



TEAM 5

SMART LIGHTING SYSTEM

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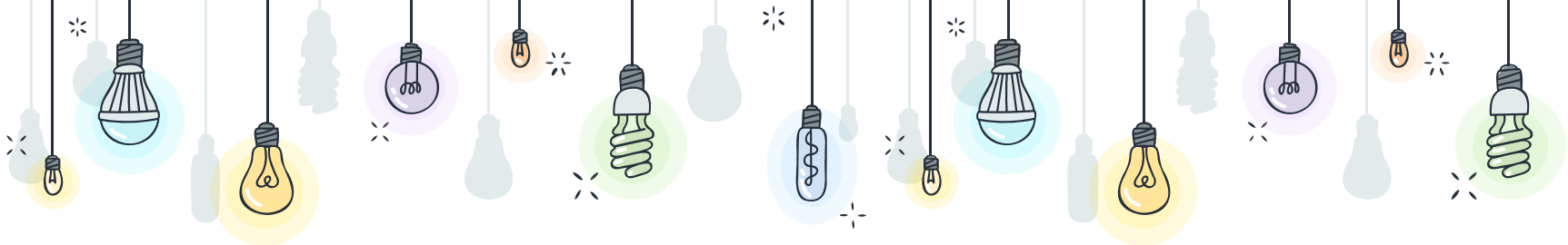
DEVELOPMENT PLAN

1

GOALS

Goals that our smart lighting system
aims



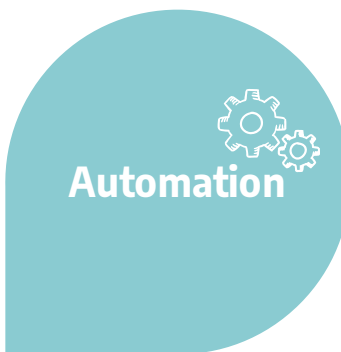


Services mainly for hearing-impaired user, to improve one's quality of life.

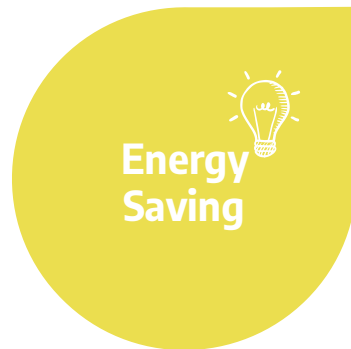


Automation

Services that are automatic are required.



Energy should be saved because of the exponentially increasing energy usage.



Customize indoor lightings by adjusting brightness and color.

2

REQUIREMENTS

Functional and Nonfunctional
Requirements



* FUNCTIONAL REQUIREMENTS

Basic Stuff

Turning a single lightbulb on/off, turning all the light on/off at one go, adjust light brightness and color.

Automation

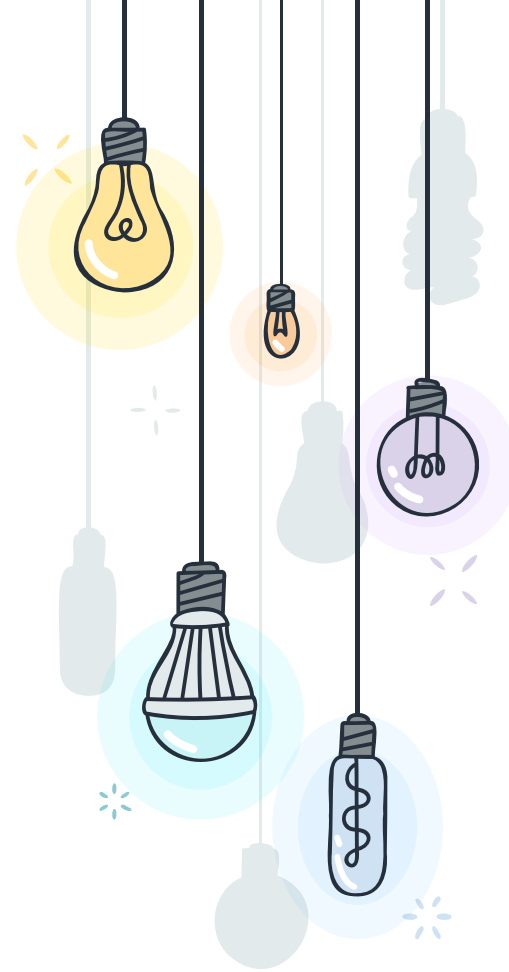
Automatically maintain the indoor brightness, automatically turn the lights on/off when entering/leaving the house or the rooms.

Sleep Detection

If the user fell asleep while working on something, the system detects the user sleeping and automatically turn the lights off.

Sleep Cycle Assist

According to the pre-setted sleeping cycle of the user, the system automatically adjust lighting when it is time for the user to wakeup/sleep.



* FUNCTIONAL REQUIREMENTS

Customizing

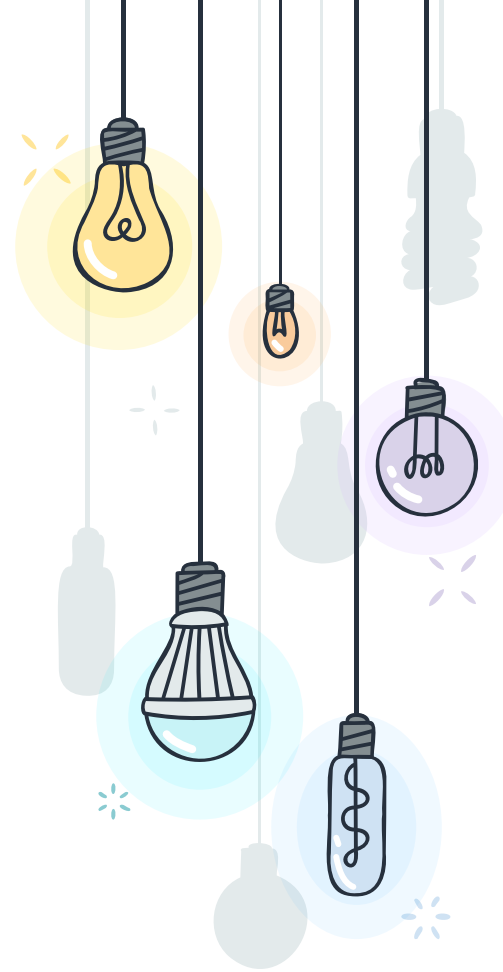
The user can adjust room light configuration to one's preference and save that configuration to load it at one go, whenever the user wants. The user can save several configurations, also edit and delete them.

Settings

Most of this functionalities can be toggled on and off. The user can enable/disable some functionalities introduced earlier.

Lighting Alarm

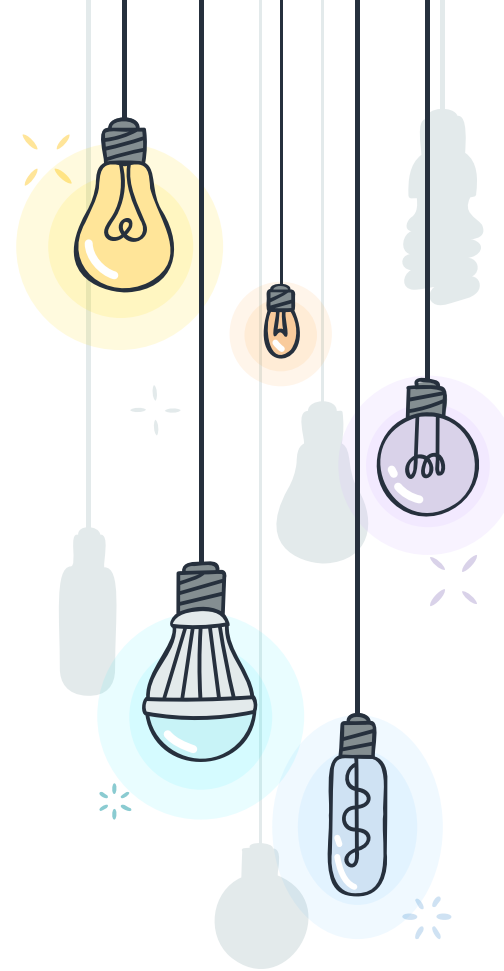
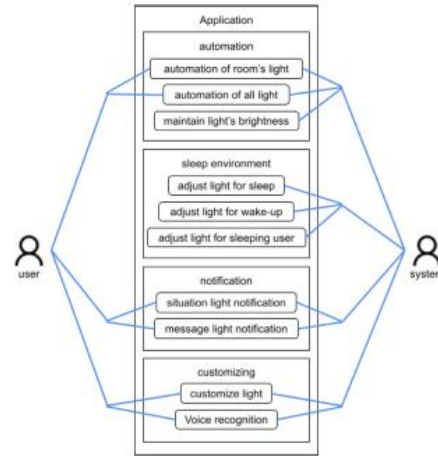
Using the lightings to alarm the user some specific situations such as, when a visitor visits, when emergency alarm goes off, when app notification goes off. These functionalities are mainly for the hearing-impaired users.



