RMS Requirements Specification

Version 1.0

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Restaurant Management System

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1. Executive Summary

1.1 Project Overview

In these days when technology has gone through huge steps some of the everyday life jobs keep being very hard and tiring. One of them is management of a restaurant. Anyone can think this as a small thing but not for them who spent their life dealing with this. Huge restaurants, with amazing views and menus do have service problems. Waiters try their best but some time are not capable to cover and please every client in time and at the end of day they will be more tired than usually. So owners are obligated to hire more waiters and give more money from what he gains. But the new restaurant management system will make everyone happy. The client will be able to order directly from the table right after sit by choosing the dish through a tablet found there. The order will be received as a message from the chef and after being prepared will be served by the waiters. So waiters will not forget the orders and get only tired, will have less work to do, the chef will not have some pieces of papers and be disorganized, and manager will not have to pay a lot of employers and at the same time will be something very elegant and new for clients too.

1.2 Purpose and Scope of this Specification

The purpose of this new method is to help the restaurant to have a better management and at the same time make clients feel more pleased and come back at the same restaurant. With this method we think that the service will get better. Service getting better the number per day of clients will be higher so the incomes will get better at the same time. At the same time the managers will be able to control the incomes in a better way because everything will be recorded. But these businesses are very effective in the economy of the state will affect in it too. So starting with some of the restaurants as an experiment which is believed to be very successful and helpful at the same time. Of course the priority are known and famous restaurants which will be able to afford this new technology. So will be continued to other restaurants and those who will embrace this new method.

2. Product/Service Description

In our country management of a business as restaurant and its service are not helping the situations to get better. This product is an experimental decision taken by a group of researchers who had different meetings with some restaurant managers.

It will be firstly used by the three or four restaurants which will give stable and continuous information according to this new method.

It is thought to be installed and get under control by a group of researches made by economists and managers.

It will help:

- Better service
- Easy management and income control
- Less hand- work
- Not tired employers

2.1 Product Context

This is a software application designed to manage the activities within the restaurant itself but also to serve as a website for the customers to see the facilities this restaurant provides.

It is supposed that each table is going to have its own tablet from which the customers can select on the menu what they want. After the order is confirmed from the customer, the chefs will know and send a notification in the table's tablet that the order is being prepared. When the client's plates are ready, the waiters get a message to deliver them to the destination table. The users of this application which are listed below are going to communicate with each other through notifications. Each of them will be able to send a notification to the other members.

2.2 User Characteristics

This application can be accessed by all the members of the staff:

- Admin
    - Can check notifications

  - Hire/add employee
  - Add/delete tables
  - Add new items in the menu
  - Update the total amount of money
  - See the whole list of products
  - Can see the whole list of employee and edit it
  - See all the orders
- Accountant
  - Can see the list of notifications
  - Can see the list of whole products
  - Add/delete products
  - Can edit the salaries of the employees
  - Can see the list of suppliers
  - Can contact the suppliers
  - Can add and delete suppliers
- Chefs
  - Add new items to the menu
  - Can see the orders which has not been confirmed yet
  - Notifies the waiter when the order is ready
  - Can send notifications
- Waiters
  - Can see the completed orders confirmed by chefs
  - Update the total confirming the payment of the orders
- Other
  - Make check-in when they start their working day and leave it

Tables also will have a login page: each page will have a unique number and a password. For each table, there will be recorded all the orders received.

2.3 Assumptions

It is assumed that the administrator profile is added b the creators of the application and then the administrator is responsible for adding, deleting other staffs' profile.
It is assumed that all the staff is trained to use the application in order to avoid misconceptions.
It is assumed all the clients will be serious and not try to use the tablets for anything else except their primary function: to order the food.

2.4 Constraints

The project is constrained by the financial state of the restaurants that are going to use it. Since the application is going to be put in tablets in the tables in the restaurant, it is crucial that the owners are willing to initially invest their capital in some qualitative tablets. The project is constrained by the Internet connection. Since the application fetches data from the database over the Internet, it is crucial that there is stable Internet connection for the application to function.

