A
Project Report
on
"Digital India"
At
Krish Compusoft Services, Ahmedabad

Submitted By:

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To

Institute of Management Research & Development, Shirpur

North Maharashtra University, Jalgaon

Guided By:

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In the partial fulfillment of the requirement for the award of the degree of 'Master of Computer Application'

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R. C. Patel Educational Trust's

R. C. Patel Institute of Managment Research & Development

Shirpur, Dist-Dhule 425405

CERTIFICATE

This is to certify that Mr. Shubham K. Chaudhari, a final year student of ***'Master of Computer Application'*** *from Institute of Management Research & Development, Shirpur has successfully completed the project enttled* ***"Digital India"*** *as a part of academic six month industrial training which is approved for degree of Master of Computer Application a post graduate course of* ***'North Maharashtra University, Jalgaon'*** *during acadmic year 2021-22.*

Director
RCPETS IMRD,
Shirpur

Examiner

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Thanks & Regards
Chaudhari Shubham K.

Contents

1 Introduction **1**
- 1.1 Company Profile . . . 1
  - 1.1.1 Services Offered . . . 1
  - 1.1.2 Clients and Products . . . 2
- 1.2 Introduction To Digital India . . . 3
  - 1.2.1 Need And Motivation . . . 3
  - 1.2.2 Problem Definition . . . 3
  - 1.2.3 Objective And Scope . . . 3
  - 1.2.4 Features of Proposed System . . . 4

2 System Requirement Analysis **5**
- 2.1 System Requirement Analysis . . . 5
- 2.2 Software Process and Development . . . 5
- 2.3 Scope of Proposed System . . . 6
- 2.4 Technical Specification . . . 6
  - 2.4.1 Express Framework . . . 7

3 Feasibility Study **8**
- 3.1 Introduction . . . 8
- 3.2 Economical Feasibility . . . 8
- 3.3 Operational Feasibility . . . 9
- 3.4 Financial and Economical Feasibility . . . 9

4 Proposed System **10**
- 4.1 Proposed System . . . 10
- 4.2 User Privileges . . . 10
- 4.3 Objective of the System . . . 11

5 Preliminary Design **12**
- 5.1 Tools of data flow strategy . . . 12
- 5.2 Use Case Diagram . . . 13
- 5.3 Entity Relationship Diagram . . . 14
- 5.4 Data Flow Diagram . . . 15

6 Detailed Design **17**
6.1 Data Dictionary 17
6.2 Input and output Design 17
6.2.1 Admin 18
6.3 Database structure 22

7 Testing **26**
7.1 Introduction 26
7.2 White Box Testing 26
7.3 Black Box Testing 27
7.4 Validation Testing 27
7.4.1 Requirements 27
7.5 GUI Testing 27

8 Concluding Remarks **31**
8.1 Strengths of System 31
8.2 Limitations of system 31
8.3 Scope for future development 32
8.4 Conclusion 32

Appendix **33**

References **34**

Chapter 1

Introduction

1.1 Company Profile

At KCS, as a cloud and data solutions company with expertise on various technology platforms, we enable our global customers to achieve digital transformation and provide smart product solutions with our tech consulting, bespoke solutions, as well as professional services. We enable clients across the globe to navigate their digital journey with integrated technology models, business intelligence, and next-gen tech expertise to catalyze change. Our pragmatic approach to technology with agile methodologies helps deliver unprecedented levels of solutions, service performances and customer delight. With almost two decades of experience and more than 80delivered with process discipline while following CMMI Level 5, ISO 27001 standards and partnering with Microsoft Gold partner, Google cloud partner, Amazon cloud partner as well as other OEMs

1.1.1 Services Offered

International Consultancy

We have been providing international consultancy from last 22 years and during we have established competitive foundation. Our consultancy Service consists of a highly skilled.

Technical Consultancy

Be it B2B, B2C or even B2E, KCS has driven service-centric project engagement models and have executed various end to end IT strategies including concept planning, architecture planning, project management, infrastructure planning, resource planning, applications development, database management, IT infrastructure planning and management, training as well as deployment. Our offerings include the entire gamut from IT strategies to application development services.

Web Development

Today, the major increasing internal efficiencies and productivity through web services. We target that

tools Our development team is well versed with the and technologies like- PHP, ASP .Net, Javascript, Ajax, React, NodeJs and Angular.

Web Hosting

The important and most overlooked aspect of site development is hosting. We offer reliable, secure and super-fast hosting services. We also provide hosting solutions.

Software Development

We are strong believers that the software you use for your business should be designed around.

1.1.2 Clients and Products

- Smart Town Mobile App.
- eHospitality Services Management(eHSM) .
- H-Connect (Connecting Health Globally).
- **Digital India.**
  Website: http://www.kcsitglobal.com

1.2 Introduction To Digital India

Digital India is a Web Application built using MERN (MongoDB, Express, React, NodeJS) Stack. With Digital India you can register the electronic devices and control is via Single Dashboard from anywhere. It uses IoT Technology to achieve this functionality .

1.2.1 Need And Motivation

• The home automation market is primarily driven by growing need for effective solutions in various domestic applications such as lighting, safety and security, energy management, entertainment, and HVAC (heating, ventilation, and air conditioning).

1.2.2 Problem Definition

The project aims to design and construct a home automation system that Will remotely switch on or off any household appliances connected to it, using a micro-controller, voice dial on a phone, or Bluetooth/-based android application.

1.2.3 Objective And Scope

Considering the problem project is to develop Digitaly control Light,Fan,Tv etc. - **Digital India**

Application such that it overcomes the flaws of existing manual Switch. .

- **Device Owner**

o Can add, update and delete new users and assign proper roles to them in the User concerned.

o User can and to Add Device to Whitelist specific Command.

1.2.4 Features of Proposed System

Digital India systems involve making homes even smarter. Homes can be interfaced with sensors including motion sensors, light sensors and temperature sensors and provide automated toggling of devices based on conditions.

- Ability to control any registered device from a single dashboard.
- Ability to register various type of devices that can be controlled later on using commands
- Ability to register different commands to control the registered devices
- Ability to connect Google Assistant and Alexa to control the registered devices

Chapter 2

System Requirement Analysis

2.1 System Requirement Analysis

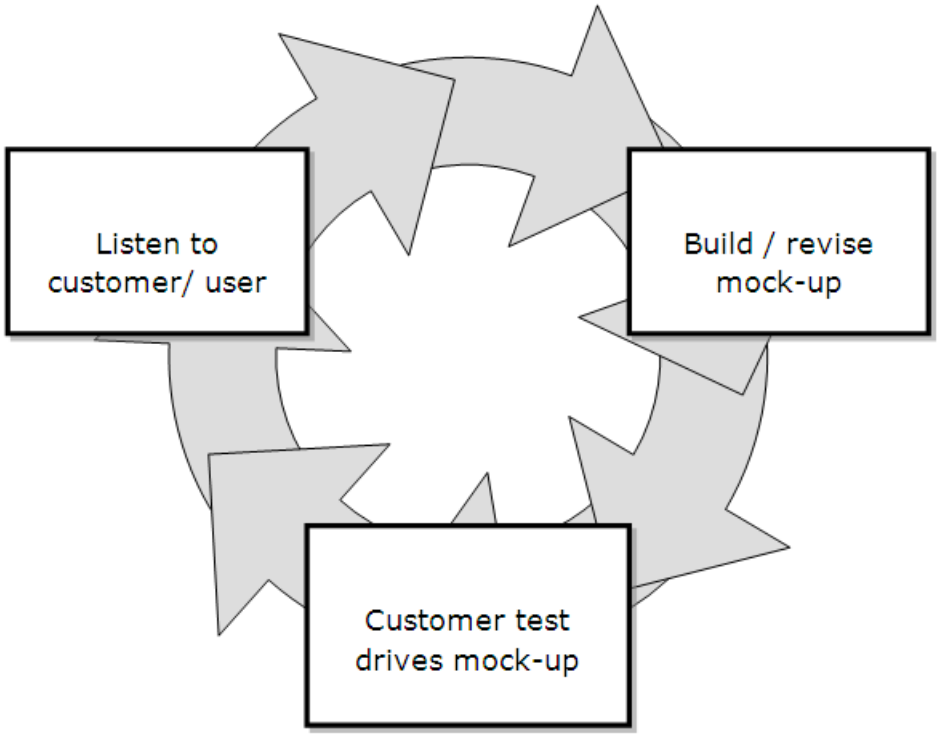
At system requirement analysis stage the information gathering process is identified a Smart devices fueled by the hyper-connected Internet of Things (IoT) are becoming ever more prevalent and pervasive in our personal lives. Sensors are everywhere, and the trend will only continue. Today, sensor-equipped industrial equipment is powered by artificial intelligence (AI). Medical devices can self-diagnose and send alerts to patients and doctors to remotely manage healthcare. Automobiles with in-car connectivity can download new features on the fly. Very soon, refrigerators will plan your dinner and ovens will know how to cook it.

