill.
Actor	Secretary
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.
Post condition	Bill is edited.

Name	**Bill printing**
Summary	Secretary finds bill of a specific customer and prints it.
Actor	Secretary
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. 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.
Post condition	Bill is printed successfully.

Name	Messages and emails for clients who have cancelled
Summary	Secretary sends messages to clients who cancelled their appointment
Actor	Secretary, Client
Description	Secretary will check data of the client/s who cancelled and politely enquire a reason by sending a message
Precondition	Secretary must be logged in and have an existing account. Client has cancelled the appointment
Alternative	There are no cancelled appointments
Post condition	Client receives a message asking them why they cancelled.

Name	Messages and emails for special clients
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 customer of the company: winner of reward program.
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.

Name	Financial performance
Summary	Accountant can see the performance on different time periods so he/she can see how each period is doing. They can see revenues, expenses and margin.
Actor	Accountant, Admin
Description	Accountant may select the period of time s/he wants to observe on a button which drops down and shows the periods. This makes it easier for him/her.
Precondition	Accountant should be logged in and select the period h/she wants to see.
Alternative	-
Post condition	Accountant selects the period of the financial performance and checks out the performance.

Name	New Invoice
Summary	Accountant keeps track of every expense and records them on invoices. H/she can create new invoices every time one is needed so they can continue keeping track of the expenses.
Actor	Accountant
Description	Accountant creates new invoice with the help new invoice button and saves there all the expenses.
Precondition	Accountant must be logged in and select new invoice where all expenses are entered.

Alternative	There are no new expenses
Post condition	After entering all expenses h/she saves the invoice and a green light show to let the accountant know they are saved. Accountant can continue to create yet another new invoice or go back.

Name	**Graphical View**
Summary	Accountant dashboard has a graphical view of expenses and revenues separated in periods.
Actor	Accountant, Admin
Description	The graphical view makes it easier for the accountant to see the expenses and revenues for each month because the graphical view period is divided in such way (months).
Precondition	Accountant must be logged in the account in order to have access on graphical view.
Alternative	-
Post condition	Accountant is informed which month is doing better/worse in order for him/her to take action.

Name	**Inventory**
Summary	Accountant has the right to check the inventory and see what's missing.
Actor	Accountant, Admin
Description	Accountant can enter the inventory in order to check which product is running low and which product is stocked and not doing well with the help of CRUD table. Accountant can take action by adding or removing products. The items that are low in inventory will show first.
Precondition	Accountant must be logged in and check the products.
Alternative	-
Post condition	Recalculates the prices and provides additional information on the products

Name	**Reports**
Summary	Accountant can check on employee's salary and taxes to be paid.
Actor	Accountant, Admin
Description	Accountant has access to the CRUD table of employees where s/he can get information regarding salaries and taxes to be paid. He accesses by pressing the "Employees" button which directs him to the Employees page.
Precondition	Accountant must be logged in and enter the employees table to check their taxes and salary.
Alternative	-
Post condition	Accountant selects different employees and gets informed on who is paid and who is not.

Name	Accountant Invoices
Summary	Accountant can access all invoices in the system.
Actor	Accountant
Description	Accountant can access all invoices in order to check which ones have received their payment and paid taxes, and which ones not. Accountant selects individual employees and the status is shown
Precondition	Accountant must be logged in the system and select the employees he wants to check.
Alternative	All employees received their payment and taxes are paid.
Post condition	Accountant gets the report.

Name	Settings
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 and they can update them.
Precondition	User must be logged in and enter settings.
Alternative	User doesn’t change the password / personal info.
Post condition	User has a new password / updated personal info.

Name	Employee Messages
Summary	Message section on the employee dashboard.
Actor	Employee, Admin, Secretary
Description	This is a section in the Employee dashboard, where messages from the other users of the system (Admin and Secretary) are shown and that the employee can respond to or delete.
Preconditions	The admin or secretary must have sent or changes something regarding the employee so that a message can appear in the section.
Alternatives	Employee can view, respond or delete a message.
Post condition	The message disappears and a response is sent to the system and other users.

Name	Employee Shift Schedule
Summary	Employees views and changes their shift
Actor	Employee, Secretary
Description	In the shift schedule, the employee can view their shift for the day or for other time frames they choose. In case they want to change the shift, they can fill the form with the shift changes and send it to be confirmed by the secretary.
Preconditions	Employee must be logged in their dashboard and use the shift schedule.
Alternatives	Employee can choose to change their shift; however it is up to the secretary whether the shift actually changes or not.
Post condition	If the shift change has been approved, then the shift schedule shall change.