2.5 Dependencies

- The chain starts from the client who does the order. Directly the order goes to the chef.
- Chef prepares the order and automatically products used for the order are subtracted from the database and if there is anything absent any product or tool chef sends notification message to accountant. Also when order is ready notify the waiter.
- Waiter takes the notification and sends the order from the chef to the client.
- Accountant is engaged on employees salaries distribution and if gets any notification for tool or products missing make orders to the relevant suppliers companies.
- Above all of the employees, there is Administrator who supervises all their actions.

3. Requirements

3.1 Functional Requirements

The requirement numbering follows the scheme - BR_ ##

No.	Requirement	Comments	Priority	Date	Reviewed/ Approved
BR_01	The software should have different views for different user levels	The view for the client, chefs, accountant and administrator will be different.	1		
BR_02	Administrator is responsible for registering all the staff members and tables into the management system, applying the predefined rules by the conventional system of the restaurant.	Usernames will be in the format name.surname and the password generated for each user will be in the format NameSurnameBirthYear, for the tables Table-Number. Users can change their passwords after.(recommended)	1		
BR_03	No staff member can edit the username.	Editing usernames conflicts with our operational intelligence.	2		
BR_04	In case a staff member leaves the job/is fired, the administrator has to delete his account from the system.	All the personal data and transactions between them and the restaurant will be erased from the system.	2		
BR_05	The software needs to add modify and delete users/tables.	CRUD functionalities possessed by the administrator	1		
BR_06	A user should have a profile page. On the profile page a user can edit his/her information, which includes the password, e-mail address and phone number. The user can modify the personal information in his/her profile.		1		
BR_07	Staff members' accounts should be secured with passwords.	For ethical and security reasons, passwords will be hashed before being stored in the database.	1		
BR_08	Tables' accounts should have the menu page displayed as the main page. Clients can easily find their food by clicking into the favourite category. (meat, pasta, rice, pizza)	This will provide a practical and easy method for the visualization of the dishes.	1		
BR_09	When a costumer clicks	This will give real-time	1		

	"+" symbol, the corresponding dish will be added to the Order List on the right side of the page.	information about the price of your order, as well as help the costumer not forget what he had previously ordered. The costumer can remove his choices from the ordering list as well.			
BR_10	Given that the costumer confirms the order, a timer will be displayed, showing the remaining estimated time until dish is ready.		3		
BR_11	Upon confirmation, the order will be added to the queue list of the chefs, until one of them takes the order.	This is a quick way to order food and doesn't need an intermediary such as waiters.	2		
BR_12	When the chef clicks "Ready" for the respective dish, the ingredients of the dish and their amounts are subtracted from the total amounts, stored in the database.	This is a more efficient way of managing food products dynamically, instead of spending a lot of time doing an inventory by the end of the week.	1		
BR_13	As soon as the customer pays the bill, the waiter/chef confirms the payment and table's status is set to available.		2		
BR_14	When a payment is confirmed, the amount of money is added/subtracted to the current total amount of money owned by the restaurant.	This avoids stealing or other mistakes made during calculations, as everything is done automatically.	1		
BR_15	When the payment is confirmed, the software prints the bill.		3		
BR_16	The customer can rate the ordered dishes from 1-5 stars.	1 star means the customer didn't enjoy the food, 5 stars means the customer is fully satisfied with the dish.	3		
BR_17	Given that the accountant is logged in, he should be provided with the following 3 lists: a. suppliers list b. product list c. worker list	These are among the key sources of data that come to the restaurant.	1		
BR_18	A chef can notify the accountant about missing/broken/needed kitchen gadgets, by	The accountant receives the notification, reads it and orders whatever	2		

	sending notifications/requests.	is needed, by contacting the distributors.			
BR_19	When the amount of a certain product is below a threshold, an automatic notification is sent to the accountant.	These automated requests avoid the need for a product inventory.	1		
BR_20	Every transaction managed by the accountant is saved in pdf/text format or is sent to administrator.	It makes every process be transparent and well-documented.	2		

3.2 Non-Functional Requirements

3.2.1 User Interface Requirements

A software application is as good as the interface it provides to its users. Appropriate functionality, easy navigation, elegant design, and fast response times make a measurable difference to a system's utility.The user interface for this software is designed to be well suited to any browser as Chrome or Mozilla and can be accessed through portable tablets which are very practical and easy to use.The interface that you face as accessing the application , as a client, administrator or employee is the log in interface.

