February 27, 2013

SOFTWARE REQUIREMENT SPECIFICATION

FOR

**ROYAL CITY: A REAL ESTATE COMPANY**

Version 1.0

Safat Siddiqui

Imtiaz Shakil Siddique

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PREPARED BY

Safat Siddiqui

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REMS software

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**Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Date | Reason For Changes | Version |
| Safat Siddiqui | 27th February 2013 |  | 1.0 |
| Imtiaz Shakil Siddique |

****1.0 Introduction****

## 1.1 Purpose

The purpose of this document is to present a detailed description of the Web Publishing System. It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will react to external stimuli. This document is intended for both the stakeholders and the developers of the system.

Currently all the employee in the firm uses hand written forms and documents to prepare monthly reports, customer records etc. So by using this software the whole company tasks and records gets digitally stored in a database.

This Software requirement specification document provides a complete description of the Real Estate Management Systems.

## 1.2 Document Conventions

The expected audiences for this document are the Front End officers, Accountants of the Accounting Department, Manager.

## 1.3 Scope of Project

This software system will be a Web Publishing System which can be used to advertise for the Royal City real Estate Company. This Software will also provide a Graphical User Interface for the employees like Front Officers, Accountants, Managers to view the customer profiles, adding a new customer, display available plot lists, display plot maps, removing a customer, search customer list. The users can also access these information outside the office through the internet as the whole software will be online based solution.

The new software will provide a very friendly user interface where both the customer and the employee can communicate with the software. Front End officers can easily reserve a plot when needed and the account department can easily get a day to day transaction report and the manager will get a monthly report.

Another important feature is that as the company is a multinational with many stake holders present locally and abroad the software needs to provide an innovative solution such that all of them can access the total information irrelevant to their location at any time.

The Software also has an auto mated mail delivery system which automatically identifies the customers who are late in paying their installment cash, have months of payments due. Customer like these are sent an automated mail generated by the system as a notice and in some case as a warning.

## 1.4 Definitions, acronyms and abbreviation

|  |  |
| --- | --- |
| Term | Definition |
| Front End Officer | A person who works on Sale’s Department. |
| Accountant | A person who works on Accounts Department. |
| Execution Department | A person who works on Execution Department. |
| Manager | A person who is the manager of the whole institute. |
| Customer | Any person who wants to view the plot area or wants to book them. |
| Database | Collection of all the information monitored by this system. |
| Viewer | Anyone visiting the site to view articles. |
| Software Requirements Specification | A document that completely describes all of the functions of a proposed system and the constraints under which it must operate. For example, this document. |
| Stakeholder | Any person with an interest in the project who is not a developer. |
| HTTP | Hypertext transfer protocol |
| Members | These are the registered users of the system. |

## 1.5 References

[IEEE] The applicable IEEE Std 830-1993, IEEE Standard for Software Requirements

Specifications, published in “IEEE Standard Collection” 2001 edition.

## 1.6 Overview of Document

The next chapter, the Overall Description section, of this document gives an overview of the functionality of the product. It describes the informal requirements and is used to establish a context for the technical requirements specification in the next chapter.

The third chapter, Requirements Specification section, of this document is written primarily for the developers and describes in technical terms the details of the functionality of the product.

Both sections of the document describe the same software product in its entirety, but are intended for different audiences and thus use different language.

2.0 Overall Description

## 2.1 Product Perspective

REMS is an independent, standalone system. Our purpose is to replace the current pen and paper based system by the windows based new REMS.

## 2.2 Product **Function**

REMS is a system that will create a user friendly environment. Following are a list of some of the functionalities that the system will provide:

1. General View
2. Customer View
3. Officer View
4. Accountant View
5. Manager View
6. Customer Registration
7. Reserve plot
8. Login Member/Customer
9. Logout Member/Customer
10. View Customer information
11. Update Customer information
12. Add Customer information
13. Customer account authentication
14. Removing Customer
15. View Plot Information
16. Add Plot Information
17. Update Plot Information
18. Automatic Mail Generation and Sending
19. Backup Data

## 2.3 User Classes and Characteristics

REMS needs human resource to maintain the whole system. There are several types of workers in maintaining the system. Descriptions about them are given below:

**Customer:** Customer come office and ask questions about plots. Customer can give a booking or installment.

**Sell’s Department:** Sell’s department receive customer. Fulfill customer query and requirement. Receives customer payment for booking or installment. Update database. Transfers payments and customer information to account’s department. Give money receipt and delivery plot to customer.