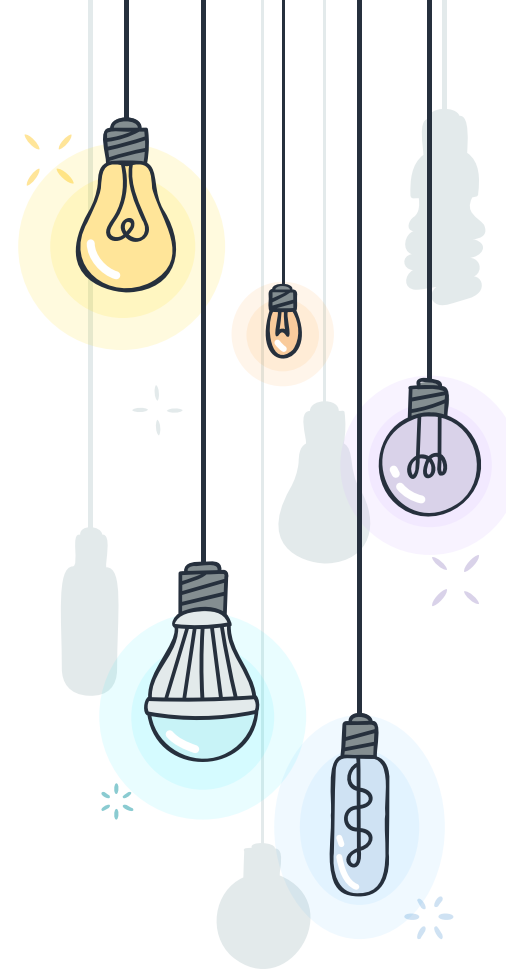
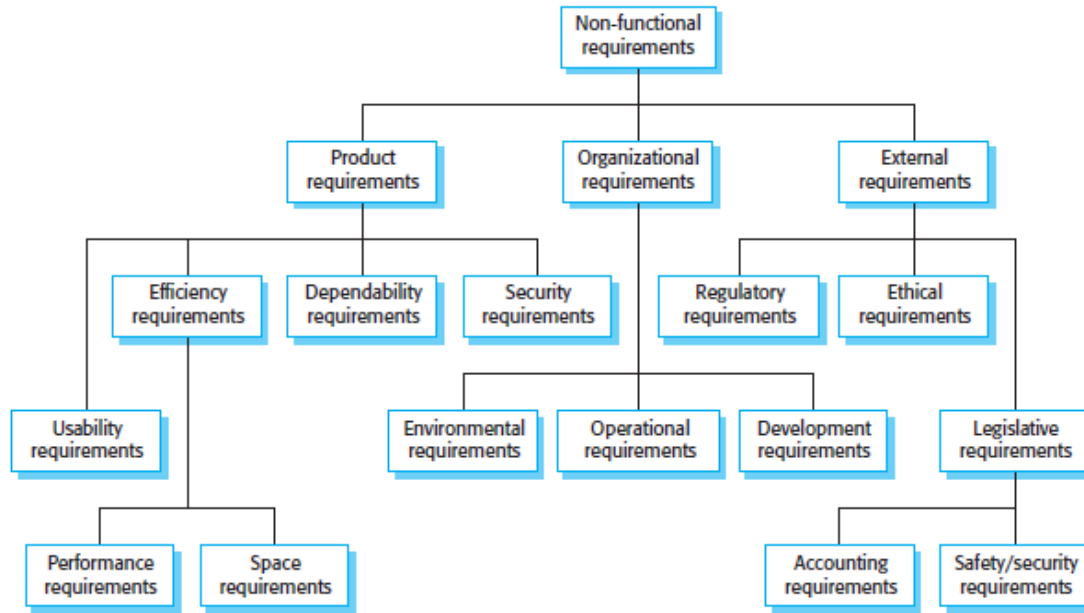
* FUNCTIONAL REQUIREMENTS

Use Case Tables & Use Case Diagram

use case name	Notification Alarm
Actor	A (hearing impaired) user
Description	Notification of phone and calls by changing the color and brightness of special lights placed in various parts of the house to inform hearing impaired persons.
Normal Course	<ol style="list-style-type: none">1. The user receives a message or a call on her/his phone.2. Incoming notification is detected by the app.3. App activates the connected lights.4. The lights begin to flash slowly.5. The user picks up the phone and opens the notification.6. The lights stop to flash.
Pre-condition	This feature has been activated by the user. Option for the alarm should be on.
Post-condition	The color and the brightness of the light is changed.
Assumptions	The user agrees to receive the desired notifications with light.

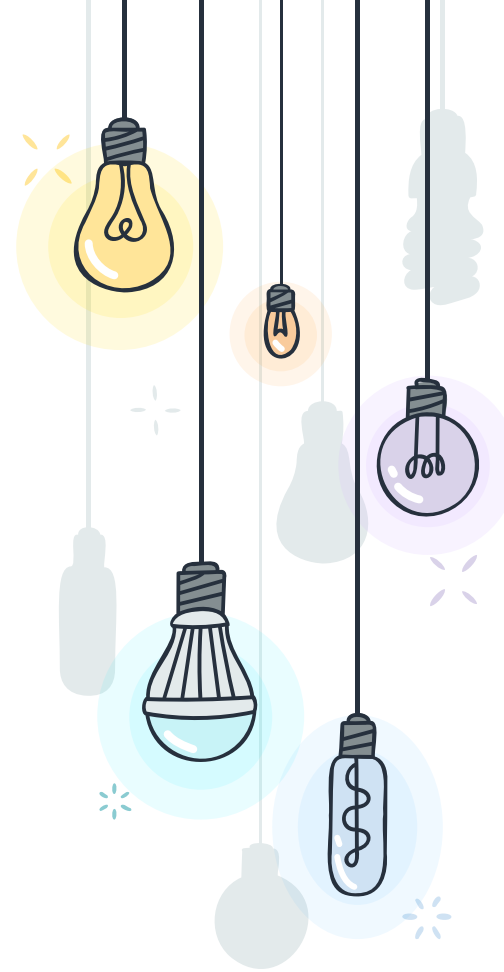


* NONFUNCTIONAL REQUIREMENTS



* NONFUNCTIONAL REQUIREMENTS

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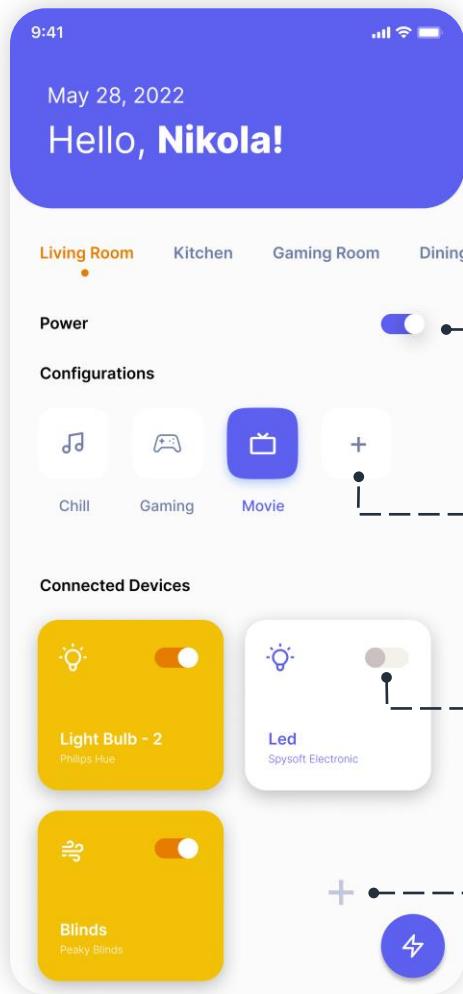


3

USER INTERFACE (UI)

