**Restaurant Management System Requirements Specification**

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APPENDIX 19

# **1.Executive Summary**

## **1.1** **Project Overview**

Nowadays, we live in a digitalized world, where technology is part of every aspect of our lives. Data is saved and processed online, which leads to more efficiency, security and less time consumption. Therefore, restaurants can no longer continue to operate using traditional primitive methods like waiters keeping orders in handwritten notebooks or computing financial reports with Microsoft Excel.

The software we are providing aims to keep track of the day-to-day activity of a restaurant and facilitate the work of the staff by reducing manual work and effectively coordinating between the different sectors. The system will also make the management of the restaurant much easier as it will maintain records not only on orders and supplies but also on the daily performance of each employee and the hours they have worked. Lastly, our application will help introduce the restaurant to the possible clients who will be able to reserve a table or communicate with the staff without wasting any time.

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

The purpose of this software is to build a system which will help the restaurant in their daily work, using all the techniques that we know, ensuring effectiveness and efficiency to save time for both the customer and the restaurant staff. Some of the main actions the software will provide are very organized and detailed information regarding generating reports, employee records and managing orders.

# **2.Product/Service Description**

## **2.1** **Product Context**

Our product is a web application for the management of a restaurant. Most of the businesses these days are moving towards automation and applying similar technologies, so there are many other products in the market similar to ours. What most of them lack however, is the inclusion of an inventory of ingredients, which really facilitates the work of the chef as well as the supplier and is one of the most important voices in the financial balance.

Our product is totally independent and not interconnected with any other system. It will be managed by the manager of the restaurant and used by the staff as well as the clients.

## **2.2** **User Characteristics**

There are 5 users that will use the software:

* Customer
* Economist
* Waiter
* Chef
* Manager
* Supplier

1. Customer

These users will not be logged in.They will have access to the online HomePage,be able to check out the menu beforehand,get more information regarding the restaurant and it’s staff. Next,they will be able to book a table as well as check the availability of it. The customer may inscribe any reviews or complaints that may arise,using the ‘Contact Us’ form.

1. Economist

These users will be logged in and registered by the manager. In order to keep track of the sales,the economist will use the electronic bills to create weekly/monthly/yearly reports and will take care of all necessary documents regarding taxation.He will also be responsible for the payments for each and every other employee as well as for the supplier. After the manager puts an order for the suppliers, the bill will go directly to the economist.

1. Waiter

These users will be logged in and registered by the manager. He should clock in/clock out at the beginning/ending of his shift.A waiter will have access to a customer’s data,containing information on whether they have made a reservation.In the case that all the tables are occupied,an alert will be displayed to inform the client of exactly that.A waiter is also responsible for taking the orders, placing them in the system and printing out the bills for the corresponding tables.They can also close tables when the clients are gone. The waiter should notify the system at the end of his shift.

1. Chef

These users will also be logged in and registered by the manager.He should clock in/clock out at the beginning/ending of his shift. He will be able to access all of the clients’ orders and organize them by the name of the dish,or the time the specific dish was ordered as well as have access to the Next,the chef is responsible for notifying the waiter once the order is ready.Moreover, he will have access to the ingredients list and if their availability.If the goods are insufficient to complete the order, an alert would be displayed.The chef should notify the system at the end of his shift.

1. Manager

Manager is the user with the most obligations out of all. He is the one who will manage the entire system, check the performance of each employee and have access to the restaurant's statistics. Also,some other actions may be enrolling/deleting employees ,adding/deleting menu items,categories into the database.Moreover,after he puts an order for the suppliers, the bill will go directly to the economist in order to make the necessary payment.

1. Supplier

Supplier is the user who will be registered by the manager. He will be the one to supply the restaurant with the right ingredients in the necessary quantity and on time.

## **2.3** **Assumptions**

* It is assumed that the data generated (including customers personal data) will be fully confidential and only available to the restaurant.
* It is assumed that there is the appropriate equipment (computer and internet) provided for every employee, so that they can access the system.
* It is assumed further that the employees know how to use the internet effectively and efficiently.
* It is assumed that every completed task needs to be stored in the system for better organization of the restaurant.
* It is assumed that the Manager will have access rights to all other employees’ accounts as well as to all data entered by each employee and to be able to update the system through any connected device.

## **2.4** **Constraints**

This system will be potentially constrained by:

* The need for fast internet connection and working computers.
* Having every restaurant employee understand the way the system works and making sure they do not make any mistakes.
* The project's deadline, which is at the beginning of June.
* The client’s requirements, which should be completed in the best possible way without any other functions out of the scope.
* Other constraints can be found during the way.

