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E-wallet
(Report)

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Abstract

This document shows the architectural design of the E-Wallet system. It contains graphical description about classes and functions in a simple way, obviously that structure of the system is now more understandable and the representation of requirements is shown in a way that reflects the purpose of the system also it gives a brief of how the software will be like.

Chapter one: Proposal

1.1 What is E-Wallet?

It is a secure place that contains your personal cards (ID, driving license) and Your money with the ability to use them everywhere.

1.2 Main goals:

- Make life easy by saving time and effort.
- Get rid of cards like driving license, car license, medical insurance and personal ID.
- Keeping up with the modern technology.

1.3 Challenges:

- The ability to secure information.
- Link between the government database and the system.
- Credibility and trust of the government.
- Link between the banks and the system.

1.4 Main functionality:

- Logged in by user name and password.
- Update cards and banks information online.
- Add personal ID.
- Add driving license.
- Add Medical Insurance.
- Add personal bank account.
- Online payment.

1.5 User usability and benefit:

- No need to carry out cards and moneys.
- Fast and easy access to your information.
- You do not have to go to government departments to update your information.
- High level security place where you find all your information.

Chapter two: SRS

2.1 Introduction

This SRS is for the electronic wallet system which affects the lives of people by making them easier and better, and that achieved by transferring the information from the cards to the system so that all the personal information become digital. This document focus on the description of the basic operations and functionality of the system, such as adding and updating information also the process of transfer, handling and securing the information.

2.2 Purpose

The purpose of this document is to present a detailed description of the E-wallet project. It will show what the system will do, the constrain that the system must committed with. The intended audience for this document is both a stakeholders and developers of the system.

2.3 Scope

The E-Wallet "Electronic Wallet" is a mobile application that store your personal cards (ID, driving license, etc.) and bank accounts in one place, the main goal of E-Wallet is to get rid of cards in a way that
you don't have to carry any of them.

Through government and banks technical supports we can access to people information by adding, removing and request for renewal if it is expires soon ,also the ability to connect the user directly by
calling technical support for each section (banks or government).

2.4 Definitions, Acronyms, and Abbreviations

Table 1- Definitions

Term	Definition
E-Wallet	Electronic Wallet.
SRS	Software Requirements Specification.
SSN	Social Security Number.
User	The person using the E-Wallets software.
Admin	System administrator who is given specific for managing controlling the system.
Stakeholders	Any person who benefits from the system.
Database	Collection of all the information monitored by this system.
E-commerce	Electronic commerce , refers to the buying and selling of goods or services using the internet, and the transfer of money and data

2.5 Overview

This project is divided into three sections. The first is a general explanation and intro about the project, where we talk about goals and what it offers. The second section contains a general overview of the program and the functions of the system and how it interacts with other systems and general constraint. The third section includes in detail specific requirements and description of the system interfaces and is intended for developers.

2.6 General Description

This section describes the general factors that affect our product and it is requirement. It will describe what type of stakeholders that will use the system and their features. In addition, the system functionality will be defined and it will be show how the system interacts with other systems and the constraints for the system.

2.6.1 Product Perspective

This application will be used to store personal information in one place. In a way that make cards useless by making Simple user interfaces so that the majority of people can interaction with the system which consists of two components, software and information. The software component stores information and provide security and encryption of the data. The information component is the link to databases that contain the user accurate information.

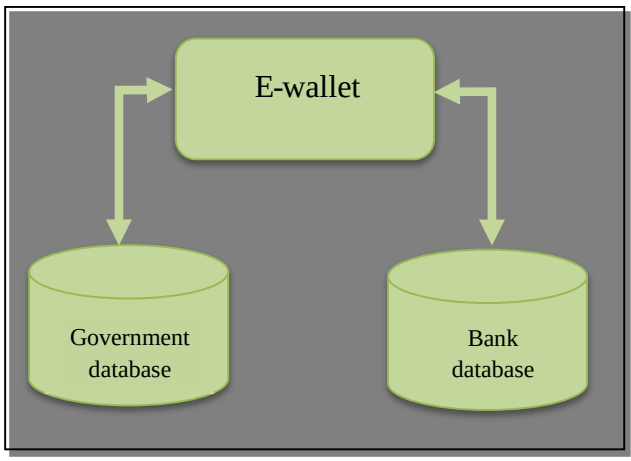

Figure 1 Block diagram

Since the application depends on trusted Information there will be two databases linked to the system providing information using internet connection in a fast way, see Figure 1. The first one is the government database, which contain different type of data like user information, and the other is the bank's database
that holds the user account information.

2.6.2 Product Functions

The app will provide many services, beginning with registration and ending with online payment. The user information likes personal ID, driver license, and insurance is added after checking out the government database and make sure that the input information is correct.

After adding a bank account and make sure that the input information is matched with the bank database, the user can perform different payments like, online shopping payments and government payments.

The ability of display and updating information in more flexible way whether it is personal information or bank account information. In addition, a different type of an announcement is given such as card
expiration and appointments.

2.6.3 User Characteristics

Users and administrators are the only people who interact with the system. The users are the one whose old enough to have a wallet that's contain their ID card, credit cards and driver license card, also the ability to read and write in English or Arabic . The administrators are responsible of organize and support the system, include managing the information and make sure that it is correct.

2.6.4 General Constraints

The application will contain two languages English and Arabic .The operating systems that the application will work on are IOS and Android, to use the app you must have internet access . People that have ID card, credit card and driver license card are the only once that can use the application.

2.7. Specific Requirements

This section shows the system functions and features that effects the system as well as system requirements.

