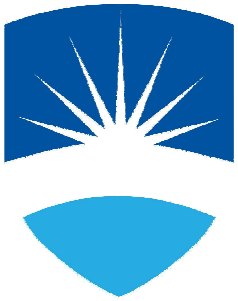

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Table of Contents

1. Executive Summary

1.1 Project Overview

The Bar Management System Project aims to build up a software to ease the Management of a Bar/Coffee Shop Business Management through efficiently implementing an easy-to-use GUI with the following functionalities: Users/Admin will be able to login and each have their own session. Admin can add new user/new category. Waiter can sell items (decrease stock) and generate bills. Admin will be able to access selling reports and the information of stock. He must also be able to add and remove items from the stock. The admin will be able to filter their sales and customer data to help grow their business. For instance they want to filter their sales by brand, product type, season, time of the year or other trends. The ability to filter such reporting data is very important so the owner can easily see which product is being sold most and less or where he is doing most of the profit etc. and not all systems have this ability.

The software will also offer all the features listed below:

- Keeping track of sales
- Keeping track of purchases
- Understanding which product sells better
- Understanding which product is more profitable
- Ensuring your taxes are computed correctly

1.2 Purpose and Scope of this Specification

The Bar Management System will be designed with the purpose to have the capabilities and features to help operate and manage a specific bar. A management system may be called as the heart of the bar as it includes many features and functions that make running in this case the bar more efficiently and ultimately more profitable.

It will make it easier for the owner of the bar to track all the business data sales down to the last cent. Also we are going to design a menu which will be easy to configure and setup. Sound like a no brainer but it is an essential consideration because there are so many systems on the market that can make your life very difficult when all you want to do is make a simple menu updates or pricing changes. It will be designed with the purpose to be easy for users and management to use as all the want is to take orders quickly, split checks, change tables and item quantities etc.

2. Product/Service Description

Every Business needs a point of sale system to keep track of everything happens in that Business. It is one of their biggest assets. Our software will help these businesses (Bars) to have control on everything that they need. It will be more like a team experts working behind the scenes, making sure everything is going quickly and efficiently.

This software will be very beneficial for such businesses in many directions such as:

- *It will save time.*
    1. It will speed up the checkout process. Every time a client order something the receipt will be printed immediately after his completed order so they do not have to wait for the bartender or waitress to do the calculations.
    2. Speed up inventory management. With a built-in inventory the manager will not have rifle through many options when an order is done. It will be automatically deducted from the current inventory so they will not have to do it manually.
    3. Faster payroll processing. The system will automatically compute payrolls and can even print out a pay slip for your employees.
    4. No need to dig your receipts. The manager or the staff can search for any transaction that they want by using the search tool, no matter how old this transaction is.
- *You will know everything*
    1. Sales reports up to the last minute. It will let the manager know how much they are selling and if they are on track or not
    2. Real-time inventory tracking. With real time inventory tracking and management, the system will alert the users of this software when they are running low.
    3. Employee attendance monitoring- The manager will be notified and see who is coming in earlier and who late.

2.1 Product Context

Our software will be related to a specific bar in this case Romario's Bar. It will be used from the employees of the bar such as waitress bartender and the manager who will have access on every detail of the software.

2.2 User Characteristics

There will be two type of users who will interact with the system

- owner of the bar (Manager)
- the waiters
- other general characteristics that may influence the product

a)Owner of the bar

-For our project the owner of the bar is also the manager. The manager maintains the list of the products, controls the inventory and the wages. He also should control the income of the day,month, year as well as the profits. In addition to that, we can set a period of time that keeps the list of all products sold since and then delete them after the period ends. The manager can sort it selects some products as well as some other functions that will allow him to have a better interface of his products.