2.2 Software Process and Development

The set of general objectives for "Digital India" development were defined by the various

Prototype model

The prototyping paradigm begins with requirements gathering. Together with Panning of those aspects of the software that will be visible to the customer/user (e.g. input approaches and output formats).



2.3 Scope of Proposed System

Our main purpose is to create a MERN application that helps Customers and other people use their home appliances remotely using their remotely held devices like Mobile phones, tablets, etc.

2.4 Technical Specification

- **Server**

Processor : Intel i3

RAM : Min. 512 MB

Hard Disk : Min. 512 MB free

- **Client**

Processor : Intel i3 or Above

RAM : Min. 512 MB

Hard Disk : Min. 480 MB free

- **Software Specification**

Platform : Windows XP

Front End : HTML, JavaScript,CSS,React

Middle ware : JavaScript,Express,Node

Back End : MongoDB

Framework: Express

Web Browser: Chrome etc.

2.4.1 Express Framework

Express is a NodeJS-driven framework, you churning out dynamic, interactive, professional websites in no time.

- It underpins the Model/View/Controller (MVC) approach to web development—a best practice philosophy all developers should adhere to.

Chapter 3

Feasibility Study

3.1 Introduction

the working of the system,

Therefore, a feasibility study of the proposed system needs to be carried out in order to:

- Provide a better understanding of the System.
- Describe the outputs.

There are many factors. These factors are **Economical Feasibility, Technical Feasibility and Operational Feasibility**.

3.2 Economical Feasibility

• Economic Feasibility helps in determining whether the required software has the potential to generate financial gains for an organization.

• The only person working here is an admin. So due to reduced manpower,the cost of wages is also reduced. Hence making it cheaper.

3.3 Operational Feasibility

• The GUI is designed to be user friendly, so it is easy to use by admin. There is only one user which handles the website i.e., Admin. So, the manpower required is less here.

• This software will have a very easy to use, user friendly interface so it will be pretty much operable by anyone having little experience with android or iOS phone.

3.4 Financial and Economical Feasibility

• This type of study involves the cost incurred on the team of the software development, cost of study involved in conducting a feasibility study, estimated cost of software and hardware.

• Here the cost of hardware is affordable

Chapter 4

Proposed System

4.1 Proposed System

helps to manage Electronic Equipment in Home.

User Registration: It provides Add User/Delete User/Give Specific Access on Electronic Divice.

Command Center: In Command Center you can add commands ,Run commands and store command logs, It stores information .

Authorize: In this module Verify User using OTP Verification, Google Assistant and Alexa Authorizations.

4.2 User Privileges

The user type determines the privileges that the user has within Home. Two types of User as follow

- Device Owner(Mannage user,Mannage command)
- Normal User(Run Command)

4.3 Objective of the System

- Latest technology
- Graphical user Interface
- AI and IoT based System

Chapter 5

Preliminary Design

5.1 Tools of data flow strategy

Data flow strategy shows th and their interactions.

Data flow analysis makes use of the following tools:

Flow Charts

Data Flow Diagrams

Data Dictionary

Flowchart

Flowchart is used to represent the algorithm.

Data Dictionary

The logical characteristics of current systems data stores, including name, description, aliases, contents.

Data Structure Diagrams

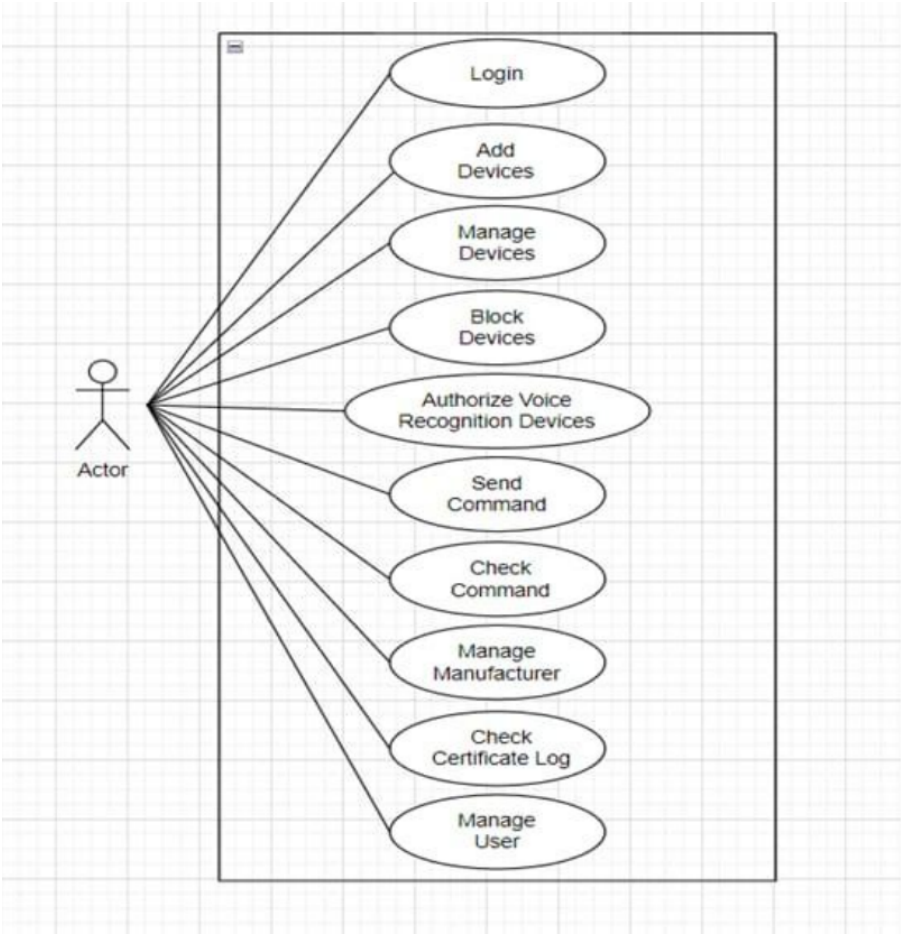
A pictorial description of the relation between entities (people, places, events and things) in system and the set of information about the entity.

Structured Chart

A design tool that pictorially shows the relation between processing modules in computer software, describes.

