

# Smart Cradle

GROUP 10

E/17/040 : Chandrasena M.M.D

E/17/356 : Upekha H.P.S

E/17/407 : Wijesooriya H.D

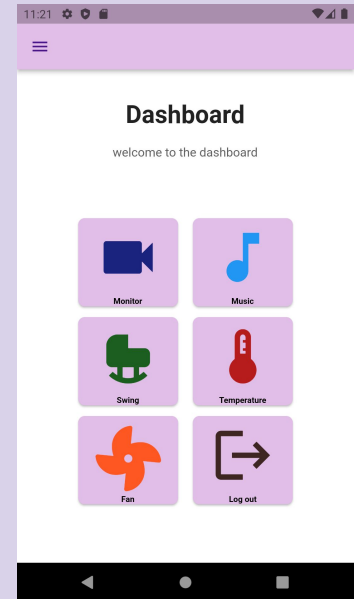
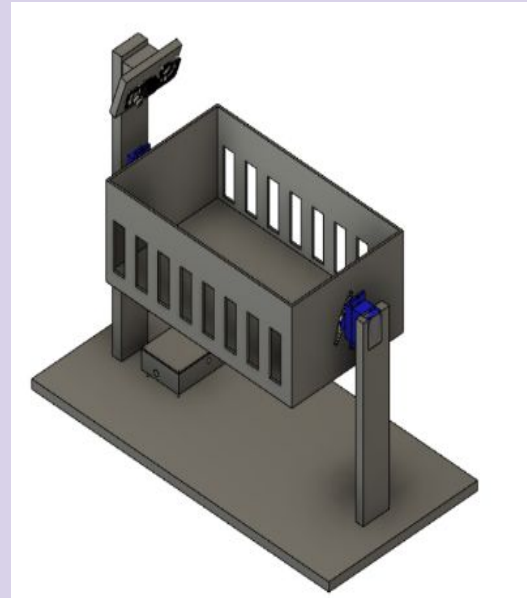


