Universidad de las Fuerzas Armadas

ESPE

Specification of Software

Requirements

Project: Simulator Health Cody + (2021)

Members:

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Revision history

Date	Review	Description	Author
03/01/2021	0.1	Software requirements specification	Tecno Cody
19/01/2020	0.2	Software requirements specification	Tecno Cody

Document validated by the parties as of: [--/--/----]

For the client	By the supplying company
Fdo. D./	Fdo. D./

CONTENT

1 Introduction

System that connects people with their favorite testing laboratory, streamlining processes and avoiding possible infections.

1.1 Purpose

Help people to have a prediction of a possible contagion, so that later they can connect with the laboratory of their choice to schedule a rapid test or pcr, to avoid the crowding of people in the same place. In addition, the administrator will have control of inventory, itinerary and results.

1.2 Scope

Our project is called "Health Cody +", a system that links the user with the test laboratory.

The user interface allows you to obtain a prediction of a possible contagion, schedule appointments, and obtain results after taking the test in person.

While the administrator (laboratory) can manage an inventory, control the schedule and manage patient results.

1.3 Personnel involved

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Responsibilities	Code review and help in documentation tasks
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Approval	Yes

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Responsibilities	Code review and help in documentation tasks
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Approval	Yes

1.4 Definitions, acronyms and abbreviations

User: is a person who uses a computer or a network service.
Administrator: is the person who is in charge of carrying out the administrative task through planning, organization, direction and control

Laboratory: are those fixed or mobile places that have the technical, material and human capacity to carry out measurements, analysis or determine the characteristics of materials, products or equipment according to established specifications.

PCR test: is a diagnostic test that allows to detect a fragment of the genetic material of a pathogen.

Quick test: identify the presence of antibodies or antigens and show the result qualitatively, positive or negative.

1.5 References

World Health Organization. Laboratory Testing Strategy Recommendations for COVID-19.; 2020

Abbott. Abbott launches molecular point-of-care test to detect novel coronavirus in as little as five minutes. Vol 564.2020. https://abbott.mediaroom.com/2020-03-27-Abbott-Launches-Molecular-Point-of-Care-Test-to-Detect-Novel-Coronavirus-in-as-Little-as-Five-Minutes.

Carbone M, Green JB, Bucci EM, Lednicky JA. Coronaviruses: Facts , Myths , andHypotheses. J Thorac Oncol. 2020.

1.6 Summary

System called "Health Cody Plus" that connects people with their favorite test laboratory, where the user provides prediction of COVID-19 contagion, scheduling of appointments and visualization of results, while the Administrator allows to manage the inventory, control the itinerary and manage PCR and rapid test results.

2. General description

The system mainly seeks to help people to obtain an accurate prognosis of a possible contagion of covid 19 and later to book an appointment in the laboratory to do the pcr or rapid test. The system will carry out activities such as taking surveys and giving its results obtaining a diagnosis for each patient and also the possibility of scheduling appointments for the laboratory of your choice.

2.1   Product perspective

The system is being developed by the entire work team, it is a totally independent system, that is to say, it does not depend on other systems, much less larger systems. This system seeks that users can feel good through its interface, conducting easy and understandable surveys for the user and giving an accurate diagnosis to the patient.

2.2   Product functionality

The system will have a simple console interface to be used and, in conclusion, it can be understood at a glance by all users who will use it in the future.