-We can also leave space to future changes in the system. If the owner decides to leave his job as manager and hire another one. This can require another profile that we will enable if the owner is not the manager.

b)The Waiters

-The waiters will be able to control the whole interface except for the manager's options. At first he will login, then the tables will appear on the screen. He can select the table for further options like making an order, adding another order or closing the table. There will be the options for two printers when making the order, one for the manager and one for the clients. The waiter can see the day's income and the products sold that day. When he closes his turn, he logs off and makes place the other waiter. The other waiter's turn starts with 0 income and he can see his income also the first waiter. He cannot change the income of the other waiter. Turns are interchangeable and leave no effect on the system.

c)Other general characteristics

-We will leave space for further improvements on the systems that may apply further changes

2.3 Assumptions

-It is assumed that the business is registered by their representative
-It is assumed that the waiters and manager already work on an system so they know how to use one.
-It is assumed that there are two printers and the computer to install the software
-It is assumed that the system should notify the manager at the end of the day, if the products' count is at some level that triggers this alert.
-It is assumed that the waiters after making the order cannot take it back, if the receipt is printed.

-It is assumed that the manager cannot make any changes in the end of the day after the daily income is closed.
-It is assumed that the waiters do not exchange passwords
-It is assumed that the the users shall have a web browser installed in their devices.
-It is assumed that every event that occurs in the software system is logged.
-It is assumed that a monthly and yearly inventory is made by an accountant according to the law.
-We may encounter other assumptions as we work on our project

2.4 Constraints

- The project is constrained by an accounting audit. He will examine if the bar's financial statements are accurate.
- It is also constrained by an external government audit.
- Each major operation should be secured by a password that only the user specified for that action can know.
- We may encounter further constraints

2.5 Dependencies

- The system should recognize the drivers of the printers
- We may encounter other dependencies while working on the system

3. Requirements

3.1 Functional Requirements

REQ#	REQUIREMENT	COMMENTS	PRIORITY	DATE RVWD	SME REVIEWED / APPROVED
BR_01	The software should provide different interfaces for users and administrators	The view for waiter and administrator will be different	2	28/03/2018	Aleks Tare/Ogers Ruda
BR_02	The system should check if the user exists in the database	Given that the specified username and password is already registered in the database	1	28/03/2018	Ogers Ruda/Romario Balukja
BR_03	The user accounts should be secured with passwords	The password should fulfill the regular expression rule specified by the team and the password textbox should hide the text.	2	28/03/2018	Renato Saliu/Aleks Tare
BR_04	Upon login the software should present the user with the products list and a tab for categories to filter these products	The basic interface to be used by the waiter to select a specific product	1	28/03/2018	Renato Saliu/Ogers Ruda
BR_05	The user is able to add products to the currently opened tab and print it	Adding, removing and finalizing a tab for a certain table	1	28/03/2018	Renato Saliu/Romario Balukja

BR_06	The administrator is able to add/remove user accounts	Ability to edit the list of waiters who can access the software	2	28/03/2018	Aleks Tare/Romario Balukja
BR_07	The system should apply the VAT automatically	At the end of each tab (before printing) the VAT (20%) will be calculated and displayed separately in the tab	3	28/03/2018	Romario Balukja/Ogers Ruda
BR_08	The administrator can view all the service records according to the search criteria or by default	When administrator searches for a specific item that exists on the database then it will show all the specific information about that item			
BR_09	Both the admin and the waiter are able to update their passwords and username, but not their first and last name.	If someone will forget their passwords they can use forget password option or they can change it for nothing if they want			
BR_10	There will be a tab on waiters view where he will have product categories listed	Product categories will be showed on a specific tab which is being managed by the employee when the customer takes the entity			

BR_11	When the order is processed it will be shown to the bar tender which after will produce the required product	The bartender will be able to see what orders are being made so he/she can process to prepare them			
BR_12	The price will be added automatically together with the ordered product and the ordered amount. If there will be any update on the order the price will be updated again	Whether there is an order it will be shown together with the price and it will be updated immediately at the time another product is added or removed			
BR_13	The payment will be done after the customers finish the product so after the waiter can close the table from the program	The waiter will need to declare the table as open after the customers finish their drinking			
BR_14	Every ordered product is being printed to a second….which is managed by the administrator	Except in the inventory the manager wants also to keep tracks of the receipts so he prints them all in a second…			
BR_15	Also ordered product together with their amount and price will be added on a file and serve as a daily inventory. After there will be weekly and monthly which collects all these.	There will be an inventory which will keep tracks of all the products sold within a day week or month			

BR_16	If there is any product running low it will give an alert on both waiter and administrator to supply the bar with the required products	We do not want to have missing products on the bar so there will be an alert showing that there are only a few products of a current type left so the manager can order some more from that product.			