Main Configuration Settings
Electricity Usage





MAIN SCREEN

----- Select a Room

----- On/Off Switch

----- Configurations

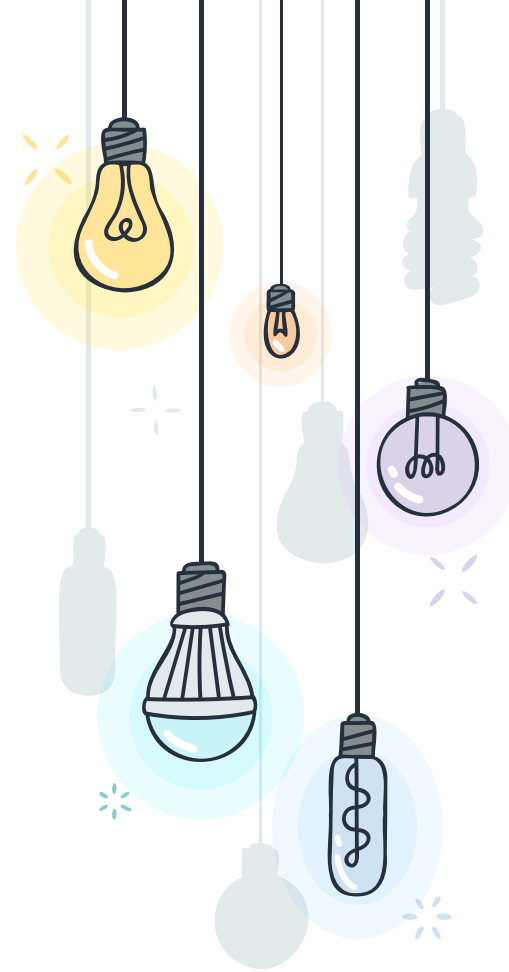
----- Add New Configuration

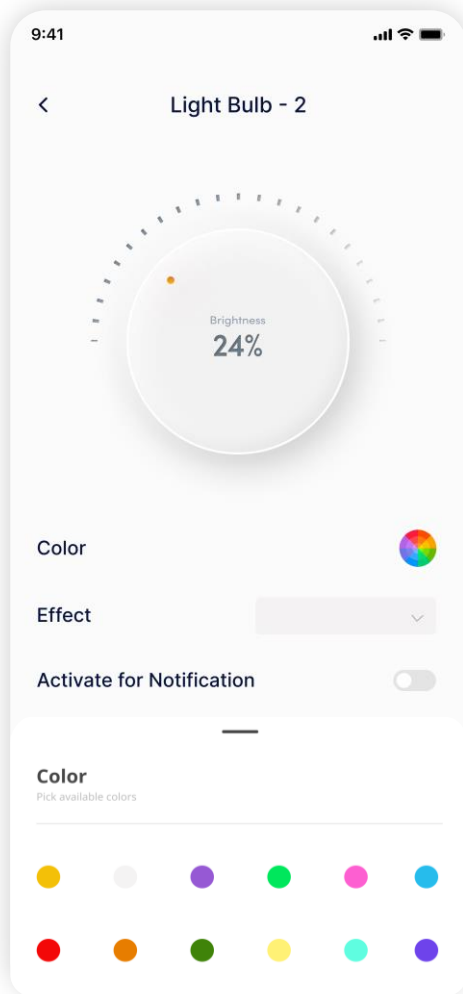
----- Lightbulbs

----- On/Off Switch

----- Add New Lightbulb

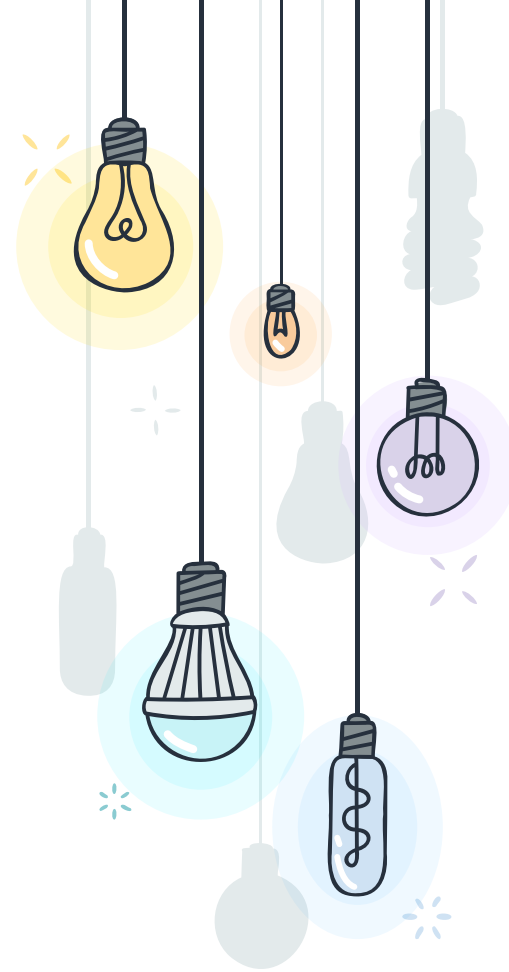
----- Energy





LIGHTING SETTING

- Brightness
- Color
- Effect for Notification
- Notification Setting



9:41

< New Configuration

Name

Configuration Icon

Select Devices

Led Spysoft Electronic

Led Spysoft Electronic

Led Spysoft Electronic

Led Spysoft Electronic

Add New Configuration

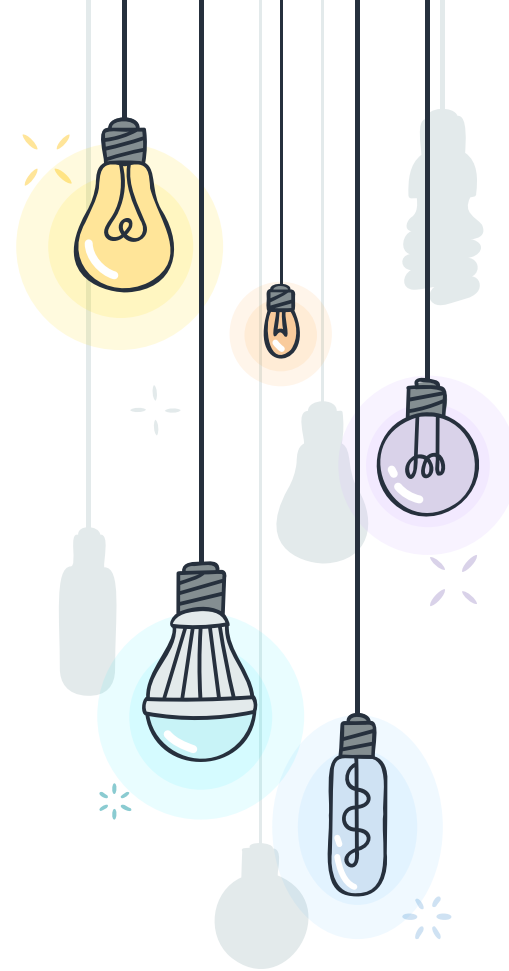
CONFIGURATION

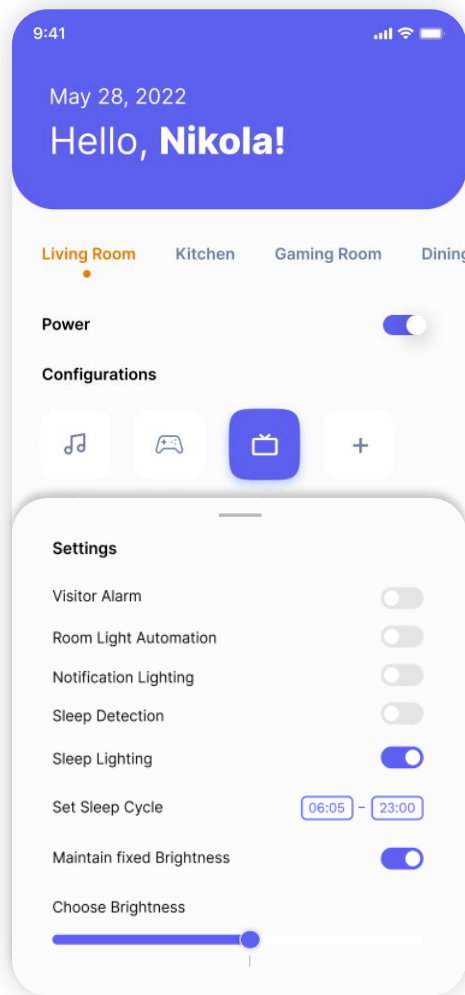
----- Name

----- Icon

----- Set Configuration of the Lightbulbs

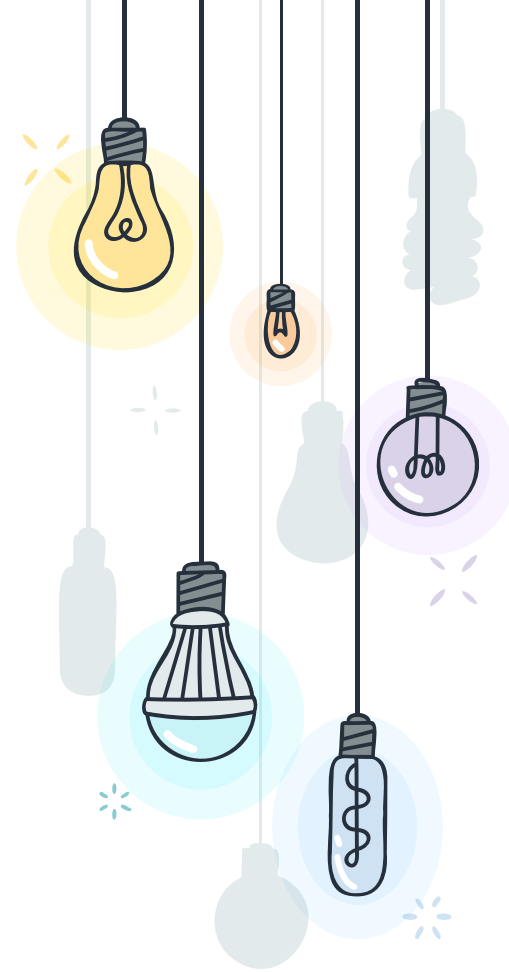
----- Press to Create New Configuration





SETTINGS

Toggle to activate
several options



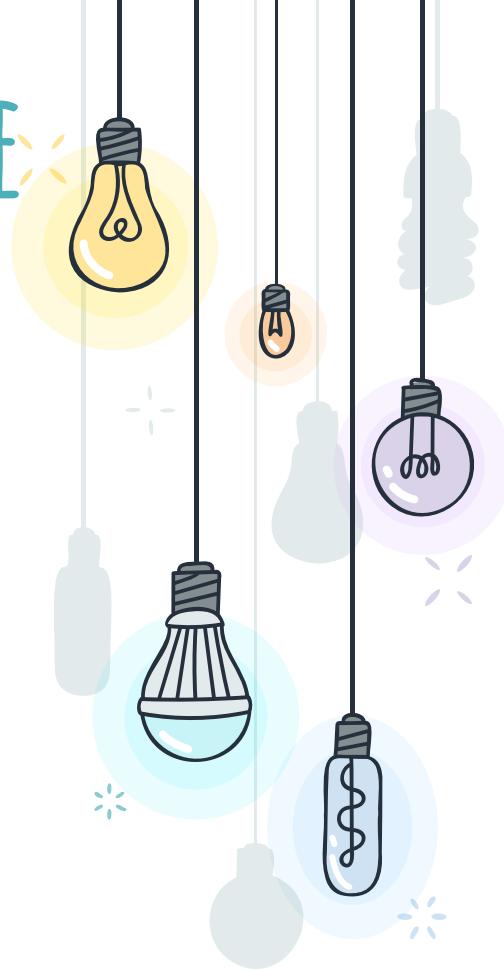


ELECTRICITY USAGE

Electricity usage
for today and current month

Electricity usage Graph

Electricity Cost



4

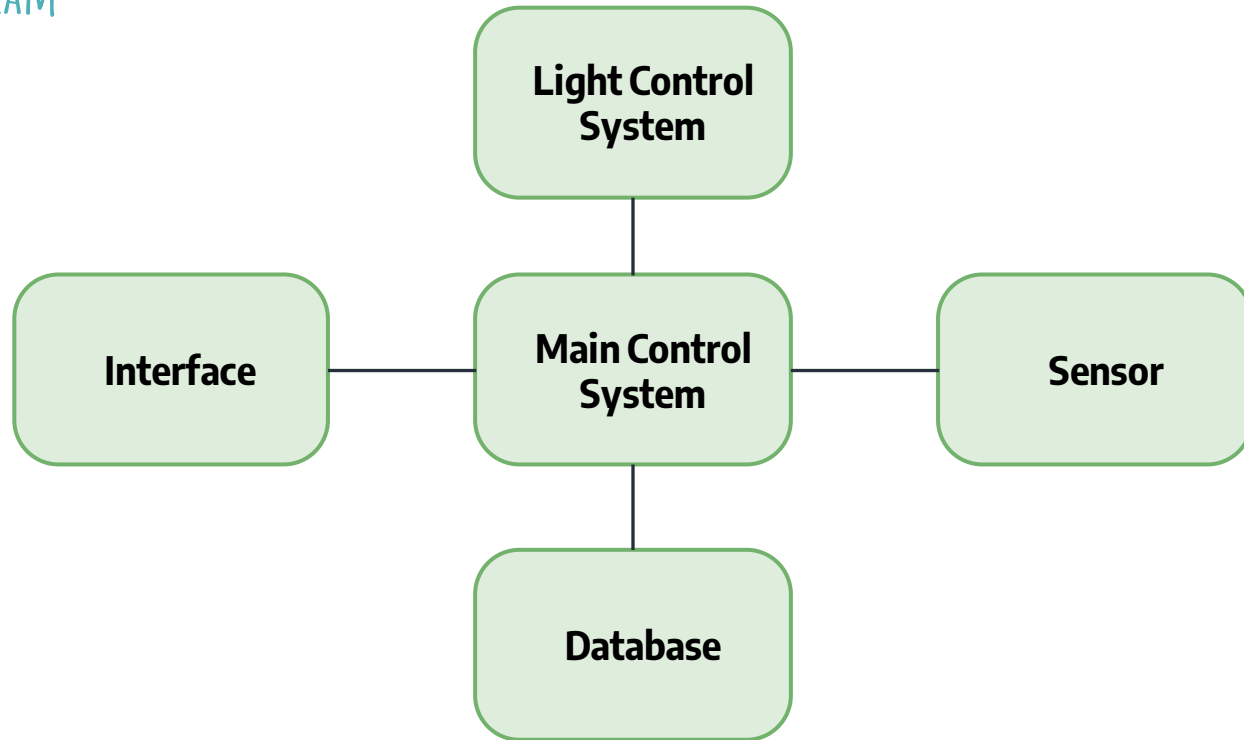
SYSTEM ARCHITECTURE

Main Control Light Control Sensor
Interface Database



SYSTEM ARCHITECTURE

CONTEXT DIAGRAM



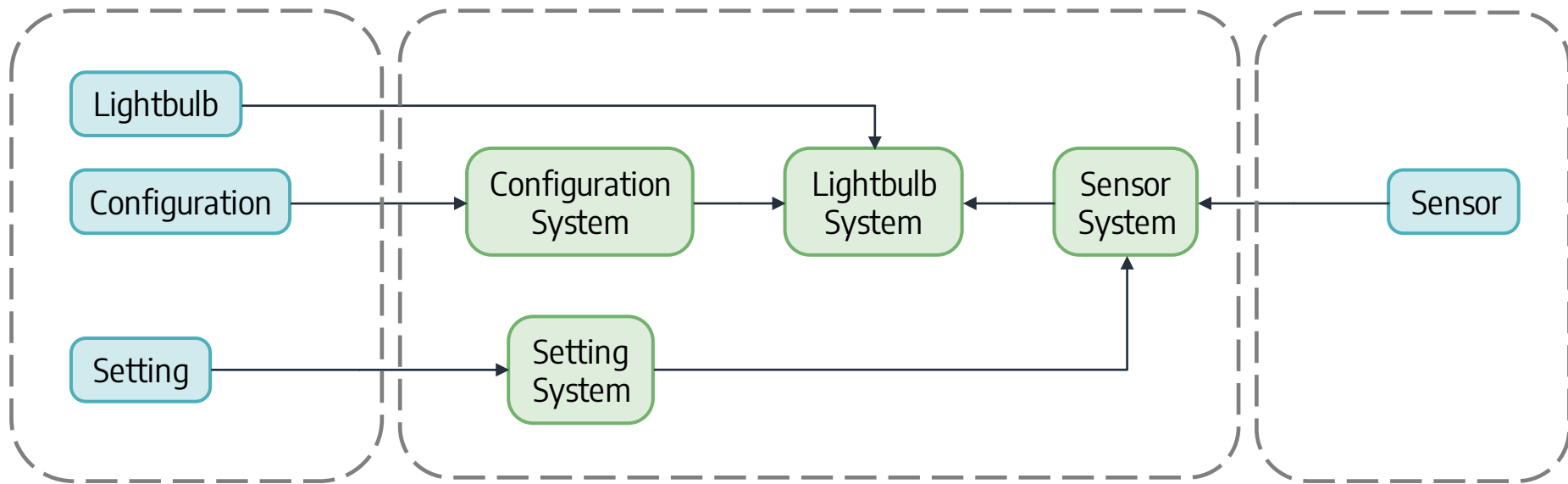