USE CASE DIAGRAM
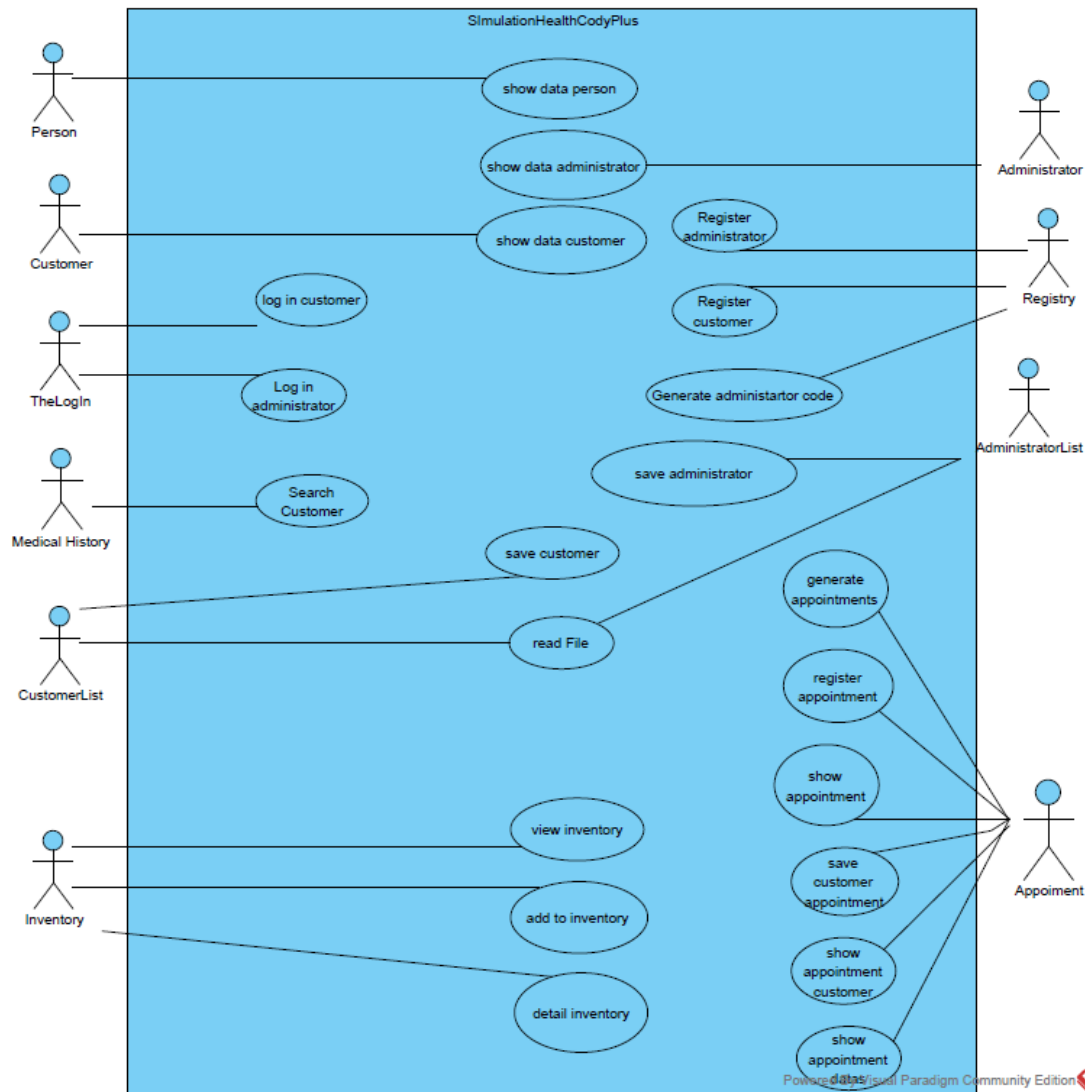
2.3 User characteristics

Type of user	Pacient

Training	Basic education, Higher education
Abilities	Ease of handling Windows Operating System.
Activities	Register in the system, Login, Fill out the survey, Schedule appointment, Check Result.

2.4 Restrictions

• The system must be developed in Java programming language.

• Information about users must be stored.

• The interface should be user friendly and easy to use.

• The system must be suitable for users over 16 years old.

• The system can only be used with a Windows Operating System

2.5 Assumptions and dependencies

• The program that will be delivered will mainly work in the console and then it will be transferred to the graphical interface.

• As soon as you choose to use a database, you must modify the system connection.

2.6 Predictable evolution of the system

After a while, the system will be modified in graphical mode for the greater benefit of the users who use it, as well as transferring their data to a more sophisticated database.

