ESPE

UNIVERSIDAD DE LAS FUERZAS ARMADAS

INNOVACIÓN PARA LA EXCELENCIA

PROJECT-TEAM-01

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Specification of Software Requirements

"Smart Home"

Version 1.0

2022

CONTENT

1. Introduction

In this requirements specification document, the essential requirements for the development of an application that controls different devices in a smart home will be presented in an organized way.

1.1 Purpose

The purpose of this writing is to define the functional and non-functional requirements of the system to be developed, in addition to making the potential user aware of the guidelines with which he can execute the system correctly and adequately.

1.2 Scope and scope

For now, the smart home system is responsible for the management and administration of devices such as: sound system, doors, lights, TV and has an alarm according to a house, the application allows you to manage the house according to the user who is in session, you can manage your input and output with your user or add more, depending on which ones the client decides.

The software displays different windows so that the user knows at all times what action is being executed or is going to be executed, in addition to being able to move freely throughout the system menu.

1.3 Definitions, acronyms and abbreviations

Language of programming	Formal language designed to carry out processes that can be carried out by machines such as computers.
Hardware	Physical parts of a device.
GUI	Graphic User Interface.
Data Base	Structured data set stored on a mass storage medium.
Mongo Atlas	Database located in the cloud.

1.4 References

IEEE84	IEEE Std 830-1984, Guide for Software Requirements Specifications
IEEE90	IEEE Std 610.12-1990, Standard Glossary of Software Engineering Terminology (ANSI).

1.5 Overview

The writing is made up of 3 parts, the first formed by an overview of the system to be developed. The second part describes how the system works, data management and its main functions. In the third section are the necessary requirements that the system must monopolize.

2. General Description

2.1 Product perspective

The perspective of our project is good since apart from being innovative, it is also useful for all types of users, whether it is from the smallest of the house or also for the grandfather.

We seek to help with innovation and comfort to make your home safer.

We believe that it is a market where the importance does not lie in selling more than others, but rather in providing a quality product, for which we understand that we will only achieve it if we do our best and study the opportunities that the market offers us, implementing our knowledge of programming to advantage

2.2 System functions

Our project has the advantage of being easy to use and understand for the user since everything is controlled from the application that will be installed on your smartphone.

In it you will find a very explanatory and detailed menu where just by entering your username and password you will have control and you will be able to manage the controls of the house as well as for example windows, doors, lights, security systems, television, among others. Performing actions such as opening and closing, turning on and off, remote monitoring and many more.

2.3 User characteristics

Being a product designed for the common family, our user interface and application are easy to execute. We focus on each member of the family that may need our service. The grandfather can use it to not require force or unnecessary movements when performing tasks such as turning on and off the light in a room, as well as to control the hours of sleep of the little ones by turning off the TV from afar. or the wifi they are using. for which the characteristics that our users need is wide, with this we can cover a lot of field in the market.

2.4 General restriccions

- The product will only be executed under a Wi-Fi connection of the same network, so a cell phone outside of another network, even if you have the application installed on your device, will not be able to manage the house.
- It is necessary to give a type of maintenance to the intelligent devices that make up the home from time to time.
- Only registered users can use it.

2.5 Assumptions and dependencies

2.5.1 Assumptions

The system will be installed only when the user accepts our terms and conditions. And when the developers of the program find it necessary to make changes or upload updates to the program, they will do so.

2.5.2 Dependencies

In case the system does not work as it should or steps are skipped in its development, the program will not be able to run.

3. Specific Requirements

3.1 External interface requirements

3.1.1 User Interfaces

The interface in use should show users only the information necessary to perform any operation.

The interface in use should show the administrator user only the information required to make a change, and so the administrator should create a new user or device in the Smart Home.

3.1.2 Hardware Interfaces

The remote control has a screen and should show the interfaces, as well as the information necessary for the user to be able to work properly with the system.

The remote control allows the user to perform selections and button presses, and also has a keyboard which allows the user to introduce data.

3.1.3 Software Interfaces

The remote control to control the house.

3.1.4 Communication Interfaces

The system communicates with the database through Mongo Atlas in the cloud.

3.2 Functional Requirements

3.2.1 Requirement 001

The programmer will control the entry of new users to the system.