SYSTEM ARCHITECTURE



Interface

Main Control System

Sensor



SYSTEM ARCHITECTURE

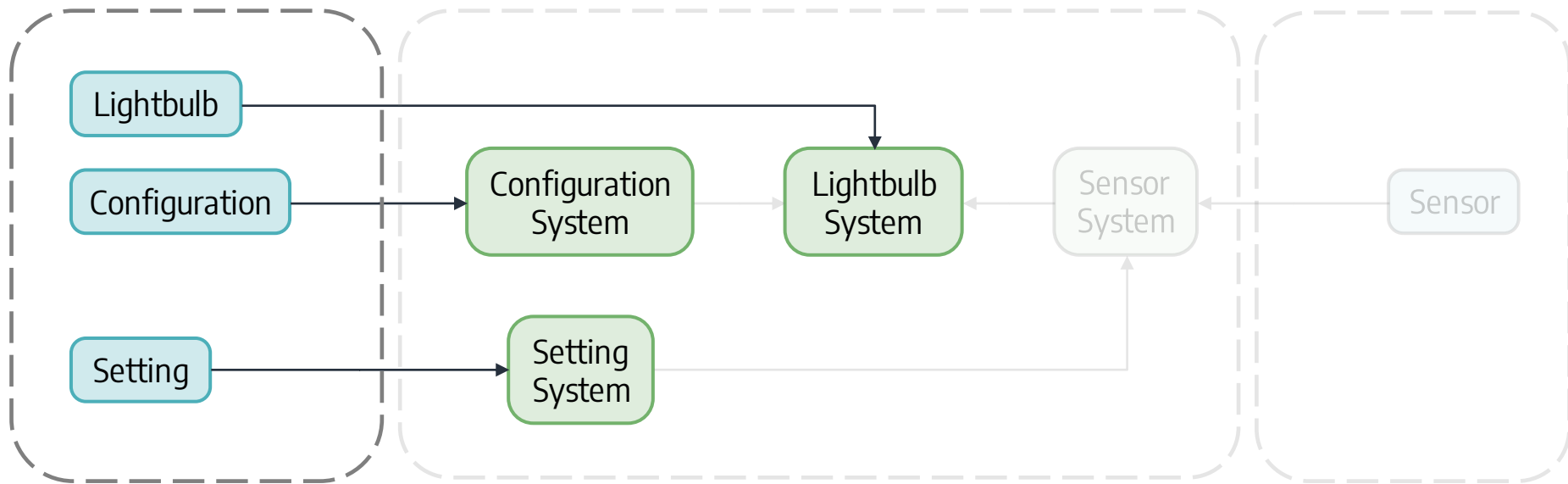
CLASS DIAGRAMS - INTERFACE



Interface

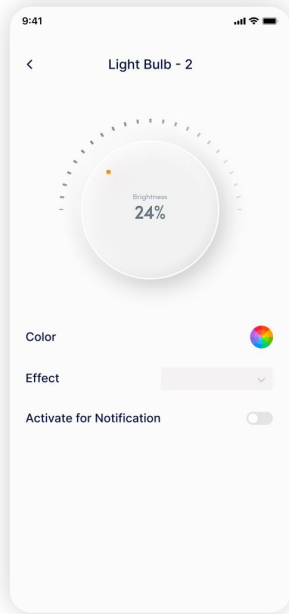
Main Control System

Sensor



SYSTEM ARCHITECTURE

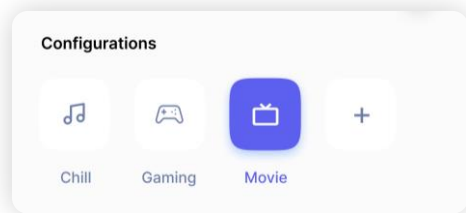
CLASS DIAGRAMS - INTERFACE



Lightbulb	
<ul style="list-style-type: none">- brightness : float- color : string- power : boolean- notification : boolean	
<ul style="list-style-type: none">+ changeBrightness(float) : void+ changeColor(string) : void+ changePower(boolean) : void+ toggleNotification() : void	

SYSTEM ARCHITECTURE

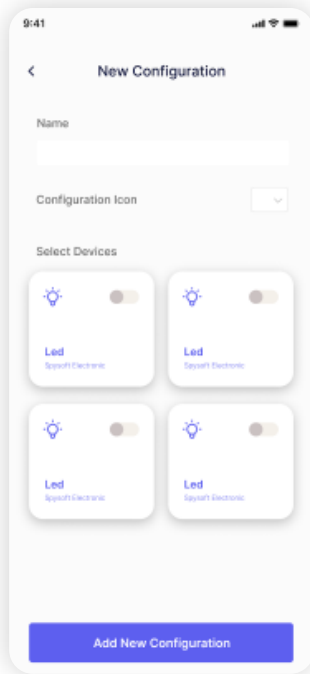
CLASS DIAGRAMS - INTERFACE



Configuration
<ul style="list-style-type: none">- configName : string- configIcon : image_data- isActivated : boolean
<ul style="list-style-type: none">+ loadConfig() : void+ updateConfig() : void+ deleteConfig() : void

SYSTEM ARCHITECTURE

CLASS DIAGRAMS - INTERFACE



NewConfiguration
<ul style="list-style-type: none">- configName : string- preset_config_icons : list<image_data>- configIcon : image_data- lightbulb_list : list<lightbulb>
<ul style="list-style-type: none">+ setName(string) : void+ setIcon(image_data) : void+ setLightbulb(lightbulb_id) : void+ createConfig() : void

