CSc 4350: Software Engineering

Fall 2016

Team Phoenix

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Document #2 — Requirements Elicitation

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Problem Statement

**1.0 Introduction**  
Phoenix Resort Management System (PRMS) is a resort software system that allows employees to management day to day functions of the resort.

**2.0 Interface**

The PRMS shall provide a graphic user interface (GUI) with tabs. Each tab of the interface shall profile functionality for employees to interact with the PRMS, as described in sections 3.0 through 7.0. When the employee clicks on a tab, the PRMS shall display a new interface with the appropriate functionality for that tab.

**3.0 Employee Profiles**

The PRMS shall provide a tab of the interface for creating and managing employee profiles. The employee profiles shall be stored in a local database. Each profile shall contain information about the employee. Each profile will contain information about the employee’s access to the PRMS (authentication).

**3.1 Profile Information**

The PRMS shall provide an interface where the new employee profiles are created. Each employee profile shall contain the employee’s name, the employee’s title, and the employee’s unique ID number. The PRMS shall allow the entry of the employee’s name and title into the new profile window, and shall create the employee’s unique ID number with cannot be changed. The PRMS will provide functionality for suitably authorized employees to modify the information contained in already existing profiles.

**3.2 Authentication**

The PRMS will limit access by way of a 4-digit access PIN. The access PIN will be created when the employee profile is created. The PRMS will provide functionality for suitably authorized employees to modify the access PIN contained in already existing profiles.

The employee profile will contain information about which interface tabs are available to each employee based on the employee’s title.

The PRMS will log employee interactions with the PRMS in a text file.

**4.0 Hotel Rooms**

The PRMS shall allow the management and reservation of the resort’s hotel rooms.

**4.1 Hotel Room Profiles**

The PRMS shall provide a tab of the user interface for managing the resort’s hotel rooms. The PRMS shall provide functionality for describing the number of floors of the hotel, and the number of rooms on each floor. The PRMS shall assign each room a number based on which floor of the hotel the room is located. The PRMS shall provide functionality to enter and modify default attributes about each room. Each room profile shall have the following attributes:

Price per night

Number of beds

Smoking allowed

Pets allowed

Contains kitchen

Contains fridge

Date and time last cleaned

Maintenance notes (repairs or replacements of furnishings)

The room inventory

The rooms inventory shall contain the following fields:

Number of pillows

Number of sheets

Number of towels

Number of soaps

Number of shampoos

Number of toilet paper rolls

The room profiles shall be stored in a local database.  
  
**4.2 Hotel Room Reservations**The PRMS shall provide a tab of the user interface that provides functionality for employees to create and modify reservations for each room. The room reservations shall be stored in a local database. Each reservation shall contain the following attributes:

Number of the room

Number of adults staying in the room

Number of children staying in the room

Timespan of stay (date and time for beginning and end)

Billing information about the reservation

The reservation’s billing information shall contain the following fields:

Name

Credit card #

Credit card expiration date

Cost of the reservation

Additional charges (for room service, restaurant, damage, etc.)

The PRMS shall allow employees to query the list of rooms by the room’s attributes and whether a reservation exists for a given timespan.

The PRMS shall allow employees to create reservations for any room that does not have a reservation for a given time span. The PRMS shall require the employee to enter valid information for all the fields in the room reservation information.

The PRMS shall allow employees to modify a reservation’s billing information by adding or removing additional charges.

The PRMS shall allow employees to modify a reservations timespan to extend a guests stay.

The PRMS shall allow employees to output an itemized bill containing all information about the room, including the calculated cost of the reservation based on the price per night and timespan.

**4.3 Room Maintenance and Inventory**

The PRMS shall provide a tab of the user interface that provides functionality for employees to manage room maintenance and inventory.

The PRMS shall allow the employee to note modify the number of items in the room inventory to indicate whether replacements are needed. The PRMS shall provide an interface to note when the room has been cleaned or the inventory has been replaced and update the necessary fields in the room profile.