## **2.5** **Dependencies**

List dependencies that affect the requirements are:

* This software requires internet service in order to function
* The front-end needs to be built first, in parallel with the database and the UML diagrams before the work on the back-end can begin
* The orders are dependent on the availability of ingredients. If there are not sufficient ingredients, the chef cannot prepare on ordered dish
* A waiter cannot edit the order of a table which is being served by another waiter
* A waiter will not get notified for the preparation of products whose orders they did not make themselves
* A reservation is not confirmed until the waiter chooses one of the available tables to assign to it

# **3. Requirements**

**3.1** **Functional Requirements**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Req#** | **Requirement** | **Comments** | **Priority** | **Date Rvwd** | **SME Reviewed/Approved** |
| 1 | Handle multiple accounts. | Based on the user, each will have a certain interface | 1 | 19/04/2021 |  |
| 2 | There is one manager, several economists, waiters,cashiers,chefs. | Every user will have certain duties | 2 | 19/04/2021 |  |
| 3 | Each account should be secured with passwords | The password should not be left as empty | 2 | 19/04/2021 |  |
| 4 | Manage the unregistered users | Each employee of the restaurant should be registered | 3 | 19/04/2021 |  |
| 5 | The restaurant employees must use the data from the database only for work purposes | This will ensure the law is enforced for Data Protection | 1 | 19/04/2021 |  |
| 6 | Manager is able to add a new category | The category name must be specified | 2 | 19/04/2021 |  |
| 7 | Manager is able to add the new employees in the system | The name, surname, email and password fields must be filled correctly otherwise the action will not be processed | 2 | 19/04/2021 |  |
| 8 | The waiter is able to check tables available to choose for the orders | If the table is occupied, warnings will appear on the screen | 2 | 19/04/2021 |  |
| 9 | Have access to the customers’ bills. | Manager and Economist are responsible for this action | 2 | 19/04/2021 |  |
| 10 | Reserve a table for the customer’s reservation. | The waiter has the responsibility of making the reservation to the client’s liking. | 2 | 19/04/2021 |  |
| 11 | Delete the table reservation when the customer does not show up or when he has left | The waiter is responsible for clearing out a reservation in the mentioned cases. | 2 | 19/04/2021 |  |
| 12 | Putting an order in the system | When the waiter puts an order in the system, it will be shown to the chef’s computer as well. | 2 | 19/04/2021 |  |
| 13 | Adding new menu items when they are out of stock or even being supplied with new ones | The manager is responsible for this action while being supplied from the supplier | 1 | 19/04/2021 |  |
| 14 | All employees can clock in and out of their shift. | The system will keep track of working hours the employees have made in his shift | 3 | 19/04/2021 |  |
| 15 | The waiter is able to check the availability of the tables for the reservations. | If the waiter chooses an occupied table, alerts will appear on his screen. | 2 | 19/04/2021 |  |
| 16 | The chef is able to add a new dish | The dish will not be added to the menu until 2 conditions are met:it is approved by the manager and it is associated with its list of ingredients | 2 | 19/04/2021 |  |
| 17 | The manager will approved the proposed dishes added by the chef | Unless he approves it, the dish cannot be added to the menu | 2 | 19/04/2021 |  |

## 

## **3.2** **Non-Functional Requirements**

### **3.2.1** **User Interface Requirements**

* The software will be web-based and can be accessed by any browser, such as google, mozilla, and internet explorer.
* The interfaces must be as user-friendly and easy to learn as possible
* Each role in the system has its own graphical user interface
* The interface of the client-side is open to anyone on the web to see and it includes a Home page, an About Us page, a Menu page, a Contact page and a Make Reservation page.
* The interface for the other roles is password protected and can only be accessed by providing the correct email and password pair in the Login page
* If the login is successful, the system will direct the users to their main page displaying their dashboard

### **3.2.2** **Usability**

* Following the delivery of the program to the customer, we must ensure that all staff are able to use it effectively.
* The web application will come together with a PDF manual, providing a step by step information on how to effectively use the system.
* Relevant error messages will be shown, along with a description of the behavior that resulted in the error.
* The program is restricted to specific users, so it will know when a particular activity is prohibited.

### **3.2.3** **Performance**

The application will be a web application which will be stored in a web server. The application’s time of execution will depend on:

* The efficiency of fetching data from database
* The Internet connection bandwidth
* The server’s hardware capabilities
* The Operating System installed on a server.
* The number of active users accessing the website.

#### **3.2.3.1 Capacity**

A web server is needed to store the web application. The database will be complicated and massive in size. The number of users is determined by the number of employees the manager chooses. For every user signed on, the application is supposed to run smoothly.