3.2.2 Usability

Learnability

Learnability is the capability of a software product to make as simple as possible for the user to learn its application.

- This software is designed to be easy to learn, easy to use, subjectively pleasing.
- Clients can log in. Employees can log in. This software is designed to be used by all kind of people from all ages. There are instructions and alert messages that will be shown during execution of each task.
- Icons and Menu options facilitate the user to perform their tasks. For example clients find any dishes that they impact - a right click on a button displays a list of specific dishes restaurant offers.

- Provide respond messages that a user command has succeeded or advise of failure. If you try to log in with a wrong username/password it will be shown a feedback message that the log in process failed due to wrong credentials.

- Provide instruction messages for user interface components: dialog boxes, fields that require input and image details. For example, a if you type a password with less than a certain number of characters it shall display :"No less than 6 number of characters is allowed".

Accessability

We know that an application have to be functional, but can this application be accessed by everyone? In this application users are staff employees, administrator and client consumers. This software tends to simplify as much as possible accessability of these users through:

- Employees working in the restaurant can access the software through their accounts.

- Clients ordering in the restaurant can access the software when they reserve a table .

- Administrator of the restaurant can access the software through his account.

- Every user level will have access to resources that belong to his/her interest.

- Taking in consideration all the conditions of the client this software is applicable and usable also for the people with disabilities such as :

Hearing-You can look for details of dishes on the portable table instead of asking the waiter, you can order through tablet instead of communicating with the waiter.

Speaking-The ordering can be done automatically,

People who can't lift and carry anything, walk and use stairs-ordering is done through tablet, waiter bring the order to the table.

Memorability

After the client learns how to navigate this software and find what they are looking for, they need to be able to remember how to do it when they come back. Memorability is a

measure of how easy software is to remember after a substantial time lapse between visit. Design of the software through icons and instructions encourages the increasement of client memorability.

3.2.3 Performance

In order to assess the performance of a system the following components must be clearly specified:

- Response Time
- Workload
- Platform

Response Time of the software is another component to be taken in consideration. Log in or ordering on tablet shall be processed in a few milliseconds. Our motto is: "Our client is sacred. Don't let him/her waiting to order, don't let him/her waiting for the order."
Workload defines the capability of the system to handle the maximum of the clients interacting with the system. This software shall be able to offer the required service even to the maximum capacity of the clients.
A platform is defined as the combination of both hardware and software which will house the system. So this platform to be able to offer the best software design and the best functionality.

3.2.3.1 Capacity

The ONLY measure that is meaningful and relevant when it comes to defining the Capacity needs of an application is the MAXIMUM.

The performance of the web application shall support all the tasks of the restaurant employees, clients and administrator to be performed on the maximum capacity in order to be functional in each possible restaurant population conditions.

3.2.3.2 Availability

The restaurant is open from 8 o'clock am to 12 o'clock pm, so the system shall be available 24/7, but its maximum availability is required during the specified time interval. Availability is an essential ethic component that is closely related with good reputation of the restaurant. So this software's purpose is to offer maximum availability.

3.2.3.3 Latency

There are no specific latency requirements.

3.2.4Manageability/Maintainability

3.2.4.1 Monitoring

Monitoring is an approach of defining and checking the performance characteristics of software systems. The purpose of this task is to ensure that this software covers successfully the issues below:

- Whether the application is running.
- Unusual tablet/memory/network usage.
- Report any unhandled exceptions.
- Status of external components (databases, etc.)
- Number of pending tasks**.**

3.2.4.2 Maintenance

MySQL is used for maintaining the database and the Apache server takes care of the site. 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 server.

For emergent cases of breakdown, we will provide the software with the backup of the web application and the database.

The application shall be easy to extend. The code shall be written in a way that it favors implementation of new functions and additions of new lines of code. Also, modularity in the organization provides for a better maintenance.

In case of bugs correction, we shall provide the users with the updates of the RMS application.

3.2.4.3 Operations

Operational requirements are the basis for system requirements. They define the essential of functionality.