3 Specific requirements

RF 1 Register users

RF   1.1   Register   (customer)
The system will allow the user (customer) to register requesting personal data

Requirement number	1.1
Requirement name	Register customer
Type	■Requirement ☐Restriction
Requirement source	User (customer)
Priority of requirement	■High/Essential ☐Medium/Desired ☐Low/Optional

RF   1.2   Register   (Administrator)
The administrator must have a special code that identifies him as a system administrator.

Requirement number	1.2
Requirement name	Register administrator
Type	■Requirement ☐Restriction
Requirement source	User (administrator)
Priority of requirement	■High/Essential ☐Medium/Desired ☐Low/Optional

RF 2 log in users

RF   2.1   log   in   (customer)
Once registered, the user will be able to log in and access the other features of the system

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Requirement number	2.1
Requirement name	log in (customer)
Type	■Requirement ☐Restriction
Requirement source	User (customer)
Priority of requirement	■High/Essential ☐Medium/Desired ☐Low/Optional

RF   2.2   log   in   (administrator)
Once registered, the administrator will be able to log in and access the other system functions as an administrator.

Requirement number	2.2
Requirement name	log in (Administrator)
Type	■Requirement ☐Restriction
Requirement source	User (administrator)
Priority of requirement	■High/Essential ☐Medium/Desired ☐Low/Optional

RF 3 Fill survey (customer)
The client must fill out a survey with questions related to covid-19

Requirement number	3
Requirement name	Fill survey
Type	■Requirement ☐Restriction
Requirement source	User (customer)
Priority of requirement	■High/Essential ☐Medium/Desired ☐Low/Optional

RF 4 Schedule Appointment (customer)

RF 4.1 see available appointment times (customer)
the user will be able to see the schedules that are available to be able to schedule their appointment

Requirement number	4.1
Requirement name	See available appointment times (customer)
Type	■Requirement ☐Restriction
Requirement source	User (customer)
Priority of requirement	■High/Essential ☐Medium/Desired ☐Low/Optional

RF 4.2 view scheduled appointments (customer)
The client will be able to see the appointments they have scheduled and decide if they can cancel them

Requirement number	4.2
Requirement name	view scheduled appointments (customer)
Type	■Requirement ☐Restriction
Requirement source	User (customer)
Priority of requirement	■High/Essential ☐Medium/Desired ☐Low/Optional

RF 5 Check result (customer)
The results of the tests to be performed will reach the user in this section

Requirement number	5
Requirement name	Check result (customer)
Type	■Requirement ☐Restriction
Requirement source	User (customer)
Priority of requirement	■High/Essential ☐Medium/Desired ☐Low/Optional

RF 6 view medical history (administrator)
The administrator will be able to see the client's medical history

Requirement number	6
Requirement name	view medical history (administrator)
Type	■Requirement ☐Restriction
Requirement source	User (administrator)
Priority of requirement	■High/Essential ☐Medium/Desired ☐Low/Optional

RF 7 View scheduled appointments (administrator)
The administrator will be able to see the appointments scheduled by the client users

Requirement number	7
Requirement name	View scheduled appointments (administrator)
Type	■Requirement ☐Restriction
Requirement source	User (administrator)
Priority of requirement	■High/Essential ☐Medium/Desired ☐Low/Optional

RF 8 Manage inventory

RF 8.1 view available inventory (administrator)
The administrator will be able to see in the inventory of the products

Requirement number	8.1
Requirement name	View inventory (administrator)
Type	■Requirement ☐Restriction
Requirement source	User (administrator)
Priority of requirement	■High/Essential ☐Medium/Desired ☐Low/Optional

RF   8.2   Manipulate   inventory   (administrator)
The administrator can add delete and modify products in the inventory

Requirement number	8.2
Requirement name	Manipulate inventory (administrator)
Type	■Requirement ☐Restriction
Requirement source	User (administrator)
Priority of requirement	■High/Essential ☐Medium/Desired ☐Low/Optional

RF   9   Generate   reports   (administrator)
The administrator will be able to generate inventory reports and appointments