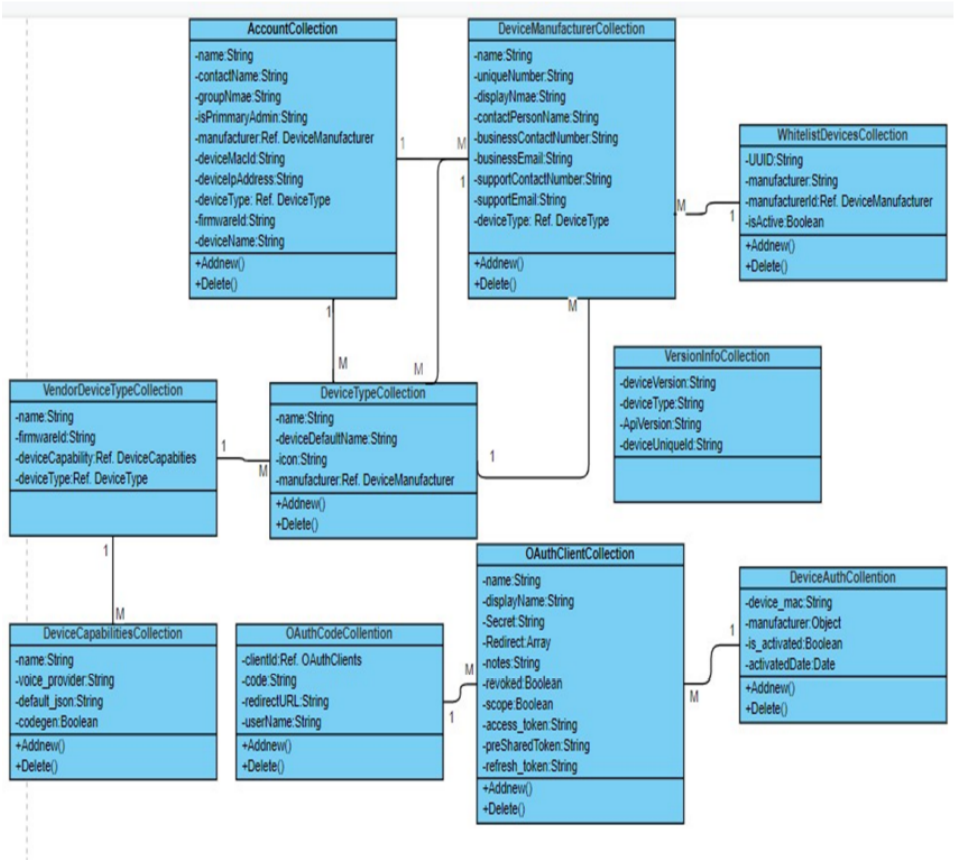
5.2 Use Case Diagram

Usecase Diagram For User

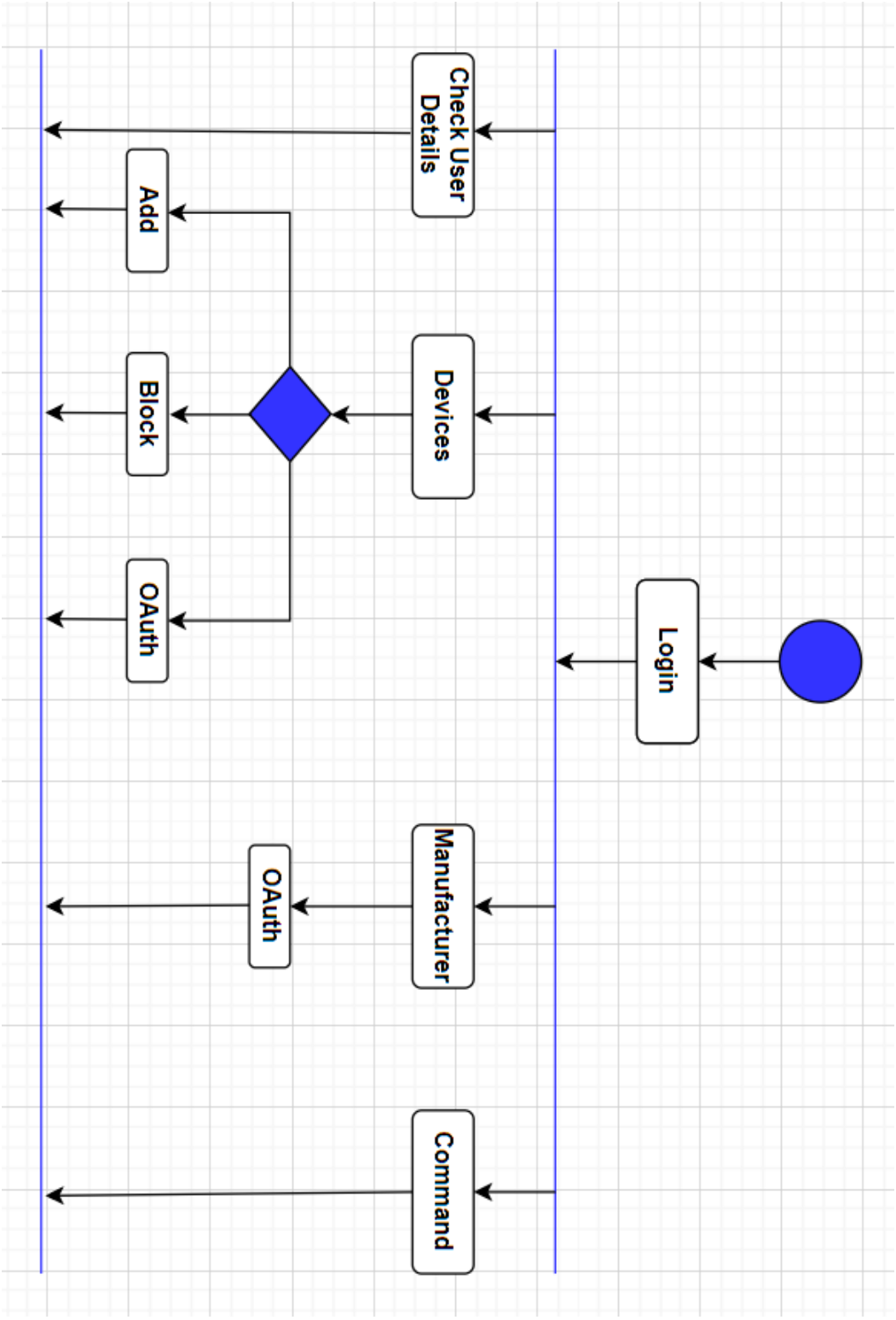


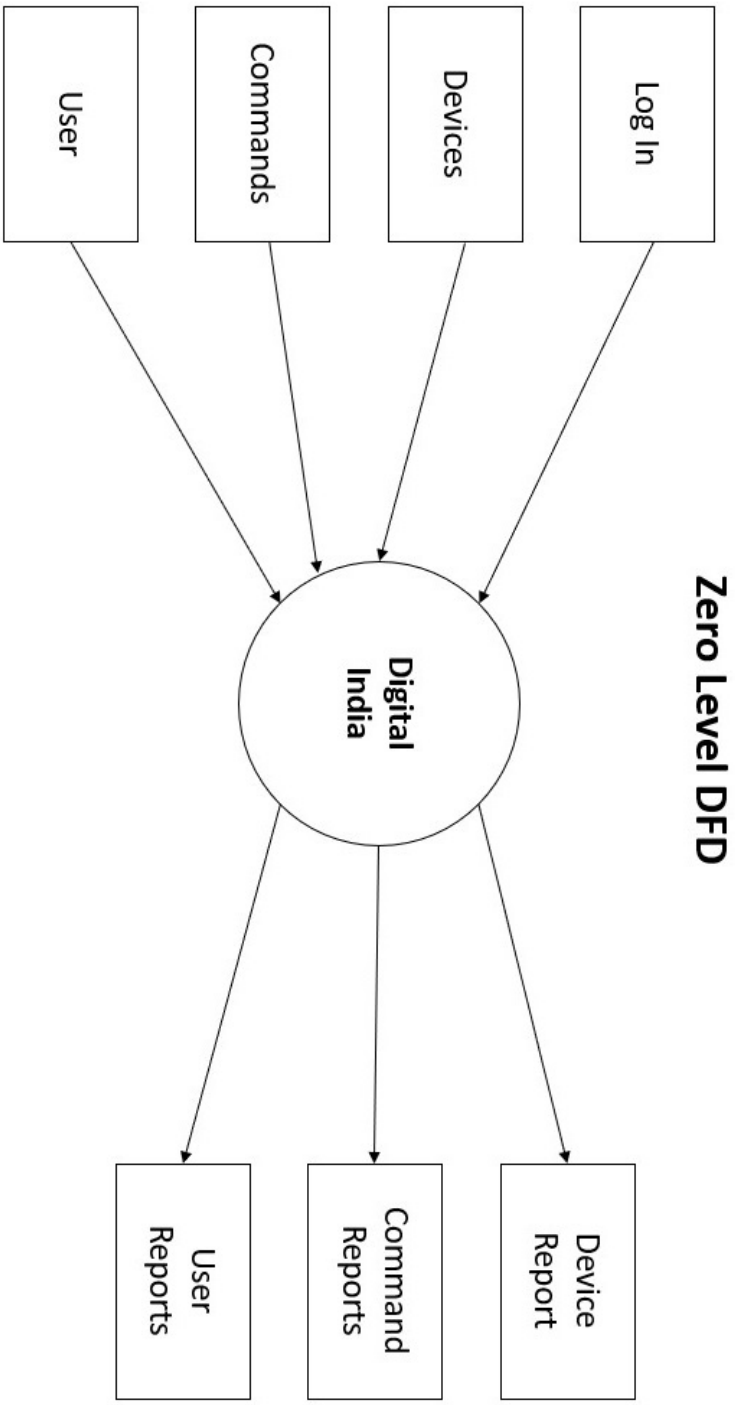
5.3 Entity Relationship Diagram

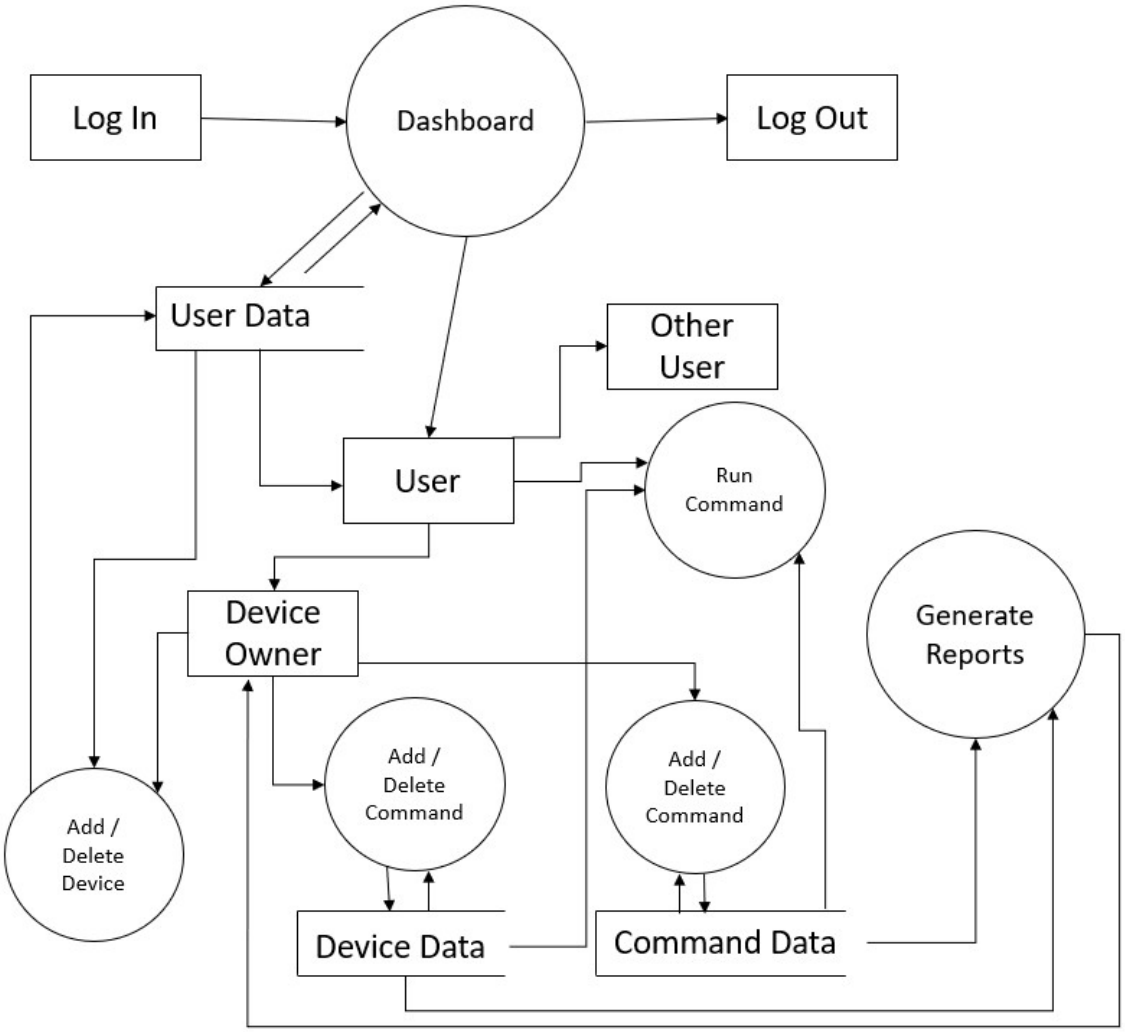
ERD For User.



5.4 Data Flow Diagram




Zero Level DFD
User
Commands
Devices
Log In
Digital India
User Reports
Command Reports
Device Report


Log In
Dashboard
Log Out
User Data
Other User
User
Run Command
Device Owner
Generate Reports
Add / Delete Device
Add / Delete Command
Add / Delete Command
Device Data
Command Data

Chapter 6

Detailed Design

etailed design done by specifying algorithm and structure that makes up the interior modules. Usually there are many choice but from the different alternatives available. The one, which offer greatest efficiency, simply functionality is selected based on the relative important of these criteria