2.7.1 Functional Requirements

This section provide description about user requirements and functionality in detail.

2.7.1.1 < Expired and Update>

Introduction: Before the expiration, you will get a notice six months before the expiration date of the card. In addition, an optional renewal is available.

Inputs: Expiry date (d1); current date (d2).

Processing: Access the governments database and fetch the expiry date, and using the internet to fetch the current date. A mathematical equation is done. Which is subtracting the current date from the expiry date. Then if the remaining time is more than six months, nothing is done. If the remaining time is less than six months, an announcement is sent to the user, to notify him that the card is close to expiry. Then an option will be given to renew the card, if it is rejected nothing is done. If it is accepted, your bank account will be checked for balance if it's enough. The renewal will be granted, and the fees will be deducted from your account. If your balance is not enough, a message will be sent to notify the user for your insufficient balance. This process is done every 6 months.

Outputs: Notice of expiration of the card. Option to renew the card.

2.7.1.2 < Booking appointments >

Introduction: The customer can book dates in different government departments to review official papers.

Inputs: date and department.

Processing: display the government departments, select the desired section then Access the government database particular the government calendar, and display the available appointments and select the suitable one.

Outputs: Reservation number and the date information

2.7.2 Non-Functional Requirements

Since the system depends and hold very sensitive information, protecting that information is the highest priority and that will be achieved by several things:

- Powerful recoverability since the system possess sensitive information about the user in case of system collapse.
- Applied the security system, which is followed in E-commerce classification.
- Secure the data by using many Encryption methods.

Chapter three: Design

3.1 Introduction

In today world with the technology development many countries and companies already entering the digital world by transferring files, paper documents and all the information into software , gathering all the Information in one place can be dangers unless that place is a strong, secure and trustworthy. Systems that deal with financial services may known as electronic wallet that hold your bank account information and its enable the user to preform several type of payment and none of these software has the ability to store different type of information like Id, driver License, etc.

However the E-Wallet is capable of doing that by allowing the user to transfer all his different cards information into powerful and secure system, the user will be able to have a full control of his cards and there functionality like update, editing and deleting, the system will be linked to two databases to conform the correctness of the information. As the program evolves, many improvements will occur such as adding a passport, and multiple bank accounts. This type of software will affects the lives of people by making them easier and better.

After collecting the information and the ideas that we need, Group 1 was able to complete the software requirements specification, that led to improve knowledge of the team about the project, and that helped us a lot in the designing phase, which is in progress.

In this document which consist of 5 sections (High Level and Medium Level Design, Detailed Design, User Interface Design, Contribution of Team Members, Conclusion) first section contain the system architecture pattern with description of how it is work also the class diagram and description for each class and their methods, the second section contain a flowchart diagram that show the process of selected methods, the third section contain snapshots of the user interface with detail description of each figure, the fourth section talk about the team member Contribution and their role, finally the conclusion which is a summary of the whole document.

<E-Wallet>

3.2 High Level and Medium Level Design

3.2.1 System Level Diagram

The system architecture consists of several subsystems, see Figure 1, which communicate with each other and form a complete system.

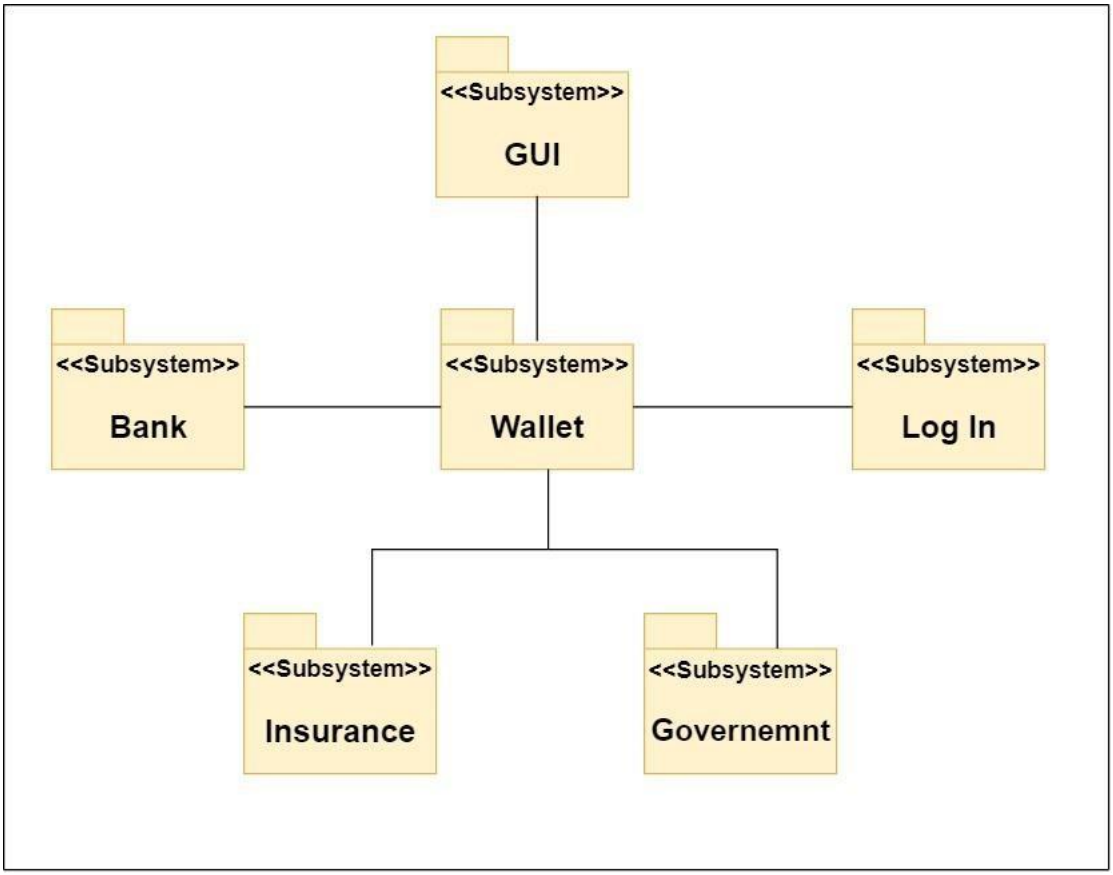

Figure 1 System Architecture

Description of the subsystems

GUI:

This subsystem allows users to interact with different electronic devices using icons and other visual indicators.