**Account’s Department:** Receives customer payments and information from sell’s department. Processes reports and prepares daily and monthly reports. Sends those reports to manager. When full payment is completed, inform execution department about that. Update database when plot is sold.

**Execution Department:** Collect payment list from account’s department. Register the plot and prepare necessary documentation for purchasing plot. Transfer purchase documentation to sell’s department.

**Manager:** Collects daily and monthly reports from account’s department. Observes the whole process.

## 2.4 Operating Environment

The software is a web based application which will operate on windows operating system like XP, Win7 and Win8 etc. It is convenient to use with any other desktop and web based applications.

## 2.5 Design and Implementation Constraint

The following are a general list of constraints that would delimit the developer’s options while building the REMS:

* The system should be able to use the MySQL database.
* The system should be able to run on Windows XP, Windows 7.
* The system should never publish user personal information without the permission of user.

## 2.6 Assumptions and Dependencies

Following is a list of the assumptions and dependencies:

* REMS will give support for at least 1500 users at a time.
* The General user cannot access the portion of operator and manager. The operator cannot access the area of manager. Operator needed only in terms of direct dealing.
* REMS will allow 500 users at most to access the system without any performance loss.

3.0 Requirements Specification

## 3.1 External Interface Requirements

### 3.1.1 User Interfaces

User interfaces for all users will be graphical user interfaces (GUI). These GUI will be web based. The same GUI will be used to represent to data to all kind of members. This is achieved by polymorphism. Also the idea of encapsulation is also preserved very efficiently as different set of members have access to different depth of information.

***3.1.1.1 Customer User Interface***

***Customer*** – If the member is a registered customer then he must login into the system with his user name and password. A registered customer can see his entire information regarding his monthly installments paid by cash, monthly installments due, total balance, time/date regarding cash receipt.

***Non Customer*** – If the person is a non-registered then he/she can only see the articles that are used for promotional purposes and also that person can see the plot map of Royal City Real Estate Company also for advertisement purposes.

***3.1.1.2 Front End Officer User Interface***

Front End Officer must access into the system by entering username and password. The Front End Officer sits in the Sale’s Department where customer comes for query and cash payment and reserving a plot. So the Front End Officer has access to these information. The member can see his personal information, the member can add a customer to the customer list by entering all the required information. The Front End Officer can also update information about a customer’s cash payment with specific time and date.

***3.1.1.3 Accountant User Interface***

The accountant must also enter into the system by entering username and password. Accountant has access of all the customer’s information. Accountant can monitor all the customer’s records for analyzing customer type, customer behavior. Any Customer who has due months more than 5 then the customer is highlighted in the GUI of accountant. By confirmation of the accountant an automated mail is delivered to that customer. Accountant has also liability of sending a report to the manager every month. This is made easy by the software. The software automatically collects all the information of all the customers and makes a report. The software also collects all the transaction received from the sale’s department. This reports are inflicted in the report.

***3.1.1.4 Manager User Interface***

Manager must also connect into the system by entering username and password. Manager’s whole responsibility is to monitor all the departments. So manager’s GUI shows all the information of all the departments. Manager also has some special access that is he can increase/deduce the discount offer of any plot if he desires. He can also alter the plot information thus favoring different customers.

Manager also has a personal list reflecting how many customers have come through him. This later is added as a commission for the manager.

### 3.1.2 Hardware Interfaces

* Communication port (COM Port) for printer.
* Internet Modem for internet Connection.

### 3.1.3 Software Interfaces

1. Name: Windows Server 2003

Mnemonic: WIN\_SRV\_OS

Version No: 2003

Source: Microsoft Corporation

1. Name: Oracle Database

Mnemonic: ORCL\_DB

Version No: Oracle 9

Source: Oracle

1. Name: Apache

Mnemonic: APCH\_WEB

Version No: 2.2

Source: Apache Software Foundation

1. Name: Internet Explorer

Mnemonic: IE

Version No: 7

Source: Microsoft Corporation

1. Name: Windows XP/Vista/Seven/Eight

Mnemonic: Win\_XP/Vista/7/8

Version No: Any One.

Source: Microsoft Corporation

### 3.1.4 Communication Interfaces

* HTTP protocol for accessing to web server by remote users.
* TCP/IP protocol for data communication over network.