The PRMS shall allow the employee to output a report of all rooms which haven’t been cleaned in a given time period, rooms which have maintenance notes, or rooms with insufficient inventory.

**5.0 Conference Rooms**

The PRMS shall allow the management and reservation of the resort’s conference rooms. In contrast to the hotel rooms, conference rooms have a different set of attributes, can be booked in blocks, can include catered meals, and are billed differently.

**5.1 Conference Room Profiles**

The PRMS shall provide a tab of the user interface for managing the resort’s conference rooms. The PRMS shall provide functionality for describing the number of conference rooms in the resort. Each room shall be identified by a number prefaced by the letter “C” to differentiate the conference rooms from the hotel rooms. The PRMS shall provide functionality to enter and modify default attributes about each conference room. Each conference room shall have the following attributes:

Name (“Main Ballroom,” for example)

Price per day

Number of seats

Contains stage

Contains audio/visual system

The conference room profiles shall be stored in a local database.

**5.2 Conference Room Booking**

The PRMS shall provide a tab of the user interface that provides functionality for employees to create and modify bookings for conference rooms. Each conference room reservation shall contain the following attributes:

List of conference rooms booked

Number of catered meals and number of servings per meal

Timespan of booking (date and time for beginning and end)

Billing information about the booking

The booking billing information shall contain the following fields:

Contact name

Organization name

Credit card #

Credit card expiration date

Total cost of booking

Additional charges (for guest meals, damage, etc.)

The PRMS shall allow employees to query the list of conference rooms by the room’s attributes and whether a booking exists for a given timespan.

**6.0 Guest Services**

In additional to managing hotel and conference rooms, the PRMS shall provide functionality for employees to manage the various services that are necessary to provide to the guests. These services include orders for room service, table service at the hotel restaurant, catered meals for conference bookings, and general service calls. Each of these services shall be managed through a unified order tracking interface.

**6.1 Unified Order System**

The PRMS shall provide a tab of the user interface that provides functionality for employees to create and modify service orders. Each order shall contain the following attributes:

State of the order (ordered, preparing, or completed)

Date and time expected

Reservation or booking for billing

Type of order (room service, table service, catered meal, general service)

Specific order data depending on type

The PRMS shall allow the employee to create a new order.

For a new order, the state of the order shall default to “ordered” and the date and time expected shall default to the current time.

The PRMS shall ensure that the employee has selected a reservation or booking for billing and type of order. The PRMS shall display an interface for entering in the various data for the type of order the employee has selected as explained in sections 6.2 through 6.4.

The PRMS shall allow employees to view a list of orders sorted by time expected and filterable by current state.

The PRMS shall allow the employee to update the state of the order. Once the state of the order is changed to “delivered,” the billing information of the reservation or booking associated with the order shall be updated with the name and cost of the order.

Orders shall be stored in a local database.

**6.2 Room and Table Service**

The resort restaurant provides room service, table service, and catered meals.

The PRMS shall provide an interface that provides functionality for managing the hotel restaurant.

The PRMS shall allow employees to create and modify a list of restaurant items available for room service and table service. Each restaurant item shall contain the following attributes:

Item name

Item description

Cost per each

The PRMS shall allow employees to create and modify a list of tables available for seating at the restaurant. Each table shall contain the following attributes:

A unique number

Number of seats

When creating an order for room service or table service, the PRMS shall require that the employee select one or more items and select a room number for billing from a list of currently reserved rooms. Additionally, if creating an order for table service, the PRMS shall require that the employee select a table number from the list of restaurant tables.

**6.3 Catered Meals**

The PRMS shall allow employees to create and modify a list of options available for catered meals. Each catered option shall contain the following attributes:

Option name

Option description

Cost per serving

When creating an order for catered meals, the PRMS shall require that the employee select a conference room booking for delivery and billing, as well as enter the number of servings required.

**6.4 General Service Orders**

Occasionally, guest may make special requests or require additional accommodations.

The PRMS shall provide an interface that provides functionality for creating general orders.

When creating a general service order, the PRMS shall provide a text box for entering specific information about the order.