Requirement number	9
Requirement name	Generate reports (administrator)
Type	■Requirement ☐Restriction
Requirement source	User (administrator)
Priority of requirement	■High/Essential ☐Medium/Desired ☐Low/Optional

3.1 Common interface requirements

3.1.1 Software interfaces

The system uses the system console, preferably windows or also other operating systems (Linux, MC OS)

3.1.2 Communication interfaces

In order to use the program, the user must have the JAR and the JRE installed

3.2 Functional requirements

3.2.1 Functional requirement 1

- Register users: The system will allow the user to register (administrator, customer)

    - ❖ Register administrator: The system will allow you to register as an administrator with an identification code provided by the company and also personal data.
    - ❖ Register client: The system will allow registering client requesting their personal data

3.2.2 Functional requirement 2

- Log in users : Users must identify themselves in order to access the other functions

    - ❖ Log in Administrator: Administrators must identify themselves in the administrator section to access the functions that correspond to them
    - ❖ Log in customers: Customers must login with a username and password to access the other functions

3.2.3 Functional requirement 3

- Fill survey : Customers must fill out a survey with questions related to covid 19 and according to that a report will be generated with their health status

3.2.4 Functional requirement 4

- Schedule Appointment :Clients will be able to schedule an appointment for a test

    - ❖ See available appointment times: Users will have available the hours in which the tests will be carried out and thus be able to reserve a shift

❖ view scheduled appointments: Customers when scheduling an appointment will be able to see the detailed information of the appointment and decide to cancel it

3.2.5 Functional requirement 5

● Check result :In this section the client will be able to see the results of the tests that have been carried out

3.2.6 Functional requirement 6

● view medical history :The administrator can search the medical history of a client

3.2.7 Functional requirement 7

● View scheduled appointments: The administrator will be able to see the appointments that are scheduled in a day or week

3.2.8 Functional requirement 8

● Manage inventory :The administrator will be in charge of managing the inventory

❖ view available inventory: The Administrator will be able to see the stock of the products
❖ Manipulate inventory: The Administrator will be able to perform the actions such as add, delete and modify the inventory

3.2.9 Functional requirement 9

● Generate reports :The administrator will be able to generate medical inventory reports and appointments

3.3   Non- Functional Requirements

RNF 01 Execution_Time

The execution_time is necessary to know if the software is running good.

Identification of the requirement.	RNF 01
Requirement Name.	Execution time
Features	The user executes the application.
Requirement Description	After the user executes the application, the time that takes the application to execute.
Priority requirement	High

RNF 02 Survey_Percentege (Customer)

The percentage of the survey is necessary to know if the user needs or not a scheduled appointment.

Identification of the requirement.	RNF 02
Requirement Name.	Survey percentage
Features	The user obtains a percentage after that he fills the survey.
Requirement Description	The percentage of the survey is necessary to know if the user needs a schedule appointment.
Priority requirement	High

RNF 03 Exceptions

The exception is an important part of the software, because if the exception doesn't work correctly, the software falls down.

Identification of the requirement.	RNF 03
Requirement Name.	Exceptions

Features	The user such as the administrator or the patient does something incorrectly in the software.
Requirement Description	The software needs to make an exception and continue with his flow.
Priority requirement	High

RNF 04 User_documentation

The software needs to contain user documentation because if the user doesn't know what they need to do, the user documentation is to be a help for this.

Identification of the requirement.	RNF 04
Requirement Name.	User documentation
Features	The user needs documentation to use the application.
Requirement Description	The application is going to do everything that is written in the user documentation.
Priority requirement	High

RNF 05 Save information

The software needs to save information such as inventory and users.

Identification of the requirement.	RNF 05
Requirement Name.	Save information
Features	The software needs to save information in files.
Requirement Description	The application is going to save information about inventory, users, appointments.
Priority requirement	High

3.3.1 Performance Requirements

The system will be able to save user data, inventory and medical appointments in files, therefore no information will be lost when running the application or when it is closed.

3.3.2 Reliability

The system will have an exhaustive validation, where in case the user makes mistakes the system will allow him to continue after giving a notification message to the user.