3.2 Non-Functional Requirements

3.2.1 User Interface Requirements

The user interface for the software shall be compatible to any Windows OS as long as they support the Windows Application Format.
Initially the employee will see a login screen where he/she can insert their credentials: username and password. If the login is successful the user is redirected to their appropriate view. Administrators can access the system by creating other user profiles.
In the case of the regular user the next view would be that of the products provided by the Bar and the ability to add them to the currently opened tab list.

3.2.2 Usability

Learnability

- Administrators will be introduced with a quick guide on how to use their interface
- The regular user interface is aimed to be built with a minimal user-friendly design
- The software is designed to be easy to learn and intuitive

3.2.3 Performance

This system is designed to work on a single terminal for each bar. The terminal can be accessed by only one person at a time. Future updates might include the ability to interact simultaneously with multiple user terminals.
The performance shall depend upon hardware components of the client/customer. Retrieval and access of data for each entity shall be processed in a few milliseconds

3.2.3.1 Capacity

The Windows Application will be able to handle calculations of multiple tabs and collect data from each closed tab. It will only be constrained by the size of the database since it does not require much computational speed.

3.2.3.2 Availability

- The system should be available during bar working hours
- It should only be accessible by waiters/bartenders and the managers
- Not limited to one specific operational location
- The system should be reliable and operational at the required time

3.2.3.3 Latency

There are no latency requirements except for the tab(receipt) print request sent to the operating system who connects it with the printer afterwards

Manageability/Maintainability

3.2.3.4 Monitoring

The system will provide a stock and transaction view which will be accessible only from the administrator view. This particular window will also serve as a logging interface which will store and retrieve data from the previous transactions..

3.2.3.5 Maintenance

MySQL is used for maintaining the database and the Windows Application Form is used to fetch and send data from/to the database. In case of a failure, a re-initialization of the program is recommended. If it is not the case, that means that the server may be down, so the user needs to wait for the system administrator to start the database server.

3.2.3.6 Operations

- login of staff users/admin
- CRUD of staff users
- Adding/Removing items from the currently opened tab
- Finalizing/Printing Tab and adding it to the database
- Review of previously closed tabs (admin eyes only)

3.2.4 System Interface/Integration

The system is operational as long as it is provided with a suitable and functional database (MySQL) and will be integrated only in the Windows Platform Applications.

3.2.4.1 Network and Hardware Interfaces

The system will not be distributed over a network interface however we must specify that it is suited to be accessed with a touch screen over a Point-of-Sale device which operates over the Windows Operating System.

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3.2.4.2 Systems Interfaces

The system will be able to print out a final tab with all the products' names, quantities and values and the calculated total. Occasionally it will also publish the happy hour discounts.
The tab structure to be sent to the database and printer is as follows:
[Bar Name]
[Date and Time]
[Products List][Quantity][Value]
[if applicable: Discount text]
[Total]

3.2.5 Security

Besides the username and password authentication the system does not require many more security measures, although some basic important rules still apply. The following explains these initial rules.

3.2.5.1 Protection

- The system will not include a register function on the login screen
- Auto-logging of tabs closed by each employee
- If an employee wants to change his username or password, the administrator must be notified
- The password will be encrypted at the time of registration

3.2.5.2 Authorization and Authentication

- Users will be authenticated with a username and password.
- If a user tries to log in to the application with a username which is not defined in the database, then the user should not be logged in. The user shall be notified about login failure.

3.2.6 Data Management

Employee Information
-accessed upon login
-has access of user views (unless role=admin)
-uniquely represented by id
-name, surname
Product Information
-accessed through the main products view more frequently

-accessible from each employee
-uniquely represented by id
-product name

Tabs/Receipts
-accessed after closing each tab and saving it
-accessible from each employee
-date and time
-active employee name
-products list
-total

3.2.7 Standards Compliance

Even though the VAT Receipt is printed separately, the system will be designed to apply the necessary calculations for VAT and print them within the Receipt. This complies with the The Republic of Albania State Law: "LIGJ 92/14 PER TATIMIN MBI VLEREN E SHTUAR" and will ensure the transparency of the system when compared with the official printed coupon for the application of VAT.