**7.0 Analytics**

Running a large enterprise requires having easy access to important data.

The PRMS shall provide a tab of the user interface that provides functionality for employees to easily query the various databases used by the software.

The PRMS shall provide interfaces for returning information about the following in any given timespan:

percentage of hotel and conference rooms that are occupied

number of guests

amount billed (by total, average, hotel room, conference room, and type of orders)

number of rooms requiring maintenance or inventory

list of orders (by state or type)

Requirements Traceability Matrix

|  |  |  |  |
| --- | --- | --- | --- |
| Entry # | Para # | PRMS Requirements Traceability Matrix | Type |
| 1 | 2.0 | The PRMS shall provide a graphic user interface (GUI) with tabs | SW |
| 2 | 2.0 | Each tab of the interface shall profile functionality for employees to interact with the PRMS | SW |
| 3 | 2.0 | When the employee clicks on a tab, the PRMS shall display a new interface with the appropriate functionality for that tab. | SW |
| 4 | 3.0 | The PRMS shall provide a tab of the interface for creating and managing employee profiles | SW |
| 5 | 3.0 | The employee profiles shall be stored in a local database. | SW |
| 6 | 3.0 | Each profile shall contain information about the employee. | SW |
| 7 | 3.0 | Each profile will contain information about the employee’s access to the PRMS (authentication). | NTH |
| 8 | 3.1 | The PRMS shall provide an interface where the new employee profiles are created. | SW |
| 9 | 3.1 | Each employee profile shall contain the employee’s name, the employee’s title, and the employee’s unique ID number. | SW |
| 10 | 3.1 | The PRMS shall allow the entry of the employee’s name and title into the new profile window. | SW |
| 11 | 3.1 | The PRMS shall create the employee’s unique ID number with cannot be changed. | SW |
| 12 | 3.1 | The PRMS will provide functionality for suitably authorized employees to modify the information contained in already existing profiles. | NTH |
| 13 | 3.2 | The PRMS will limit access by way of a 4-digit access PIN. | NTH |
| 14 | 3.2 | The access PIN will be created when the employee profile is created. | NTH |
| 15 | 3.2 | The PRMS will provide functionality for suitably authorized employees to modify the access PIN contained in already existing profiles. | NTH |
| 16 | 3.2 | The employee profile will contain information about which interface tabs are available to each employee based on the employee’s title. | NTH |
| 17 | 3.2 | The PRMS will log employee interactions with the PRMS in a text file. | NTH |
| 18 | 4.0 | The PRMS shall allow the management and reservation of the resort’s hotel rooms. | SW |
| 19 | 4.1 | The PRMS shall provide a tab of the user interface for managing the resort’s hotel rooms. | SW |
| 20 | 4.1 | The PRMS shall provide functionality for describing the number of floors of the hotel, and the number of rooms on each floor. | SW |
| 21 | 4.1 | The PRMS shall assign each room a number based on which floor of the hotel the room is located. | SW |
| 22 | 4.1 | The PRMS shall provide functionality to enter and modify default attributes about each room. | SW |
| 23 | 4.1 | Each room profile shall have attributes. | SW |
| 24 | 4.1 | The rooms inventory shall contain the following fields: Number of pillows, Number of sheets, Number of towels, Number of soaps, Number of shampoos, Number of toilet paper rolls | SW |
| 25 | 4.1 | The room profiles shall be stored in a local database. | SWC |
| 26 | 4.2 | The PRMS shall provide a tab of the user interface that provides functionality for employees to create and modify reservations for each room. | SW |
| 27 | 4.2 | The room reservations shall be stored in a local database. | SWC |
| 28 | 4.2 | Each reservation shall contain attributes. | SW |
| 29 | 4.2 | The reservation’s billing information shall contain fields. | SW |
| 30 | 4.2 | The PRMS shall allow employees to query the list of rooms by the room’s attributes and whether a reservation exists for a given timespan. | SW |
| 31 | 4.2 | The PRMS shall allow employees to create reservations for any room that does not have a reservation for a given time span. | SW |
| 32 | 4.2 | The PRMS shall require the employee to enter valid information for all the fields in the room reservation information. | SW |
| 33 | 4.2 | The PRMS shall allow employees to modify a reservation’s billing information by adding or removing additional charges. | SW |
| 34 | 4.2 | The PRMS shall allow employees to modify a reservations timespan to extend a guests stay. | SW |
| 35 | 4.2 | The PRMS shall allow employees to output an itemized bill containing all information about the room, including the calculated cost of the reservation based on the price per night and timespan. | SW |
| 36 | 4.3 | The PRMS shall provide a tab of the user interface that provides functionality for employees to manage room maintenance and inventory. | SW |