**3.2.3.2 Availability**

* The web application will be accessible 24/7, even though it will not be used during all that time interval.
* The software is supposed to cover all geographical areas while they have internet access.
* During the operating hours of the day, the web application would perform at its best.
* If an action results in a system error, specific error messages will be provided

#### **3.2.3.3 Latency**

The latency of the web application will depend on:

* The internet connection bandwidth
* The speed at which data is retrieved from the database
* The size of the database
* The maximum acceptable time for a service request which should not be more than 5 seconds

### **3.2.4** **Manageability/Maintainability**

#### **3.2.4.1 Monitoring**

* The system will be built to be secure, reliable and trustworthy
* To ensure reliability, all information entered by the users will be validated
* For every error scenario, the users will be notified and informed about the encountered problem and its possible causes
* The login interface needs a valid email and password in order for the manager/employee to access the system
* If the login credentials are not valid an error message will be displayed

Include any requirements for product or service health monitoring, failure conditions, error detection, logging, and correction.

#### **3.2.4.2 Maintenance**

The system will be developed using MySQL for the database and Apache for the server. In case the system crashes, the application is going to restart. Then the application will redirect the user to the website's homepage, but the changes will be saved. If the problem continues, you should contact the IT team so that the server or even the computer can be restarted completely.

#### **3.2.4.3 Operations**

* The software will be online and operational for 24 hours, all days of the week
* All operations, including those of the client will be attended at all times
* There will be a backup server available to restore all information in case of fatal crashes and system failure
* All data entered by the users will be validated
* Each user, besides the client who doesn’t input nor access any sensitive information, has their own unique credentials and are the only ones who can access their page
* The password of a user is encrypted and can be accessed and/or modified only by the user himself and no one else

### **3.2.5 System Interface/Integration**

* The system will be developed using MySQL for the database and Apache for the server
* This software will be a web-based application, which is the most universal cross-platform solution available and does not depend operation system of the client’s computer
* It system will be running and functional on all modern and widely used Web-Browsers like Chrome and Mozilla
* The system will be using a TCP connection which will require a 3-way Handshake to establish the connection

#### **3.2.5.1 Network and Hardware Interfaces**

Our system is a web application that will be stored on a web server, which means that a TCP link will be established between the browser and the server. Every browser is capable of supporting this link, ensuring that our system will work properly and that each employee will have access to his page if the appropriate credentials are provided.

#### **3.2.5.2 Systems Interfaces**

While they will be informed about the database, none of the users of the system will be able to modify its structure. The access to the database configurations will be restricted to only the IT department. All necessary queries will be conducted by the application itself.

### **3.2.6** **Security**

#### **3.2.6.1 Protection**

Since this is a highly confidential system, application protection is critical. Every type has protection built in to ensure that anything entered is right such as including a valid name, and email address.

#### **3.2.6.2 Authorization and Authentication**

* Valid credentials are checked when users log in.
* The type of user will determine the level of authorization.
* Users will have access only to their data.

### **3.2.7** **Data Management**

* All the data will be stored in a MySQL database
* In order to not put unnecessary load on the database and slow it down, we will not be storing images in it. Instead the images will be stored in their respective directories on the client’s computer files system and only the path to the image will be stored on the database
* The same procedure will be followed for the files generated by the system (mainly the weekly and monthly reports produced to help the economist)
* To avoid the database infinitely increasing in size, when an employee stops working for the restaurant, their records get deleted permanently and the foreign keys referencing them get turned to null
* For the same purpose as above, the data of the orders and the supply transaction will get automatically deleted from the database after 1 year from their insertion.
* All the data entered on the database will be validated and respect the domain constraints ( it will be of the same data type and an available value in its specified domain), entity integrity constraints (no primary key will be null), referential integrity constraints (each foreign key will be either null or serving as the primary key of the referenced table) and key constraints (all key values will be unique) in order to preserve the integrity of data
* No user will be able to access the database unless they are logged into their account with their valid credentials
* Each user will have specific authorization over the database depending on their role
* The manager is the only user allowed to delete records from the database
* Records of the orders and the supply transactions cannot be deleted by any user of the system
* There are 16 entities/tables: Admin, Economist, Supplier, Waiter, Chef, Timesheet, Category, Product, Table, Reservation, Inventory, Ingredients, Supply Transaction, Order, Ordered Products and Report.
* The attributes for each table are as below:

**Admin**

PRIMARY KEY (Id) INT

Name VARCHAR

Surname VARCHAR

Email VARCHAR

Password VARCHAR

PRIMARY KEY (Id)

**Economist**

PRIMARY KEY (Id) INT

Name VARCHAR

Surname VARCHAR

Email VARCHAR

Phone NUMERICAL

Salary INT

Password VARCHAR

**Supplier**

PRIMARY KEY (supplier\_Id) INT

Name VARCHAR

Surname VARCHAR

Email VARCHAR

Password VARCHAR

Phone NUMERICAL

Salery INT

**Waiter**

PRIMARY KEY (waiter\_Id) INT

Name VARCHAR

Surname VARCHAR

Email VARCHAR

Phone NUMERICAL

NormalSalery INT

Start\_shift TIME

End\_shift TIME

Password VARCHAR

Pay\_per\_overtime\_hour INT

**Chef**

PRIMARY KEY (chef\_Id) INT

Name VARCHAR

Surname VARCHAR

Email VARCHAR

Phone NUMERICAL

Start\_shift TIME

End\_shift TIME

Password VARCHAR

NormalSalery INT

Pay\_per\_overtime\_hour INT

**Timesheet**

PRIMARY KEY (Date) DATE

Login\_time TIME

Logout\_time TIME

Overtime\_hours INT

Missing\_hours INT

dayly\_bonus/penalty INT

FOREIGN KEY (waiter\_Id)