Identifier	Requirement 001
Label	Introduce new user
Description	The programmer will control the entry of new users to the system
Actors	House Programmer
Preconditions	None
Normal flow of events	
1. The system displays a menu in the Users login 2. The programmer enters the user's first and last name, age, cell phone 3. Validate that there are no empty fields 4. Login to the system	
Alternate flows and exceptions	
A. There are empty fields 1. The system shows the user a warning window to identify that no data was entered. 2. The system allows you to enter the login data again (returns to the normal flow).	

3.2.1 Requirement 002

Identifier	Requirement 002
Label	Install and program the system of the house
Description	The programmer will install the systems in the house

Actors	House Programmer
Preconditions	None
Normal flow of events	
1. The system is programmed by the company 2. The programmer gives access to the system by the remote controll. 3. Login to the system	
Alternate flows and exceptions	
A. Invalid User 1. There is an error in the software. 2. The system allows you to enter the login data again (returns to the normal flow).	

3.2.1 Requirement 003

Identifier	Requirement 003
Label	Add new hires for the smart home
Description	The Company Boss is the person who allows to sign new hires
Actors	Company Boss
Preconditions	Contract and payment
Normal flow of events	
1. The Company Boss sign new hires 2. The Company Boss allows the programmer to manage the system to the user. 3. Going home to install the system	
Alternate flows and exceptions	
A.Contract not paid 1. The user must pay the money. 2. The user must sign the Contract.	

3.2.1 Requirement 004

Identifier	Requirement 004
Label	Check program updates
Description	The Company Boss will check and authorized to make updates in the the house system.
Actors	Company Boss
Preconditions	Contract and payment
Normal flow of events	
1. The Company Boss check and authorized to make updates 2. The Company Boss allows the programmer to manage the system and make updates. 3. Going home to update the system	
Alternate flows and exceptions	
A.Contract not paid 1. The user must pay the money. 2. The user must sign the Contract ...	

3.2.1 Requirement 005

Identifier	Requirement 005
Label	Open the system
Description	The user enters his name, surname, identity card, username and telephone number in the system's home interface allowing access to the application.
Actors	User
Preconditions	To be registered as an user.
Normal flow of events	

1. Enter the username and password into the system, which will not be displayed when entered. 2. Validate that there are no empty fields 3. Validate user 4. Validate password 5. The main interface of the application is displayed.
Alternate flows and exceptions
A. There are empty fields In step 2 if any field is empty 1. The system displays the message “There are empty fields”. 2. The system allows you to enter the login data again (returns to the normal flow
B. Wrong user In step 3 if it is an invalid user 1. The system displays the message “Wrong User”. 2. The system allows you to enter the user again in the login data window (returns to normal flow)
C. Wrong password In step 4 if the password does not have 6 or more characters. 1. The system displays the message “Password must be 6 or more characters”. 2. The system allows you to enter the password again in the login data window. income (returns to normal flow)

3.2.1 Requirement 006

Identifier	Requirement 006
Label	Add new devices
Description	The user can add new devices such us television, if the user want to introduce new devices or control such as lights or door that need the installation of the programer and an architect, those can not be done by the user.
Actors	User
Preconditions	To be registered as an user / Access to the system
Normal flow of events	
1. Add a new TV 2. Choose the room 3. Validate	

Alternate flows and exceptions
A. There are empty fields 1. The system displays the message “There are empty fields”. 2. The system allows you to enter the login data again (returns to the normal flow

3.2.1 Requirement 007

Identifier	Requirement 007
Label	Control devices
Description	Among the main functions that can be controlled are the following: ● Open and close the doors. ● Turn on and off the lights in each room. ● Turn on and off the television. ● Turn on and off the sound system. ● Activate and deactivate an alarm signal in emergencies.
Actors	User
Preconditions	To be registered as an user. / Access to the system
Normal flow of events	