### 3.1.5 Memory constraints

There is a limitation of the amount of customers that can register into the system. Normally the amount is sufficient enough as there will never occur a situation where total plot size is greater than the customer list. Currently the system will be developed assuming that there will be not be greater than 1,000,000 customers at a time present in the customer list.

Internet Connection is required, Windows Operating System is required. For that at least minimum system requirement is needed which are given below.

|  |  |
| --- | --- |
| **CPU:** | Intel Core2 Duo E6700/AMD Athlon64 X2 6000+ |

|  |  |
| --- | --- |
| **CPU Speed:** | At least 2.2 GHz |

|  |  |
| --- | --- |
| **RAM:** | 2 GB |

|  |  |
| --- | --- |
| **Hard Disk:** | Free Storage of at least 10 GB |

|  |  |
| --- | --- |
| **Video Card:** | At least 1GB |
| **Sound Card:** | Yes |

## 3.2 Functions

### 3.2.1 Authentication

|  |  |
| --- | --- |
| Requirements ID | Functions.Authentication.Login |
| Title | Login |
| Description | The Front End Officers, Accountants of Account Department, Managing Director shall be able to Login Through HTTP Connection by entering their username and password. |
| Identifier/Source | Tanzil Chowdhury ,Director , in management meeting on 20-2-2013 |
| Rationale | The system would have to distinguish users so that they are only authorized to view the data that is meant for them. Also the system must recognize the type of user who is entering into the system such as customer , accountant etc. |
| Input | Two strings consisting of username and password. |
| Output | Login Success or Login Failed Confirmation Message |
| Restrictions & Risks | Not Applicable |
| Dependencies | Not Applicable |

|  |  |
| --- | --- |
| Requirements ID | Functions.Authentication.Logout |
| Title | Logout from the system. |
| Description | The system can logout the members of the system. |
| Identifier/Source | Tanzil Chowdhury ,Director , in management meeting on 20-2-2013 |
| Rationale | Front end Officers, managers, accountants should be able to log out from the system. |
| Input | Not Applicable. |
| Output | Not Applicable. |
| Restrictions & Risks | Not Applicable. |
| Dependencies | Fountions.Authentication.Login |

### 3.2.2 Plot Data

|  |  |
| --- | --- |
| Requirements ID | Functions.Plot.getMapOfPlots |
| Title | getMapOfPlots |
| Description | Any People whether customer or not can see the available plots by clicking the desired active plot from the map. |
| Identifier/Source | Ekram Hossain ,Officer , in customer meeting on 22-2-2013 |
| Rationale | By selecting any plot all the necessary information regarding it will be displayed.  The System should be able to provide encapsulation such that different level of user should have different access to the map. |
| Input | Selecting any plot from a map. |
| Output | All the information like current state [ Geographical Location], condition [ ready ,under construction ],money per installment, size of each unit, monthly installment amount, total amount , total months to pay, total discount regarding the plot will be shown. |
| Restrictions & Risks | Only managers, accountants are able to cancel a reservation i.e. make a specific plot ready to be sold again. Front End officers can only reserve a plot for a specific customer. |
| Dependencies | Functions.Plot.getPlotData |

|  |  |
| --- | --- |
| Requirements ID | Functions.Plot.reservePlot |
| Title | reservePlot |
| Description | Front end officers can reserve a plot. They are responsible to enter the whole customer description in the database with the specific plot address. |
| Identifier/Source | Ekram Hossain ,Officer , in customer meeting on 22-2-2013 |
| Rationale | When a Plot is booked/reserved it becomes deactivated in the map. This plot from now on is assigned to the specific customer. |
| Input | Customer Details i.e. Name, Passport Number, Customer ID [Unique], Address, Time/Date, Plot Number. |
| Output | Plot is reserved for the customer and is deactivated from the map. |
| Restrictions & Risks | Only Front end Officers have the right to accept customer request. |
| Dependencies | Functions.Customer.addData |

|  |  |
| --- | --- |
| Requirements ID | Functions.Plot.addData |
| Title | Add Plot |
| Description | The mangers should be able to add new Plot into the database. |
| Identifier/Source | Tanzil Chowdhury ,Director , in management meeting on 20-2-2013 |
| Rationale | This is needed to add Plot data with all the information reagarding the new plot. |
| Input | New Plot record regarding all the information of the plot. |
| Output | Plot is added into the Plot data. |
| Restrictions & Risks | Only the manger can add new plot data. |
| Dependencies | Not Applicable. |