6.1 Data Dictionary

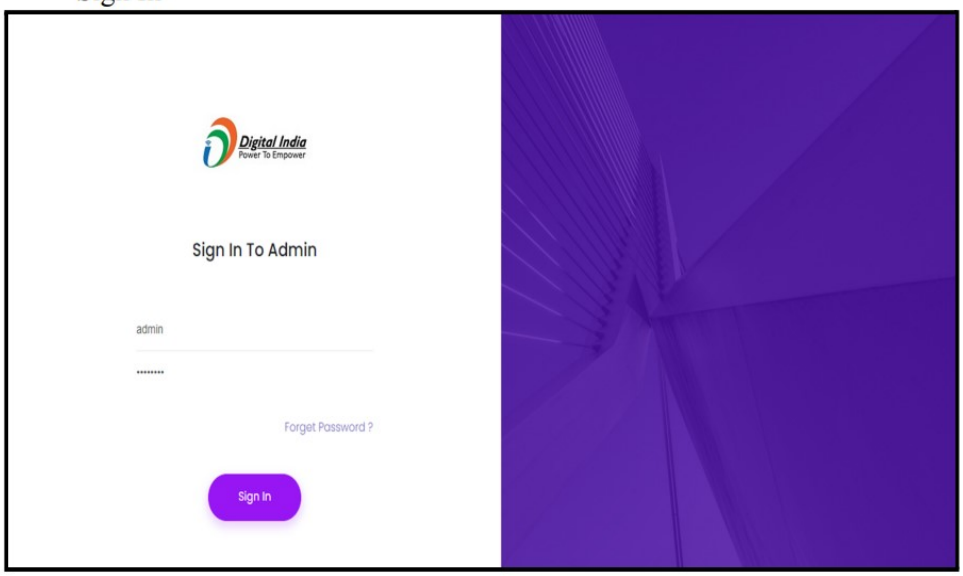
A data dictionary provides a complete documentation of all the element of system like data items, data stores(database) and data flow. Data described in data dictionary carries the details of the type, data name, database name, data description and characterization. Data Dictionary covers the whole organization or a database. Data Dictionary is only collection of the element definition.

6.2 Input and output Design

Considering all o the interaction of user with the system be in most effective and simplified way. All the input forms are designed in she user will be able to use them in very eff possibilities needed by the user.....