1. Enter the username and password into the system, which will not be displayed when entered.
2. Validate that there are no empty fields
3. Validate user
4. Validate password
5. The main interface of the application is displayed.
6. Chose if you want to controll the house by rooms or by devices
   DEVICES:
      Television (On / Off / Add Tv)
      Sound System (On / Off)
      Alarm Signal (On / Off)
  ROOMS:
      Living Room (Light: On / Off) (Door: Open / Close)
      Kitchen (Light: On / Off) (Door: Open / Close)
      Bathroom (Light: On / Off) (Door: Open / Close)
      Bedroom 1 (Light: On / Off) (Door: Open / Close)
      Bedroom 2 (Light: On / Off) (Door: Open / Close)
      Bedroom 3 (Light: On / Off) (Door: Open / Close)
7. Exit

Alternate flows and exceptions

A. Choose an incorrect option
1. The system displays the message “ Incorrect option”.
2. The system allows you to enter the correct data again (returns to the normal flow)

3.3. Performance requirements

3.3.1. Performance requirements 1

The system must receive maintenance four times a month for one year. Subsequently, the system must have a maintenance of 12 times a year (1 maintenance per month).

3.3.2. Performance requirements 2

As the maintenance is carried out, it will be possible to view the data saved by the user and decide if they are stored or deleted.

3.3.3. Performance requirements 3

A manual document will be created with the data of the user and their equipment to maintain a backup if necessary.

3.4. Technological requirements

Specifications of the equipment to be connected

Basic	***Optimum***
Windows XP Operating system	Windows 7/8/10/11 Operating system
RAM Memory 2Gb	RAM Memory 4/8/32/64 Gb
Hard Drive Disk 512Gb	Hard Drive Disk 1TB
Java 7	Java 8

3.5. Security Requirements

3.5.1. Requirements Security 1

The program will have a unique username and password to access.

3.5.2. Requirements Security 2

The system will have the modules separated so that the user can correctly manage the system depending on the action he wishes to perform.

3.5.3 Requirements Security 3

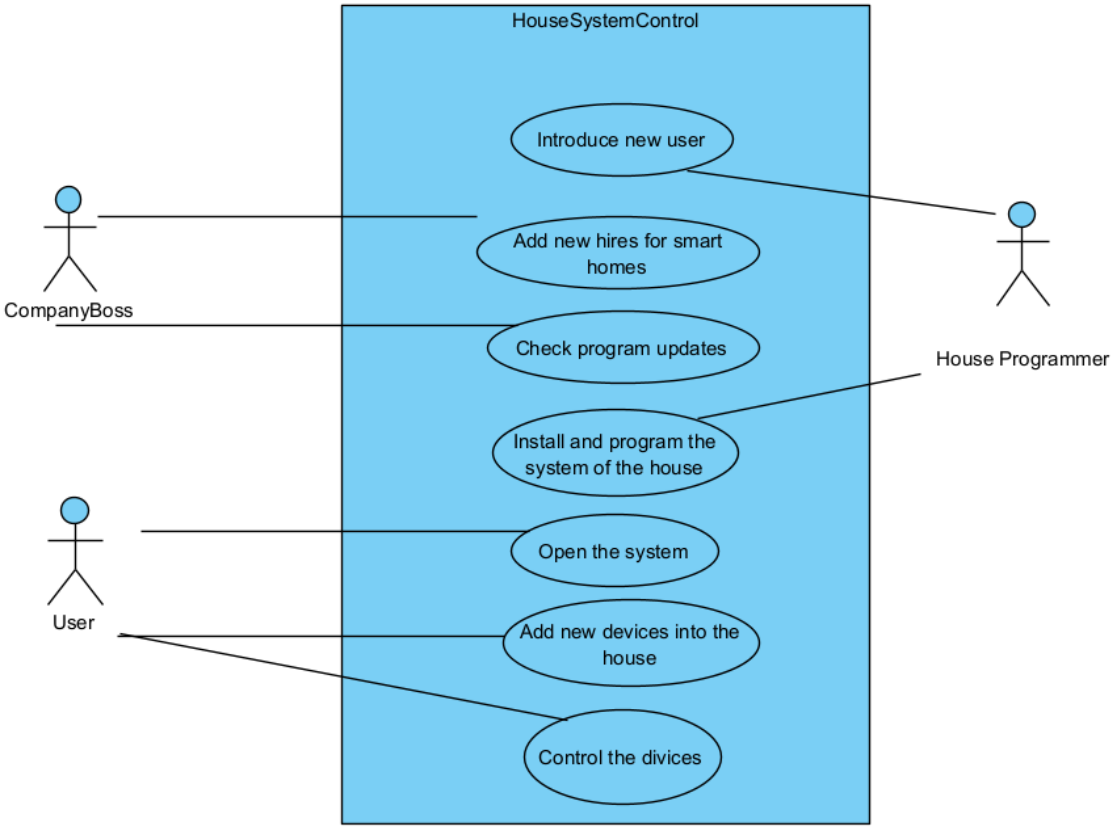
The system will be divided into two sections, one for the administrators and another for the user who contracts the service.