FOREIGN KEY (chef\_Id)

**Category**

PRIMARY KEY (category\_Id) INT

Name VARCHAR

**Product**

PRIMARY KEY (product\_Id) INT

Name VARCHAR

Description VARCHAR

Image VARCHAR

Price VARCHAR

FOREIGN KEY (category\_Id)

**Table**

PRIMARY KEY (table\_Id) INT

Nr\_of\_seats INT

State VARCHAR

**Reservation**

PRIMARY KEY (Id) INT

Name VARCHAR

Surname VARCHAR

Email VARCHAR

Date DATE

Time TIME

Nr\_of\_people INT

Phone NUMERICAL

Status VARCHAR

FOREIGN KEY (table\_Id)

**Inventory**

PRIMARY KEY (inventory\_Id) INT

Ingredient\_name VARCHAR

available\_amount INT

price INT

measurement\_unit VARCHAR

SupplierName VARCHAR

SupplierPhone VARCHAR

SupplierAddress VARCHAR

PRIMARY KEY (inventory\_Id)

**Ingredients**

quantity INT

FOREIGN KEY (product\_Id)

FOREIGN KEY (inventory\_Id)

**SupplyTransaction**

PRIMARY KEY (Id) INT

date DATE

quantity INT

amount INT

FOREIGN KEY (supplier\_Id)

FOREIGN KEY (inventory\_Id)

**Order**

PRIMARY KEY (order\_Id) INT

Date\_time DATETIME

Amount INT

Status VARCHAR

FOREIGN KEY (table\_Id)

FOREIGN KEY (waiter\_Id)

**Ordered\_product**

Status VARCHAR

Quantity INT

FOREIGN KEY (order\_Id)

FOREIGN KEY (product\_Id)

FOREIGN KEY (chef\_Id)

**Reports**

PRIMARY KEY (Time\_generated) DATETIME

Total\_Revenue INT

Total\_Supply\_Bill INT

Total\_Employee\_Payroll INT

Profit INT

Document VARCHAR

### **3.2.8** **Standards Compliance**

The app will be created in such a way that it will adhere to and obey the restaurant's rules without violating any laws including:

* Privacy Policy, according to Law no. 9887, dated 10.03.2008
* Sales & Bills & Documents & Inventory, according to Law No. 9228 dated 29 April 2004 on Accounting and Financial Statements
* Employees dashboard & Timesheets, according to “Kodi i Punes” in Albania

### **3.2.9** **Portability**

* The application can be accessed via a browser and an internet connection.
* Php is used as portable scripting language

### **3.2.10 Other Non-Functional Requirements**

*Regulatory and Legislative Requirements*

The functions or modularities that have been established in compliance with legal and regulatory requirements are presented in detail below.

**3.2.3.10.1 Privacy Policy**

According to Law no. 9887, dated 10.03.2008 “Personal data protection”, our system safeguards all of the employees' personal details and will not be used for other purposes outside the system.

**3.2.3.10.2 Sales, Bills and Documentation**

According to Law No. 9228 dated 29 April 2004 on Accounting and Financial Statements, as a medium-sized company, our client is required to follow the National Accounting Standards (NAS).This law sets out the general principles and regulations for the preparation of national accounting standards and financial statements, as well as for the maintenance of accountability. In order to produce legal income, according to taxation rules, it is required by law to keep track of every sale made and declared in every bill.This accounting cycle is made up of 12 months. The currency used to keep track is the Albanian currency (Lek). Accounting documents should be kept in a chronological order.The economist and the manager will keep track of these regulations in sales, bills, records, and inventory pages.

**3.2.3.10.3 Employees dashboard and Timesheets**

According to Law No. 7961 dated 12 July 1995 “Kodi i Punes” in Albania, the manager is required to maintain a complete list of employee personal details, keep track of an employee's average time on the job, declare the employees' salaries and pay their insurances.The salary may not be lower than the minimum wage determined by the Council of Ministers.The employee is entitled to a reward based on the working hours, which is measured on an annual basis and is decided in accordance with the law and commonly accepted commercial principles.

## **3.3** **Domain Requirements**

This web-based program can only be used inside the restaurant system/network and will not interact with any other systems. It should only be accessible to users who have registered with the system, which are employees of the restaurant.