Wallet:

This subsystem contain main financial operations like online payment.

<E-Wallet>

Log In:

The Log in procedure used to get access to the system or application with an extra layer of security using verification.

Bank:

This subsystem provide financial services and it is responsible for operating a payment system.

Insurance:

This subsystem is concern with health and car Insurance and its operations.

Government:

This subsystem hold the user personal information, and car information.

3.2.2 System Architecture Pattern

The MVC stands for "Model-View-Controller "pattern, see Figure 2 This model is divided into three interconnected parts all of them are built to handle some specific development parts of any web or software application. The Model handle data and business logic, the View present data to the user in any supported format and layout, the Controller receive user request and call appropriate resources to carry them out.

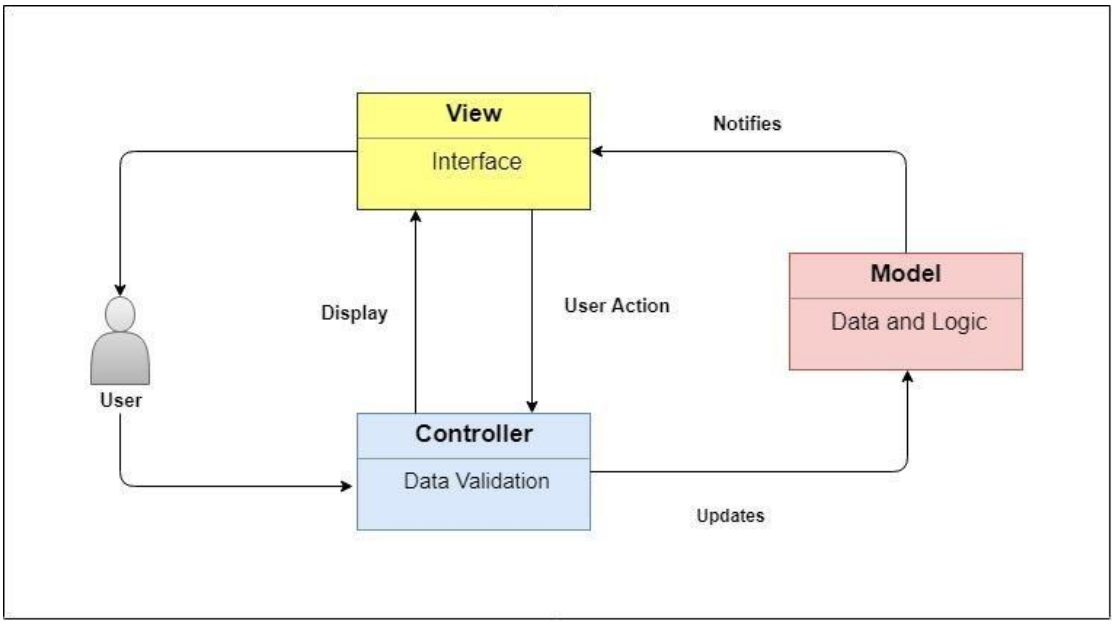

Figure 2 Architecture Pattern

<E-Wallet>

3.3 Class Diagram

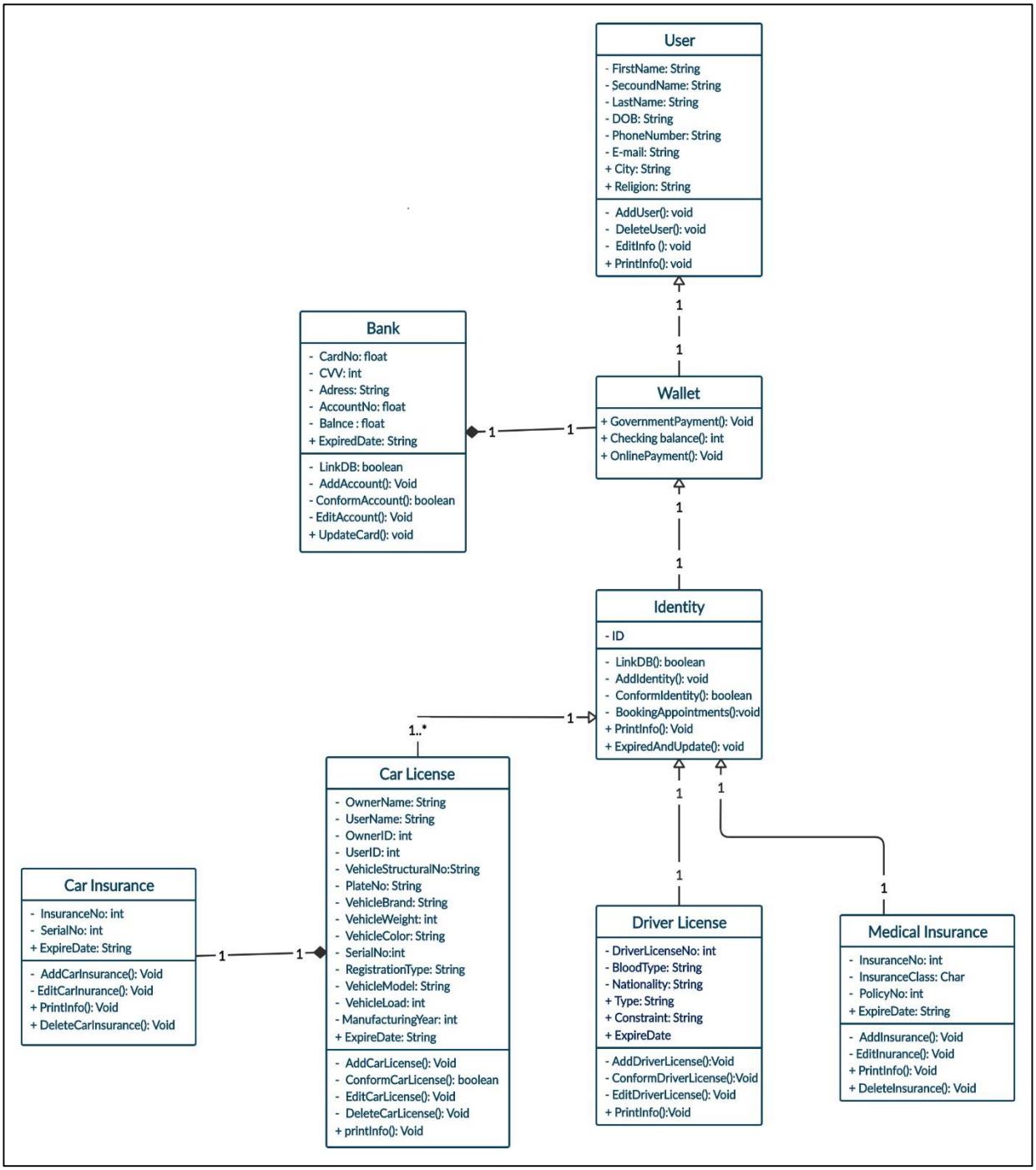

Figure3 Class Diagram

3.4 Class Method Descriptions

Driver License Class

The driver license class contains information about the license like type and expire date also the holder information like blood type and date of birth.

Class	Driver license
Method	AddDriverLicense
Visibility	Private
Return type	Void
Parameters , types	User :String, Bloodtype:Char, ID: float, ExpireDate:String
Description .	This method create electronic card, which hold information about the user.

Class	Driver license
Method	ConformDriverLicense
Visibility	Private
Return type	Boolean
Parameters , types	None
Description .	This method purpose is to check whether the driver license is correct or not.

Class	Driver license
Method	Printinfo
Visibility	Public
Return type	Void
Parameters , types	None
Description	This method display the information of the driver license card.

Class	Driver license
Method	EditDriverLicense
Visibility	Private
Return type	Void

Parameters , types	None
Description .	This method is used for editing information about Driver license.

Car license Class

This class contain detail information about the car, many attributes like the shape, weight and color also the owner information and methods to modify and create electronic car license.

Class	Car license
Methods	AddCarLicense
Visibility	Private
Return type	Void
Parameter, type	None
Description	This method create electronic card, which hold information about a car that the user entered.

Class	Car license
Methods	ConformCarLicense