3.5.4 Requirements Security 4

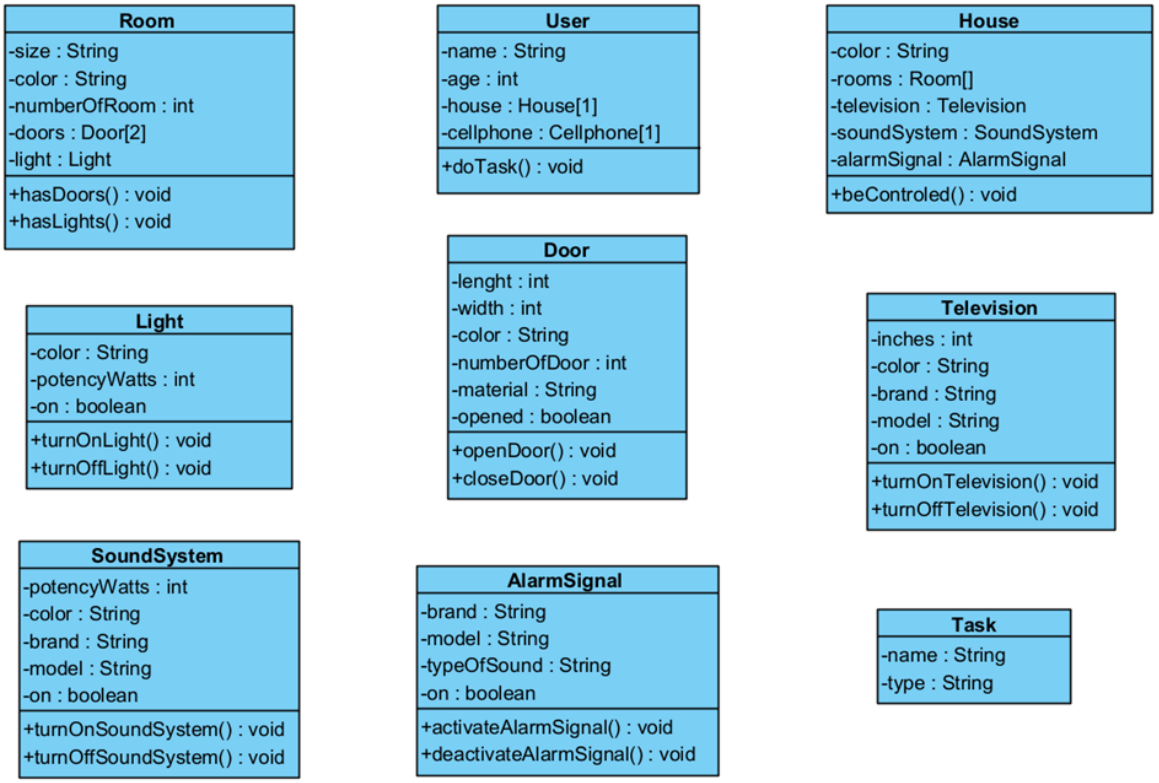
The system will make backup copies as long as the user has closed the program and is not using it.