# Why this product ?

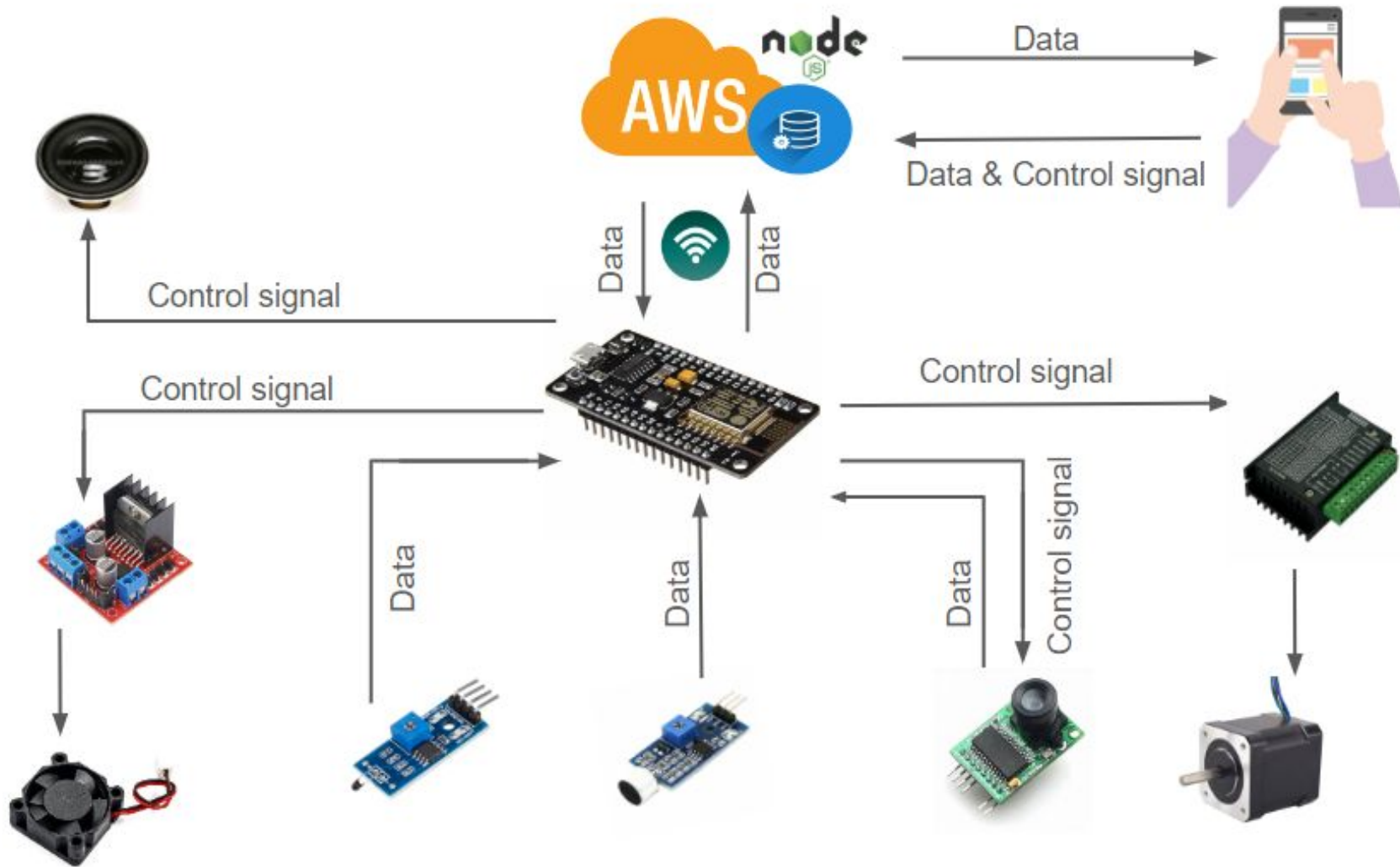
## Problem



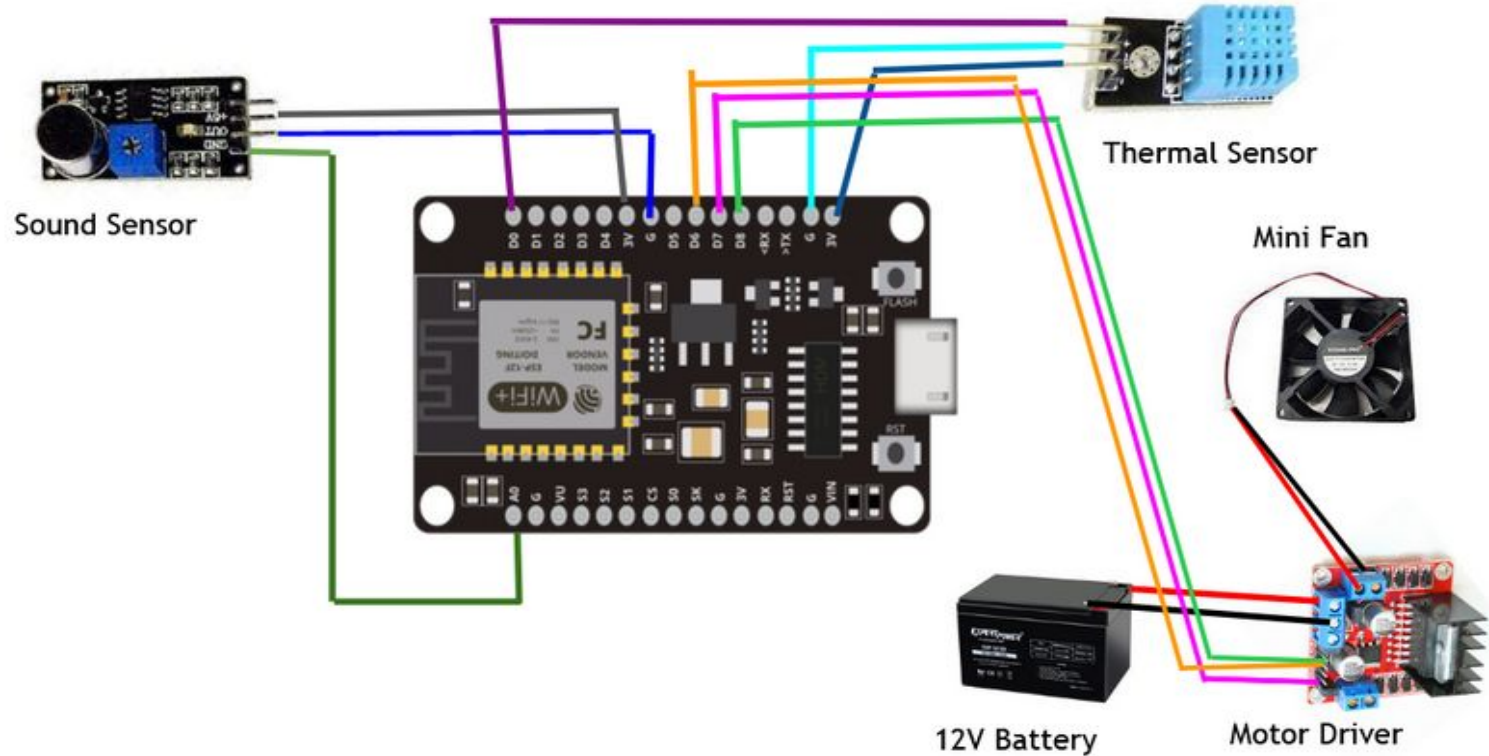
## Solution



# System Overview



# Circuit Diagrams

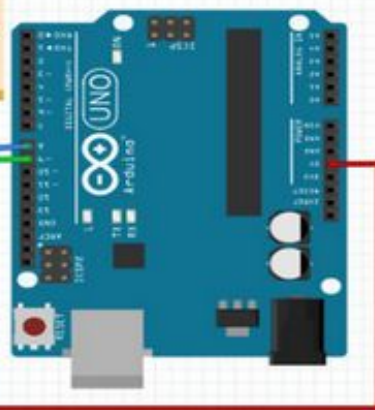


## Motor Driver



ENA (-): Not connected  
ENA (+): +5 V  
DIR (-): Pin 9  
DIR (+): +5 V  
PUL (-): Pin 8  
PUL (+): +5 V