3.2.8 Portability

The system is currently being developed in C# which offers many portability opportunities. However the team has decided to develop the system as a Windows Application and the portability and compatibility with other systems will depend on future updates.

3.3 Domain Requirements

System should operate in a bar/coffee shop and also be able to add and update Employees, process payments, print out receipts and store tabs information in the database

4. User Scenarios/Use Cases

4.1 User Scenarios

Nr.	User Scenario Name	Description
1.	Employee login	Using a predefined username and pass combination to access the system.
2.	Register new employee	Add new employee that starts working in the bar
3.	Edit Employee	The employee credentials can be edited and updated
4.	Delete Employee	In case an employee is removed from the job his status can be deleted
5.	Admin login	Using the admin username and password the system administrator can login and access the employees' data
6.	Employee Add Order	The currently logged in employee is able to add an order from the Products list of the currently opened tab
7.	Employee Open Tab	The employee can open a new tab for a specific table to add newly purchased products from the bar.
8.	Employee Prints Tab	The currently opened tab is sent to the computer's printer to be printed.
9.	Employee Delete Order	The currently logged in employee is able to remove an order from the Products list of the currently opened tab
10.	Log out	Provide the user to logout from the system
11.	Employee Login Fail	If the predefined username and pass combination doesn't match up in the Database, then the user can not log in.
12.	Print Empty Tab Exception	*The system returns an Error pop-up with the exception description that a currently empty tab cannot be printed without any products in it.*

4.2 User Scenarios

1. *Employee Login: Scenario 1*

a. *Employee is asked to choose his name from a drop-down list*

b. Employee is asked to enter password

c. If his credentials match with those in database , employee is successfully logged in

d. His own view is opened

2. *Admin Scenario: Register new employee: Scenario 2*

a. Given that admin is logged in

b. *Admin accesses the list of all current employees*

c. Admin clicks Register Employee Tab

d. Registration form appears

e. Admin fills the form with the employee's attributes

f. Admin adds a password which is shared with the employee

g. Confirm the registration of new employee

h. Admin logs out

3. *Admin Scenario: Edit employee: Scenario 3*

a. Given that admin is logged in

b. *Admin can access the list of all current employees*

c. *Admin can access the list of all current employees*

d. Admin clicks the specific Edit button which is available for each employee

e. Employee Form appears

f. Admin edits specific points in the Employee Form

g. Admin saves form

h. Admin logs out

4. Admin Scenario: Delete employee: Scenario 4

a. Given that admin is logged in

b. Admin can access the list of all current employees

c. Admin clicks the specific Delete button which is available for each employee

d. Delete popup confirmation appears

e. Admin selects specific action (Yes/No)

f. Employee credentials are removed from database

g. Admin logs out

5. Admin Login: Scenario 5

a. Admin is asked to choose his username from a drop-down list

b. Admin is asked to enter password

c. If his credentials match with those in database , the administrator is successfully logged in

d. Admin's own view is opened

6. Employee Add Order: Scenario 6

a. Employee logs in.

b. Employee selects open new tab function

c. Employee selects items from the products list

d. He then clicks the Add button to add the currently selected product to the opened tab

e. Employee prints tab or logs out

7. **Employee Open Tab: Scenario 7**

a. Employee logs in.

b. Employee selects open new tab function

c. A new tab is shown in the view and is ready to receive products on prompt

d. Employee fills tab with products and prints

e. Employee logs out

8. ***Employee Prints Tab: Scenario 8***

a. Employee logs in

b. Employee has multiple opened tabs in his view

c. He selects one of the opened tabs in the view

d. Employee clicks the Print Tab button

e. The specific print view is then called from the Operating System

f. Employee logs out

9. ***Employee Delete Order: Scenario 9***

a. Employee logs in

b. Employee has at least one opened tab

c. Employee decides to remove one of the products in the currently opened tab

d. Employee clicks the product in the tab highlighting it

e. He then clicks the Delete Order button

f. Employee prints the new tab

g. Employee logs out

10. Employee Login Fail: Scenario 10

a. *Employee is asked to choose his name from a drop-down list*

b. Employee is asked to write down his password

c. If the combination doesn't match up in the Database then the system shows a prompt of "Incorrect Password/Employee combination" asking the employee if he wants to continue and try again.