3.3.3 Availability

The availability will be around 800% because it requiere many requirements, and it's structure is very complex, so it must always be available to the user.

3.3.4 Maintainability

The preventive maintenance will be carried every two weeks for a period of three months, the developers will carry out a check of the application, verifying the correct use of the exceptions, and the normal operation of the system, they will also add functionalities that help the system to the function better and to better manipulate it by the user.

3.3.5 Portability

The application will be available for the operating system of Windows or with other operating system such as Linux, Mac that have the JRE(Java Runtime Environment)
this has to be installed so that the developed software can work.

3.4 Other requirements

The changes that need to be done in the project are going to be in different versions understood in different classes.

4   Use case diagram.
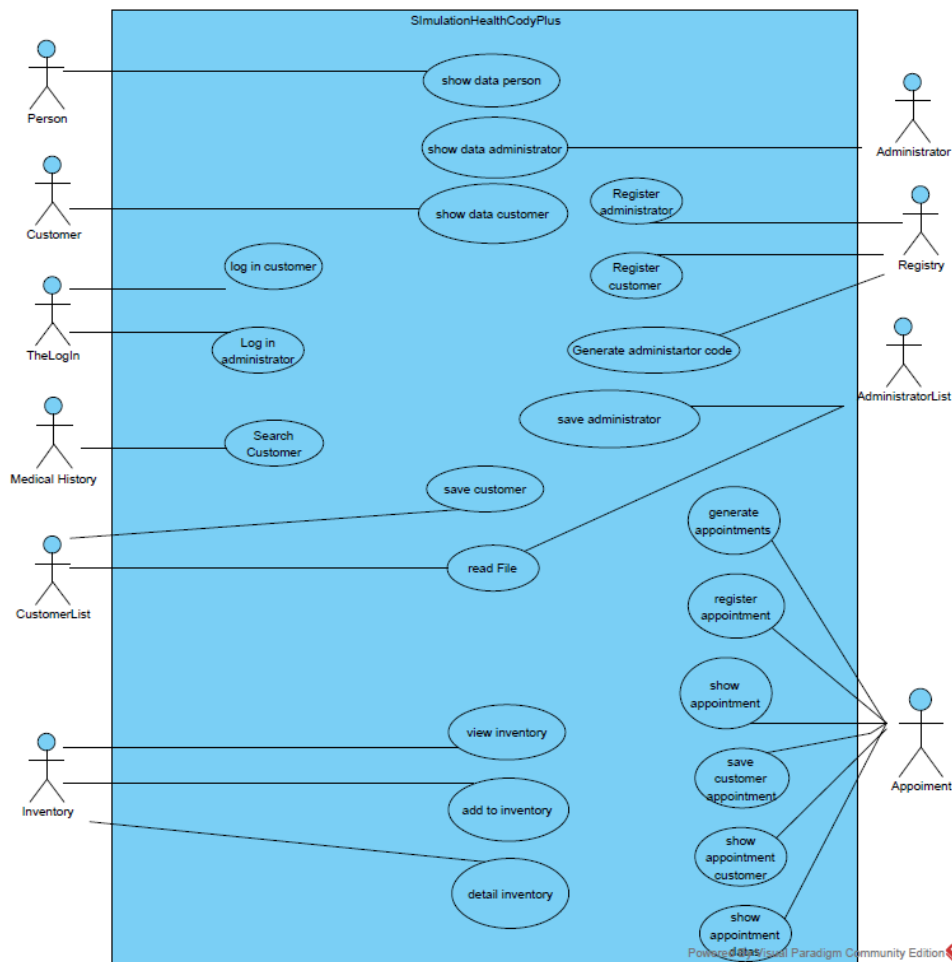
5   Use case specification

5.1   Specification of use cases.

Identifier	Use Case 1
Name	show data person
Description	show the data of the people.
Actors	Person
Preconditions	The people need to be registered.
Postconditions	The system viewed the person's data.

Normal flow of events

The system can view the person's data	

Alternative flow of events	

The system can not view the person's data because the person don't be registered and appears a notification..	