## ATMega32



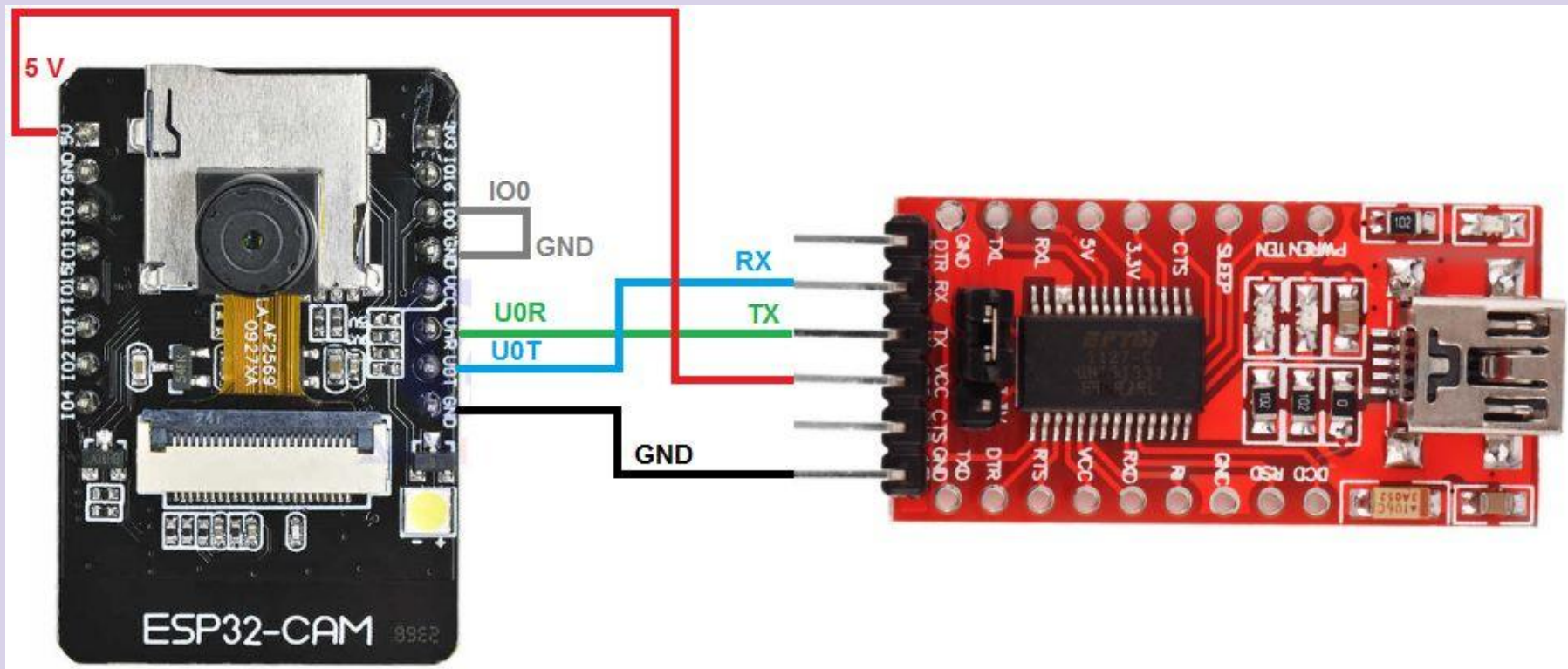
## 12V Battery



## Stepper Motor





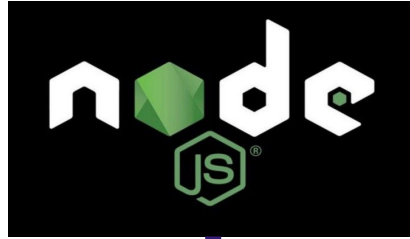


# Technologies Used



## Mobile Application

- Open Source
- Simple and Fast
- Important packages used
  - http
  - secure storage
  - url\_launcher



## Backend Development

- Open Source
- Highly scalable
- Fast
- Important libraries used
  - express
  - joi
  - Mqtt
  - Bcrypt