SYSTEM ARCHITECTURE

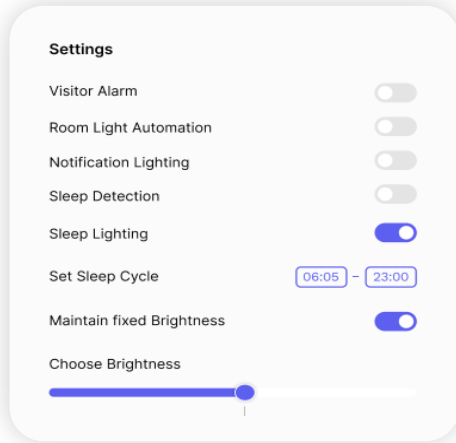
CLASS DIAGRAMS - INTERFACE



Settings

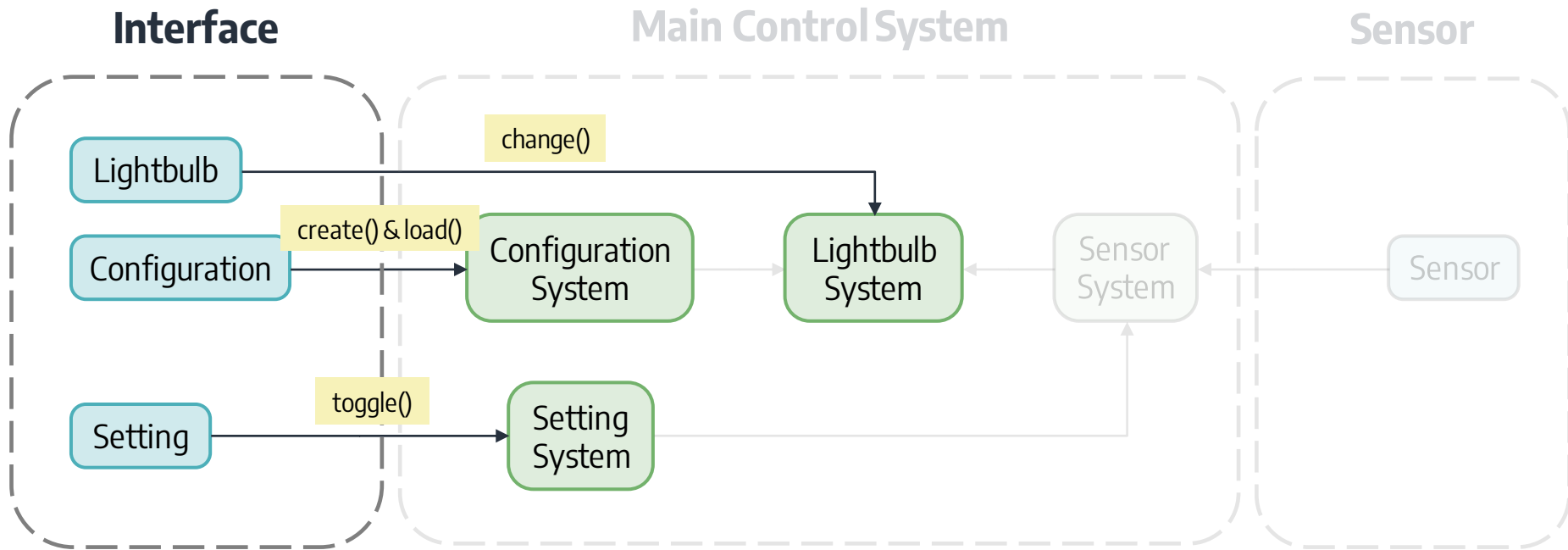
- visitorAlarm : boolean
- roomLightAutomation : boolean
- notificationLighting : boolean
- sleepDetection : boolean
- sleepCycle : list<float>
- fixedBrightness : boolean
- Brightness : float

- + toggleVisitorAlarm() : void
- + toggleRoomLightAutomation() : void
- + toggleNotificationLighting() : void
- + toggleSleepDetection() : void
- + setSleepCycle(list<float>) : void
- + toggleFixedBrightness() : void
- + setChooseBrightness(float) : void