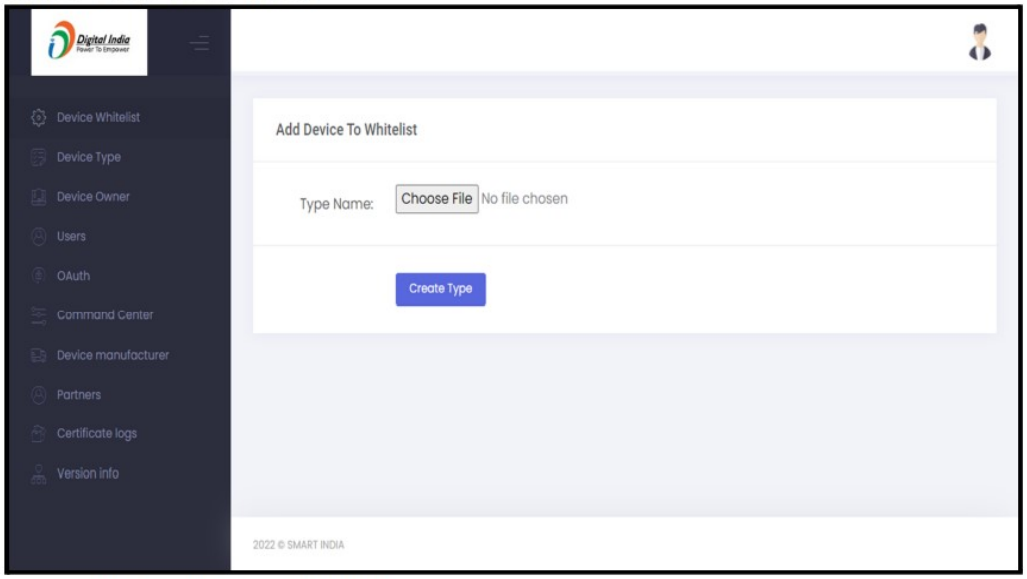
6.2.1 Admin

Sign In



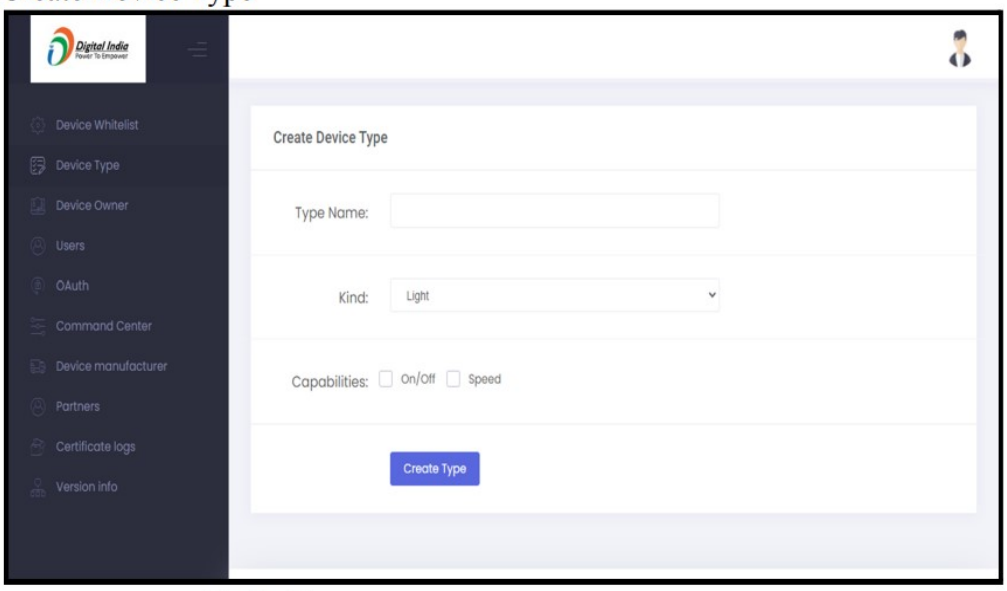
- to Sign in into a admin panel.