## Database

- Secure
- Scalable
- High performance

# Communication Protocols

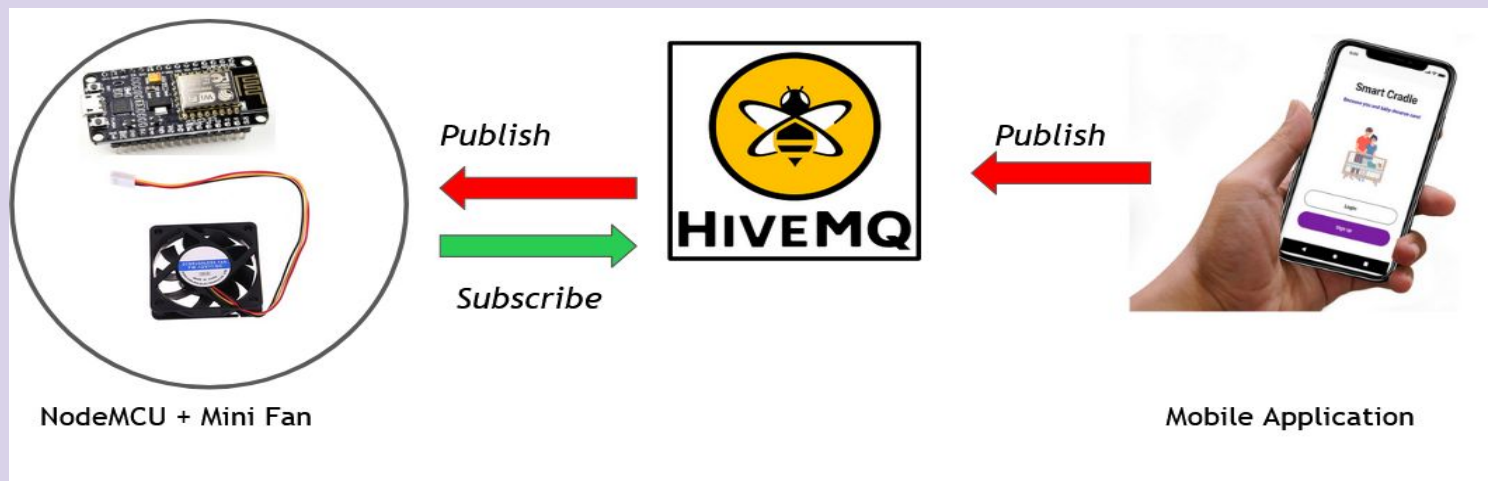
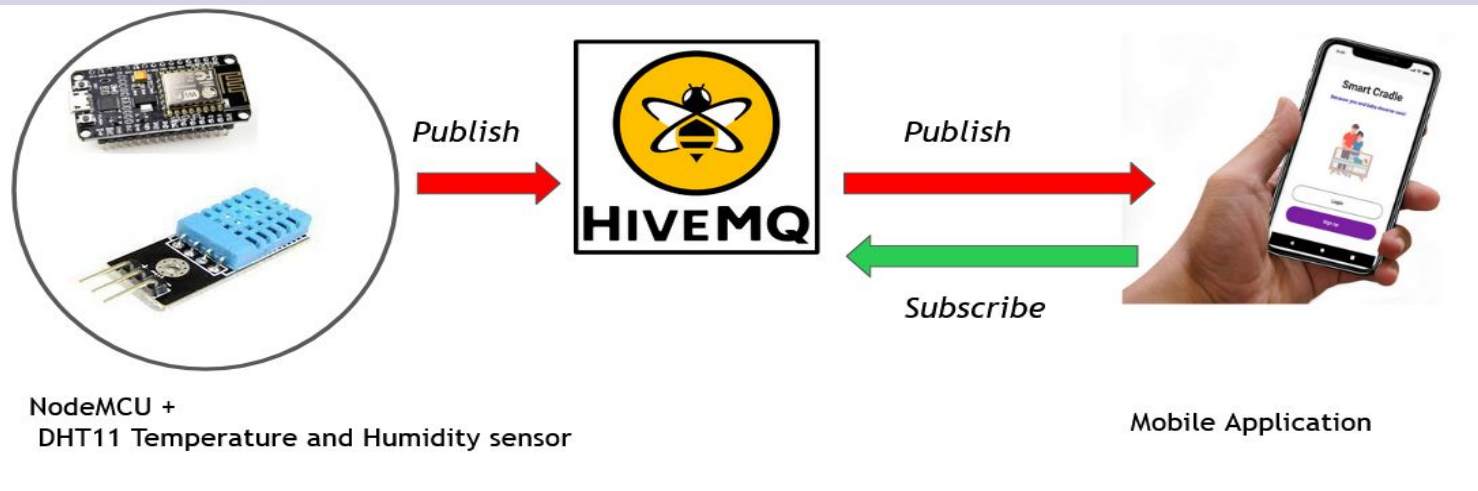
## MQTT