Visibility	Private
Return type	Boolean
Parameter, type	None
Description .	The only process this method do is checking whether the information is correct or not by accessing the database.

Class	Car license
Methods	EditCarLicense
Visibility	Private
Return type	Void
Parameter, type	None
Description .	In case of incorrect information entered, this method allow the user to modify it.

Class	Car license
Methods	DeleteCarLicense
Visibility	Private
Return type	Void
Parameter, type	None
Description .	This method delete the car license card and all the information in case of the car is sold or change.

Class	Car license
Methods	PrintInfo
Visibility	Public
Return type	Void
Parameter, type	None
Description .	The card can be displayed using this method, it print all the car information in organized.

Identity Class

The identity class It is concerned with the identity and how to add it and make sure it is valid and linked to the database and other services such as renewal and booking dates.

Class	Identity
Method	LinkDB
Visibility	Private
Return type	Boolean
Parameters, types	None
Description: .	This method Link between the government database and the System in order to conform the information.

Class	Identity
Method	AddIdentity
Visibility	Private
Return type	Void
Parameters, types	None
Description .	This method create electronic card, which hold personal information about the user.

Class	Identity
Method	ConformIdentity
Visibility	Private
Return type	Boolean
Parameters, types	None
Description .	This method confirms the user's identity and matches them with information in the database.

<E-Wallet>

Class	Identity
Method	ExpiredAndUpdate
Visibility	public
Return type	Void
Parameters, types	None
Description .	This method check whether the card is about to expire and send a notification to the user with optional renewal.

Wallet

This class contain the most important financial services and operations like payment also the majority of the other classes depends on it.

Class	Wallet
Method	onlinePayment
Visibility	public
Return type	Void
Parameters, types	None
Description .	This method is designed to transfer the money from the user account to another account like website.

Class	Wallet
Method	GovernmentPayment
Visibility	public
Return type	Void
Parameters, types	None
Description .	This method is designed to transfer the money from the user account to the Government account.

Class	Wallet
Method	CheckingBalance
Visibility	public
Return type	Void
Parameters, types	None
Description .	This method is designed to calculate and display the amount of money remaining.