Some of the operations required by the users include:

- login of chef
- login of waiters
- login of accountant
- login of administrator
- ordering for clients
- mediation of dishes with products
- service offered as a chain from chef and then from waiter
- CRUD of employee profiles
- financial assistance from ecconomist for employees and restaurants products
- communication of clients with staff

3.2.5 System Interface/Integration

Specify the use of other required products (e.g., a database or operating system), and interfaces with other systems (e.g., UWHires package interfaces with PubCookie and ODS, HEPPS system interfaces with Budget system). For each interface, define the interface in terms of message format and content. For well-documented interfaces, simply provide a reference to the documentation.

Outline each interface between the product and the hardware or network components of the system. This includes configuration characteristics (e.g., number of ports, instruction sets), what devices are to be supported, and protocols (e.g., signal handshake protocols).

3.2.5.1 Network and Hardware Interfaces

Specify the logical characteristics of each interface between the product and the hardware or network components of the system. This includes configuration characteristics (e.g., number of ports, instruction sets), what devices are to be supported, and protocols (e.g., signal handshake protocols).

3.2.5.2 Systems Interfaces

Example systems interface requirements:

3.2.6 Security

- The surveyor of the software will be administrator so he/she will be the the only one who monitors and accesses the data for everyone on the restaurant.This software offers to every user the highest system of security.
- To meet the security objectives, a certain security components shall be covered such as: Identification ,Authentication, Authorization ,Privacy Requirements, Physical Protection Requirements,System Maintenance.
- These components shall be achieved through:
- The application shall identify all of its clients,staff employees,administrator before allowing them to access its capabilities.

- Specific authenticated externals shall access specific software component capabilities or information if and only if they have been explicitly authorized to do so by a properly appointed person(s).For example:The account of waiter shall not be accessed by the chef.
- Unauthorized individuals shall not gain access to users credentials.
- The restaurant security staff shall protect its hardware components from physical destruction, theft, or any kind of damage.Despite software security ,it's important and hardware security.
- The application shall not violate its security requirements as a result of the replacement of a data, hardware, or software component.

3.2.6.1 Protection

The software is accessible by a username and an encrypted password. Only by these two credentials the worker or the client can use this utilitary application for their purposes.

- In order to increase the protection of information ,encrypting passwords should be applied to each user registered.
- If an employee wants to edit its profile, the administrator should be alerted through a notification message.
- The password of an employee must be changed anytime,it's up to the employee's preferences.
- The password of a client must be registered at the beggining, but it must be edited according to the client's preferences.
- The username and password for administrator might be edited anytime based on administrator preferences.

3.2.6.2 Authorization and Authentication

An authentication requirement is a component of security requirement. It shall verify the identity of its externals before interacting with them.

- The software shall verify the identity of all the users who access it before allowing them to use its capabilities. Employees,clients or administrator can have access to the system through their credentials: username,password.
- The software shall verify the identity of all of its users before allowing them to update their user information.An employee can't edit his/her profile without logging in.
- The software shall consider the repeated requested validation failures as fraud. If a client or a worker makes repeated requests to log in to the system with a wrong username/password the client or worker shall not be logged in.
- The software shall not allow any employee to access any account information of any other worker.

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3.2.7 Data Management

This application is based on MySQL language.

There will be some tables which are going to be connected with each other with joint tables. For example: each order will have the id-s of each table, each chef and each waiter.

3.2.8 Standards Compliance

This method is also approved by the trade office and will be at the same time under their control. Their function will also be controlled by this office in co-operation with our group. It is important to mention that will not be allowed any use of this method wrongly and will be only one center where every restaurant that wants it should apply. The price of using this method will be according to economical standards of the country and of course by analyzing the conditions of the restaurants. This method policy will also be useful for the financial office to control the incomes of the restaurant better for them not to have frauds.

3.2.9 Portability

This application can be accessed by everyone who wants to see the facilities this restaurant provides, but only the members of the staff will have a username and a password to login so to collaborate with other members of this online community.

3.2.10 Other Non-Functional Requirements

Please provide all necessary non-functional requirements, similar to the requirements explained in the lesson slides or in the textbook.