- Light weight
- Reliable
- Event driven



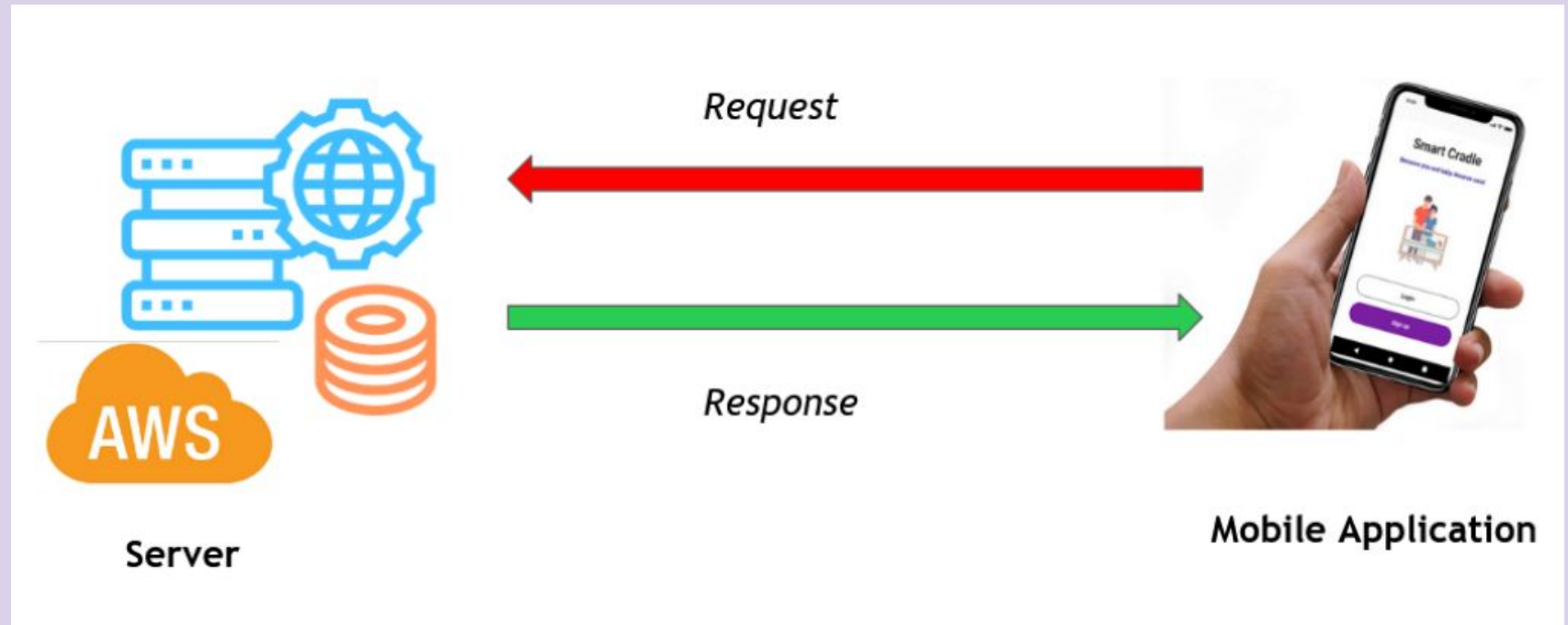
<i>Topic</i>	<i>Mobile Application</i>	<i>Sensors/Actuators</i>
cradle/fan/speed/state/device_id	publish	subscribe (fan)
cradle/songs/song_name/state/device_id	publish	Subscribe (speaker)
cradle/swing/pattern/state/device_id	publish	Subscribe (motor)
cradle/temperature/device_id	subscribe	Publish (temperature sensor)
cradle/sound/device_id		publish (sound sensor)
cradle/sound/device_id		subscribe (Speaker)