d. The default login interface is reset and starts again from the beginning

11. Print Empty Tab Exception: Scenario 11

a. Employee is logged in

b. Employee clicks the Print Tab button without adding any products to it

c. The system returns an Error pop-up with the exception description that a currently empty tab cannot be printed without any products in it.

d. The pop-up prompt has an Ok button to confirm the exception and return to the previous view

e. Employee logs out

4.3 Use Cases

Use Case No.	**1**
Name	Employee login
Overview	Employees can access the system and its functionalities
Actors	Employees (User)
Pre-condition	Employee must have an account
Scenario flow	I. Employee is asked to choose his name from a drop-down list II. Employee is asked to enter password III. If his credentials match with those in database , employee is successfully logged in IV. His own view is opened

Use Case No.	**2**
Name	Register new employee
Overview	Administrator can register new employee
Actors	Administrator
Pre-condition	Admin must be logged in
Scenario flow	I. Admin is logged in II. *Admin accesses the list of all current employees* *III. Admin clicks Register Employee Tab* *IV. Registration form appears* *V. Admin fills the form with the employee's attributes* *VI. Admin adds a password which is shared with the employee* *VII. Confirm the registration of new employee* *VIII. Admin logs out*

Use Case No.	**3**
Name	Edit employee
Overview	Administrator can edit a currently registered employee
Actors	Administrator
Pre-condition	Employee must be registered and admin must be logged in
Scenario flow	I. Given that admin is logged in II. *Admin can access the list of all current employees* *III. Admin clicks the specific Edit button which is available for each employee* *IV. Employee Form appears* *V. Admin edits specific points in the Employee Form* *VI. Admin saves form* *VII. Admin logs out*

Use Case No.	**4**
Name	Delete employee
Overview	Administrator can remove employees from the system
Actors	Administrator
Pre-condition	Employee must have an account and admin must be logged in
Scenario flow	1. Admin is logged in 2. Admin can access the list of all current employees 3. Admin clicks the specific Delete button which is available for each employee 4. Delete popup confirmation appears 5. Admin selects specific action (Yes/No) 6. Employee credentials are removed from database 7. Admin logs out

Use Case No.	**5**
Name	Admin Login
Overview	Administrator can login to his own view in the system
Actors	Administrator
Pre-condition	Administrator must know his initial account credentials
Scenario flow	I. Admin is asked to choose his username from a drop-down list II. Admin is asked to enter password III. If his credentials match with those in database , the administrator is successfully logged in IV. Admin's own view is opened