|  |  |
| --- | --- |
| Requirements ID | Functions.Plot.setData |
| Title | PlotSetData |
| Description | Only the manager can set/edit the plot information. |
| Identifier/Source | Tanzil Chowdhury ,Director , in management meeting on 20-2-2013 |
| Rationale | Managers can increase/decrease the discount of any plot, total value, money per installment, Geographical Location, Current State. |
| Input | Not Applicable. |
| Output | Not Applicable. |
| Restrictions & Risks | Managers are able to alter the plot information if necessary. |
| Dependencies | Functions.Plot.reservePlot |

|  |  |
| --- | --- |
| Requirements ID | Functions.Plot.removePlot |
| Title | PlotRemove |
| Description | When a customer has paid all the installments of a plot then the plot is permanently removed from the Plot Data. The Accounting Department is notified with this information to step for further process. |
| Identifier/Source | Tousif Ahmed, Assistant Manager, Accounts Department, in management meeting on 20-2-2013 |
| Rationale | When a plot is removed this information is then added on to the Record Data to keep as a log file. |
| Input | Not Applicable. |
| Output | Not Applicable. |
| Restrictions & Risks | Only the manger and the system can remove a plot from the plot data. |
| Dependencies | Functions.Plot.reservePlot |

### 3.2.3 Manage Customers

|  |  |
| --- | --- |
| Requirements ID | Functions.Customer.getData |
| Title | CustomerGetData |
| Description | All the current customer records can be found by managers and accountants. |
| Identifier/Source | Tousif Ahmed, Assistant Manager, Accounts Department, in management meeting on 20-2-2013 |
| Rationale | Accountant and manager needs to see the overall customer list, their installment status, dues, their current balance. |
| Input | Not Applicable. |
| Output | Not Applicable. |
| Restrictions & Risks | Only Manager, Accountant can access this information. |
| Dependencies | Not Applicable. |

|  |  |
| --- | --- |
| Requirements ID | Functions.Customer.setData |
| Title | CustomerSetData |
| Description | Any current customer records can be updated by managers, accountants. |
| Identifier/Source | Tousif Ahmed, Assistant Manager, Accounts Department, in management meeting on 20-2-2013 |
| Rationale | Accountant and manager needs to see the overall customer list , their installment status, dues, their current balance. |
| Input | Not Applicable. |
| Output | Not Applicable. |
| Restrictions & Risks | Only Manager, Accountant can access this information. |
| Dependencies | Not Applicable. |

|  |  |
| --- | --- |
| Requirements ID | Functions.Customer.AddData |
| Title | Add Customer Data |
| Description | New Customer Entry is added into the customer List in the database. |
| Identifier/Source | Tousif Ahmed, Assistant Manager, Accounts Department, in management meeting on 20-2-2013 |
| Rationale | The Front End officers should be able to add new Customer records into the customer list in the database. |
| Input | All the necessary Customer information. This includes Customer’s name,Passport Number,Address, email address, Plot number booked. |
| Output | Customer added into the customer list. |
| Restrictions & Risks | Only the front end officers are able to add customer data. |
| Dependencies | Functions.b Customer.getData |

|  |  |
| --- | --- |
| Requirements ID | Functions.Customer.removeData |
| Title | CustomerRemove |
| Description | When a Customer needs to be removed from the Customer List by entering their username and password that customer is removed from Customer List. |
| Identifier/Source | Tousif Ahmed, Assistant Manager, Accounts Department, in management meeting on 20-2-2013 |
| Rationale | The members can remove a customer If a customer is ready to receive all the plot that he/she ordered or if the due month has exceeded the threshold limit. |
| Input | Enter Username and password of a customer. |
| Output | Customer gets removed from Customer List. |
| Restrictions & Risks | Only the system, manager and the accountants can remove a customer. |
| Dependencies | Functions.Customer.getData |

