CSc 4350: Software Engineering

Fall 2016

Team Phoenix

Fergus Kelley

Andrew Truong

Ryan Ocampo

Deividas Rutkauskas

Viraj Shah

Document #4 — Object Design

October 3rd , 2016

Architecture

The architecture of our system will be based off of…

Requirements Traceability Matrix

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Entry # | Para # | PRMS Requirements Traceability Matrix | Type | Use Case |
| 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, job title, unique ID number, username, and password. | SW |  |
| 10 | 3.1 | The PRMS shall allow the entry of the employee’s profile information into the new profile window. | SW | UC2 |
| 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. | SW | UC2 |
| 13 | 3.2 | The PRMS will limit access by way of a username and password | SW | UC1 |
| 14 | 3.2 | The username and password will be created when the employee profile is created. | SW |  |
| 15 | 3.2 | The employee profile will contain information about which interface tabs are available to each employee based on the employee’s title. | SW |  |
| 16 | 3.2 | The PRMS will log employee interactions with the PRMS in a text file. | NTH |  |
| 17 | 4.0 | The PRMS shall allow the management and reservation of the resort’s hotel rooms. | SW | UC3 |
| 18 | 4.1 | The PRMS shall provide a tab of the user interface for managing the resort’s hotel rooms. | SW | UC3 |
| 19 | 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 | UC3 |
| 20 | 4.1 | The PRMS shall assign each room a number based on which floor of the hotel the room is located. | SW |  |
| 21 | 4.1 | The PRMS shall provide functionality to enter and modify default attributes about each room. | SW | UC4 |
| 22 | 4.1 | Each room profile shall have attributes and a list of the rooms inventory. | SW |  |
| 23 | 4.1 | For each item in the room, the room inventory shall keep track of the name, quantity, expected quantity, and whether the item is consumable. | SW |  |
| 24 | 4.1 | The PRMS shall keep track of the number of each item in the rooms inventory that has been replaces. | 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 | UC5 |
| 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 | UC5 |
| 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 | UC5 |
| 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 | UC6 |
| 34 | 4.2 | The PRMS shall allow employees to modify a reservations timespan to extend or shorten a guest’s stay. | SW | UC5 |
| 35 | 4.2 | The PRMS shall allow employees to output an itemized invoice containing all information about the room, including the calculated cost of the reservation based on the price per night and timespan. | SW | UC6 |
| 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 | UC7 |
| 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 | UC7 |
| 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 | UC7 |
| 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 | UC7 |
| 40 | 5.0 | The PRMS shall allow the management and reservation of the resort’s events rooms. | SW |  |
| 41 | 5.1 | The PRMS shall provide a tab of the user interface for managing the resort’s events rooms. | SW | UC8 |
| 42 | 5.1 | The PRMS shall provide functionality for describing the number of events rooms in the resort. | SW | UC8 |
| 43 | 5.1 | The PRMS shall provide functionality to enter and modify default attributes about each events room. | SW |  |
| 44 | 5.1 | Each events room shall have attributes. | SW |  |
| 45 | 5.1 | The events room profiles shall be stored in a local database. | SWC |  |
| 46 | 5.2 | The PRMS shall provide a tab of the user interface that provides functionality for employees to create and modify bookings for events rooms. | SW | UC9, UC10 |
| 47 | 5.2 | Each events room reservation shall contain attributes. | SW |  |
| 48 | 5.2 | The booking billing information shall contain fields. | SW |  |
| 49 | 5.2 | The PRMS shall allow employees to query the list of events rooms by the room’s attributes and whether a booking exists for a given timespan. | SW | UC9 |
| 50 | 6.0 | The PRMS shall provide functionality for employees to manage the various services that are necessary to provide to the guests. | SW |  |
| 51 | 6.1 | The PRMS shall provide a tab of the user interface that provides functionality for employees to create and modify service orders. | SW | UC11, UC12 |
| 52 | 6.1 | Each order shall contain the attributes. | SW |  |
| 53 | 6.1 | The PRMS shall allow the employee to create a new order. | SW | UC11 |
| 54 | 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 |  |
| 55 | 6.1 | The PRMS shall ensure that the employee has selected or created an invoice for the order provided. | SW |  |
| 56 | 6.1 | The PRMS shall display an interface for entering in the various data for the type of order the employee has selected | SW | UC11 |
| 57 | 6.1 | The PRMS shall allow employees to view a list of orders sorted by time expected and filterable by current state | SW | UC13 |
| 58 | 6.1 | The PRMS shall allow the employee to update the state of the order. | SW | UC12 |
| 59 | 6.1 | Once the state of the order is changed to “delivered,” the invoice associated with the order shall be updated with the name and cost of the order. | SW |  |
| 60 | 6.1 | Orders shall be stored in a local database. | SWC |  |
| 61 | 6.2 | The PRMS shall provide an interface that provides functionality for managing the hotel restaurant. | SW |  |
| 62 | 6.2 | The PRMS shall allow employees to create and modify a list of restaurant items available for room service and table service. | SW | UC14 |
| 63 | 6.2 | Each restaurant item shall contain attributes. | SW |  |
| 64 | 6.2 | The PRMS shall allow employees to create and modify a list of tables available for seating at the restaurant | SW | UC14 |
| 65 | 6.2 | Each table shall contain attributes. | SW |  |
| 66 | 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 or create an invoice for billing. | SW | UC11 |
| 67 | 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 | UC11 |
| 68 | 6.3 | The PRMS shall allow employees to create and modify a list of options available for catered meals. | SW | UC14 |
| 69 | 6.3 | Each catered option shall contain attributes. | SW |  |
| 70 | 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 | UC11 |
| 71 | 6.4 | The PRMS shall provide an interface that provides functionality for creating general orders. | SW | UC11 |
| 72 | 6.4 | When creating a general service order, the PRMS shall provide a text box for entering specific information about the order. | SW | UC11 |
| 73 | 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 | UC15 |
| 74 | 7.0 | The PRMS shall provide interfaces for returning information in any given timespan. | SW | UC15 |

Work Schedule Diagram

Gantt Chart

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Start Date:  August 22, 2016** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Week:** | **1** |  |  |  |  | **2** |  |  |  |  | **3** |  |  |  |  | **4** |  |  |  |  | **5** |  |  |  |  | **6** |  |  |  |  | **7** |  |  |  |  |
|  | **M** | **T** | **W** | **T** | **F** | **M** | **T** | **W** | **T** | **F** | **M** | **T** | **W** | **T** | **F** | **M** | **T** | **W** | **T** | **F** | **M** | **T** | **W** | **T** | **F** | **M** | **T** | **W** | **T** | **F** | **M** | **T** | **W** | **T** | **F** |
| **Document 1** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fergus |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Andrew |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ryan |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Devidas |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Viraj |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Document 2** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fergus |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Andrew |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ryan |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Devidas |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Viraj |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Document 3** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fergus: Gantt, FP, RTM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Andrew: UC, UC diagrams |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ryan: UC, UC diagrams |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Devidas: UC, UC diagrams |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Viraj: UC, UC diagrams |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Document 3** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fergus: Gantt, WSD, RTM |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Andrew: Object design |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ryan: Object design |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Devidas: Object design |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Viraj: Object design |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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

Change Log

**Date and Time:** October 3, 2016 — 2:33 PM

**Team member:** Ryan Ocampo

**Description:** Initial creation of document

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

**Date and Time:** October 4, 2016 — 11:31 PM

**Team member:** Fergus Kelley

**Description:** Added WSD and Gantt chart

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