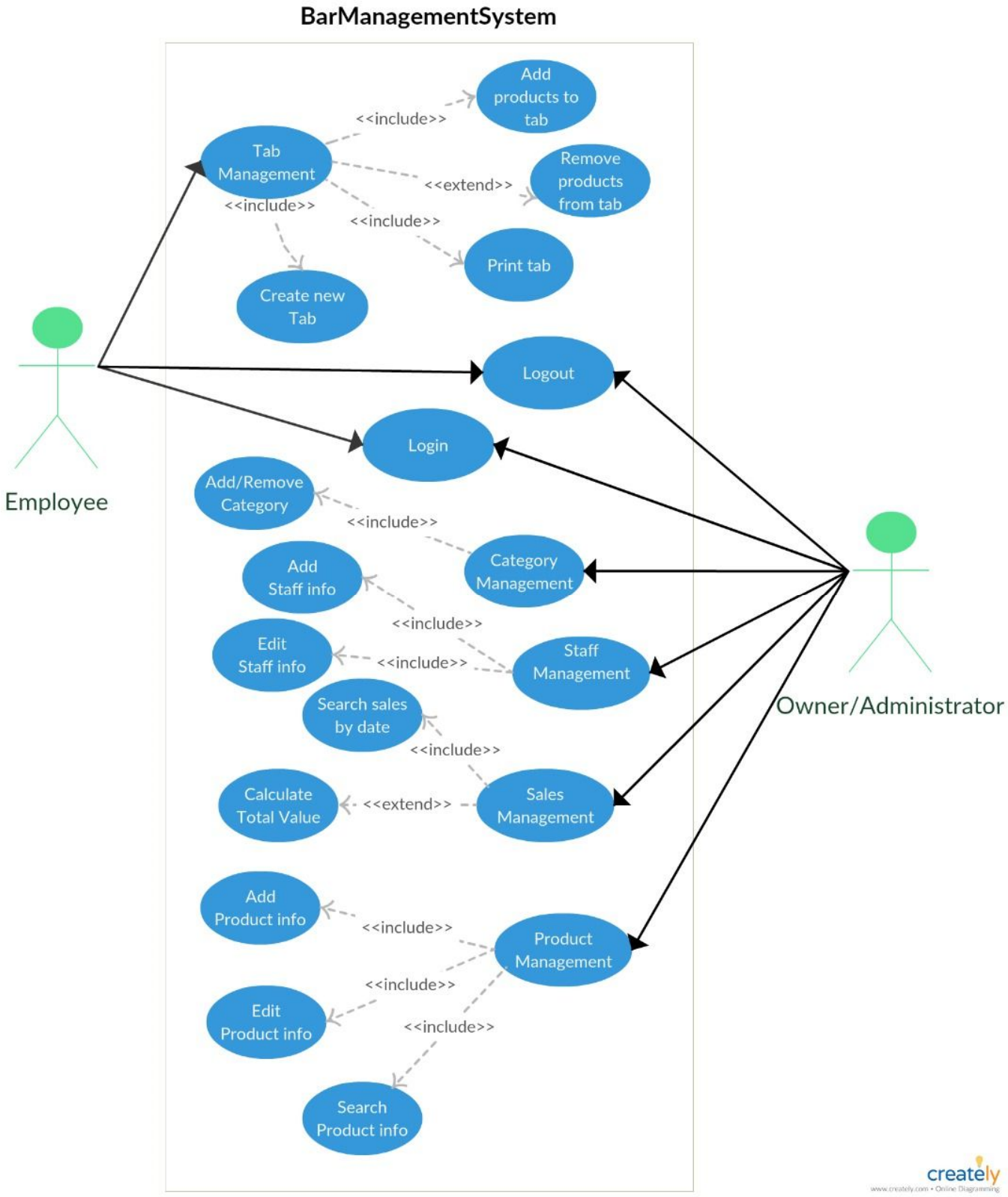
Use Case No.	**6**
Name	Employee Add Order
Overview	Employee can add product to the currently opened tab. It can be hot drink, cold drink , cocktails or what else is being served
Actors	Employee
Pre-condition	Employee must be registered and logged in
Scenario flow	I. Employee logs in. II. Employee selects open new tab function III. Employee selects items from the products list IV. He then clicks the Add button to add the currently selected product to the opened tab V. Employee prints tab or logs out

Use Case No.	**7**
Name	Employee open tab
Overview	Employee starts a new receipt to add what the customer asks for
Actors	Employee
Pre-condition	Employee must have an account and must be logged in
Scenario flow	I. Employee logs in. II. Employee selects open new tab function III. A new tab is shown in the view and is ready to receive products on prompt IV. Employee fills tab with products and prints V. Employee logs out

Use Case No.	**8**
Name	Employee print tab
Overview	Employee prints currently opened tab wit what is being ordered together with its specifications
Actors	Employee
Pre-condition	Employee must have an account, be logged in and the tab must be not empty
Scenario flow	I. Employee logs in II. Employee has multiple opened tabs in his view III. He selects one of the opened tabs in the view IV. Employee clicks the Print Tab button V. The specific print view is then called from the Operating System VI. Employee logs out

Use Case No.	**9**
Name	Employee Add Order
Overview	Employee can add products to the currently opened tab
Actors	Employee
Pre-condition	Employee must be registered and logged in
Scenario flow	I. Employee logs in II. Employee has at least one opened tab III. Employee decides to remove one of the products in the currently opened tab IV. Employee clicks the product in the tab highlighting it V. He then clicks the Delete Order button VI. Employee prints the new tab VII. Employee logs out

User Case Diagram



APPENDIX

Appendix A. Definitions, Acronyms, and Abbreviations

The term ‘tab’ is usually referred in this text as the currently opened order and to-be-printed receipt at the same time.
The term exception is used to represent errors which may be returned from the system in cases of faulty actions