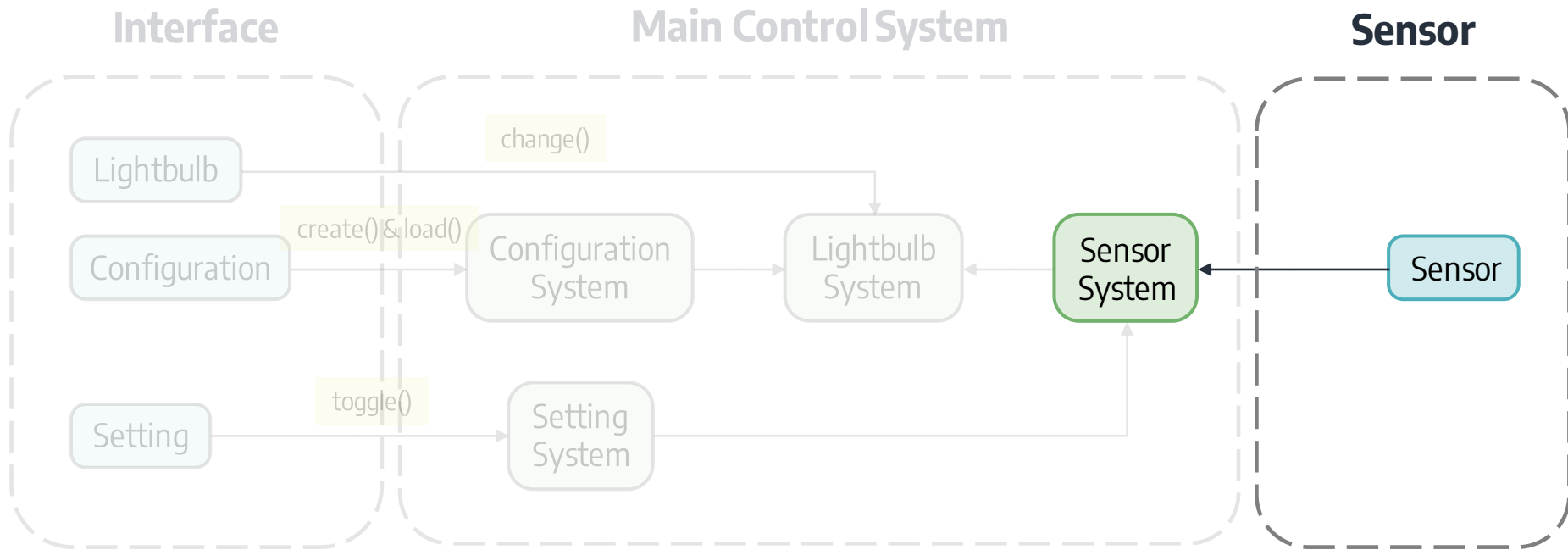
SYSTEM ARCHITECTURE

CLASS DIAGRAMS - INTERFACE



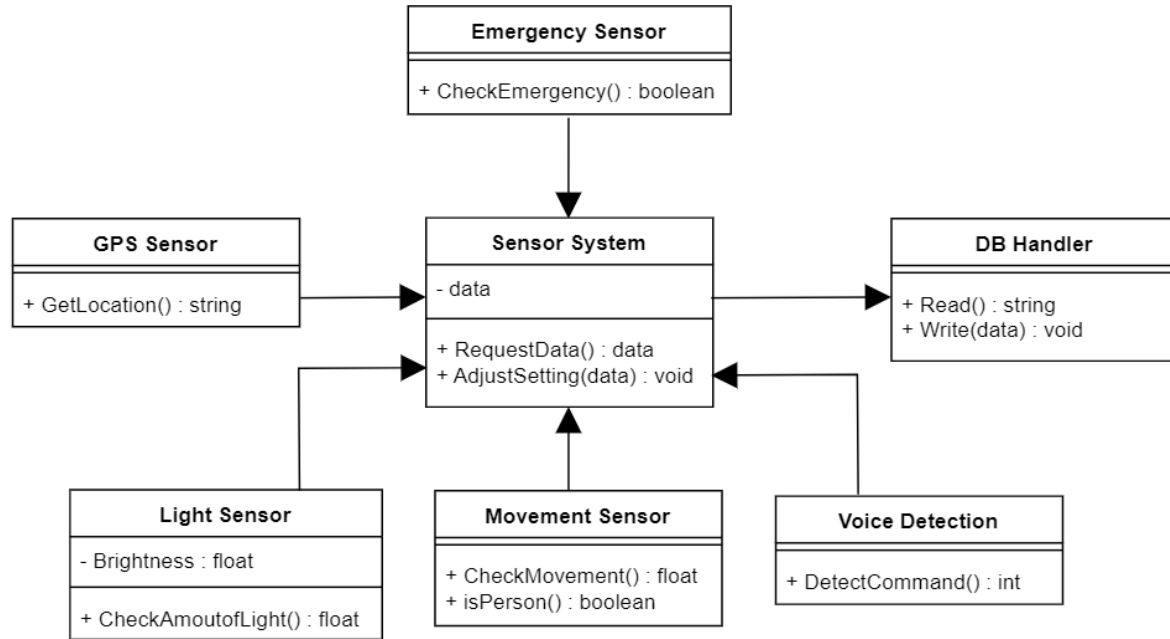
SYSTEM ARCHITECTURE

CLASS DIAGRAMS - SENSOR



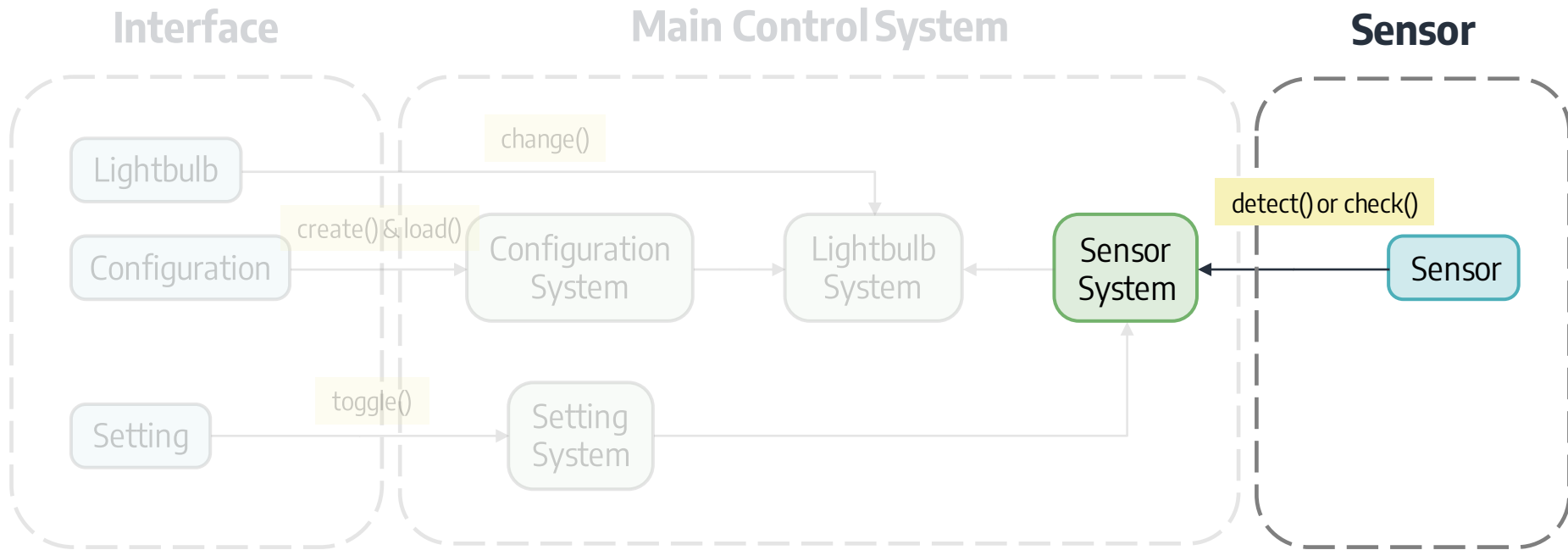
SYSTEM ARCHITECTURE

CLASS DIAGRAMS - SENSOR



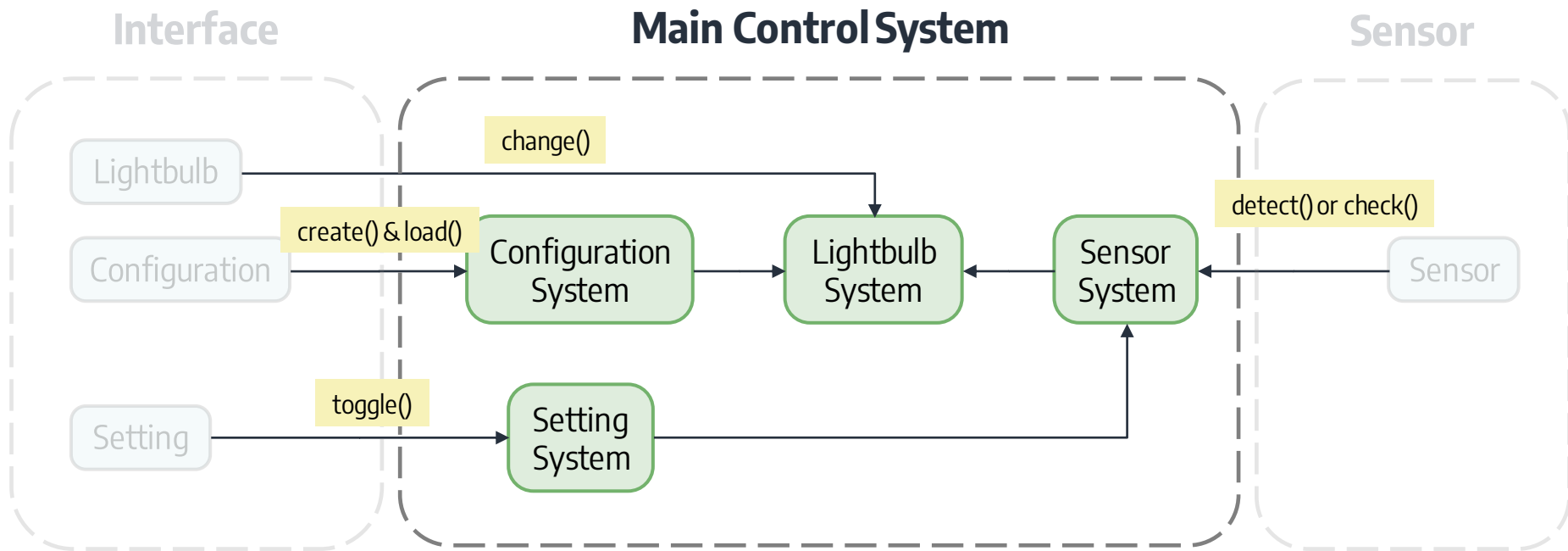
SYSTEM ARCHITECTURE

CLASS DIAGRAMS - SENSOR



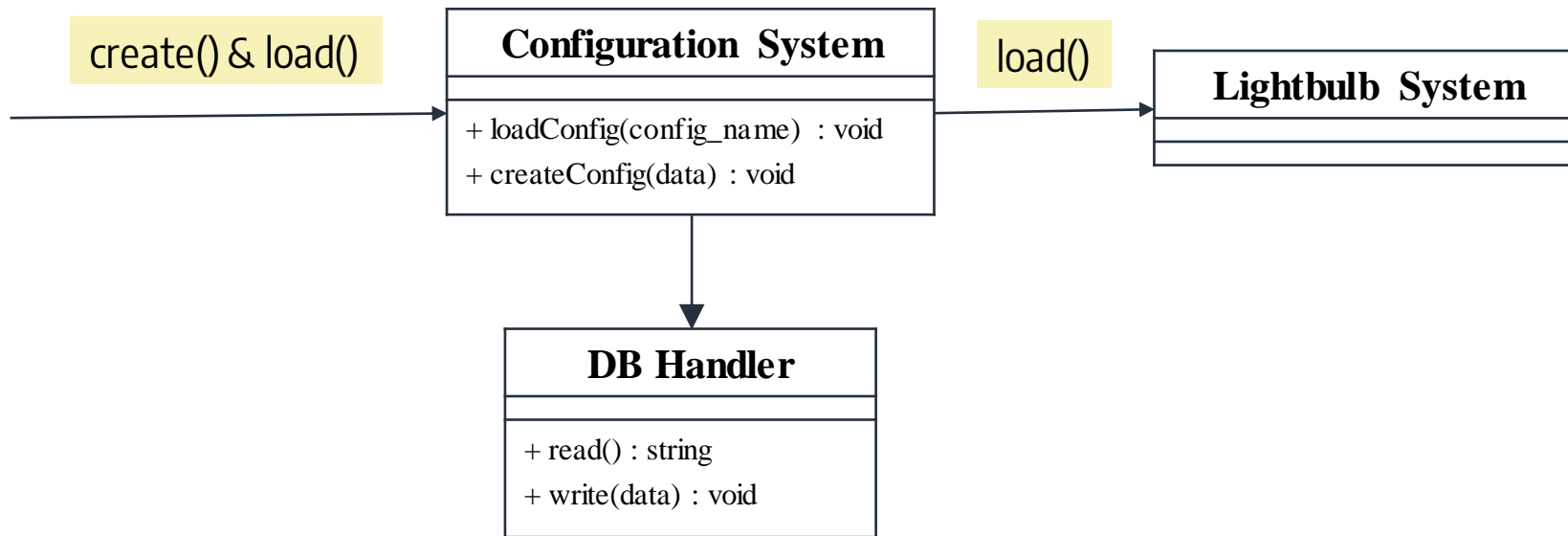
SYSTEM ARCHITECTURE

CLASS DIAGRAMS – MAIN CONTROL



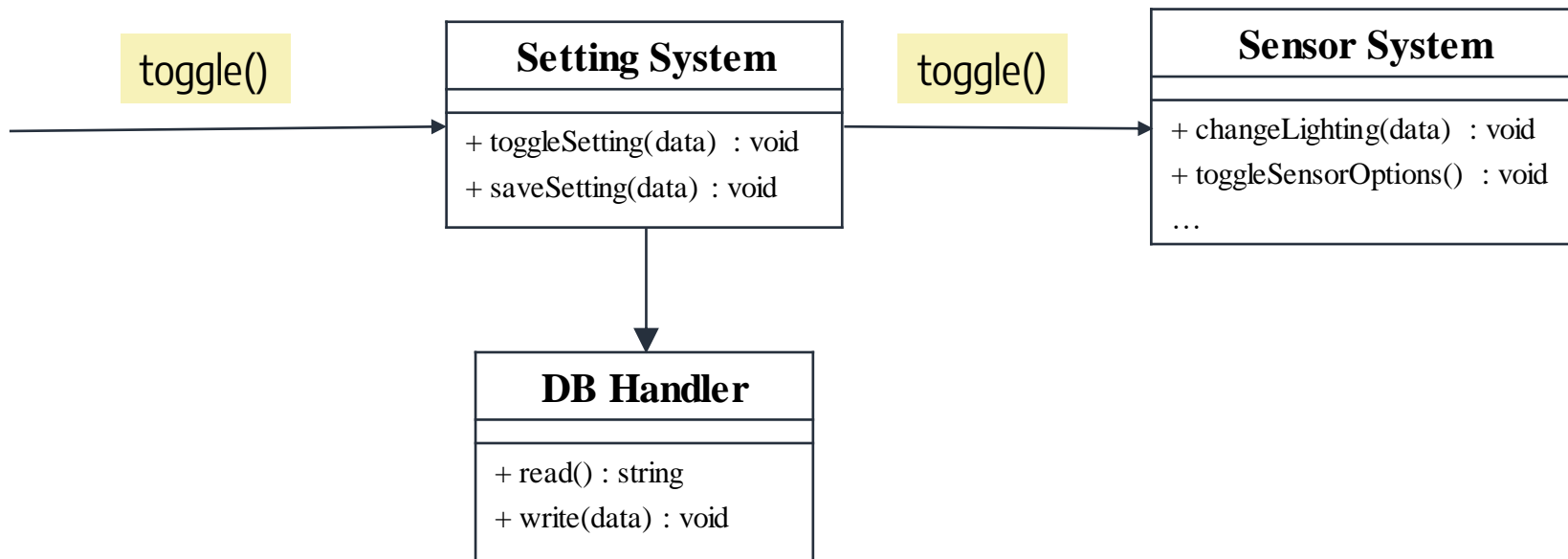
SYSTEM ARCHITECTURE

CLASS DIAGRAMS – MAIN CONTROL



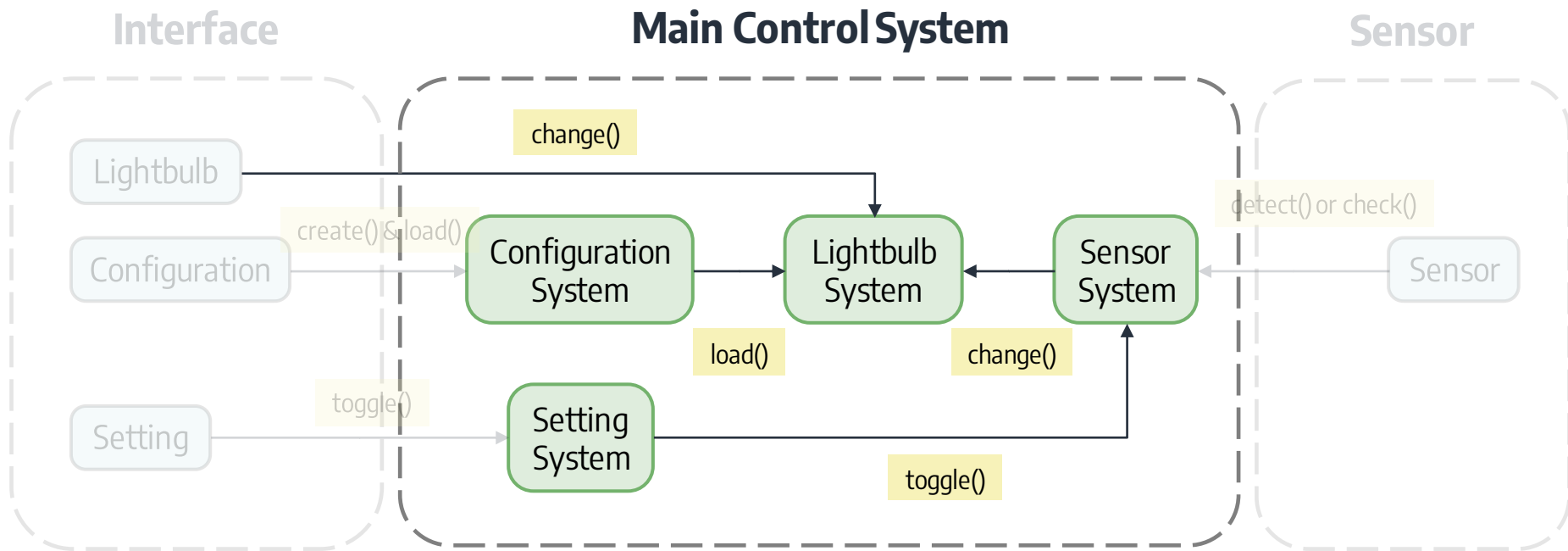
SYSTEM ARCHITECTURE

CLASS DIAGRAMS – MAIN CONTROL



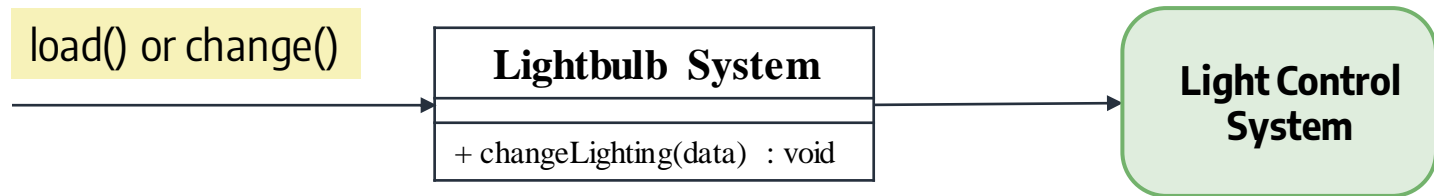
SYSTEM ARCHITECTURE