<E-Wallet>

3.5 Detailed Design

This section provide diagrams for some functions in the E-Wallet system.

Figure 4 shows flowchart of the method
Identity:: ExpireAndUpdate() that send notification and option for renewal.

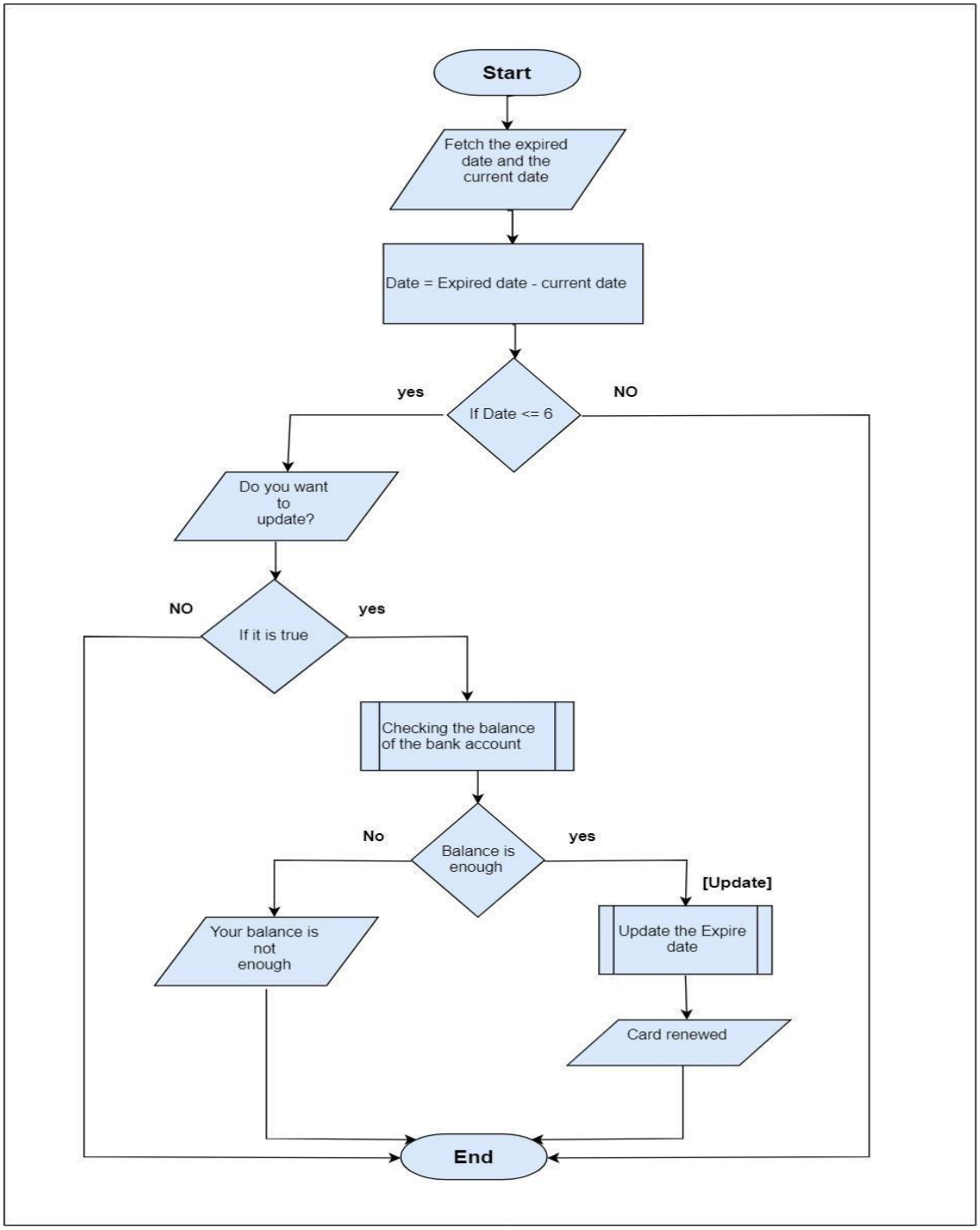

Figure4 Expire and Update

<E-Wallet>

Figure5 shows flowchart of the method
Identity:: Bookingappointment() that display the available date and allow the user to choose one.