| 37 | 4.3 | The PRMS shall allow the employee to note modify the number of items in the room inventory to indicate whether replacements are needed. | SW |
| 38 | 4.3 | The PRMS shall provide an interface to note when the room has been cleaned or the inventory has been replaced and update the necessary fields in the room profile. | SW |
| 39 | 4.3 | The PRMS shall allow the employee to output a report of all rooms which haven’t been cleaned in a given time period, rooms which have maintenance notes, or rooms with insufficient inventory. | SW |
| 40 | 5.0 | The PRMS shall allow the management and reservation of the resort’s conference rooms. | SW |
| 41 | 5.1 | The PRMS shall provide a tab of the user interface for managing the resort’s conference rooms. | SW |
| 42 | 5.1 | The PRMS shall provide functionality for describing the number of conference rooms in the resort. | SW |
| 43 | 5.1 | Each room shall be identified by a number prefaced by the letter “C” to differentiate the conference rooms from the hotel rooms. | SW |
| 44 | 5.1 | The PRMS shall provide functionality to enter and modify default attributes about each conference room. | SW |
| 45 | 5.1 | Each conference room shall have attributes. | SW |
| 46 | 5.1 | The conference room profiles shall be stored in a local database. | SWC |
| 47 | 5.2 | The PRMS shall provide a tab of the user interface that provides functionality for employees to create and modify bookings for conference rooms. | SW |
| 48 | 5.2 | Each conference room reservation shall contain attributes. | SW |
| 49 | 5.2 | The booking billing information shall contain fields. | SW |
| 50 | 5.2 | The PRMS shall allow employees to query the list of conference rooms by the room’s attributes and whether a booking exists for a given timespan. | SW |
| 51 | 6.0 | The PRMS shall provide functionality for employees to manage the various services that are necessary to provide to the guests. | SW |
| 52 | 6.1 | The PRMS shall provide a tab of the user interface that provides functionality for employees to create and modify service orders. | SW |
| 53 | 6.1 | Each order shall contain the attributes. | SW |
| 54 | 6.1 | The PRMS shall allow the employee to create a new order. | SW |
| 55 | 6.1 | For a new order, the state of the order shall default to “ordered” and the date and time expected shall default to the current time. | SW |
| 56 | 6.1 | The PRMS shall ensure that the employee has selected a reservation or booking for billing and type of order. | SW |
| 57 | 6.1 | The PRMS shall display an interface for entering in the various data for the type of order the employee has selected | SW |
| 58 | 6.1 | The PRMS shall allow employees to view a list of orders sorted by time expected and filterable by current state | SW |
| 59 | 6.1 | The PRMS shall allow the employee to update the state of the order. | SW |
| 60 | 6.1 | Once the state of the order is changed to “delivered,” the billing information of the reservation or booking associated with the order shall be updated with the name and cost of the order. | SW |
| 61 | 6.1 | Orders shall be stored in a local database. | SWC |
| 62 | 6.2 | The PRMS shall provide an interface that provides functionality for managing the hotel restaurant. | SW |
| 63 | 6.2 | The PRMS shall allow employees to create and modify a list of restaurant items available for room service and table service. | SW |
| 64 | 6.2 | Each restaurant item shall contain attributes. | SW |
| 65 | 6.2 | The PRMS shall allow employees to create and modify a list of tables available for seating at the restaurant | SW |
| 66 | 6.2 | Each table shall contain attributes. | SW |
| 67 | 6.2 | When creating an order for room service or table service, the PRMS shall require that the employee select one or more items and select a room number for billing from a list of currently reserved rooms. | SW |
| 68 | 6.2 | If creating an order for table service, the PRMS shall require that the employee select a table number from the list of restaurant tables. | SW |
| 69 | 6.3 | The PRMS shall allow employees to create and modify a list of options available for catered meals. | SW |
| 70 | 6.3 | Each catered option shall contain attributes, | SW |
| 71 | 6.3 | When creating an order for catered meals, the PRMS shall require that the employee select a conference room booking for delivery and billing, as well as enter the number of servings required. | SW |
| 72 | 6.4 | The PRMS shall provide an interface that provides functionality for creating general orders. | SW |
| 73 | 6.4 | When creating a general service order, the PRMS shall provide a text box for entering specific information about the order. | SW |
| 74 | 7.0 | The PRMS shall provide a tab of the user interface that provides functionality for employees to easily query the various databases used by the software. | SW |
| 75 | 7.0 | The PRMS shall provide interfaces for returning information in any given timespan. | SW |

