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

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REMS software

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Revision History

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

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:

I. General View
II. Customer View
III. Officer View
IV. Accountant View
V. Manager View
VI. Customer Registration
VII. Reserve plot
VIII. Login Member/Customer
IX. Logout Member/Customer
X. View Customer information
XI. Update Customer information
XII. Add Customer information
XIII. Customer account authentication
XIV. Removing Customer
XV. View Plot Information
XVI. Add Plot Information
XVII. Update Plot Information
XVIII. Automatic Mail Generation and Sending
XIX. 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

2. Name: Oracle Database
   Mnemonic: ORCL_DB

Version No: Oracle 9
Source: Oracle

3. Name: Apache
   Mnemonic: APCH_WEB
   Version No: 2.2
   Source: Apache Software Foundation

4. Name: Internet Explorer
   Mnemonic: IE
   Version No: 7
   Source: Microsoft Corporation

5. 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

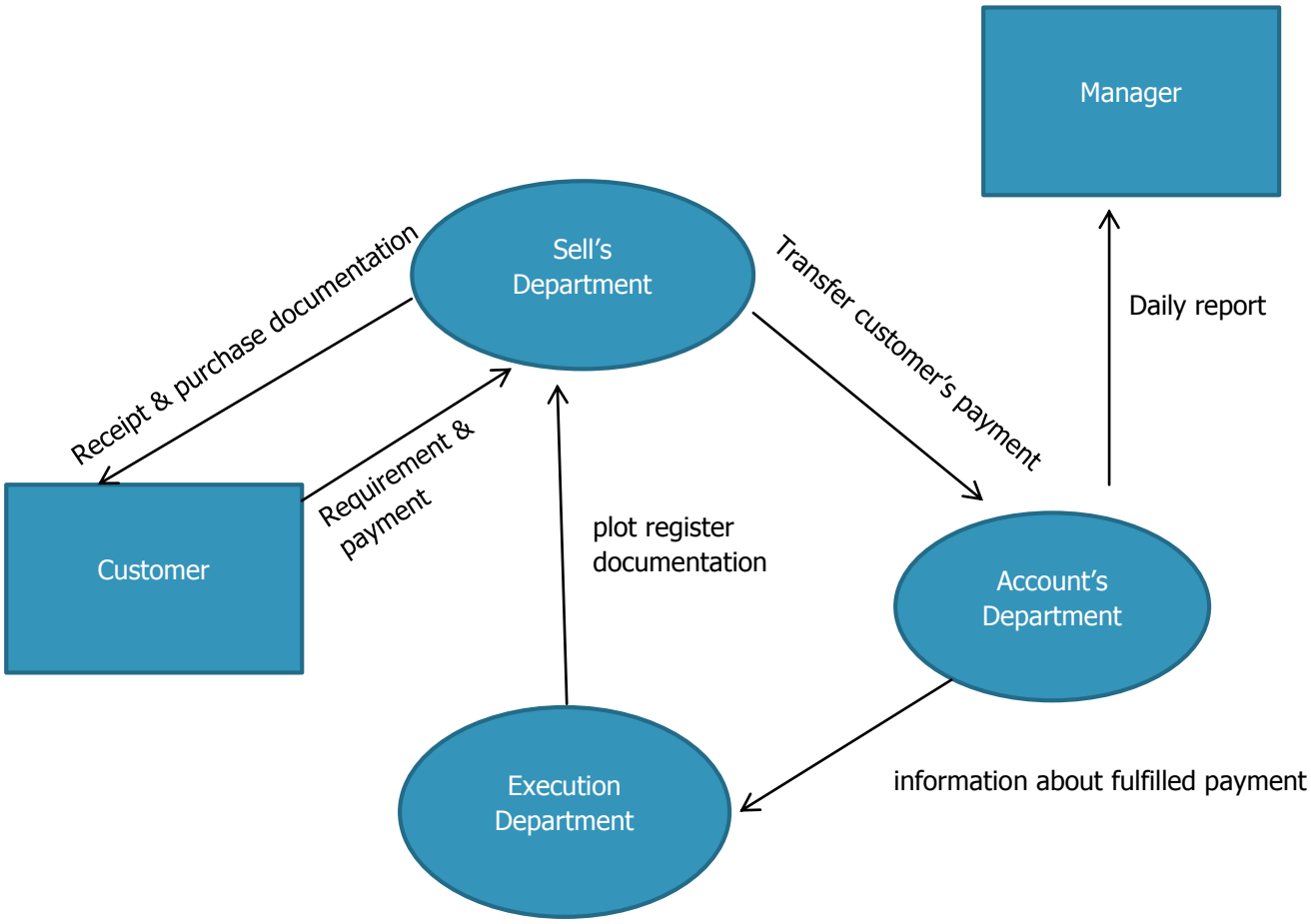


Fig: CONTEXT DIAGRAM

Appendix B

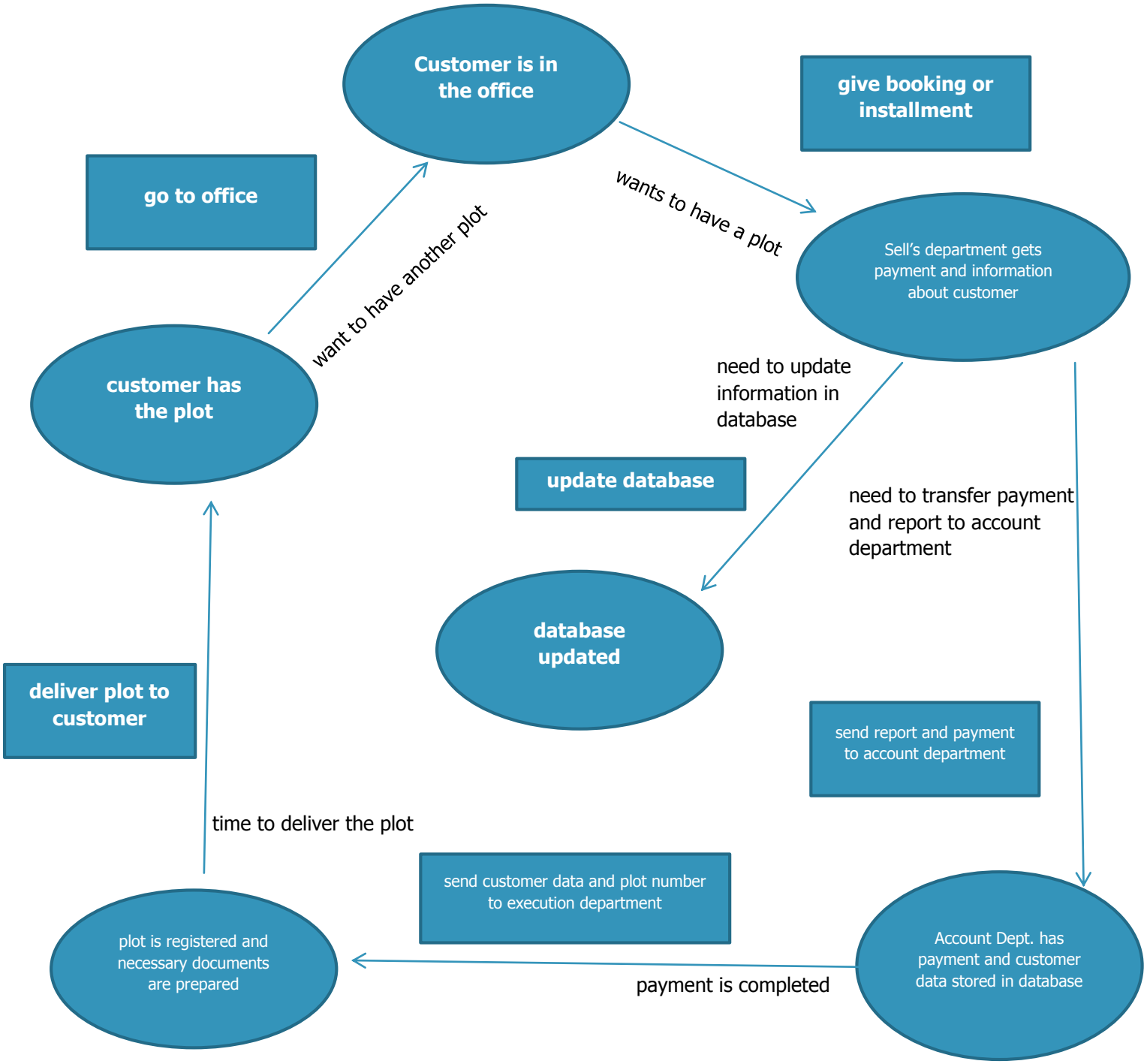


Fig: STATE TRANSITION DIAGRAM

Appendix C

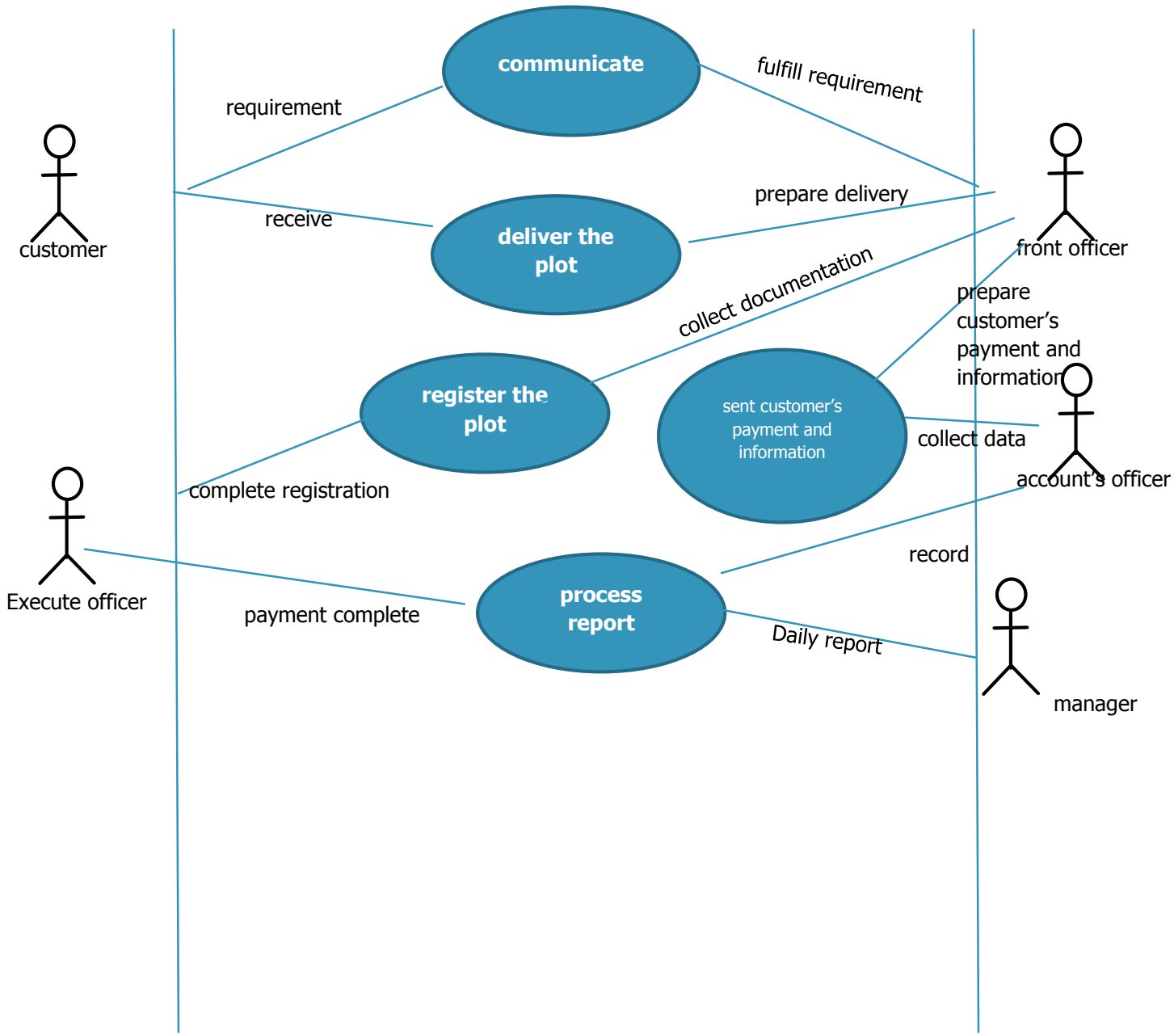
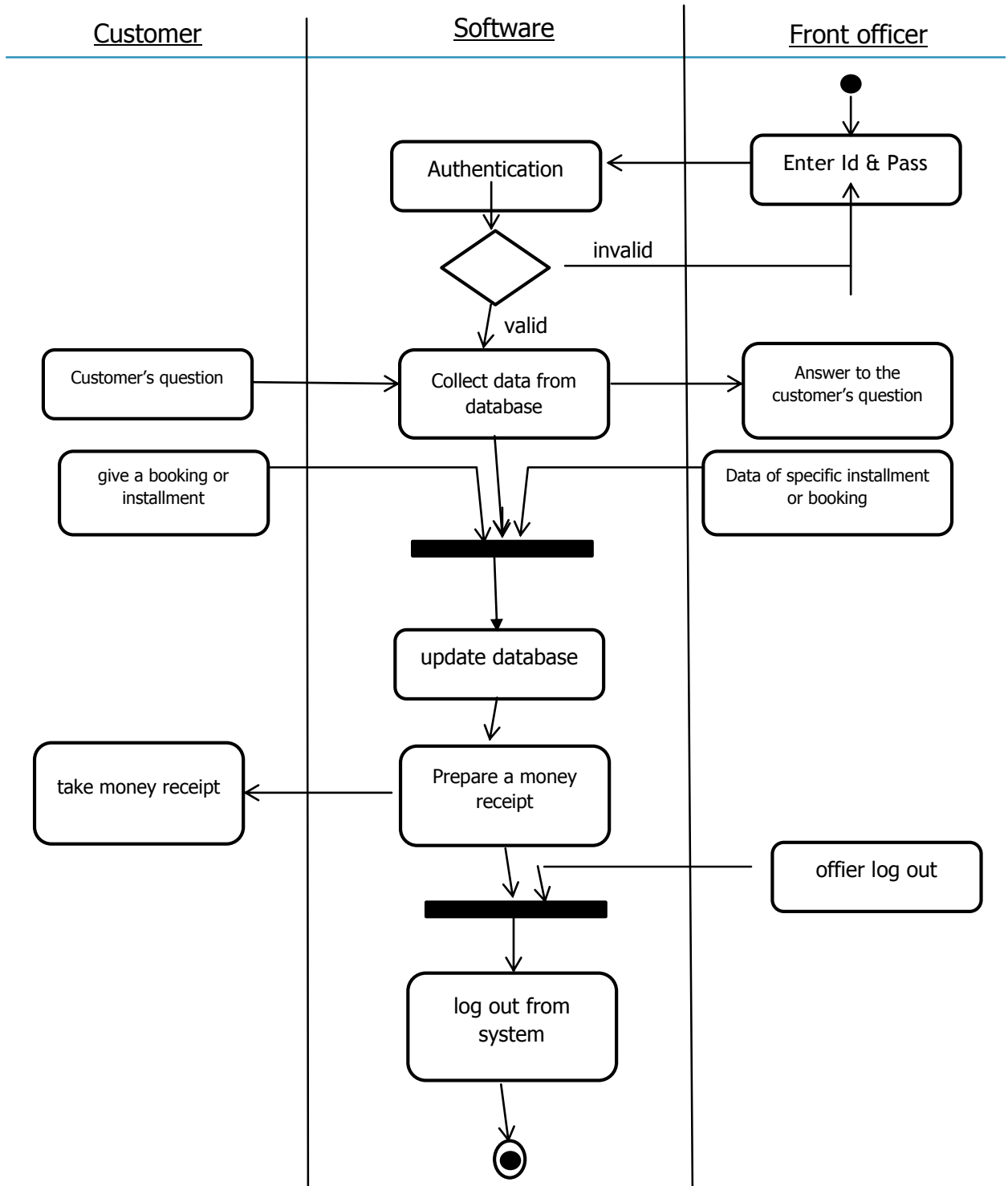
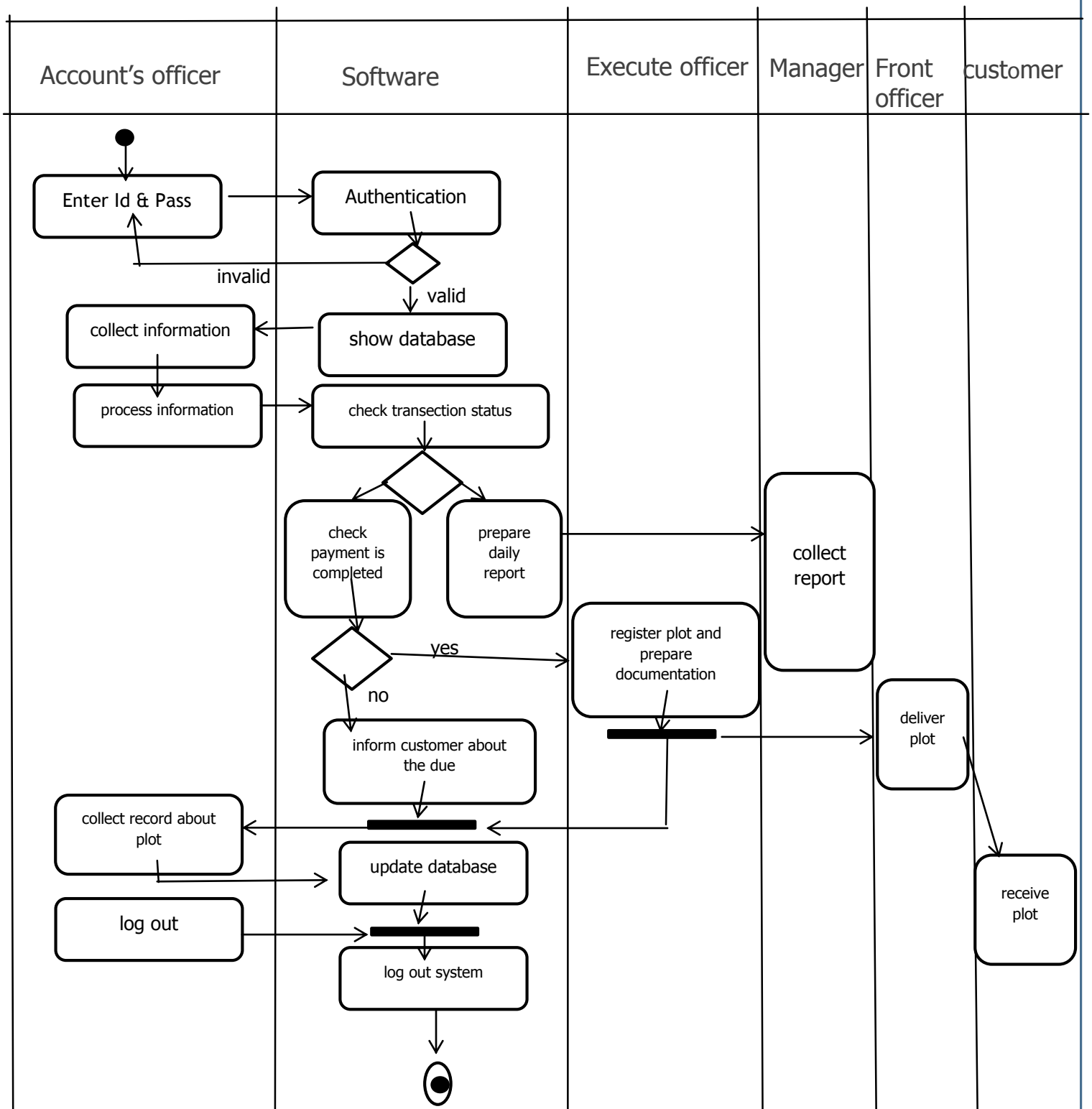