### 3.2.4 Customer Authentication

|  |  |
| --- | --- |
| Requirements ID | Functions.Customer.Login |
| Title | Login of a Customer |
| Description | Any registered Customer can see his/her overall status by entering customer name and password. |
| Identifier/Source | Tousif Ahmed, Assistant Manager, Accounts Department, in management meeting on 20-2-2013 |
| Rationale | A registered Customer can login into the website and see this personal information. Each individual Customer can only see his/her overall information through this function. |
| Input | Customer needs to enter his/her username and password to enter. |
| Output | Customer can see his overall status. This status includes various information like billing information, time and date, Months Due. |
| Restrictions & Risks | Customer must enter a valid username and password. |
| Dependencies | Not Applicable. |

|  |  |
| --- | --- |
| Requirements ID | Functions.Customer.logout |
| Title | Logout of a Customer |
| Description | The customer can logout from the system. |
| Identifier/Source | Tousif Ahmed, Assistant Manager, Accounts Department, in management meeting on 20-2-2013 |
| Rationale | The Customer should be able to logout whenever necessary from the system. |
| Input | Not Applicable. |
| Output | Not Applicable. |
| Restrictions & Risks | Not Applicable. |
| Dependencies | Functions.Customer.login |

### 3.2.5 Manage Mail System

|  |  |
| --- | --- |
| Requirements ID | Functions.MailSystem.SendMail |
| Title | SendMail |
| Description | Whenever a customer is found with due month more than 4 or 5 then a auto generated mail is delivered to that customer to pay up his dues. |
| Identifier/Source | Tousif Ahmed, Assistant Manager, Accounts Department, and  Tanzil Chowdhury ,Director , in management meeting on 20-2-2013 |
| Rationale | The System checks the client information for any customer for long due records. If such situation occurs then a mail is generated by the system and delivered to that specific customer. |
| Input | Not Applicable. |
| Output | Not Applicable. |
| Restrictions & Risks | Not Applicable. |
| Dependencies | Functions.Database.Customer.getData |

## 3.3 Design Constraints

There are no design constraints.

## 3.4 Software System Attributes

#### 3.4.1 Reliability

* The REMS should perform its operations and functionalities without any crash.
* The REMS should be able to recover from data loss due to system failure etc.
* The REMS should have consistent data about the customer.

#### 3.4.2 Availability

* The REMS will be available at all times, even during the system backups and recoveries.
* The REMS will be accessible from all over the globe at any time.

#### 3.4.3 Security

* There will be proper user privileges according to the user type i.e. Forwarding Officer or Accountant or Manager or Customer.
* Users will be able to login into the system only by using his or her id/username and password.
* Historical data/Past records about members will be saved in the system.

#### 3.4.4 Maintainability

* Every information is backed up and maintained by the database system.
* Data is backed up at a consistent interval.

#### 3.4.5 Portability

* The REMS will run its web interface on any operating system that has a web browser installed.
* The REMS web server would be portable to any other server that supports Apache.

Appendix A

Receipt & purchase documentation

information about fulfilled payment

Daily report

Transfer customer’s payment

Manager

Customer

Requirement & payment

plot register

documentation

Fig: CONTEXT DIAGRAM

Appendix B

**give booking or installment**

**go to office**

wants to have a plot

want to have another plot

need to update information in database

**update database**

need to transfer payment and report to account department

**deliver plot to customer**

send report and payment to account department

time to deliver the plot

send customer data and plot number to execution department

payment is completed

Fig: STATE TRANSITION DIAGRAM

Appendix C

requirement

fulfill requirement

prepare delivery

receive

front officer

customer

collect documentation

prepare customer’s payment and information

collect data

account’s officer

complete registration

record

Execute officer

payment complete

Daily report

manager

Fig: USER CASE DIAGRAM

Appendix D

**Activity Diagram : 1**

**Software**

**Front officer**

**Customer**

Authentication

Enter Id & Pass

invalid

valid

Customer’s question

Answer to the customer’s question

Collect data from database

Data of specific installment or booking

give a booking or installment

update database

take money receipt

Prepare a money receipt

offier log out

log out from system

### Execute officer

### customer

### Front officer

### Manager

### Software

### Account’s officer

Enter Id & Pass

Authentication

valid

invalid

show database

collect information

check transection status

process information

collect report

check payment is completed

prepare daily report

yes

register plot and prepare documentation

no

deliver plot

inform customer about the due

collect record about plot

update database

receive plot

log out

log out system

Appendix E

query

requirement & payment

Receipt and service

answer

available plot list

**customer**

new booking

new customer

installment

new customer info

new booking info

new installment record

customer installment list

booking list

customer list

installment record

booking record

customer record

Manager

daily report

payment report

plot sold record

confirmation data

plot sold list

registration data

plot registration list

purchase and register documentation

registration record

Data Flow Diagram

\*\*\*\*\*\*\*\*\* End of Document \*\*\*\*\*\*\*\*\*