Work Schedule Diagram

Gantt Chart

Dictionary

*Graphical User Interface* (abbreviated *GUI*): A program that allows the user to interact with the computer using icons and other visual indicators.

*Local Database*: a collection of digital indexed information that can be searched, referenced, changed, compared or otherwise manipulated. A local database is stored on the same computer that is used to access it.

Rationale

When we formed Team Phoenix for this semester project, we want to pick a topic that would challenge our critical thinking and problem solving skills, while at the same time resembling a project we might encounter in our careers. We decided to create a piece of resort management software because it would require careful thinking to fully understand the needs of hotel guests and employees. From there, we decided to include additional tools for employee to manage other aspects that might be necessary at a resort, such as conference rooms and a restaurant. We want to explore the complexity of the business operations and create a piece of software that is both powerful and easy to use.

We are targeting the software to be used by the hotel employees to manage the operations of the resort. The software can be utilized on any contemporary operating system, such as Windows, Mac OS, or Linux since it will be developed using the Java language. A local database will be used for all persistent data necessary for the software.

Change Log

**Date and Time:** September 7, 2016 — 4:45 PM

**Team member:** Andrew Truong

**Description:** Initial creation of document

**Version:** 1 — Current version accumulating changes

**Date and Time:** September 7, 2016 — 5:20 PM

**Team member:** Andrew Truong, Ryan Ocampo, Deividas Rutkauskas, Viraj Shah

**Description:** Wrote problem statement sections 1.0, 2.0, 3.0, 4.0

**Version:** 1 — Current version accumulating changes

**Date and Time:** September 14, 2016 — 3:55 PM

**Team member:** Fergus Kelley

**Description:** Rewrote problem statement sections 1.0 through 4.1

**Version:** 1 — Current version accumulating changes

**Date and Time:** September 14, 2016 — 4:32 PM

**Team member:** Ryan Ocampo

**Description:** Initial draft of rationale statement

**Version:** 1 — Current version accumulating changes

**Date and Time:** September 14, 2016 — 5:02 PM

**Team member:** Ryan Ocampo

**Description:** Updates roles in Work Schedule Diagram

**Version:** 1— Current version accumulating changes

**Date and Time:** September 14, 2016 — 5:20 PM

**Team member:** Deividas Rutkauskas

**Description:** Initial draft of dictionary

**Version:** 1— Current version accumulating changes

**Date and Time:** September 14, 2016 — 5:25 PM

**Team member:** Andrew Truong

**Description:** Initial draft of Gantt Chart

**Version:** 1— Current version accumulating changes

**Date and Time:** September 14, 2016 — 8:55 PM

**Team member:** Fergus Kelley

**Description:** Wrote problem statement sections 4.2 through 7.0

**Version:** 1 — Current version accumulating changes