Identifier	Use Case 2
Name	show data administrator
Description	show the administrator's data
Actors	Administrator
Preconditions	The administrator needs to be registered.
Postconditions	The system viewed the administrator data.

Normal flow of events
The system can view the administrator's data
Alternative flow of events
The system can not view the administrator's data because the administrator don't be registered and appears a notification.

Identifier	Use Case 3
Name	show data customer
Description	show the customer's data
Actors	Customer
Preconditions	The customer needs to be registered.
Postconditions	The system viewed the customer data.

Normal flow of events
The system can view the administrator's data
Alternative flow of events

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The system can not view the customer's data because the customer don't be registered and appears a notification.	

Identifier	Use Case 4
Name	Login Administrator
Description	login the administrator's account
Actors	TheLogin
Preconditions	The administrator needs to be registered.
Postconditions	Apparers the administrator's menu.

Normal flow of events
The system can login the account.
Alternative flow of events
The system don't read the account because is not registered.

Identifier	Use Case 5
Name	Login Customer
Description	login the customer's account
Actors	TheLogin
Preconditions	The customer needs to be registered.
Postconditions	Apparers the customer's menu.

Normal flow of events
The system can login the account.
Alternative flow of events

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The system don't read the account because is not registered.	

Identifier	Use Case 6
Name	Register Administrator
Description	The administrator can register the account with user,password and a code.
Actors	Registry.
Preconditions	Nothing.
Postconditions	The account is registered in the system.

Normal flow of events
The account is registered and saved in the system.
Alternative flow of events
The account exists with other case, appear a notification.

Identifier	Use Case 7
Name	Register Customer
Description	The customer can register the account with user,password.
Actors	Registry.
Preconditions	Nothing.

Postconditions	The account is registered in the system.

Normal flow of events
The account is registered and saved in the system.
Alternative flow of events
The account exists with other case, appear a notification.

Identifier	Use Case 8
Name	Generate Administrator Code
Description	The administrator can use the code that is generated.
Actors	Registry.
Preconditions	Use the administrator's data.
Postconditions	The administrator can create an account.

Normal flow of events
The administrator can use an account with the code that was created.
Alternative flow of events
The administrator can't create an account because the account is registered with this code.

Identifier	Use Case 9
Name	Save Customer
Description	The customer is saved in a list in the system.

Actors	CustomerList
Preconditions	The customer needs to be registered in the system.
Postconditions	The system creates a customer list.

Normal flow of events
The system creates a customer list.
Alternative flow of events
The system can't create a customer list because there aren't any registered customers.

Identifier	Use Case 10
Name	Save Administrator
Description	The administrator is saved in a list in the system.
Actors	AdministratorList
Preconditions	The administrator needs to be registered in the system.
Postconditions	The system creates an administrator's list.

Normal flow of events
The system creates an administrator list.
Alternative flow of events
The system can't create an administrator list because it doesn't register any customers.

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Identifier	Use Case 11
Name	Read File
Description	The file will read for the system.
Actors	CustomerList, AdministratorList
Preconditions	Use the person's data.
Postconditions	The file will read for the system and used too.

Normal flow of events
The system can read the file.
Alternative flow of events
The administrator can't read the file because it is not created.

Identifier	Use Case 12
Name	Search Customer
Description	The system will search the patient's clinical information
Actors	Medical History
Preconditions	Use the person's data.
Postconditions	Creation of the patient's medical profile

| Normal flow of events |
|---|
| The system searches the customer's information. |
| Alternative flow of events |
| The administrator can't read the file because it is not created. |

Identifier	Use Case 13
Name	Read File

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Description	The file will read for the system.
Actors	AppointmentsAdminList
Preconditions	Use the person's data.
Postconditions	The file will read for the system and used too.

Normal flow of events
The system can read the file.
Alternative flow of events
The administrator can't read the file because it is not created.