CLASS DIAGRAMS – MAIN CONTROL

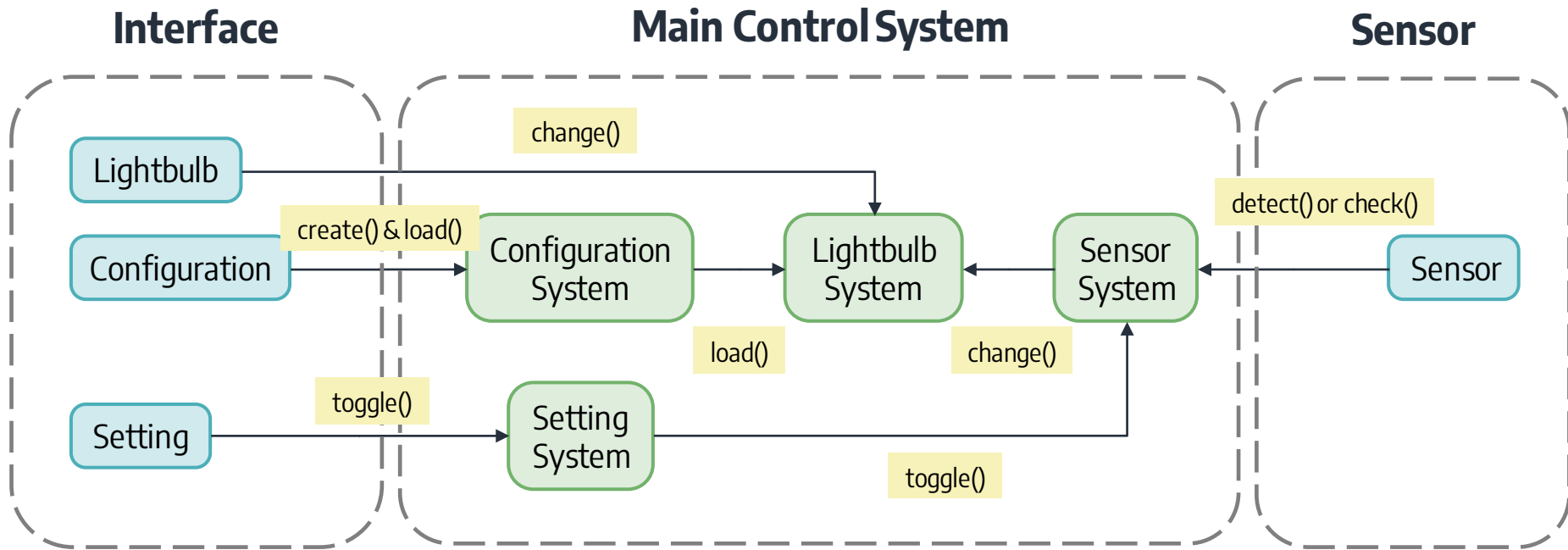


SYSTEM ARCHITECTURE

CLASS DIAGRAMS – MAIN CONTROL

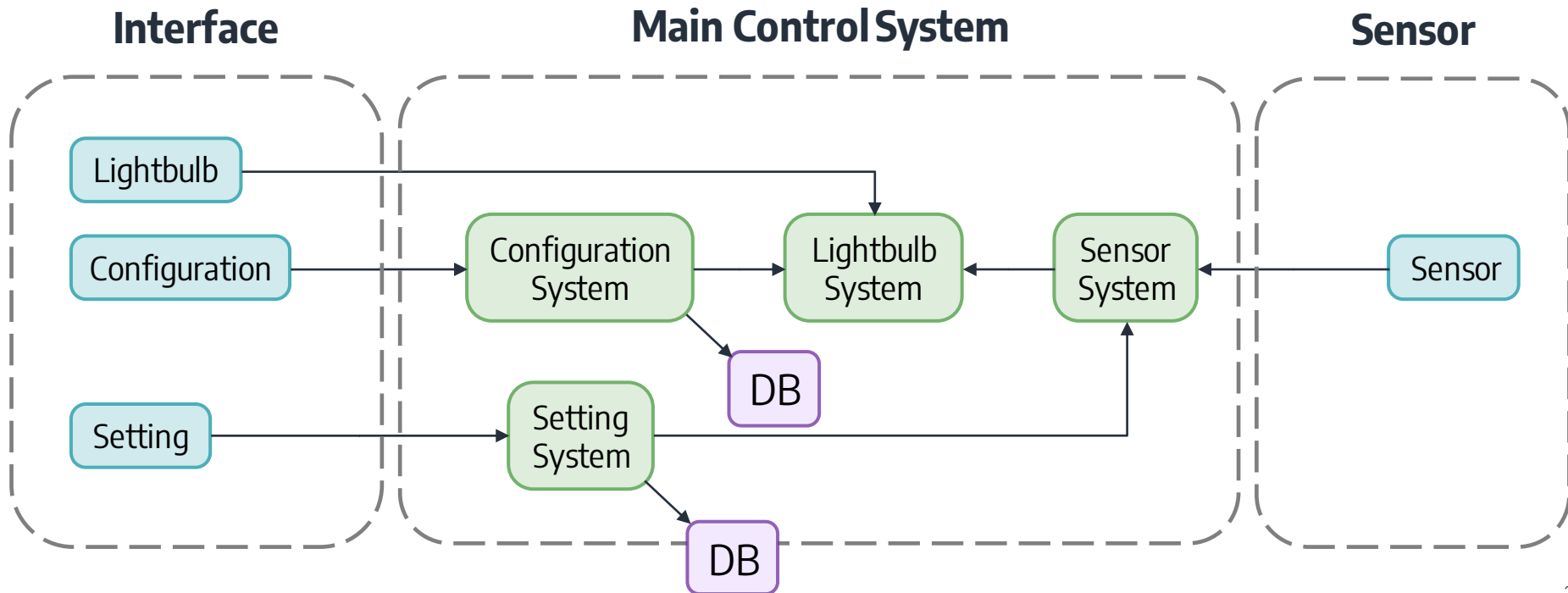


SYSTEM ARCHITECTURE



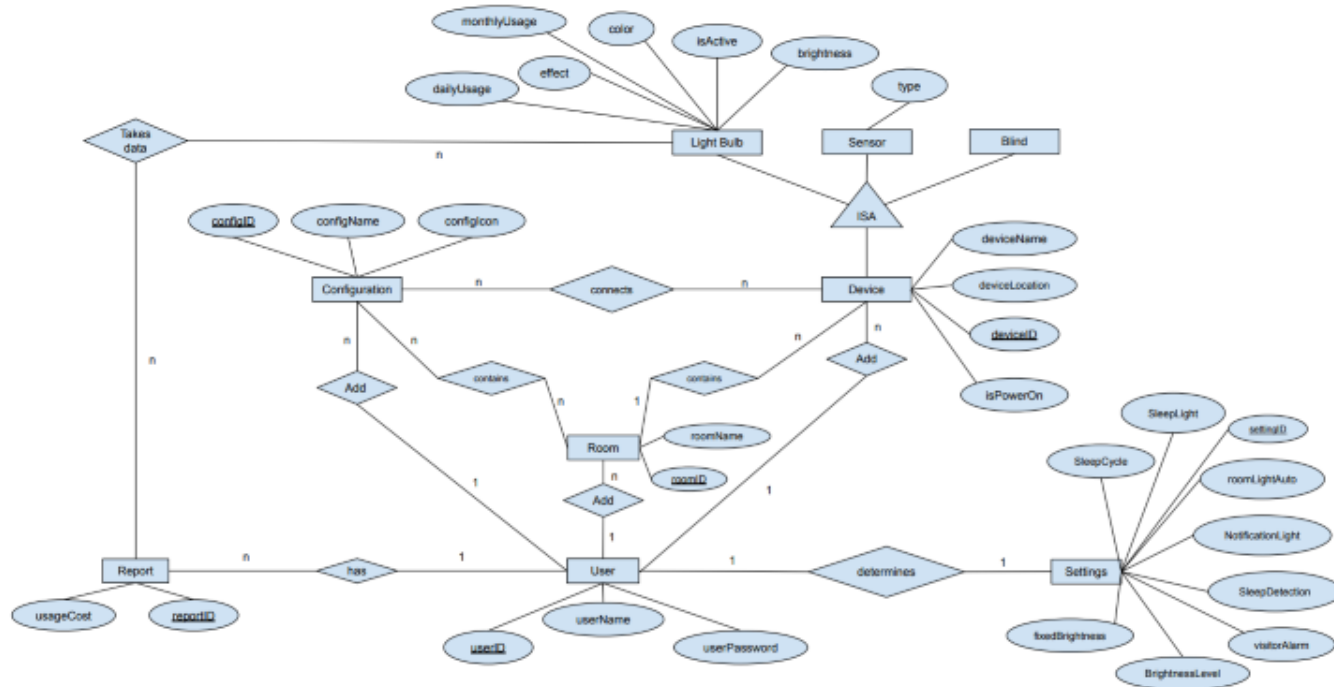
SYSTEM ARCHITECTURE

DATABASE



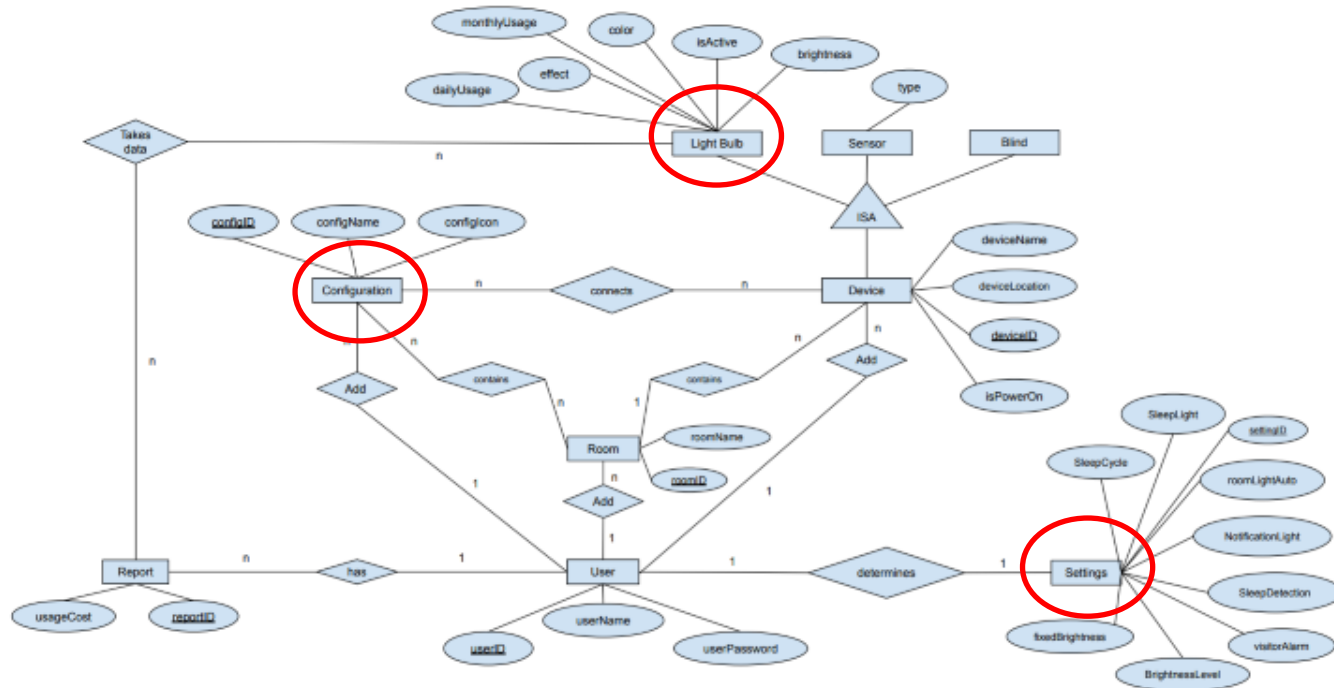
SYSTEM ARCHITECTURE

DATABASE : E-R DIAGRAM



SYSTEM ARCHITECTURE

DATABASE : E-R DIAGRAM



5

TESTING PLAN

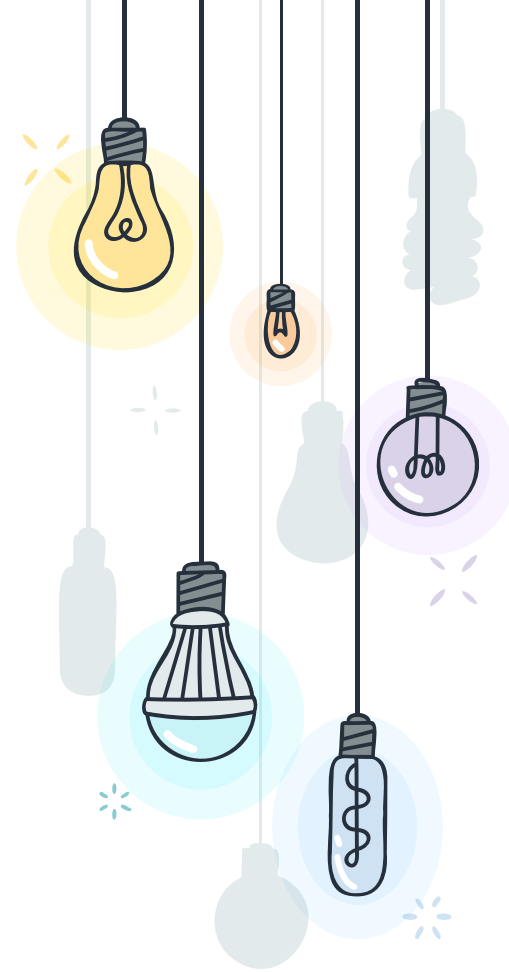
Development, Release, User testing



* TESTING PLAN

- 8.2.1. Development Testing.....
 - 8.2.1.1. Performance
 - 8.2.1.2. Reliability
 - 8.2.1.3. Security
- 8.2.2. Release Testing.....
- 8.2.3. User Testing.....