3.3 Domain Requirements

Everything related to the domain that might be needed in the project shall be mentioned in here. Sometimes the domain Requirements might be thought as part of either functional or non-functional requirements.

4. User Scenarios/Use Cases

Provide a summary of the major functions that the product will perform. Organize the functions to be understandable to the customer or a first time reader. Include use cases and business scenarios, or provide a link to a separate document (or documents). A business scenario:

- Describes a significant business need
- Identifies, documents, and ranks the problem that is driving the scenario
- Describes the business and technical environment that will resolve the problem
- States the desired objectives
- Shows the “Actors” and where they fit in the business model
- Is specific, and measurable, and uses clear metrics for success

In here you may define the written user scenarios tested in the UCED Application given to you.

APPENDIX

The appendixes are not always considered part of the actual Requirements Specification and are not always necessary. They may include

- Sample input/output formats, descriptions of cost analysis studies, or results of user surveys;
- Supporting or background information that can help the readers of the Requirements Specification;
- A description of the problems to be solved by the system;
- Special packaging instructions for the code and the media to meet security, export, initial loading, or other requirements.

When appendixes are included, the Requirements Specification should explicitly state whether or not the appendixes are to be considered part of the requirements.

Appendix A. Definitions, Acronyms, and Abbreviations

Define all terms, acronyms, and abbreviations used in this document.

Appendix B. References

List all the documents and other materials referenced in this document.

Appendix C. Requirements Traceability Matrix

The following trace matrix examples show one possible use of naming standards for deliverables (FunctionalArea-DocType-NN). The number has no other meaning than to keep the documents unique. For example, the Bargaining Unit Assignment Process Flow would be BUA-PF-01.

For example (1):

Business Requirement	Area	Deliverables	Status
BR_LR_01 The system should validate the relationship between Bargaining Unit/Location and Job Class.---Comments: Business Process = "Assigning a Bargaining Unit to an Appointment" (Priority 1)	BUA	BUA-CD-01 Assign BU Conceptual Design	Accepted
		BUA-PF-01 Derive Bargaining Unit-Process Flow Diagram	Accepted
		BUA-PF-01 Derive Bargaining Unit-Process Flow Diagram	Accepted
BR_LR_09 The system should provide the capability for the Labor Relations Office to maintain the job class/union relationship.---Comments: Business Process = "Maintenance" (Priority 1)	BUA	BUA-CD-01 Assign BU Conceptual Design	Accepted
		BUA-PF-02 BU Assignment Rules Maint Process Flow Diagram	ReadyForReview

For example (2):

BizReqID	Pri	Major Area	DevTstItems DelivID	Deliv Name	Status
BR_LR_01	1	BUA	BUA-CD-01	Assign BU Conceptual Design	Accepted
BR_LR_01	1	BUA	BUA-DS-02	Bargaining Unit Assignment DB Modification Description	Accepted
BR_LR_01	1	BUA	BUA-PF-01	Derive Bargaining Unit-Process Flow Diagram	Accepted