Add Device to Whitelist



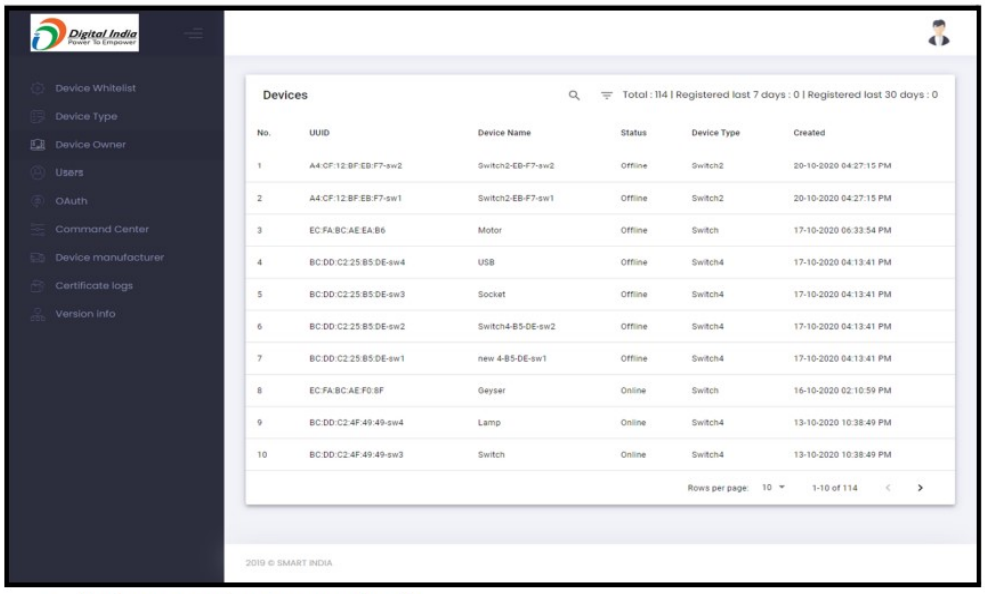
- Add new Device to Whitelist

Create Device Type



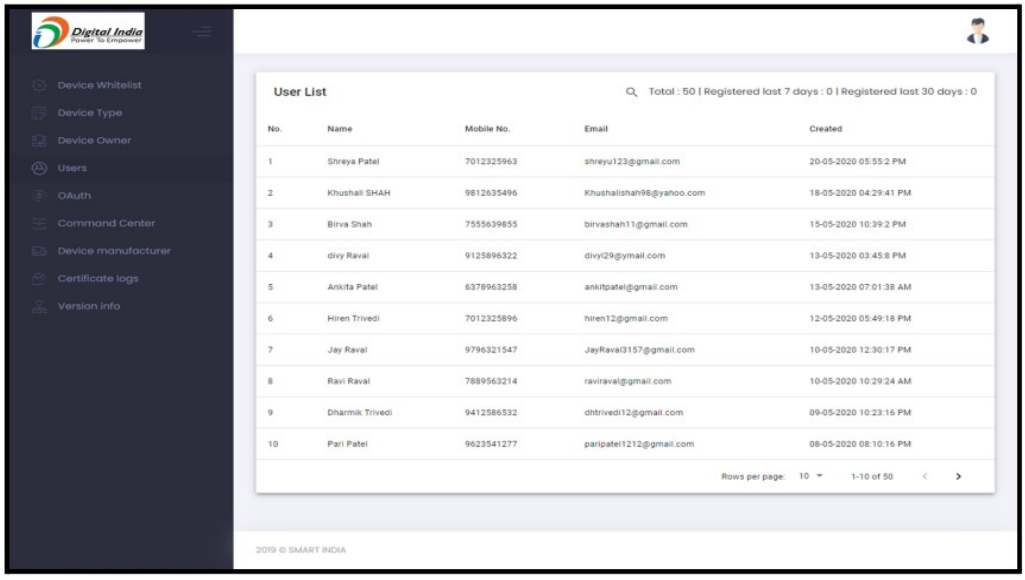
- create new Device Types

Device Owner



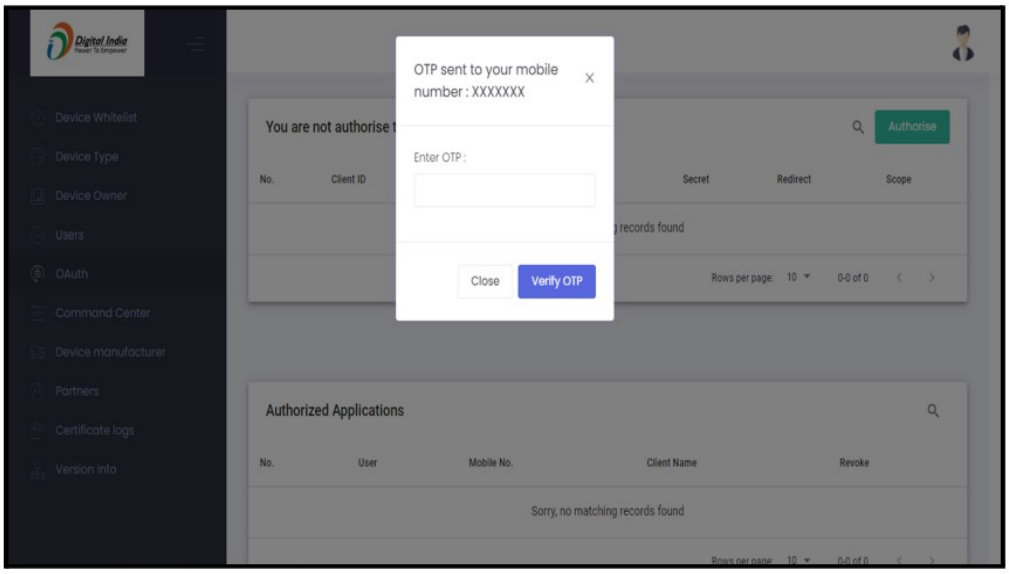
- it shows Device Owners details

User List



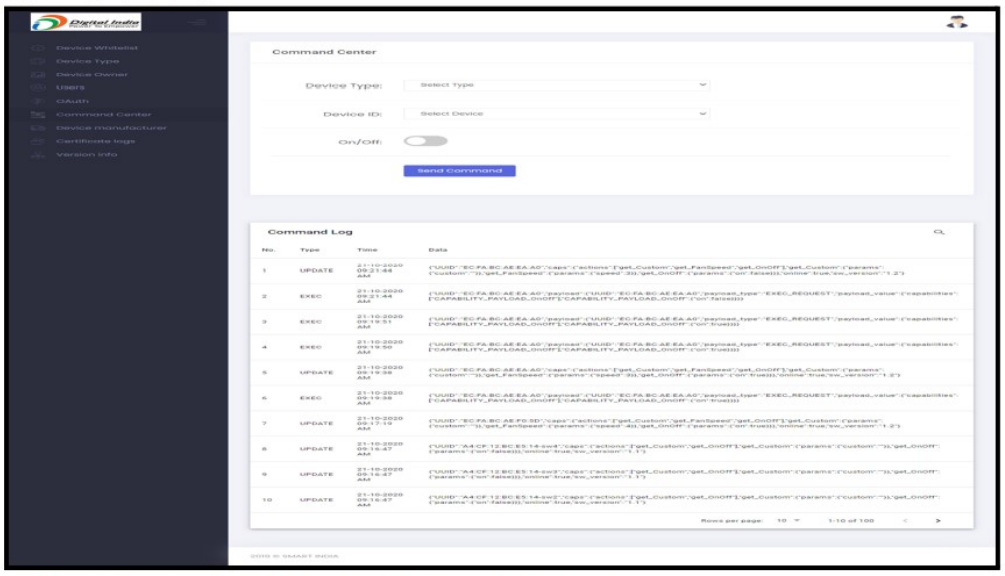
- it shows User details

Authorize



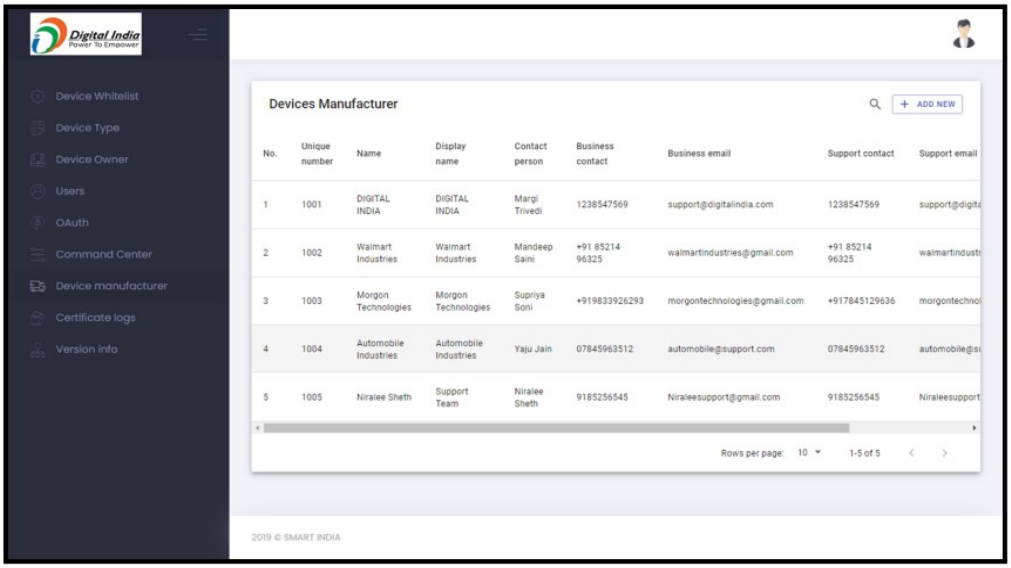
- send otp for authorize

Command Center



- send command for device and generates its logs

Device Manufacturer



- it shows device manufacturer details

6.3 Database structure

Account Collection: This table stores Information for Creating account and give access to login.

Field Name	Data Type	size	Constraints
name	String	50	NOT NULL
contactName	String	50	NOT NULL
groupName	String	50	NOT NULL
isPrimaryAdmin	Boolean	-	NOT NULL
manufacturer	Object	-	-
deviceMacId	String	30	NOT NULL
deviceIpAddress	String	30	NOT NULL
deviceType	Object	-	-
firmwareId	String	20	NOT NULL
deviceName	String	20	NOT NULL

Table 6.1: Account Collection

Command Collection: This table stores Commands .

Field Name	Data Type	size	Constraints
command	JSON	20	

Table 6.2: Command Collection

DeviceAuth Collection: This table stores Auth details .

Field Name	Data Type	size	Constraints
device_mac	String	30	NOT NULL
manufacturer_mac	Object	-	-
is_activated_mac	Boolean	-	NOT NULL
activated_date_mac	Date	-	NOT NULL

Table 6.3: DeviceAuth Collection

DeviceManufacturer Collection This table stores Device Manufacturer Details .

Field Name	Data Type	size	Constraints
name	String	50	Not NULL
uniqueNumber	String	20	Not NULL
displayName	String	50	Not NULL
contactPersonName	String	50	Not NULL
businessContactNumber	String	20	Not NULL
businessEmail	String	50	Not NULL
supportContactNumber	String	20	Not NULL
supportEmail	String	50	Not NULL
deviceType	Object	-	-

Table 6.4: DeviceManufacturer Collection

DeviceCapabilitiesCollection This table stores the Device Capabilities.

Field Name	Data Type	size	Constraints
name	String	50	NOT NULL
voice_provider	String	50	NOT NULL
default_json	String	30	NOT NULL
codegen	Boolean	-	NOT NULL

Table 6.5: DeviceCapabilitiesCollection

DeviceTypeCollection This table stores the Device Type.

Field Name	Data Type	size	Constraints
name	String	50	NOT NULL
deviceDefaultName	String	50	NOT NULL
icon	String	50	NOT NULL
manufacturer	Object	-	-

Table 6.6: DeviceTypeCollection

OAuthAccessCollection This table stores the yearly target.

