SOFTWARE REQUIREMENT SPECIFICATION DOCUMENT

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1. Introduction

Albany Park Hotel, located in the Northwest Side of the City of Chicago has decided to get a software application built for a couple of their day-to-day activities and services. The hotel management is currently MS Office for their record-keeping purposes and now wants to upgrade their system. They have hired services of NEIU Software Services (NSS) and within NSS, Team Green has been awarded this project. This application will be formally called HOTEL MANAGEMENT SYSTEM (HMS) throughout the scope of this document.

The management wants the following role-based functions to be handled by the HMS:

- Manage guest reservations by front desk.
- Room-service orders placement for dining services by front desk.
- Manage dining orders by restaurant staff.
- Log-in and log-out functionality for all employees.
- Process payments for customers using a payment portal by front desk.
- Print invoices for processed payments by front desk.
- View reports based on a list of defined criteria and defined roles.

This document is aimed at exhausting each of these functions defined above to as much detail as possible and what each function will do and how will it impact the overall application. This document will be considered FINAL and the HMS will be delivered exactly as laid out in this document. Any change requests by the hotel management will incur and additional cost and change in timelines, and in any such event, this document will go through a revision.

1.1. Scope

The HMS is intended to be used by the hotel management staff to handle defined list of activities in this document. HMS has four defined roles: a) Manager b) HR c) Receptionist d) Dining e) Employee. These roles have restricted access to the application with the Manager having the most access and Employee having the least access. For end-user, HMS has minimum operating requirement of computers with a web-browser installed in it. The end-user is expected to be knowledgeable of using basic browsing functions. HMS will be used within the hotel and will be hosted on the internal server. The only interaction it will make with the internet is during payment authorization.

1.2. Purpose

HMS is a browser/web based software application that provides specific hotel management functions as laid out in this document. The application has role-restricted functions so only certain end-users are allowed to use certain functions.

This document specifies every detail about the functionalities that will be provided in the HMS. It also addresses the constraints, risks and possible mitigation strategies that are pertinent to this project. The targeted audience of this document is the hotel manager who is the stakeholder and sponsor in this project, the project manager of TEAM GREEN at NSS, lead of development team, and lead of the quality assurance team.

1.3. Definitions, Acronyms, and Abbreviations

a) HMS: Hotel Management System
b) NSS: NEIU Software Services
c) TEAM GREEN: Refers to project team at NSS.
d) Manager: Refers to hotel manager.
e) HR: Refers to Human Resources department staff.
f) Receptionist: Refers to hotel staff at front desk.
g) Dining: Refers to restaurant staff.
h) Employee: Generally, refers to Albany Park Hotel employee.

1.4. Overview

HMS is a web-based application that will implement the following Albany Park Hotel functions:

- Guest reservations management.
- Room-service orders placement.
- Dining orders management.
- Attendance registers (log-in/log-out for employees).
- Payment processing.
- Reporting.

All these functions are based on the following five user roles:

1) Manager
2) HR
3) Receptionist
4) Dining
5) Employee

The application requires a computer with a web-browser installed on it. The application is hosted on hotel's internal server. The application does not require internet access but only for payment authorization purposes.

2. Overall description

2.1. Product perspective

This product will be used by the staff at the Albany Park Hotel. The point of view is one of an employee friendly piece of software that serves its purpose and is easy to work with. The software will have a large number of functions as well as many different user perspectives. It will give the appropriate capabilities to each user set by their position. This way employees will be able to do their job correctly and not be concerned with other parts that they won't have authority to do. They will only have access to what they need. The software will be for the entire hotel and available in all of the offices and all the desks for the employees, so it won't be just constrained to one computer. The software will be very efficient and useful as it will cover all the necessary tasks in one program. There will not be a need to use multiple tools as this software will integrate everything in one.

2.2.Product functions

The functions of the product will be as follows.

- Receptionist's ability to manage reservations for guests from the front desk.
- Next they will be allowed to take room service orders for dining services.
- The restaurant staff will be able to view the orders and then mark as completed once prepared.
- The application will allow staff management as well.
- The HR/Managers will be able to see the list of all the employees but be only editable by the HR department.
- There will also be a basic function that allows employees to clock in and out.
- In the first iteration, the application only provides list of employees and hours to the Manager and HR. There will be a payment portal that allows the receptionists to enter guest billing details and charge them according to the fixed rate of the room per night and food items ordered.
- This part of the application will also print out an invoice.
- As a part of the auditing process, the hotel manager will have all access to the reports where they can view the guest's info and room numbers, amounts charged, restaurant orders, employees and hours logged.
- The set room charges will be $300 per night, and $10 per food item.

2.3.User characteristics

There will be different users and they will have different characteristics. The range of employees will cover everyone from the receptionist, restaurant staff, HR and staff management. Each user will have a specific interface that is designed for their use. The management will have the most capabilities and access to information. Management will be able to see everything from guest information all the way to employee work details. There will be accounts that everyone will get a log in, so that way the software knows who is using the computer as well as each employee will have their own identity. This will be useful for keeping track of hours and who is clocked in and when somebody came and left. The program will use object oriented programming with information hiding and encapsulation. This will also help protect the people staying at the hotel from having their information stolen. We will also have an automatic log out after a certain period of inactivity, so that the proper user is always

logged in correctly. There will be a database that will be live and up to date that authorized users can access the information.

2.4.Constraints

The constraints of the software will be based on information hiding from certain employees as that will be for safety reasons and because certain things are not part of their role. So this will be consisted also of payment information as for example when an employee charges a customer, the credit card information will not be visible and will not be stored. The software will be a medium to process payments and other guest services. Everyone will need to know and remember their log in, as this will be used to clock in and do tasks. There will also need to be a live internet connection with proper speeds so that payment and other functions can process.