4. Annexes

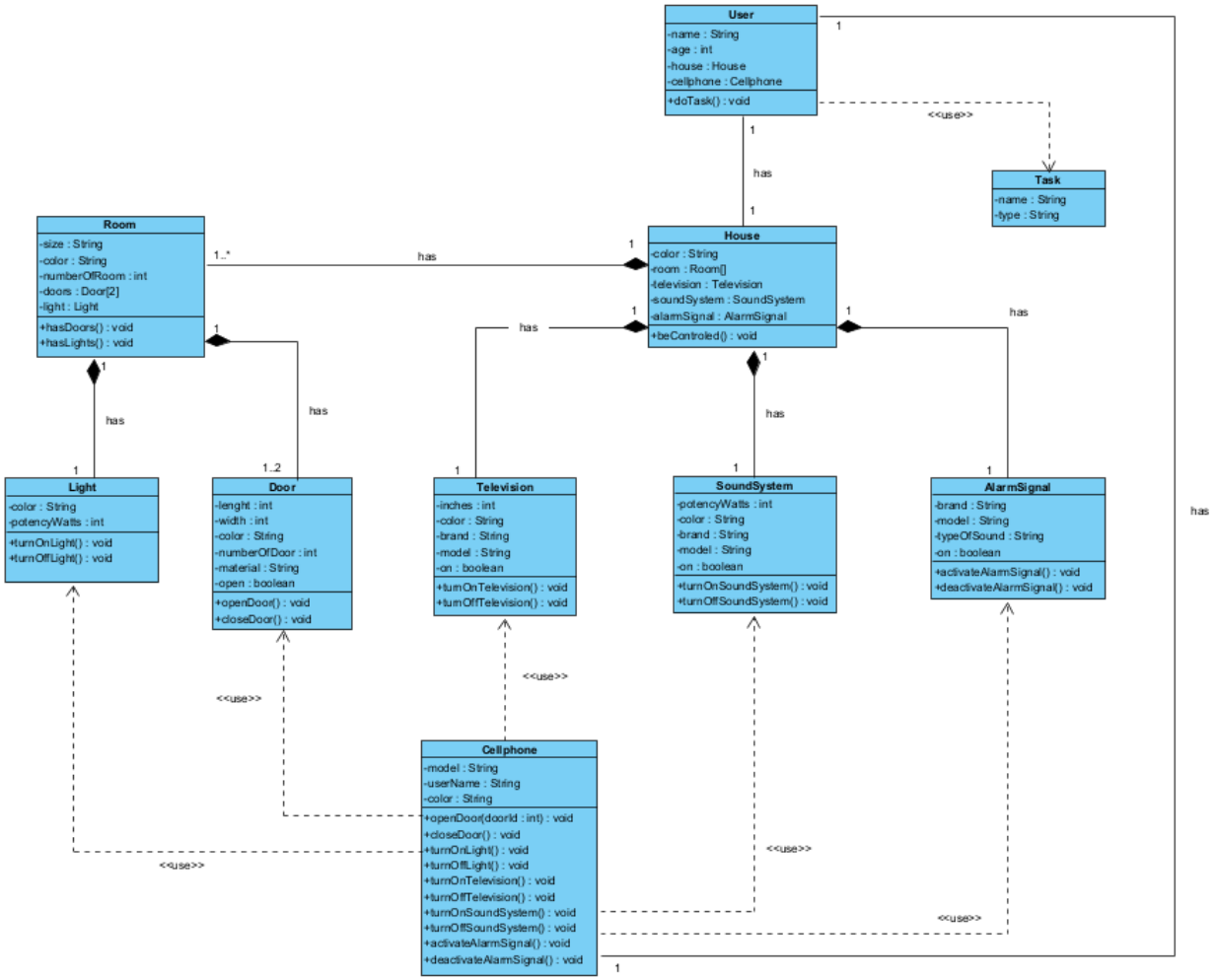
4.1 Diagram Use Case



4.2 Modeling Using Visual Paradigm



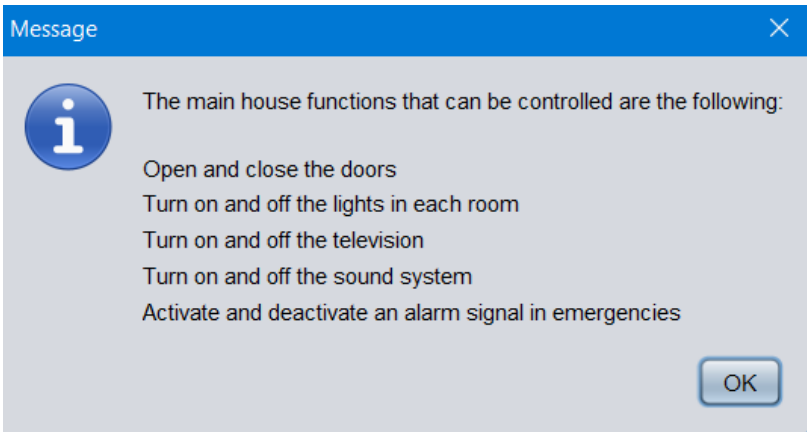
4.3 Class Diagram

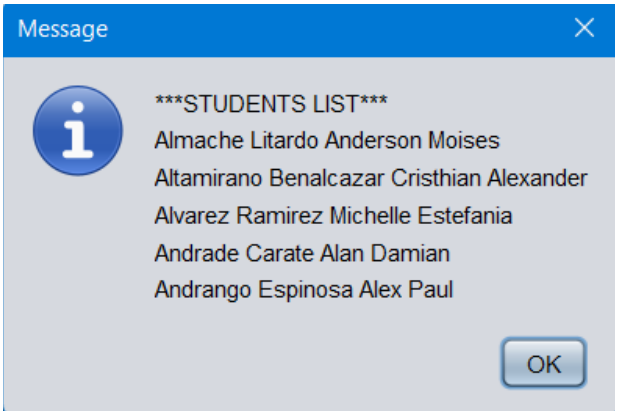


4.4 Graphic Interfaces