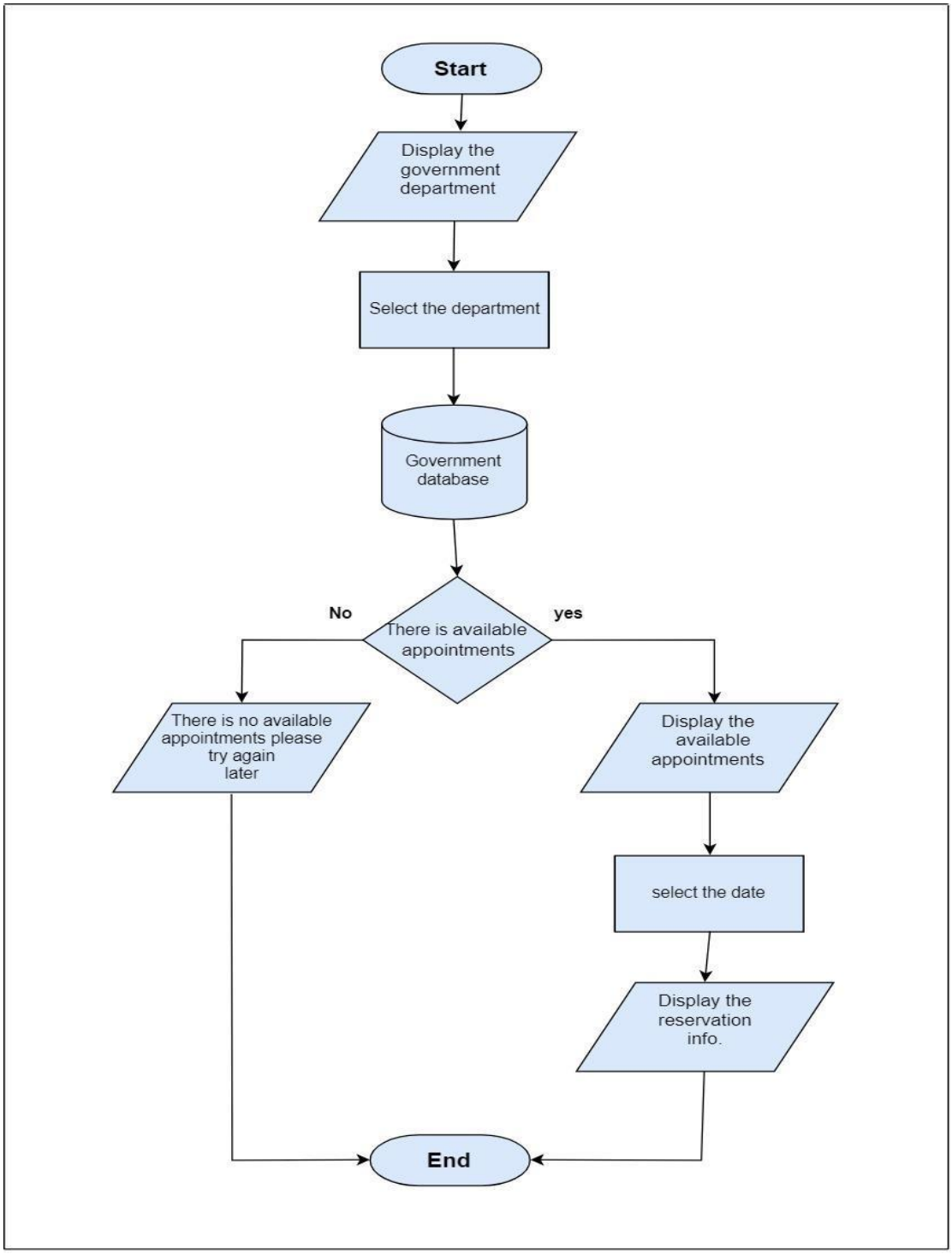

Figure5 Booking Appointment

<E-Wallet>

3.6 User Interface Design

This section provide snapshots for the E-Wallet user interface. Figure6 shows the user interface for the Log In and Verification system where the user is asked to enter the username or Id and the password to access the system, in case the user was new to the system sign up option is available if the user forgot his password he can reset the password by clicking Forgotten your password option the last thing in Log in page is Remember me option which saves the user name and password so that the user doesn't have to enter them again.

After the log In the user will have to enter 6 digit code that was send to his phone to provide an extra layer of protection if the user did not receives the code he can click on Resend SMS or Call me option.