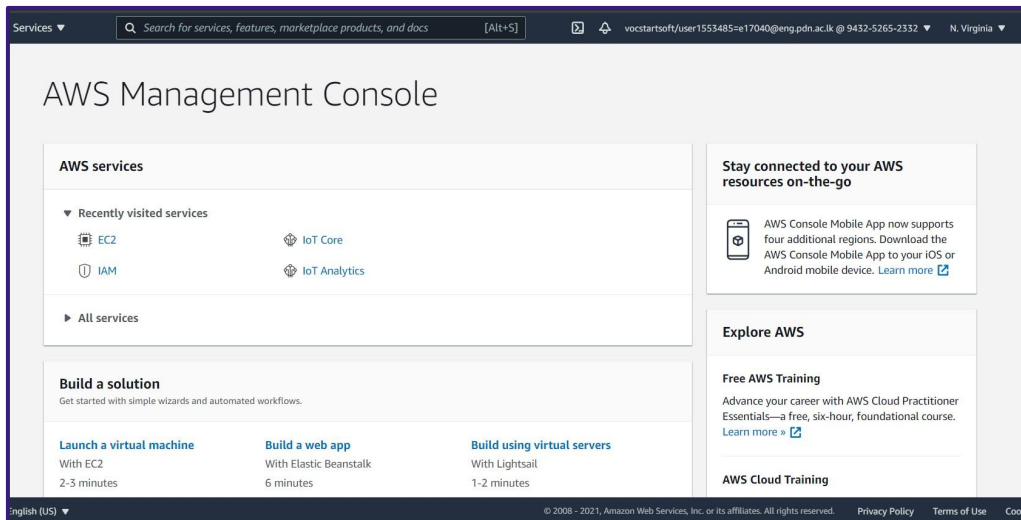


# HTTP

- Request response pattern

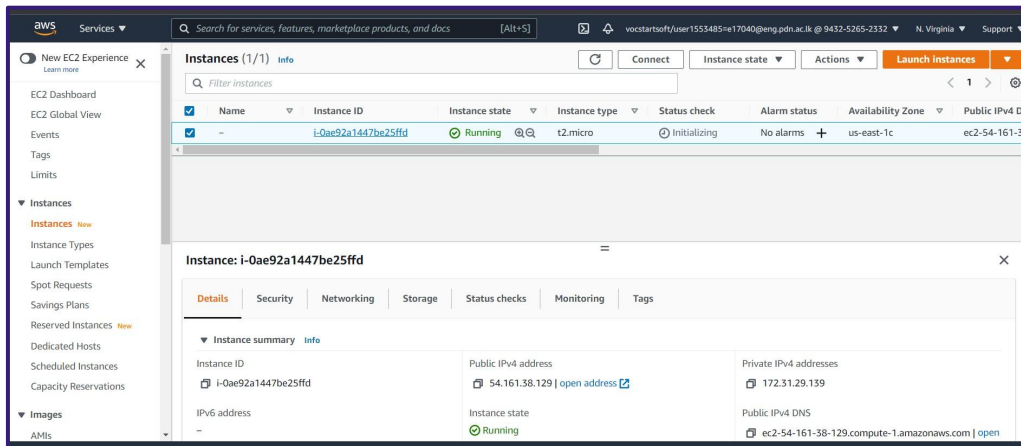


# Cloud Deployment



## Hosting

- Secure
- Reliable
- Scalable
- Services used
  - EC2
  - Amazon RDS



# Security and Safety

## Software aspects

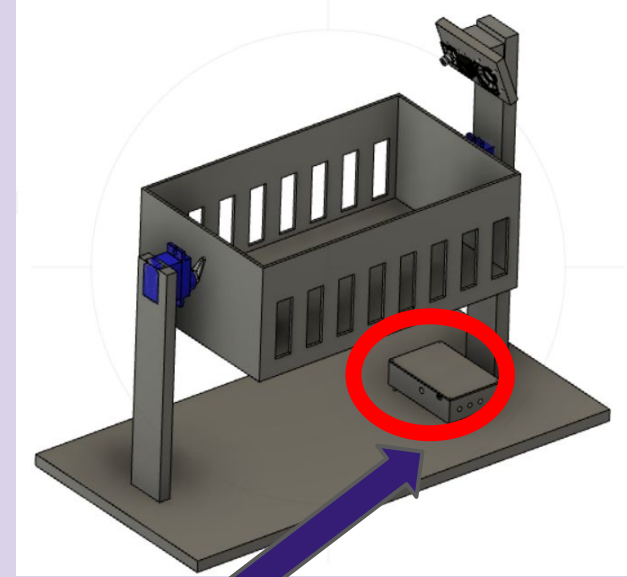
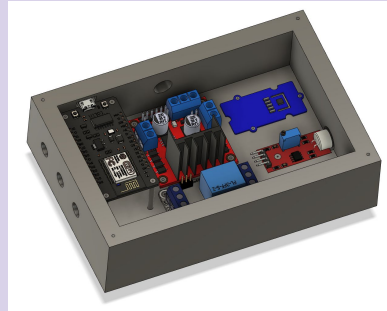
- JWT authentication
- Password hashing
- Data validation
- Amazon RDS



user_name	password
Ashan	\$2b\$10\$AOIPr23u5J/ECWlOuQ.fgu1aFeONY5H4aUhG7jsnjtu1V4otxHoay
Gayan	\$2b\$10\$Z6.gcv/RqQfcB1sWTPaZEu/.aHCUIhZmy/X91KF7wVLcm1zMOoYcu
Geeshan	\$2b\$10\$dZ6d5UAcigMUCvUJvJaxuuBABcztE/WnNQUwEylsptIC77xJx1h.e
hasara	\$2b\$10\$ogy9j/yRh.nfmvqK.ZG0wOBvGcEOFvTzkekgvF2ysLwzpnXbtNAT2
Madush	\$2b\$10\$y2qEWX.BaDpM3sdq4gxli0cuw5vGDr7FdLTmcCuB1FiqSdP3paZbS
Nimali	\$2b\$10\$A3s0.SdsCfpqE7ByKj5NLe5B73KpqNn5.egUY00SAosGbWAtqkD2e
Pasindu	\$2b\$10\$B.YQXChaqYGG0GdoAinkAe08/oWaAPGn8uKi9SY0cj2MPhpgtSfHO

## Hardware aspects

- All electronic components are embedded inside a wooden box and connected at a place which is not reachable to the baby
- Good depth of the cradle prevents the baby from escaping.
- No sharp edges.