Field Name	Data Type	size	Constraints
clientId	Object	-	-
token	String	200	NOT NULL
refresh_token	String	200	NOT NULL
revoked	Boolean	-	NOT NULL

Table 6.7: OAuthAccessCollection

OAuthCodeCollection

Field Name	Data Type	size	Constraints
clientId	Object	-	-
code	String	50	NOT NULL
redirectUrl	String	200	NOT NULL
userName	String	50	NOT NULL

Table 6.8: OAuthCodeCollection

OAuthClientCollection This table stores the Client Auth details.

Field Name	Data Type	size	Constraints
name	String	50	NOT NULL
display_name	String	50	NOT NULL
secret	String	50	NOT NULL
redirect	Array	100	NOT NULL
notes	String	100	NOT NULL
revoked	Boolen	-	NOT NULL
scope	Boolen	-	NOT NULL
access_token	String	200	NOT NULL
preShared_token	String	200	NOT NULL
refresh_token	String	200	NOT NULL

Table 6.9: OAuthClientCollection

OtpCollection This table stores the details For OTP.

Field Name	Data Type	size	Constraints
mobileNo	String	20	NOT NULL
Otp	String	10	NOT NULL
otpValidThrough	Date	-	NOT NULL

Table 6.10: OtpCollection

WhitelistDevicesCollection This table stores the user Whitelist details.

Field Name	Data Type	size	Constraints
UUID	String	50	NOT NULL
manufacturer	Object	-	-
isActivat	Boolen	-	NOT NULL

Table 6.11: WhitelistDevicesCollection

VersionInfoCollection This table stores the Device Version details.

Field Name	Data Type	size	Constraints
deviceVersion	String	50	NOT NULL
deviceType	Object	-	-
apiVersion	String	50	NOT NULL
deviceUniqueId	String	50	NOT NULL

Table 6.12: VersionInfoCollection

Chapter 7

Testing

7.1 Introduction

In our scenario test strategy is used to test the functionality of our system. We have to use to cover all scenarios. Main focus is on Functional Testing. In Functional Testing test case are used to test the application interface.
In our system testing is going to be done at individual module level. Each module will be undergone to Unit Testing and expected result is supposed to be same as actual result.

7.2 White Box Testing

White box testing is a security testing method that can be used to validate whether code implementation follows intended design, to validate implemented security functionality, and to uncover exploitable vulnerabilities. White box testing includes analyzing data flow, control flow, information flow, coding practices, and exception and error handling within the system, to test the intended and unintended software behaviour.

7.3 Black Box Testing

Black box testing takes an external perspective of the test object to derive test cases. These tests can be functional or non-functional, though usually functional. The test designer selects valid and invalid input and determines the correct output. There is no knowledge of the test object's internal structure.

7.4 Validation Testing

7.4.1 Requirements

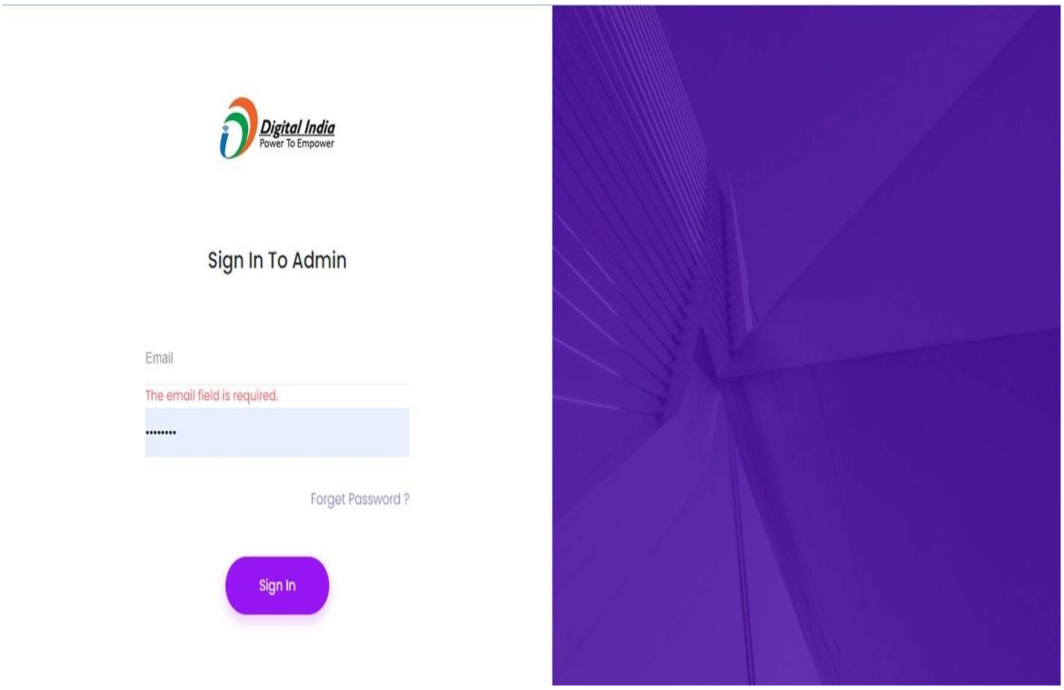
- Username must be not blank
- Password must be not blank
- login with invalid username and valid password
- Login with valid username and invalid password
- Login with valid credentials

Test Case ID	Test Case Description
TC01	Login with blank Username
TC02	Login with blank Password
TC03	Login with invalid username and valid password
TC04	Login with valid username and invalid password
TC05	Login with valid credentials

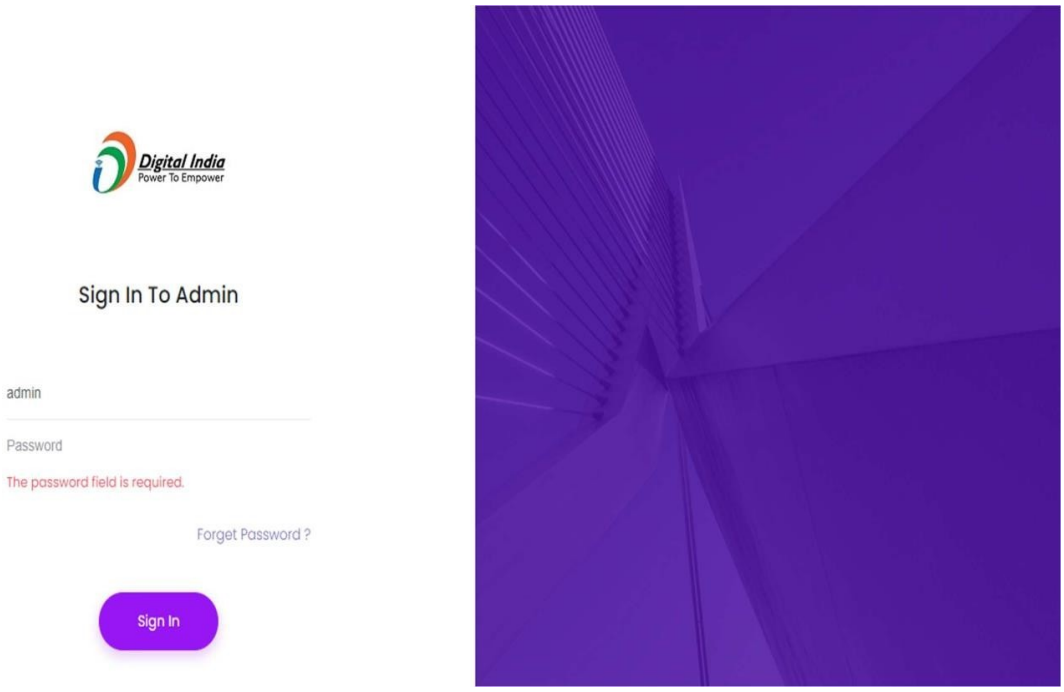
7.5 GUI Testing

The criterion of the user interface is graphical which less time consuming for user but more complexes for the programmer.