Make **test cases** to test out system's performance, reliability, and security. Later the **release testing** and **user testing** are used to receive feedbacks.



6

DEVELOPMENT PLAN

Frontend Backend Development



* FRONTEND DEVELOPMENT



Figma

Dynamic prototypes,
collaborative environment



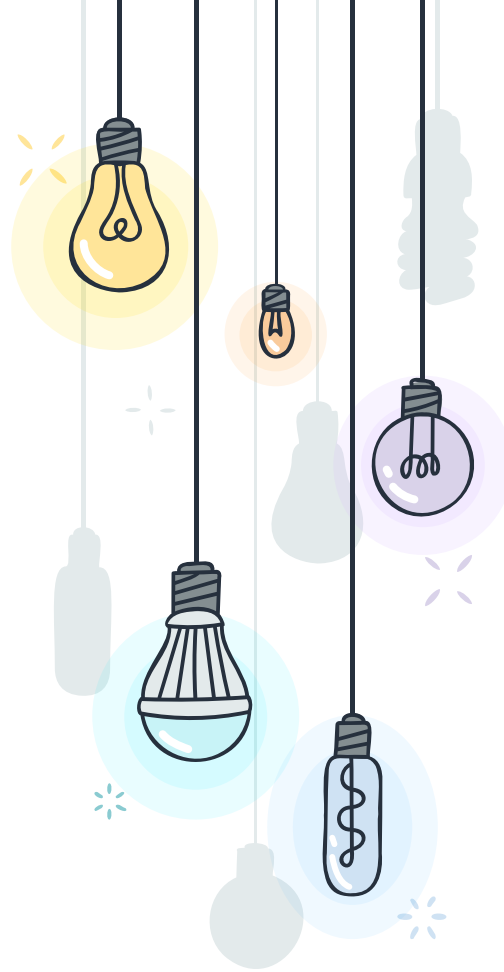
Android Studio

Official IDE for Android
application development



Xcode

Apple's IDE for macOS
application development



* BACKEND DEVELOPMENT



GitHub

GitHub is a code hosting platform for version control and collaboration.



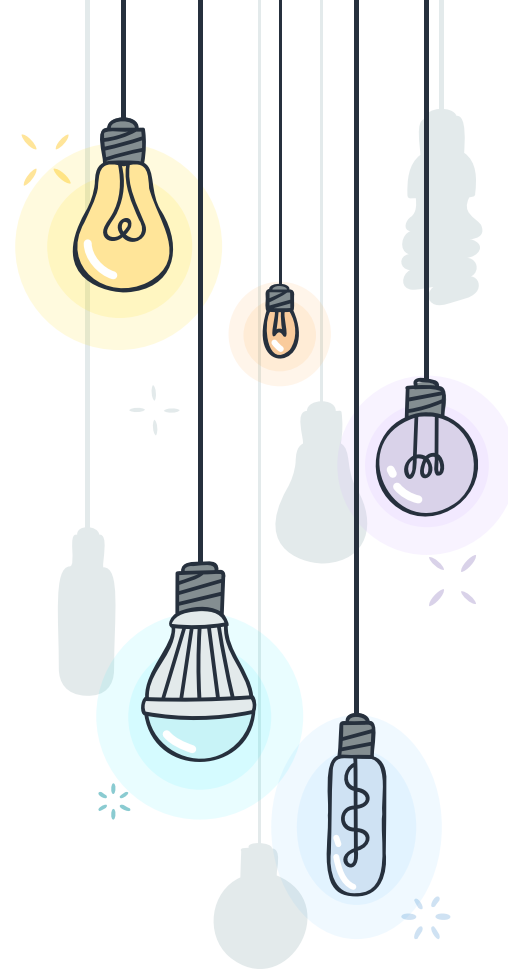
MySQL

MySQL is a DBMS that is a client/server system.



Firebase

Firebase Cloud can be used as a server and datastore.





THANKS YOU!