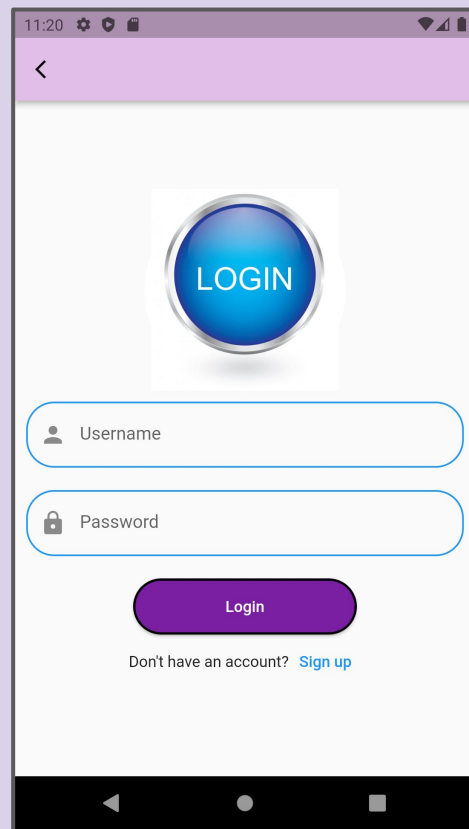
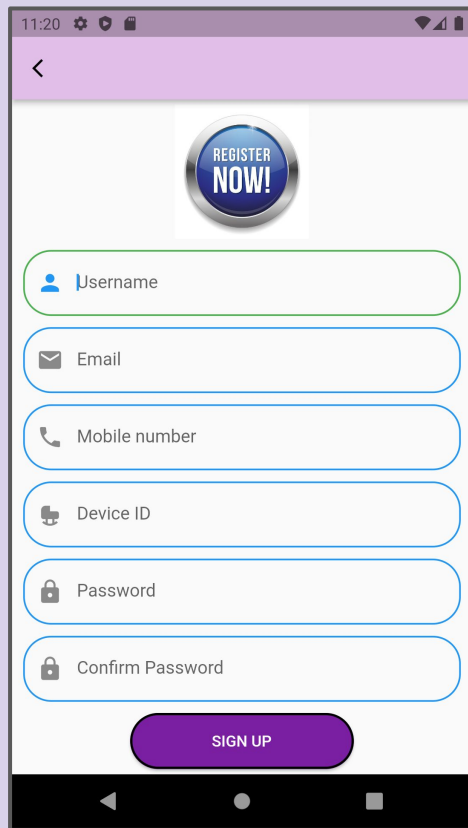
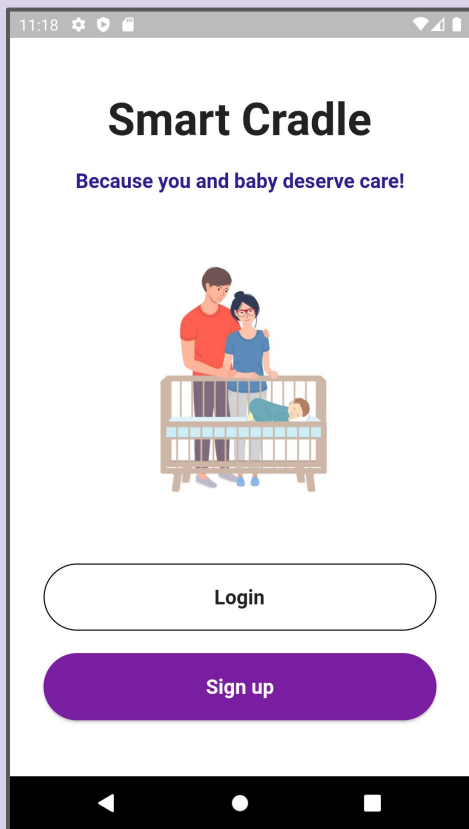
# Testing

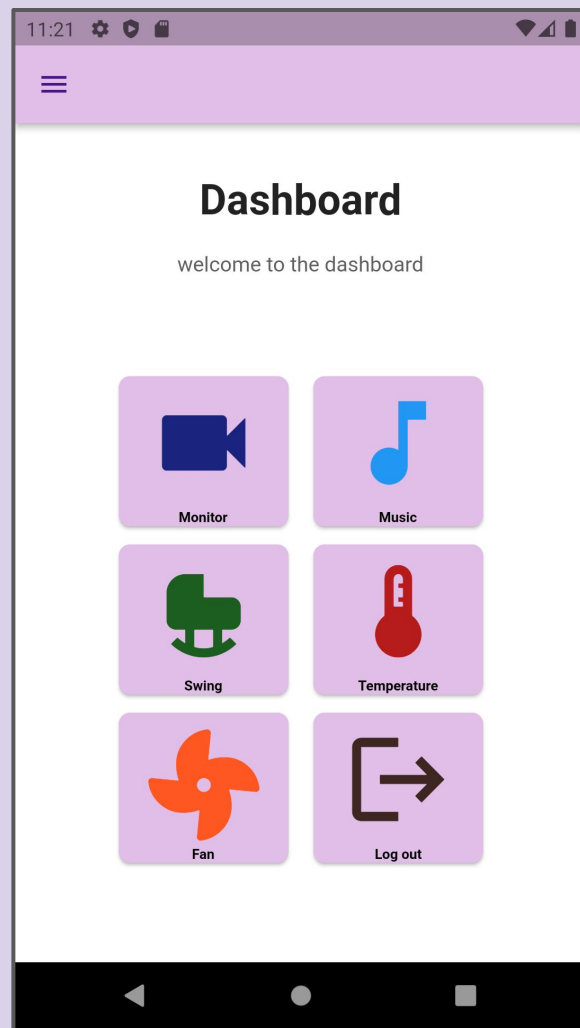
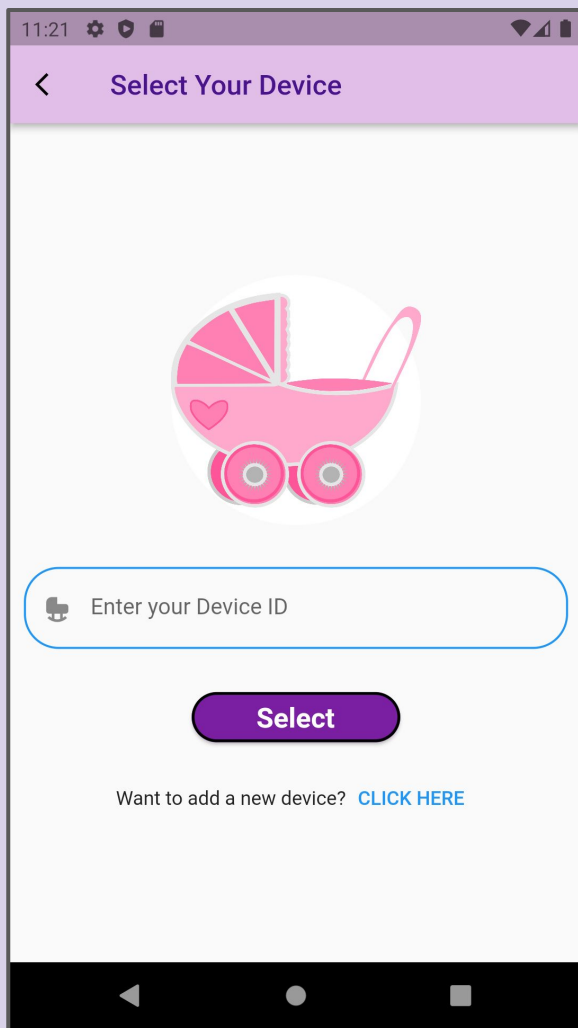