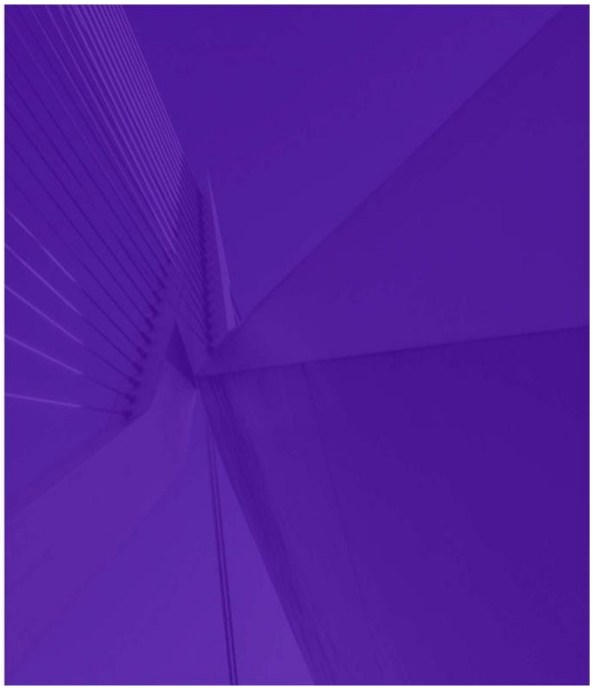
Test Case 01



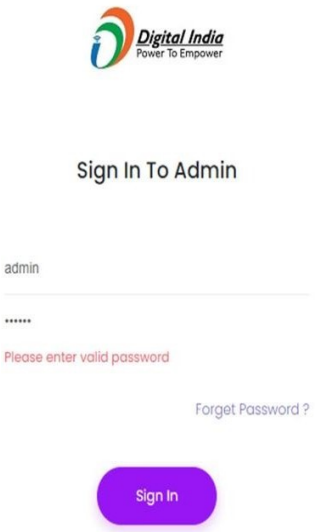
Test Case 02

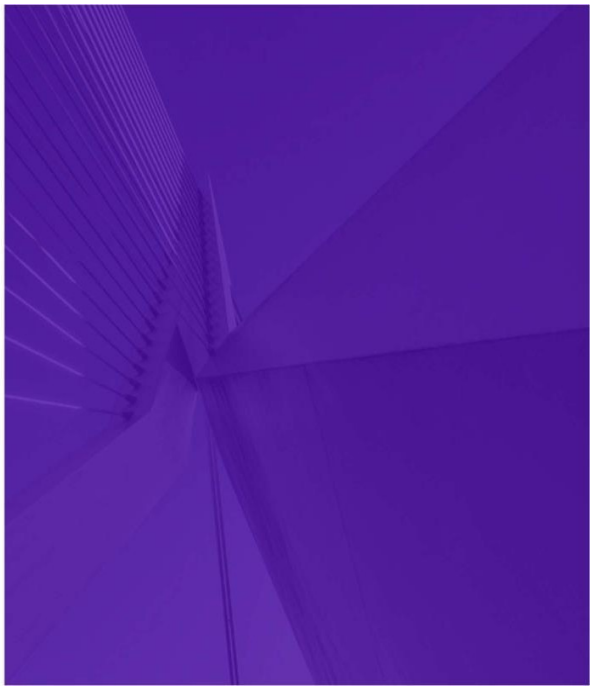


Test Case 03

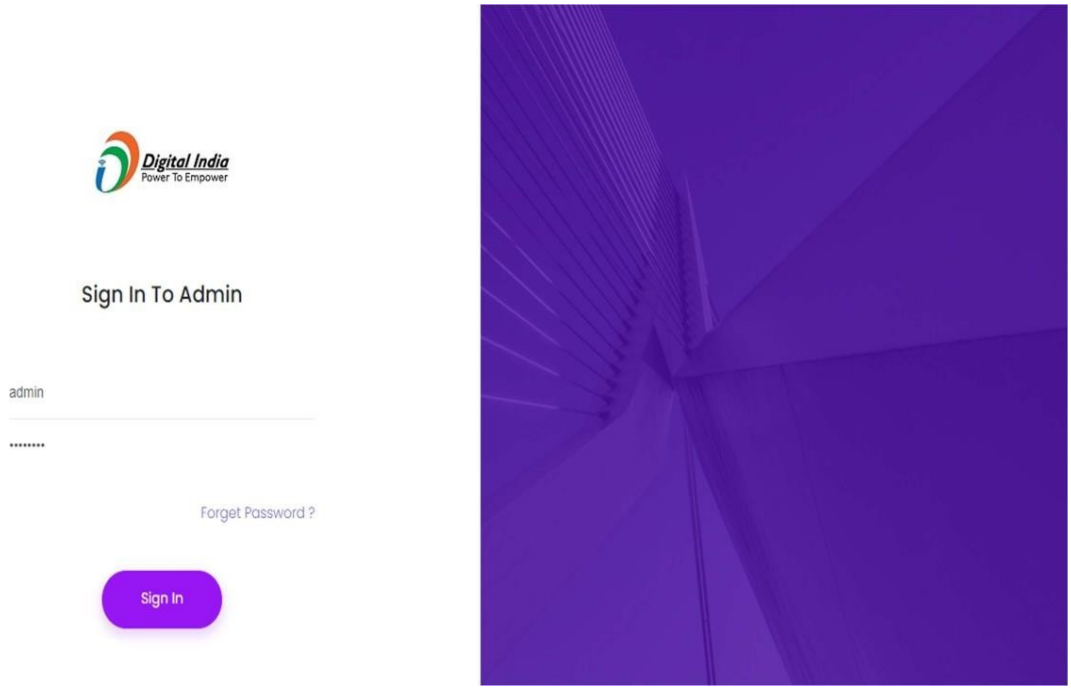


Test Case 04





Test Case 05


Digital India
Power To Empower
Sign In To Admin
admin
Forget Password ?
Sign In

Chapter 8

Concluding Remarks

8.1 Strengths of System

Smart home automation allows you to tap into hightech functionality and luxury that wasn't possible in the past. As technology development continues to expand, so will the possibilities for consumer home automation to make life easier and more enjoyable.

8.2 Limitations of system

- While the potential for remote device tampering is plenty scary, it pales in comparison with the risk of a physical break-in posed by security devices like smart door locks and surveillance cameras.
- Not only do these digital voice assistants listen in on you continuously while on, but hackers can also exploit security loopholes to break into the speaker and issue their own commands or harvest prior recordings.
- The data transmitted by smart devices like printers and smart TVs are often unencrypted, a virtual villain can view—and alter—data collected by your devices.

8.3 Scope for future development

In future we add User module and Client Module. The next step would be to extend this system to automate a large-scale environment, such as offices and factories. We will set timer for the module which you want to control automatically. Sensors in smart homes will turn off utilities, close windows, monitor security, and report to homeowners in real time. The smart clock will scan your schedule and adjust the bussing time that you will get ready for the tasks which you will going to perform.

8.4 Conclusion

- igital India's main purpose is to create a MERN application that helps Customers and other people use their home appliances remotely using their remotely held devices like Mobile phones, tablets, etc
- The main motive of learning and acquiring the skills has also been achieved.
  o Way of analyzing the system.

  o Importance and skill of proper database design.
  o Proper use of state management tools.

- Company too is satisfied with the quality of work.

Appendix

References

[1] Books Referred,

Following books proved to be very helpful during the development of the system.

• CodeIgnitor for Rapid React Application Developement

David Upton

• Software Engineering: A Practitioner's Approach, Seventh Edition Roger S. Pressman

[2] WebSites Visited :-

Following websites proved to be very helpful during the development of the system.

• www.msdn.microsoft.com

• www.w3schools.com

• www.codeproject.com

[3] Software Used for Diagrams

• Pacestar UML Diagrammer 6

[4] Software Engineering a Practitioner's Approach. (McGraw Hill Publication) Roger S. Pressman.