Software Requirements Specification (SRS)
Smart Home

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1 Introduction

The Smart Home Project aims to develop a comprehensive software system that enables users to control and automate various aspects of their home environment. The system will provide a user-friendly interface that allows homeowners to monitor and control devices such as lighting, temperature, security systems, and appliances remotely. This document outlines the requirements and specifications for the Smart Home Project.

a. Purpose: The purpose of this document is to define the requirements for the software system that interacts with the Smart home project.

b. Scope: This document covers the functional and non-functional requirements of the Smart home project.

c. Definitions, Acronyms, and Abbreviations:

2 System Overview

The Smart Home system will consist of the following key components:

- Mobile Application: A cross-platform mobile application that allows users to control their smart home devices and access system features.

- Security system: Adjustable password and easy access to the home using RFID.

- Display module: An LCD used to display system parameters and status.

- Water level System: Controlled tank of water with pump for water supply.

- Garage door: Controlled door with servo motor open and close via mobile app commands.

Context diagram
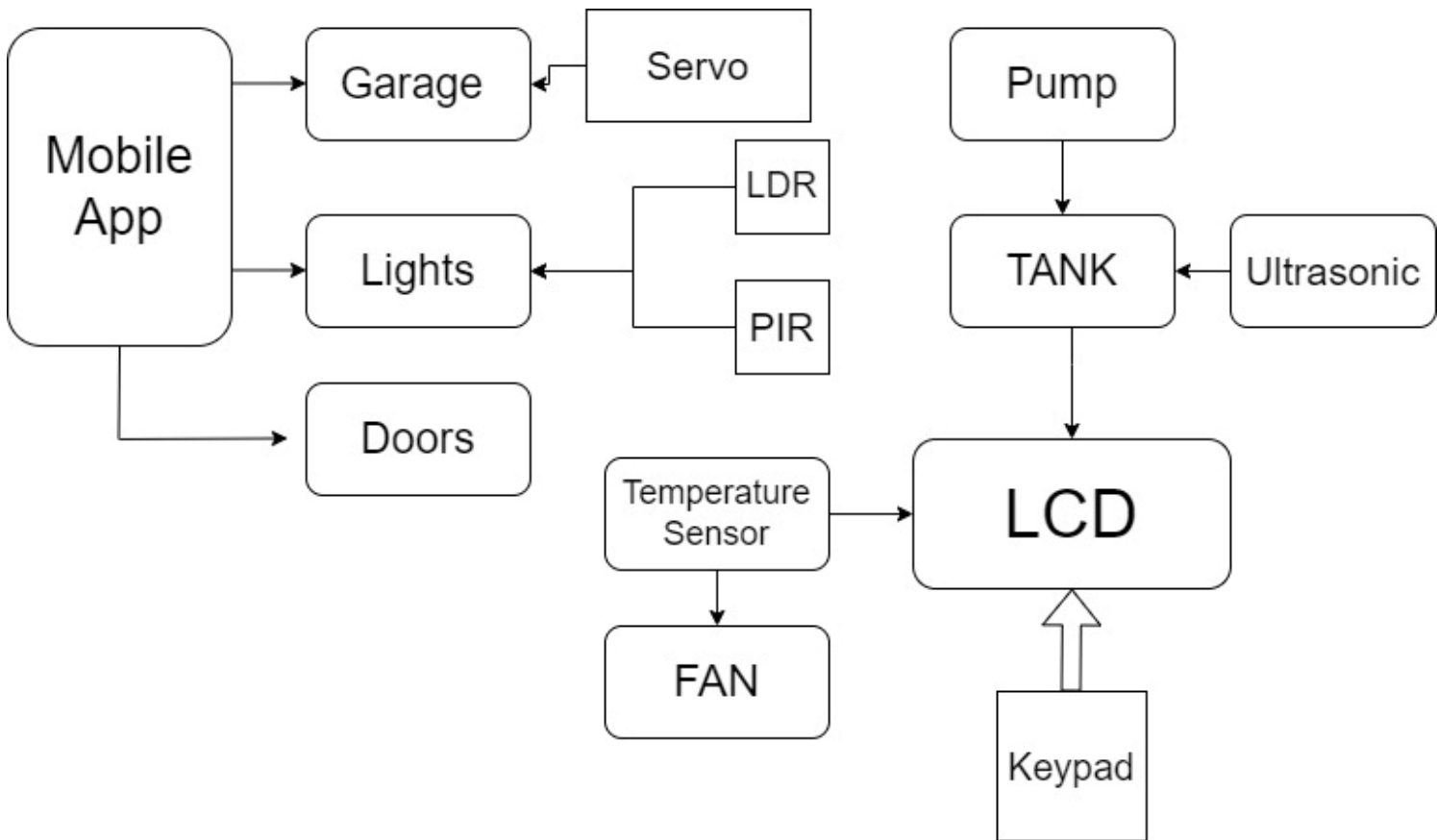
3 Functional Requirements

[SRS_S_H_200]: Enter the system through password or RFID for security.

[SRS_S_H_201]: Controlling garage door via mobile app.

[SRS_S_H_202]: Controlling home door via mobile app.