4.4.1 Main Menu

4.4.2 Messages

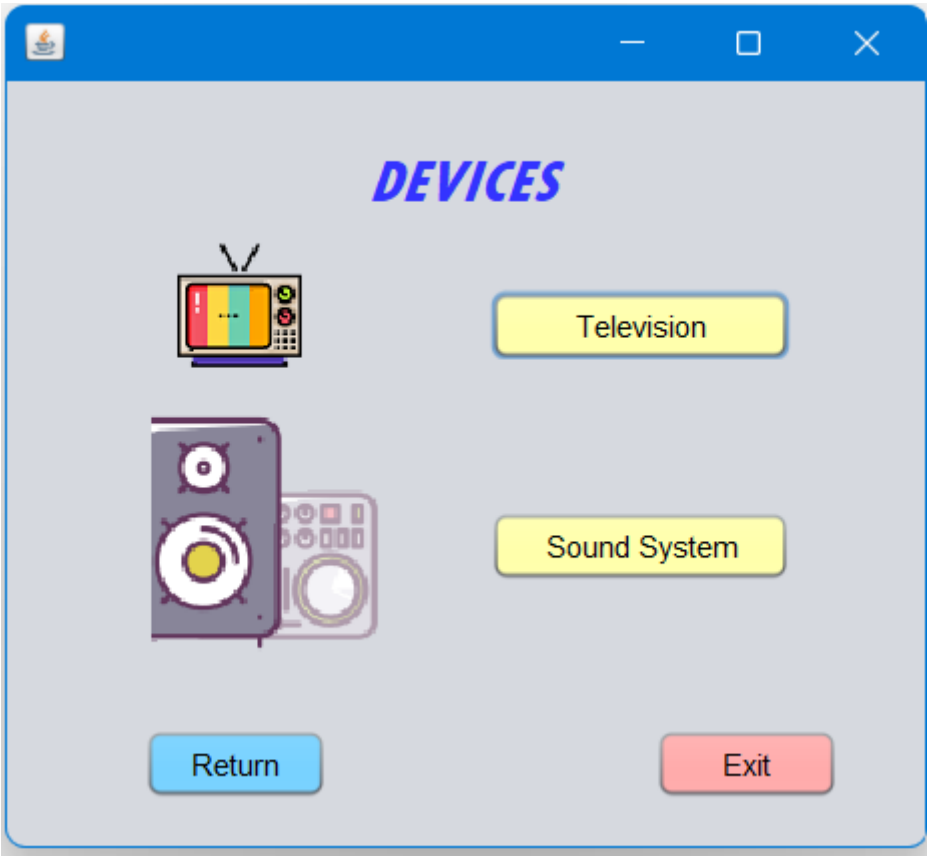




4.4.3 Add Users

4.4.4 Controller

4.4.5 Devices



4.4.6 Rooms


ROOMS
Living Room
Kitchen
Bathroom
Bedroom 1
Bedroom 2
Bedroom 3
Light
Light
Light
Light
Light
Light
Return
Exit