2.5.Assumptions and dependencies

The assumptions and dependencies of the software will depend on several factors.

a) All employees have a basic understanding of using a computer.

b) Proper hardware for the software to run and function.

c) Short training so that everyone is familiar with the functions and what they are supposed to do.

d) This program will be specific to this hotel and will not be compatible in another business or environment.

e) This new system has to be adopted and old ways of using Microsoft Office have to be dropped so that there is consistency and uniformity.

3. Specific requirements

The requirements of the software product are defined in this section in detail, so that its sufficient for design.

3.1. External Interface Requirements

3.1.1. User interface

Login Screen

The first screen displayed to the user would be the login screen. It will allow the user to access the application based upon the user role. There would be two different types of users with the following roles:

- Staff i.e. receptionist, room service etc.
- Management
- HR

These roles would be identified by the system based on the User ID and the Role.

Listing Screen

This screen would provide the user with listing of all the guests and the rooms available and assigned to the guests. They would be able to view all the guests, rooms assigned and the services they ordered. This screen would be available to all users.

Manage Reservation Screen

This screen would be managed by the receptionists while making reservations for the guests.

Room Service Order Screen

This screen would be managed by the receptionists where they would be able to take room service orders for the respective guests for dining services. The staff would be able to view all the orders and then mark them as completed once they are prepared.

Manage Staff Screen

This screen would be accessed and managed by only the HR/ Management department of Albany Park Hotel. This screen would show the list of all the employees, their roles, salaries, address and other information. Only the HR department would be able to edit the staff listings.

The management would also be able view the clock-in time of each employee for each day based on their login time every day. It would display their hours worked each day.

Audit Report Screen

The managers would be able to view this screen where there will be auditing reports as following:

a) Guests and room numbers
b) Guests and amounts charged
c) Restaurant Orders
d) Employees and hours logged

Payment portal

This screen would allow the receptionists to enter the guests billing details for their stay. That would enable them to charge the guests with the fixed rate of room and food items ordered by the respective guest.

User would also be able to print out an invoice using this screen.

3.2. Functional Requirements

The functional requirements describe the core functionality of the application. This section includes the data and functional process requirements.

User Login

User should be able to login, suing their User id and password. All users would be given a user role and depending upon the roles the access to different features of the application would be given.

The users would be authenticated and then given access.

Manage Reservations

User should be able to manage the reservations, including following features:

- Enter new guests.
- Assign room to guests.
- Enter the number of days of stay.

Service orders

The users would be able to track the guests order history , food they buy. View the orders and mark them as completed whenever the order is prepared and served.

Staff management

The Managers would be able to view the employee's list and see their information like salary, address phone etc.

They would be able to see the hours of the employees for every week as well.

Only the HR would be able to edit the employee list. i.e. Add or remove an existing employee from the employee list.

Employee clock-in

One of the features provided by the system would be to track the time the employee logs in and log out to compute how much hours did they work every day.

Payment portal

There would also be a payment portal to be used by the staff to bill the guests depending upon how many nights they spent and also the services they ordered. Every guest would be charged as follows:

- $300 per night
- $10 each food item

The staff would also be able to print an invoice using the print command for the bills.

Audit reports

The manager/HR would be able to print report which will show information as follows from the reports section provided:

a) Guests and room numbers
b) Guests and amounts charged
c) Restaurant Orders
d) Employees and hours logged

4. Non-functional requirements

Define the overall qualities and attributes of the application.

4.1. Performance requirements

This part contains response time, throughput, and resource utilization of the application.

4.1.1. Response Time

Is the time that the application takes to initially responds to end-user request?

The average response time for the application requests (includes accessing the home page, logging in, logging out, employees clock in and out, reception transactions, restaurant orders, and payment transactions) are:

- 95% of end-user requests shall be processed in less than 1 second.
- The application shall be able to process 150 payment transactions per second.

4.1.2. Throughput

Indicates the number of request per second the application can handle.

- The application must be able to handle 100 requests per second.

4.1.3. Resource Utilization

The amount of resources that the application is consuming, in terms of CPU, memory, disk, and network.

- The CPU usage shall be less than 50%.
- The memory usage shall be less than 100 MB.
- The disk usage shall be less than 10 MB/s.
- The network usage shall be less than 50 Mbps.

4.2. Dependability Requirements

Defining the required availability, reliability, and security of the application.

4.2.1. Availability

The probability that the application, at a point in time, will be operational and able to deliver the request transactions.

- The application shall meet or exceed 99.9% uptime.
- The application shall not be unavailable more than 1 hour per 2000 hours of operation.

4.2.2. Reliability

The probability of failure-free application operation over specified time in a given environment for a given purpose.

- The application defect rate shall be less than 1 failure per 2000 hours of operation.
- No more than 1 per 1000000 requests shall result in a failure requiring the application restart.

4.2.3. Security

The capability to prevent unauthorized attempts at usage and providing service to authorized users while under denial of service attack.

- 99% of attacks shall be detected within 5 seconds.
- Identify the employees before accessing the application by matching their name with employee's social security card information.
- Employees shall access the application based on their role.

4.3. Other Quality Attributes

4.3.1. Testability

Measure of how well components allow you to create test criteria and execute tests to determine if the criteria are met.

- Application developers shall be able to write a test cases to detect, isolate, and fix defects.

4.3.2. Portability

Is a measure of how easily an application can transferred from one computer environment to another?

- The application shall be support different hardware, software, operating system, languages, and versions.

4.3.3. Robustness

- The application shall be able handle error condition gracefully, without failure. (invalid data, software defects, and unexpected operating conditions)