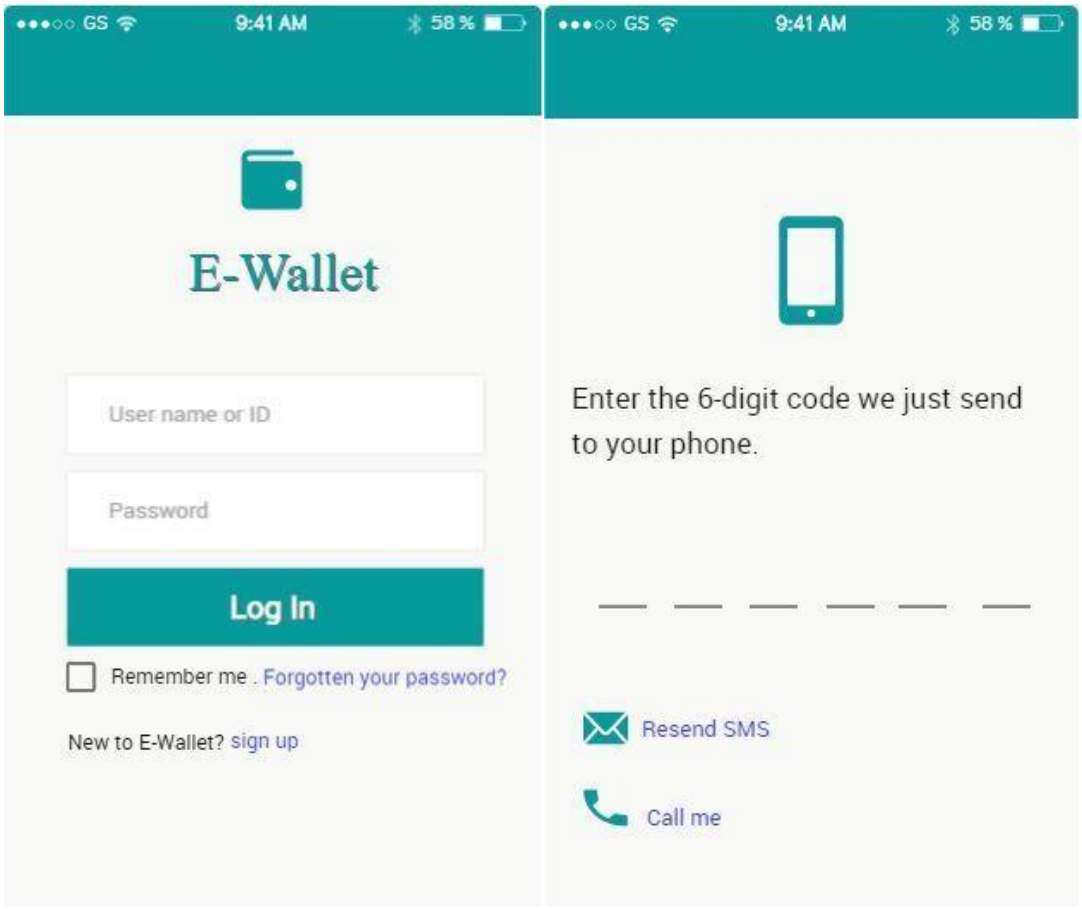

Figure6 LogIn and Verification

<E-Wallet>

In the Figure 7 below is the user interface of the system home page and one of the sections (Government), the home page is divided into 3 basic component (Government, Bank, Insurance) each on is different from the other, also the home page shows a picture of the user and finally the notification section.

The government section is divided into 4 operations (Add, View, Update, Appointments) each operation concern with government branch, other similar operations is exist in the Bank and Insurance component.

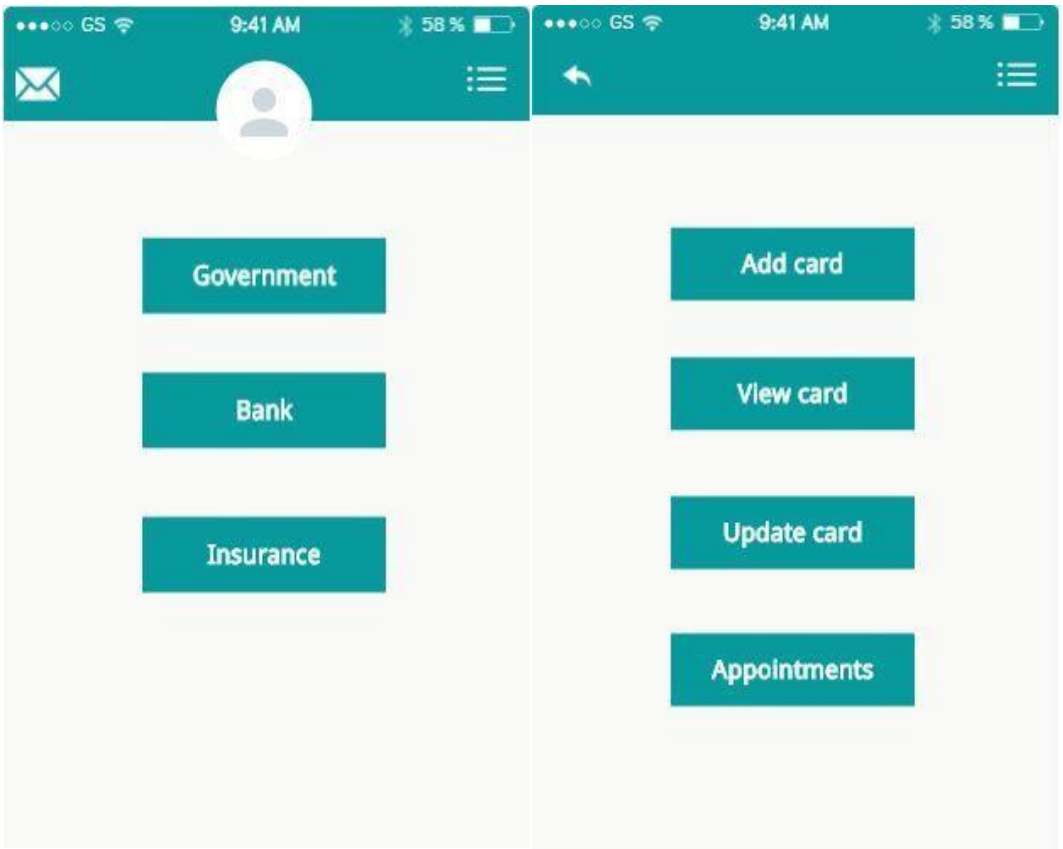

Figure 7 Home page and Government section

Figure 8 shows the user interface of the view operations and Driver License Card display, there are three card can be showed (ID, Driver License, Car License) and the user can control the Notifications about the cards.

The organization and order of information displayed on the screen is different, it depends on the information and the type of the card, Driver License card shows the picture, name of the user, blood type and other information.