BizReqID	Pri	Major Area	DevTstItems DelivID	Deliv Name	Status
BR_LR_01	1	BUA	BUA-UCD-01	BU Assign LR UseCase Diagram	ReadyForReview
BR_LR_01	1	BUA	BUA-UCT-001	BU Assignment by PC UseCase - Add Appointment and Derive UBU	Reviewed
BR_LR_01	1	BUA	BUA-UCT-002	BU Assignment by PC UseCase - Add Appointment (UBU Not Found)	Reviewed
BR_LR_01	1	BUA	BUA-UCT-006	BU Assignment by PC UseCase - Modify Appointment (Removed UBU)	Reviewed
BR_LR_09	1	BUA	BUA-CD-01	Assign BU Conceptual Design	Accepted
BR_LR_09	1	BUA	BUA-DS-02	Bargaining Unit Assignment DB Modification Description	Accepted
BR_LR_09	1	BUA	BUA-PF-02	BU Assignment Rules Maint Process Flow Diagram	Accepted
BR_LR_09	1	BUA	BUA-UCD-03	BU Assign Rules Maint UseCase Diagram	Reviewed
BR_LR_09	1	BUA	BUA-UCT-045	BU Assignment Rules Maint: Successfully Add New Assignment Rule	Reviewed
BR_LR_09	1	BUA	BUA-UCT-051	BU Assignment Rules MaintUseCase: Modify Rule	Reviewed
BR_LR_09	1	BUA	BUA-UCT-053	BU Assignment Rules MaintUseCase - Review Assignment Rules	Reviewed
BR_LR_09	1	BUA	BUA-UCT-057	BU Assignment Rules MaintUseCase: Inactivate Last Rule for a BU	Reviewed
BR_LR_09	1	BUA	BUA-UI-02	BU AssignRules Maint UI Mockups	ReadyForReview
BR_LR_09	1	BUA	BUA-TC-021	BU Assignment Rules Maint TestCase: Add New Rule (Associated Job Class Does Not Exist) - Success	ReadyForReview
BR_LR_09	1	BUA	BUA-TC-027	BU Assignment Rules Maint TestCase: Modify Rule - Success	ReadyForReview
BR_LR_09	1	BUA	BUA-TC-035	BU Assignment Rules Maint TestCase: Add New Rule (Associated Job Class Does Not Exist) - Error Condition	ReadyForReview
BR_LR_09	1	BUA	BUA-TC-049	BU Assignment Rules Maint TestCase: Modify Rule - Error Condition	ReadyForReview

For example (3):

BizReqID	CD01	CD02	CD03	CD04	UI01	UI02	UCT01	UCT02	UCT03	TC01	TC02	TC03	TC04
BR_LR_01			X		X		X			X		X	
BR_LR_09	X			X		X			X		X		X
BR_LR_10	X			X					X		X		
BR_LR_11		X											

Appendix D. Organizing the Requirements

This section is for information only as an aid in preparing the requirements document.

Detailed requirements tend to be extensive. Give careful consideration to your organization scheme. Some examples of organization schemes are described below:

By System Mode
Some systems behave quite differently depending on the mode of operation. For example, a control system may have different sets of functions depending on its mode: training, normal, or emergency.

By User Class
Some systems provide different sets of functions to different classes of users. For example, an elevator control system presents different capabilities to passengers, maintenance workers, and fire fighters.

By Objects
Objects are real-world entities that have a counterpart within the system. For example, in a patient monitoring system, objects include patients, sensors, nurses, rooms, physicians, medicines, etc. Associated with each object is a set of attributes (of that object) and functions (performed by that object). These functions are also called services, methods, or processes. Note that sets of objects may share attributes and services. These are grouped together as classes.

By Feature
A feature is an externally desired service by the system that may require a sequence of inputs to affect the desired result. For example, in a telephone system, features include local call, call forwarding, and conference call. Each feature is generally described in a sequence of stimulus-response pairs, and may include validity checks on inputs, exact sequencing of operations, responses to abnormal situations, including error handling and recovery, effects of parameters, relationships of inputs to outputs, including input/output sequences and formulas for input to output.

By Stimulus
Some systems can be best organized by describing their functions in terms of stimuli. For example, the functions of an automatic aircraft landing system may be organized into sections for loss of power, wind shear, sudden change in roll, vertical velocity excessive, etc.

By Response
Some systems can be best organized by describing all the functions in support of the generation of a response. For example, the functions of a personnel system may be organized into sections corresponding to all functions associated with generating paychecks, all functions associated with generating a current list of employees, etc.

By Functional Hierarchy
When none of the above organizational schemes prove helpful, the overall functionality can be organized into a hierarchy of functions organized by common inputs, common outputs, or common internal data access. Data flow diagrams and data dictionaries can be used to show the relationships between and among the functions and data.

Additional Comments
Whenever a new Requirements Specification is contemplated, more than one of the organizational techniques given above may be appropriate. In such cases, organize the specific requirements for multiple hierarchies tailored to the specific needs of the system under specification.

There are many notations, methods, and automated support tools available to aid in the documentation of requirements. For the most part, their usefulness is a function of organization. For example, when organizing by mode, finite state machines or state charts may prove helpful; when organizing by object, object-oriented analysis may prove helpful; when organizing by feature, stimulus-response sequences may prove helpful; and when organizing by functional hierarchy, data flow diagrams and data dictionaries may prove helpful.