Fig: USER CASE DIAGRAM

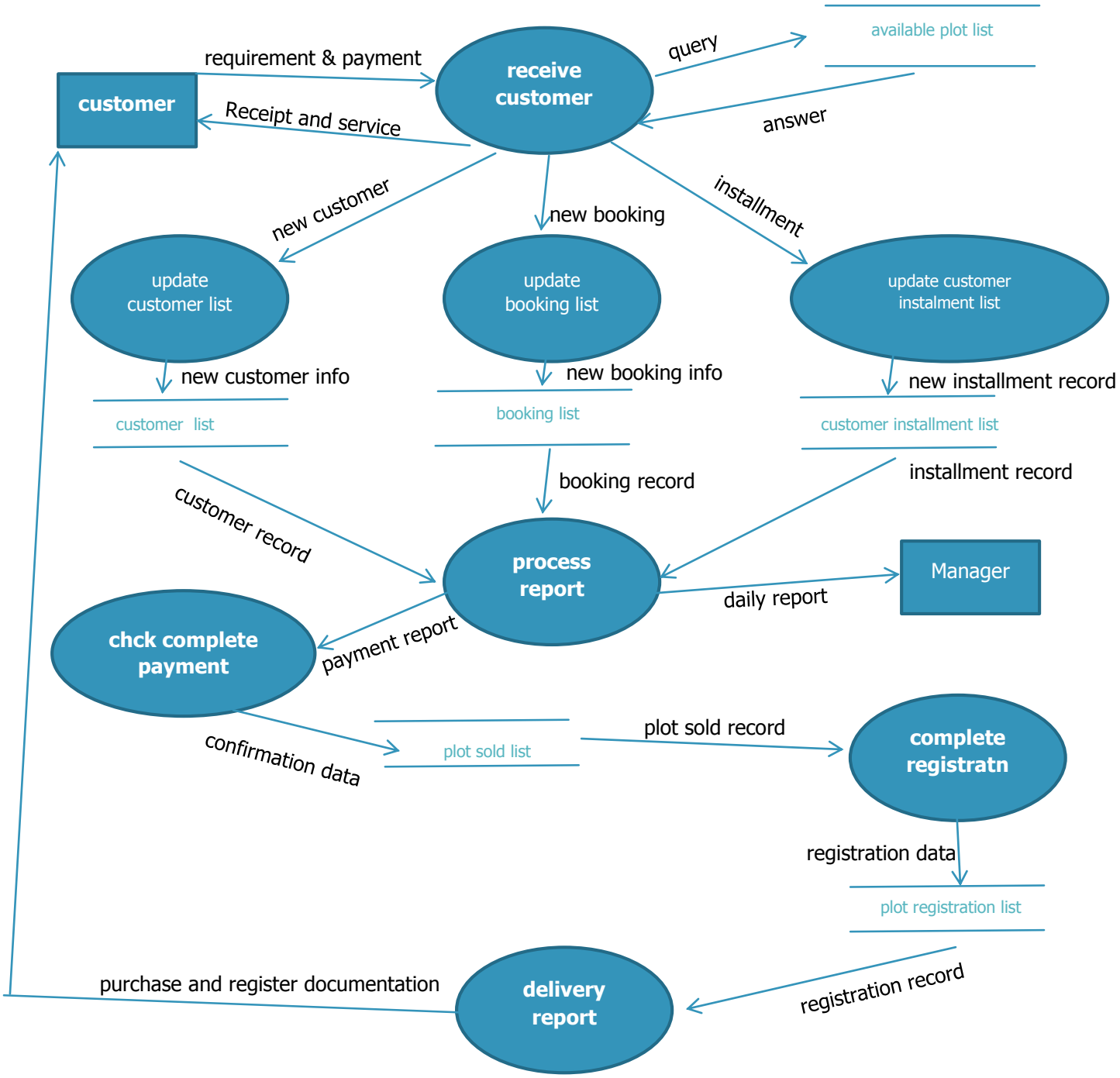
Appendix D

Activity Diagram : 1




Account's officer
Software
Execute officer
Manager
Front officer
customer
Enter Id & Pass
Authentication
invalid
valid
collect information
show database
process information
check transection status
check payment is completed
prepare daily report
collect report
register plot and prepare documentation
yes
no
deliver plot
inform customer about the due
collect record about plot
update database
log out
log out system
receive plot

Appendix E



Data Flow Diagram

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