Identifier	Use Case 14
Name	Save appointments
Description	The system will save the appointment time information
Actors	AppointmentsAdminList
Preconditions	Find the date and time to be attended
Postconditions	Confirm the schedule

Normal flow of events
The system will store the information of the schedule chosen by the patient
Alternative flow of events
The chosen schedule is no longer available

6   Class diagram
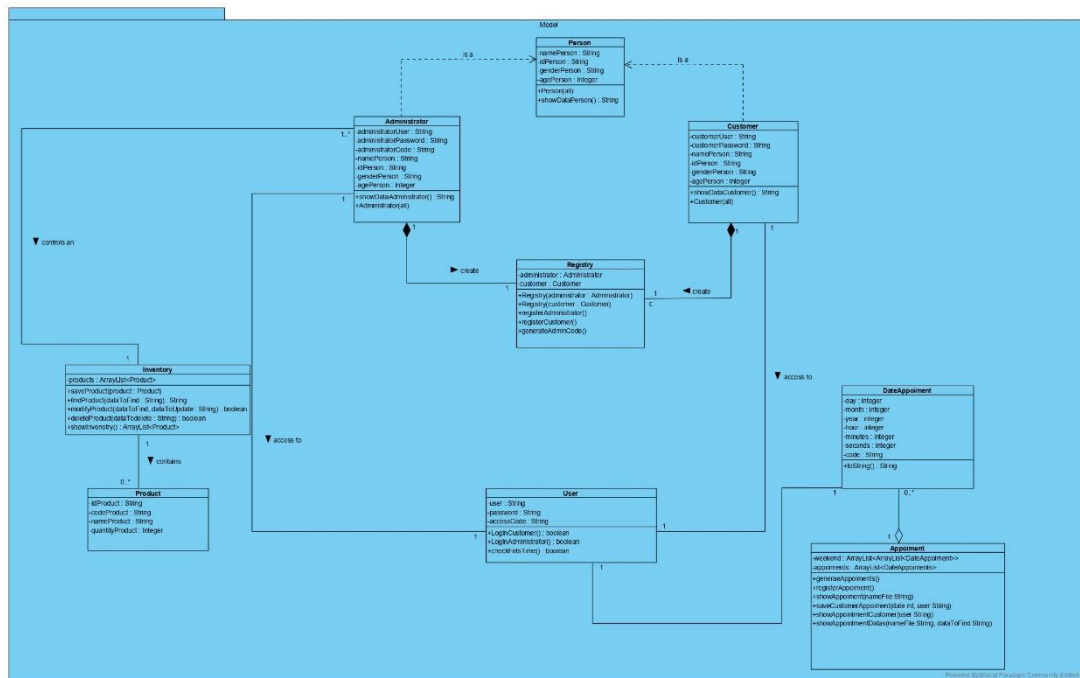
7   Class diagram specification

The diagram is based in the model system package that creates the operations that are going to do our project.

7.1   Specifying class attributes

1) Person

1.1) Attributes:

- namePerson: String
- idPerson: String
- genderPerson: String
- agePerson: Integer

1.2) Methods

- Person(all)
- showDataPerson():String

2) Administrator

2.1) Attributes:

- administratorUser: String
- administratorPassword: String
- administratorCode: String
- namePerson: String
- idPerson: String
- genderPerson: String
- agePerson: Integer

2.2) Methods

- showDataAdministrator():String
- Administrator(all)

3) Customer

3.1) Attributes:

- customerUser: String
- customerPassword: String
- namePerson: String
- idPerson: String
- genderPerson: String
- agePerson: Integer

3.2) Methods

- showDataCustomer():String
- Customer(all)

4) Registry

4.1) Attributes:

- administrator: Admministrator
- customer: Customer

4.2) Methods

- Registry(administrator: Administrator)
- Registry(customer: Customer)
- registerAdministrator()
- registerCustomer()
- generateAdminCode()

5) User

5.1) Attributes:

- user: String
- password: String
- accessCode: String

5.2) Methods

- LogInCustomer(): boolean
- LogInAdministrator(): boolean
- checkFirtsTime(): boolean

6) DataAppointment

6.1) Attributes:

- day: integer
- month: integer
- year: integer
- hour: integer
- minutes: integer
- seconds: integer
- code: String