Name	**Employee Calendar**
Summary	Employee accesses their calendar and can change the status of each day.
Actor	Employee, Secretary
Description	Employees can view their own personal calendar in the dashboard. Each day is highlighted by a different color which indicates if that day is a work day, holiday, or taken leave by the employee as free day.
Preconditions	Employee must be logged in their dashboard and access the calendar to use.
Alternatives	Employee can change the color of the day as they wish. But the secretary must accept the proposed change to the calendar by the employee.
Post condition	If the change was approved by the secretary, then the color of the day will change. Otherwise, no change will be displayed.

Name	**Create Personal Account**
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	-
Post condition	User can login their account.

Name	**Create Appointment**
Summary	Client creates an appointment on a free slot in the calendar
Actor	Client, Secretary
Description	After viewing the calendar, the client will choose in the calendar a free date and she will make an appointment by filling in the required info.
Preconditions	Every client with an account can make an appointment and the calendar must have space to book the appointment.
Alternatives	Another alternative is sending email or call the secretary.
Post condition	After making a request for an appointment. The client will wait some second until the secretary approves or disapproves the appointment.

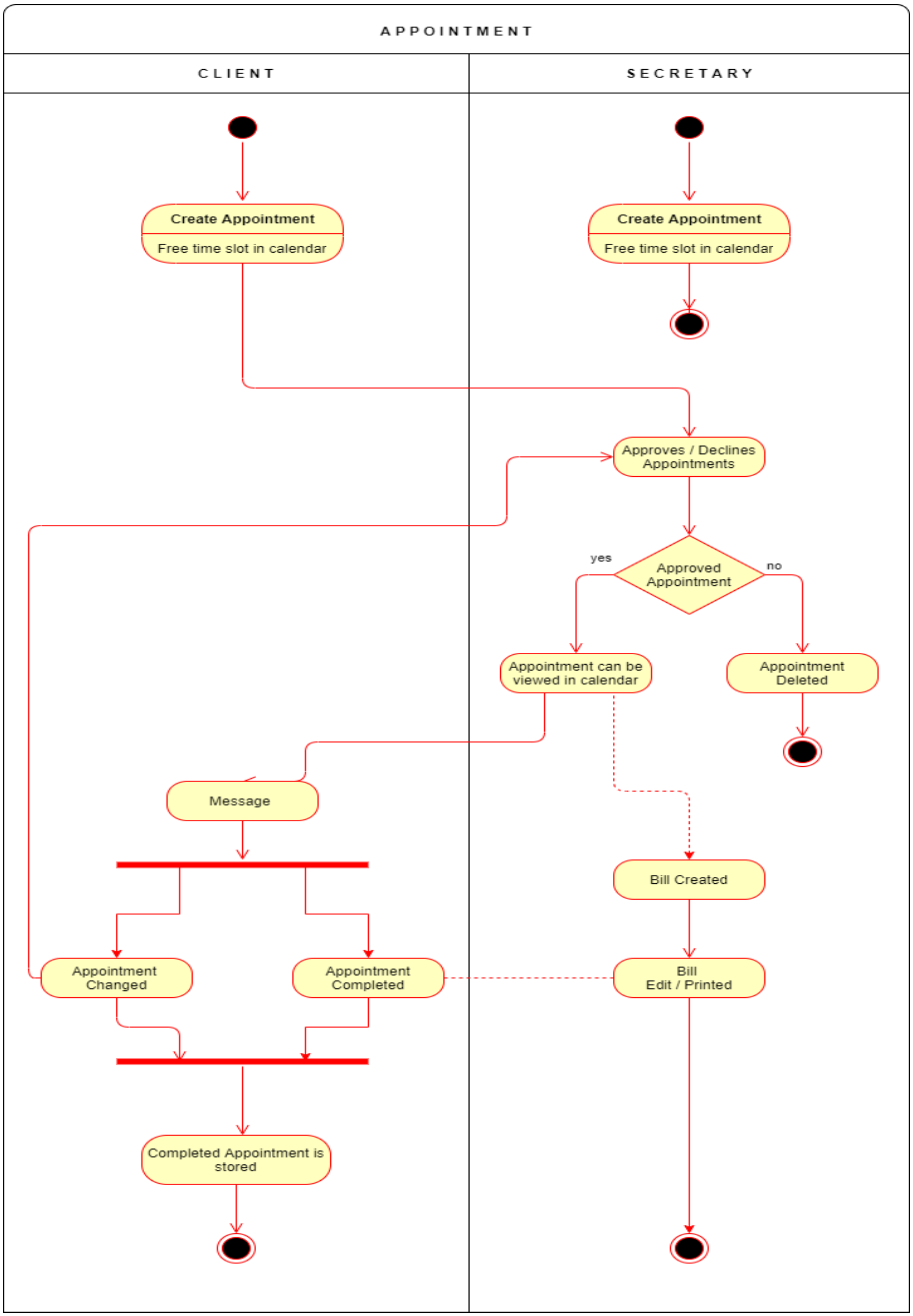
Name	**Completed Appointments**
Summary	All clients have their previous appointment stored in their account.
Actor	Client
Description	This area in the website is to help the client to have all their appointment organized and they will receive notification for service that they need to make in the salon.
Preconditions	All clients must have an account and have previously booked 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-
Post condition	-