[SRS_S_H_203]: Controlling home lights via mobile app.

[SRS_S_H_204]: Error checking ability for every software module.

[SRS_S_H_205]: Displaying temperature and water level on LCD.

[SRS_S_H_206]: Controlling the fans depending on temperature.

[SRS_S_H_207]: Controlling the lights depending on LDR.

[SRS_S_H_208]: Turning on\off the lights via PIR sensor.

[SRS_S_H_209]: GUI using LCD and Keypad.

4 Non-Functional Requirements

[SRS_S_H_300]: Reliability The smart home system should always be reliable and available for use.

[SRS_S_H_301]: Security The system should have robust security measures in place to protect user data, prevent unauthorized access, and ensure the integrity of the smart home devices and communication channels.

[SRS_S_H_302]: Performance The system should have efficient performance, providing fast response times for device control, data retrieval, and system operations.

[SRS_S_H_303]: Usability The smart home system should be user-friendly and intuitive, with a well-designed user interface that allows users to easily navigate and control their devices.

[SRS_S_H_304]: Compatibility The system should be compatible with a wide range of smart home devices, protocols, and standards.

[SRS_S_H_305]: Power Efficiency The smart home system should be power-efficient, optimizing energy usage to minimize the impact on electricity consumption and battery life of connected devices.

5 State machine
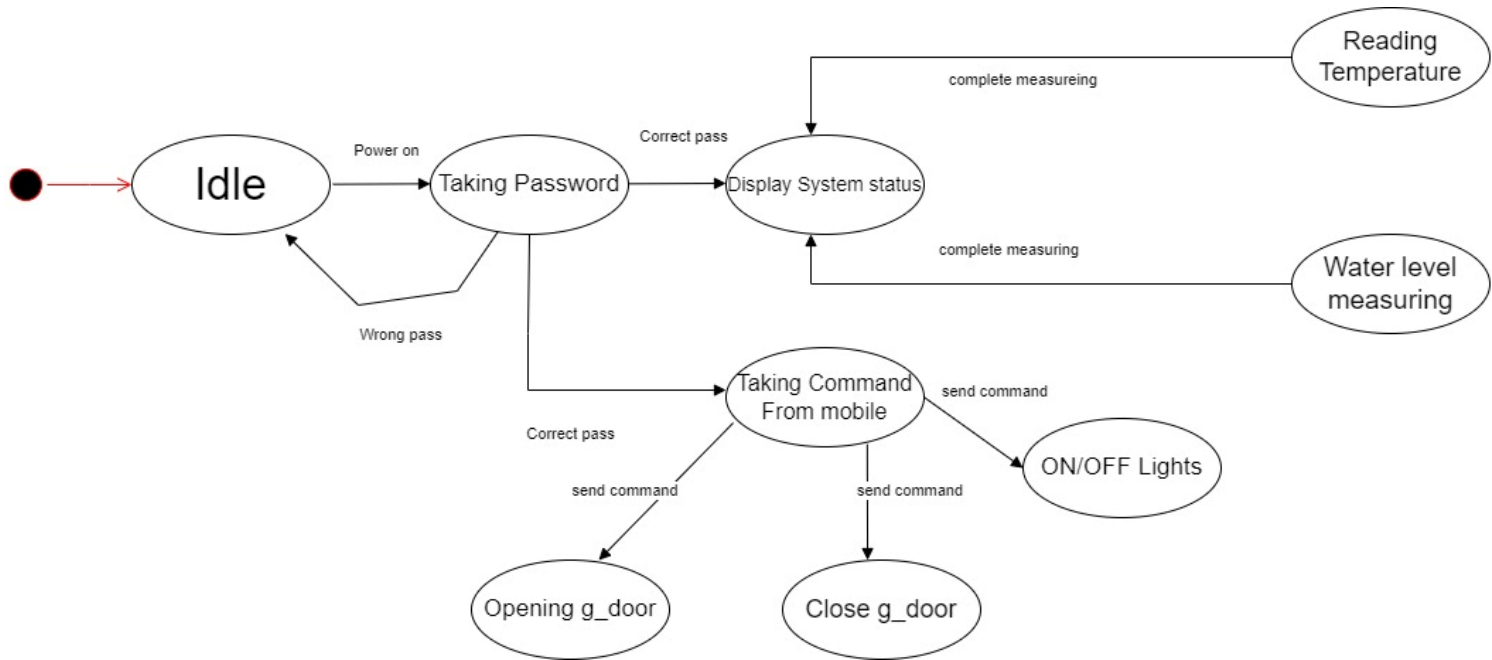
State 1

Action: No action idle state

Transition: power on the system and waiting to take password.

State 2

Action: Taking the password from the user via lcd and keypad.

Transition: Password is correct then starting the system. Or incorrect return to idle state.

State 3

Action: Displaying readings of temperature and water level.

Transition: No transition.

State 4

Action: Taking commend from the user using mobile application.

Transition: sending command to the controller.

State 5

Action: Reading temperature using LM3.

Transition: Measuring complete.

State 6

Action: Reading water level using ultrasonic sensor.

Transition: Measuring complete.

6 Sequence diagram