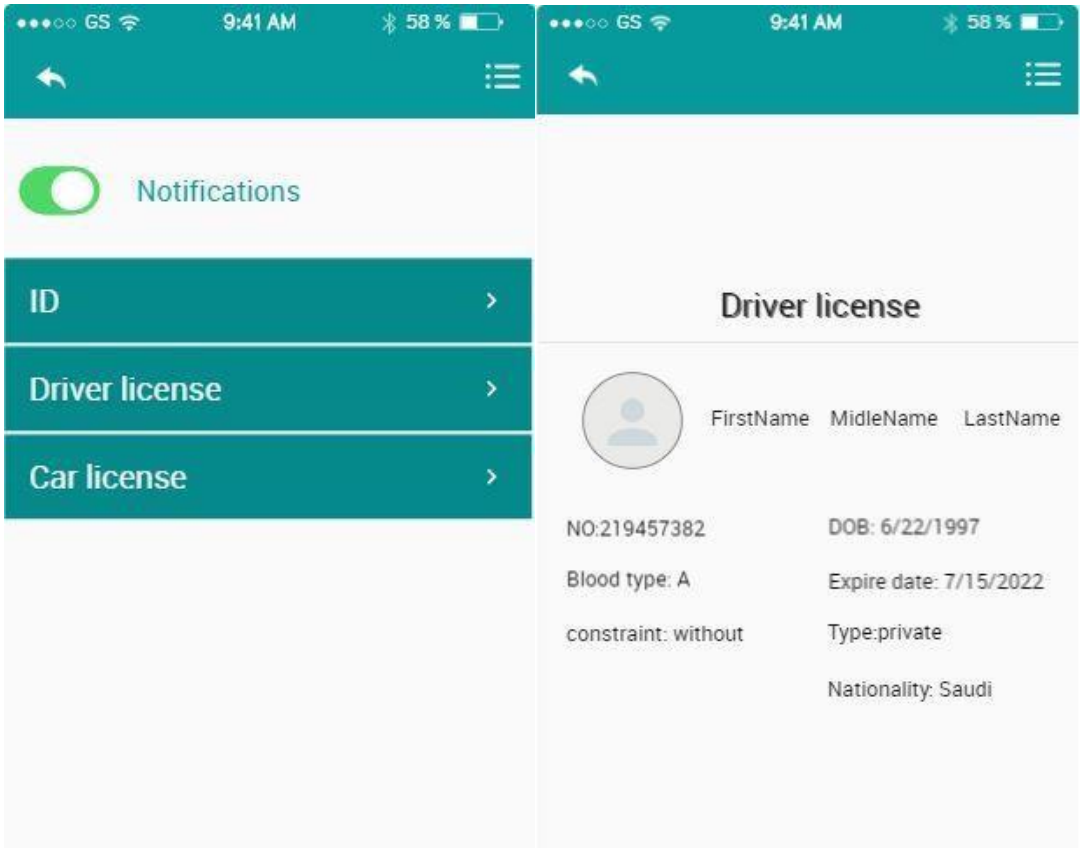

Figure 8 View opreation and Driver License Card

Figure 9 shows the system Menu and Notification, there are 5 different selections in the menu (Home, Wallet, Profile, Support, Settings) first selection take the user to the home page, the second one take the user to the financial section of the system, third one is the user profile which contain the personal information, the fourth one is the support section which help the user to solve the problem that may accrue, finally the settings that enable the user to adjustment all the system to his preference.

Whenever a card is nearly expire a notification is send to user tells him which card is gone expire and the date with an optional renewal, if user wants to renew the card or not.

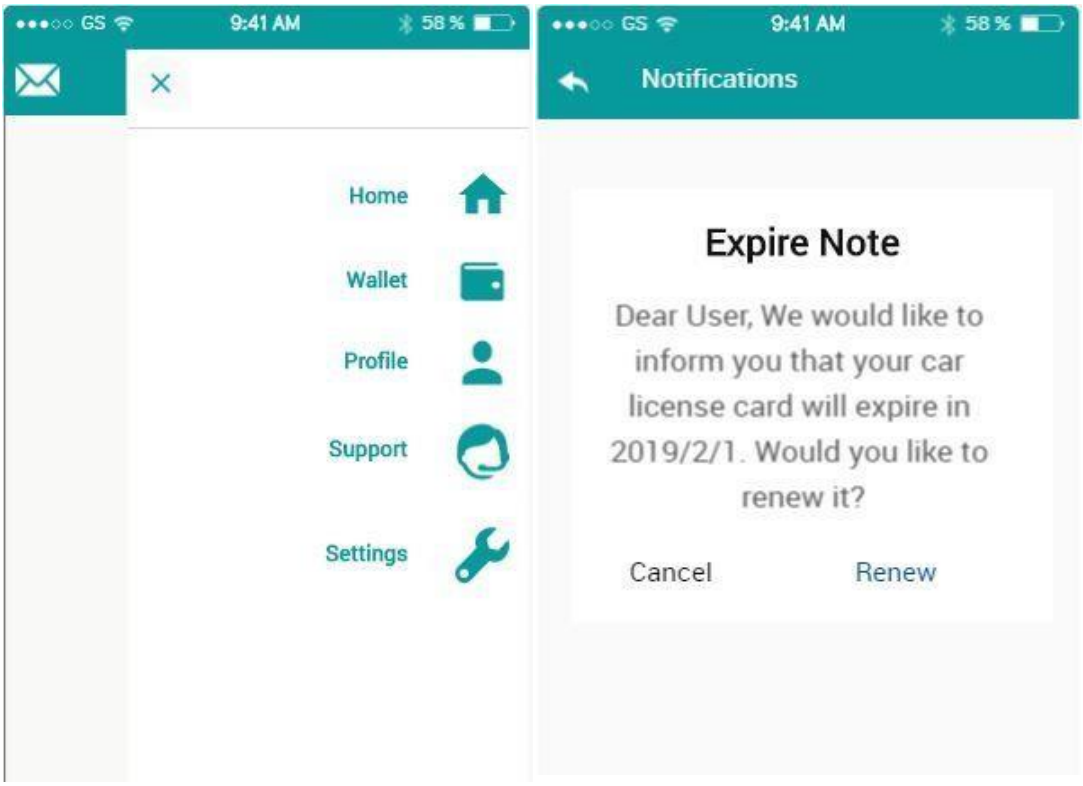

Figure 9 Menu and Notification

3.7 Conclusion

In the phase number three we tried to cover all the design requirements that we were asked to do, starting from high and medium level design that gives brief of the system component, after that we create the class diagram and the detailed design and finally we build the user interface design making it easy to understand and look more professional, the process wasn't easy so we tried our best to make it more clear.