Name	**Client Discount Points**
Summary	Client will receive discount points.
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 in the future for a reduced price or other gifts, coupons and products.
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 % discounts, coupons, gifts or products.
Post condition	The points will me decreased afterwards and client must start accumulating them again.

Name	**Client Gallery**
Summary	All clientd 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.
Post condition	-

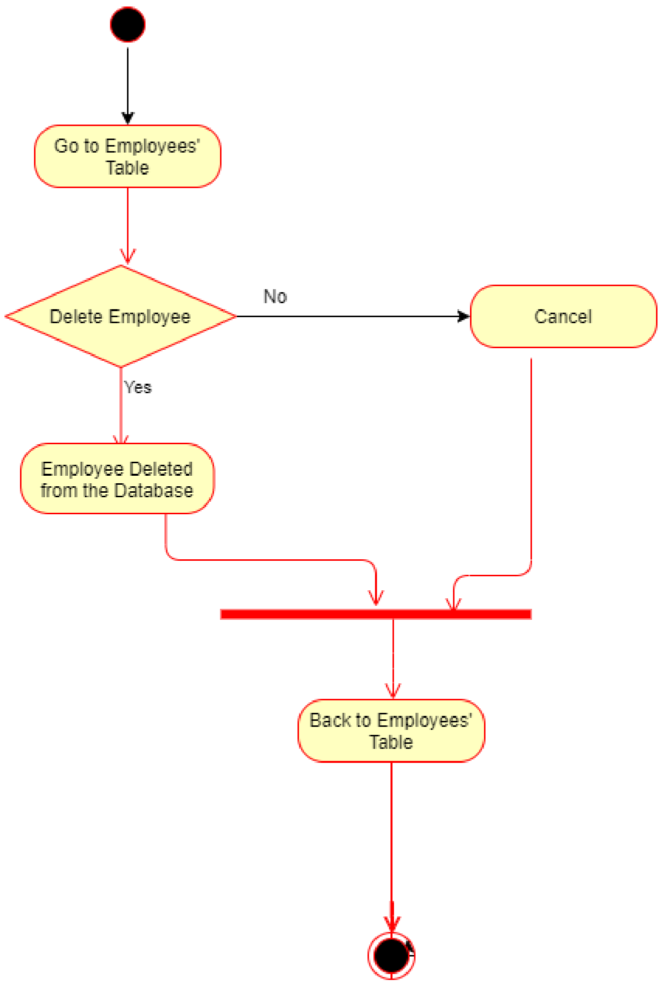
3.3.3 Activity Diagrams

Appointment activity diagram

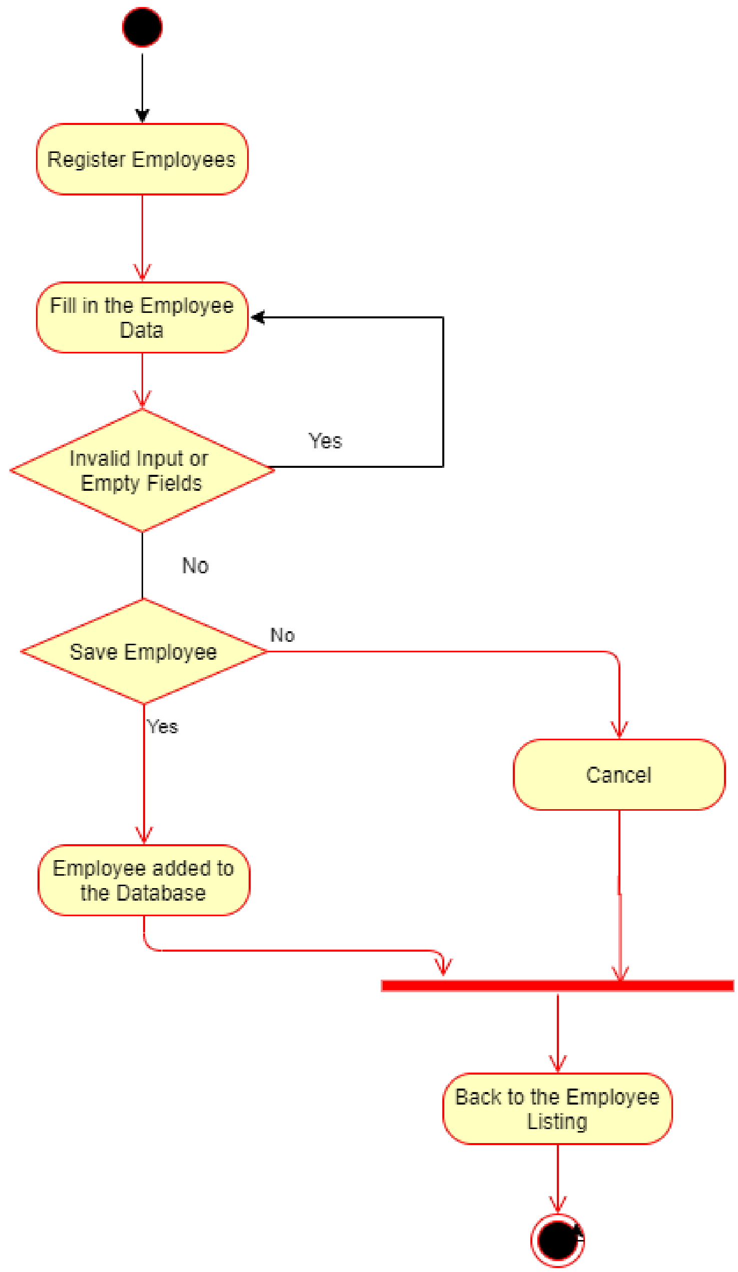


Admin Activity Diagram

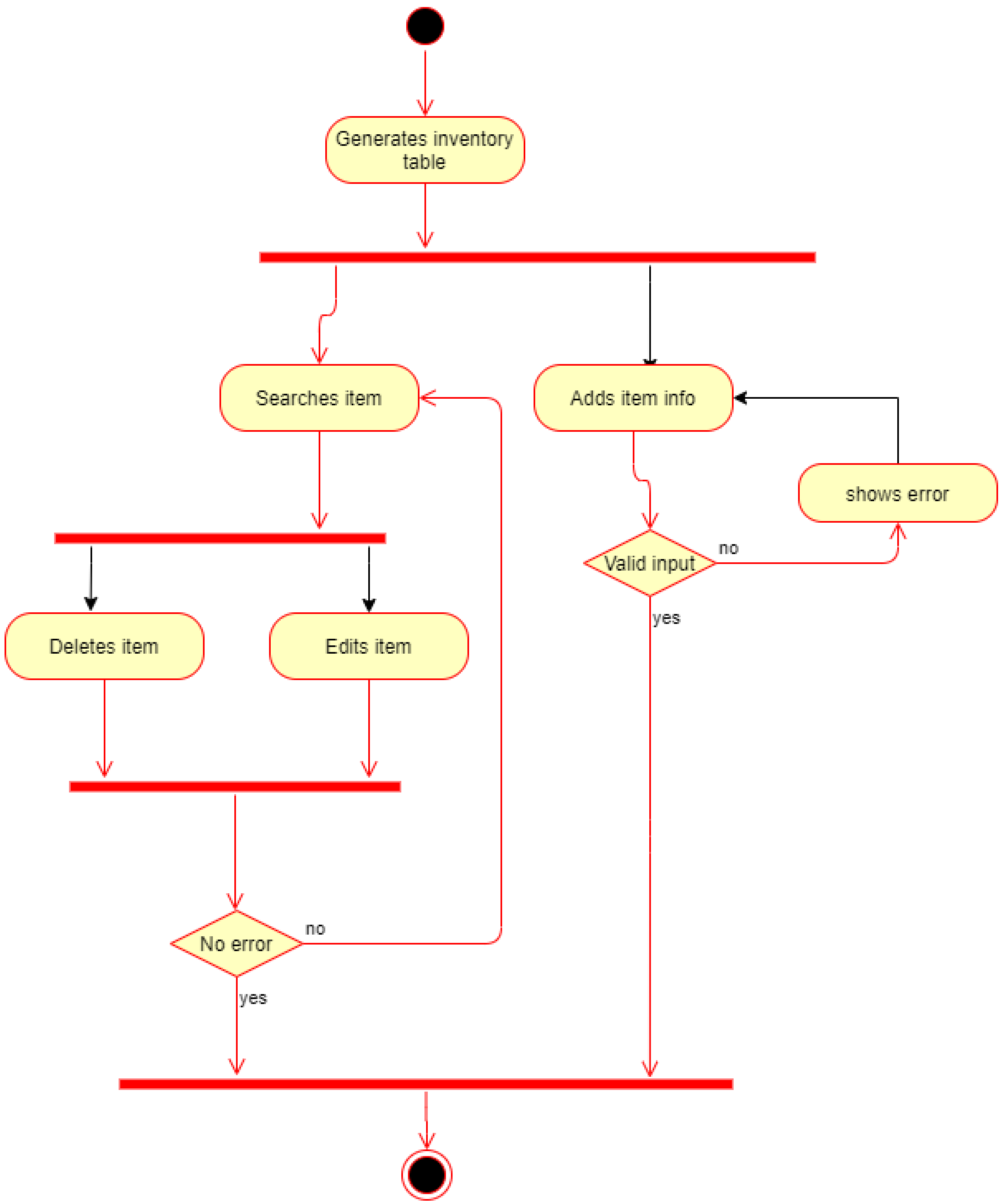
Registering Employee



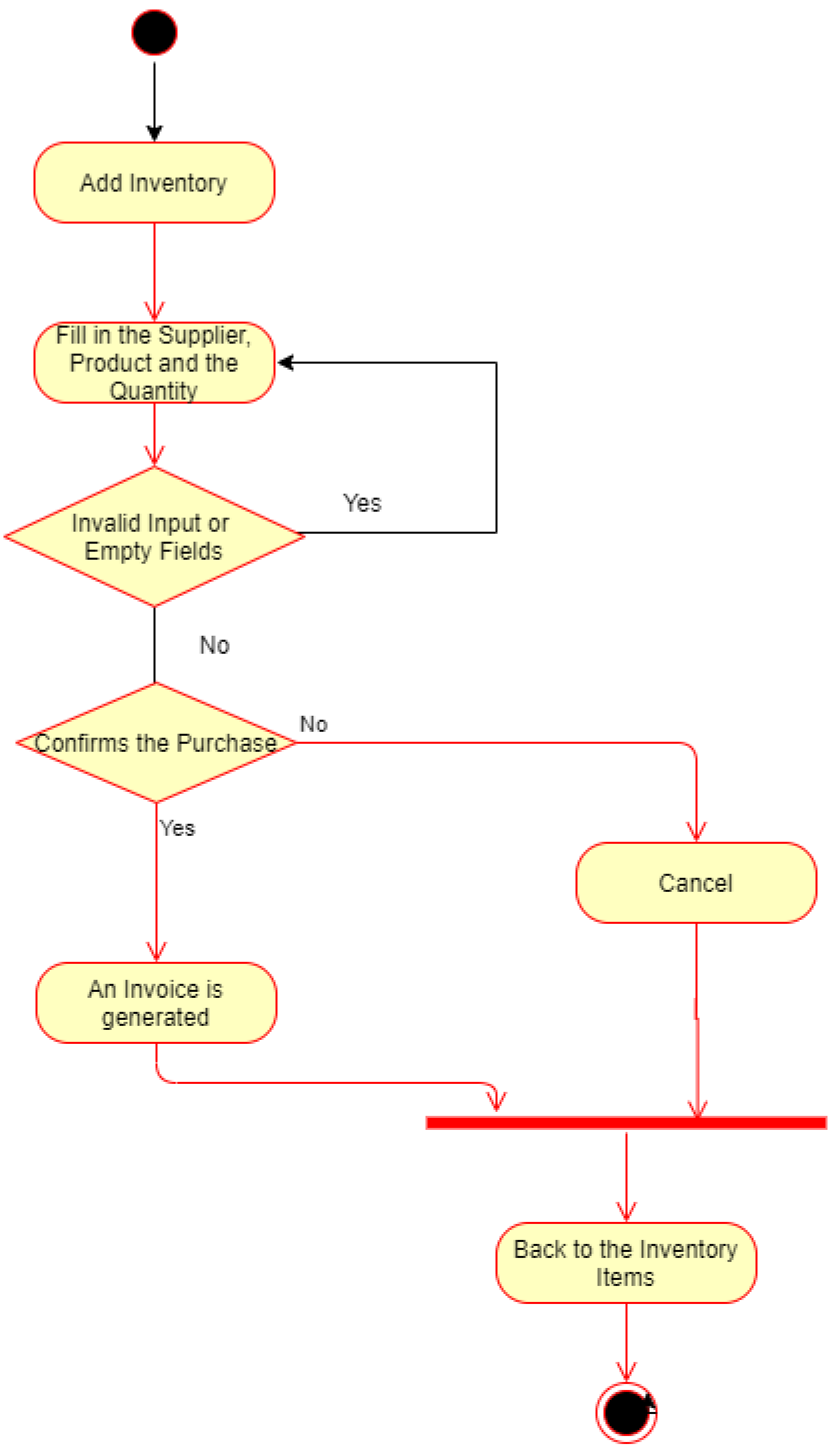