6.2) Methods:

- toString(): String

7) Appointment

7.1) Attributes:

- weekend: ArrayList<ArrayList<DateAppointment>>
- appointments: ArrayList<DateAppoiments>

7.2) Methods:

- generateAppointments()
- registerAppointments()
- showAppointments(nameFile String)
- saveCustomerAppointment(date int, user String)
- showAppointmentCustomer(user String)
- showAppointmentDatas(nameFile String, dataToFind String)

8) Appointment

8.1) Attributes:

- products: ArrayList<Product>

8.2) Methods:

- saveProduct(product: Product)
- findProduct(dataToFind: String); String

- modifyProduct(dataToFind, dataToUpdate: String): Boolean
- deleteProduct(dataToDelete: String): Boolean
- showInventory(): ArrayList<Product>

9) Product

9.1) Attributes:
- IdProduct: String
- codeProduct: String
- nameProduct: String
- quantityProduct: Integer

8   User interfaces

8.1   Software Interfaces

MAIN MENU

```
MENÚ
1. Iniciar sesión
2. Registrarse
3. Salir
Seleccione una opción:
```

MENU FOR REGISTER AN ACCOUNT

```
MENÚ
1. Iniciar sesión
2. Registrarse
3. Salir
Seleccione una opción:

Seleccione una opcion: 2
1. Administrador
2. Usuario
Seleccione una opcion: |
```

SELECT ADMINISTRATOR

```
MENÚ
1. Iniciar sesión
2. Registrarse
3. Salir
 Seleccione una opción:
Seleccione una opcion: 2
1. Administrador
2. Usuario
Seleccione una opcion: 1
Complete los datos
Nombre: Juan
id: 1714889875
Genero: male
Edad: 25
Ingrese un usuario: juan@145.hotmail.com
Ingrese una contraseña: juan1225487_cordova
Su codigo de acceso es: 1714889875Juan
```

SELECT CUSTOMER

```
MENÚ
1. Iniciar sesión
2. Registrarse
3. Salir
 Seleccione una opción:
```

```
1. Administrador
2. Usuario
Seleccione una opcion: 2
Complete los datos
Nombre: Juan
id: 174858
Genero: male
Edad: 15
Ingrese un usuario: juanCordov
Ingrese una contraseña: juanito123
```

MENU FOR THE LOGIN

```
MENÚ
1. Iniciar sesión
2. Registrarse
3. Salir
 Seleccione una opción:
```

```
Seleccione una opcion: 1
1. Administrador
2. Usuario
Seleccione una opcion:
```

MENU FOR THE LOGIN ADMINISTRATOR

```
MENÚ
1. Iniciar sesión
2. Registrarse
3. Salir
Seleccione una opción:
```
```
Seleccione una opcion: 1
1. Administrador
2. Usuario
Seleccione una opcion: 1
Usuario: juan@145.hotmail.com
Contraseña: juan1225487_cordova
Codigo de acceso: 1714889875Juan
Correcto
```
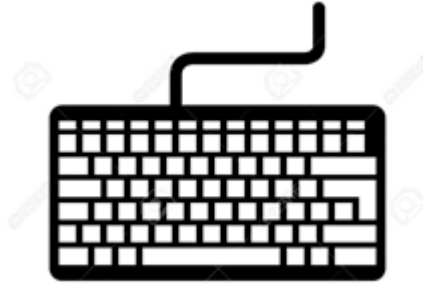
MENU FOR THE LOGIN CUSTOMER
```
MENÚ
1. Iniciar sesión
2. Registrarse
3. Salir
Seleccione una opción:
```
```
Seleccione una opcion: 1
1. Administrador
2. Usuario
Seleccione una opcion: 2
Usuario: juanCordov
Contraseña: juanito123
Correcto
```

8.2 Hardware Interfaces

The hardware interface is the most important tool for a programmer. The code is created from the display and the keyboard.

9   Appendices

The project and the documentation was done by software engineering students.

As the project is in constant evolution, the documentation is going to change for every part of the project.