Deleting Employee



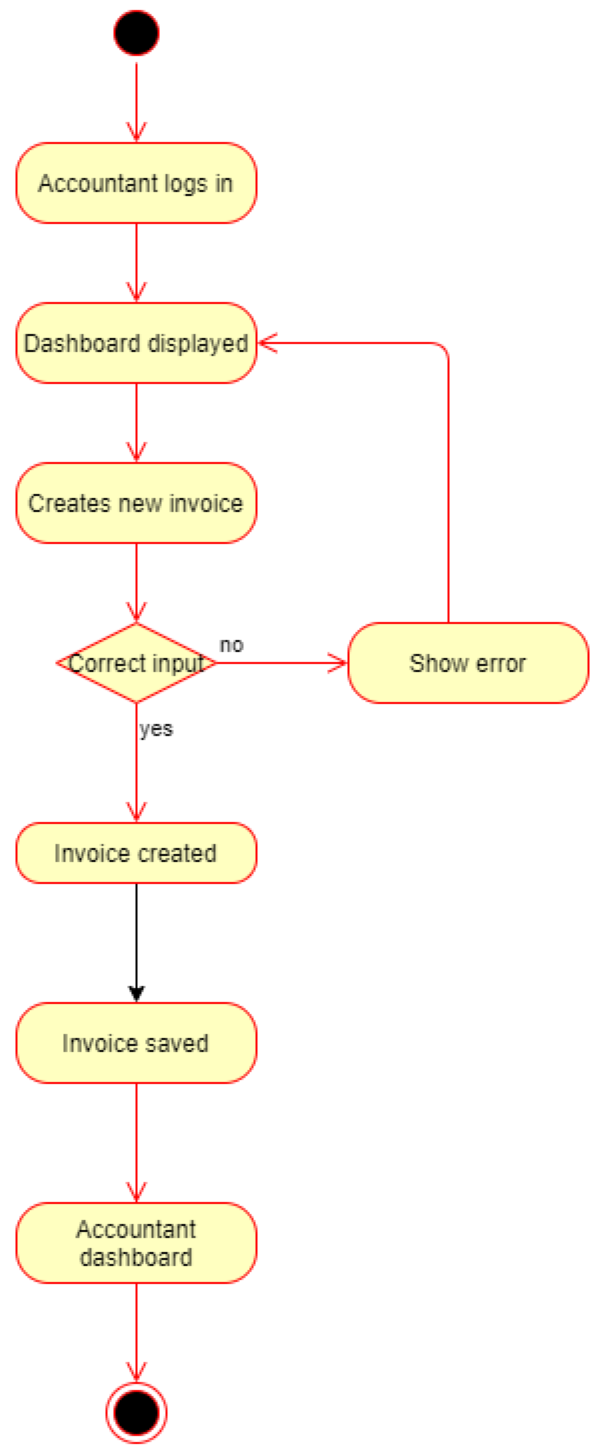
Inventory


Generates inventory table
Searches item
Adds item info
shows error
Valid input
no
yes
Deletes item
Edits item
No error
no
yes

Purchase Inventory



Create Invoice



3.3.4 Use Cases Diagram