Test	Reason
user signup and user logins	It is important to make sure that the system is only accessible by authorized users with accurate user details
add device and remove device	It is important to make sure that the tables in our database are correctly updated.
select device	It is important to make sure that the devices are only accessible by their owners.



# Demonstration





< Temperature is : 27.10 celcius

You can check the room temperature...



Room Temperature is : 27.10 celcius

H-Mirror



V-Flip



DCW (Downsize EN)



Color Bar



Face Detection



Face Recognition



Get Still

Stop Stream

Enroll Face

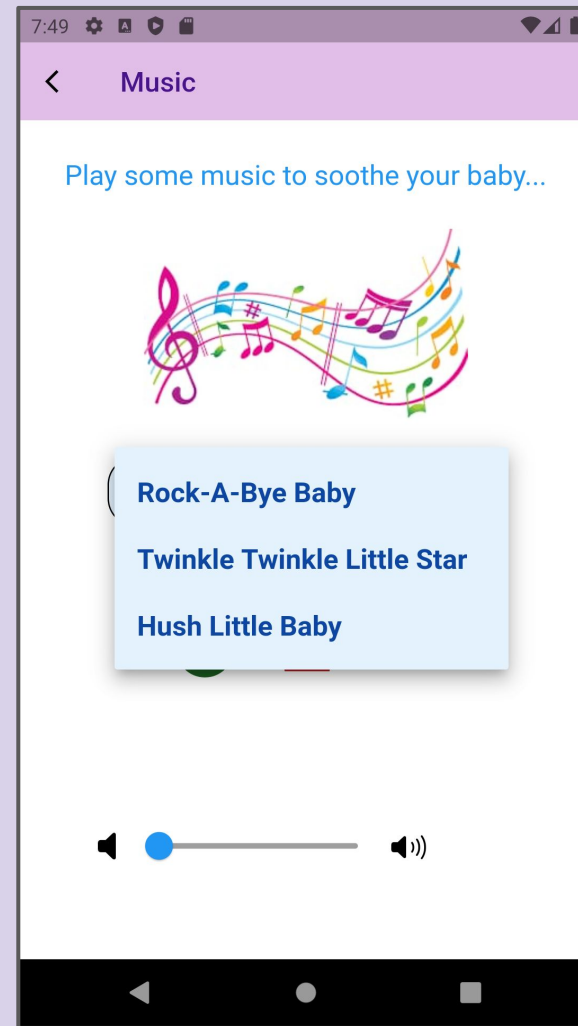
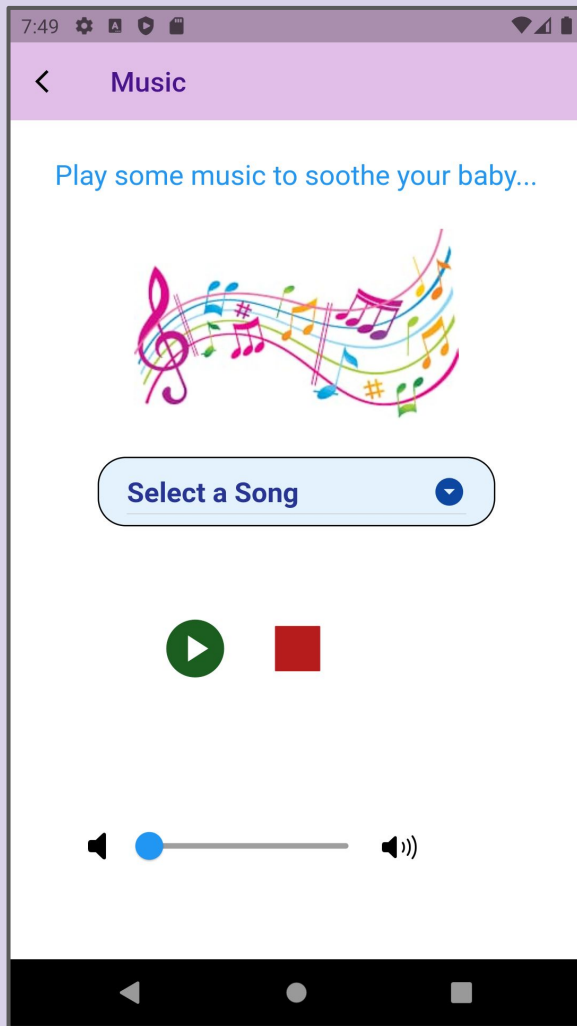
### Advanced Settings

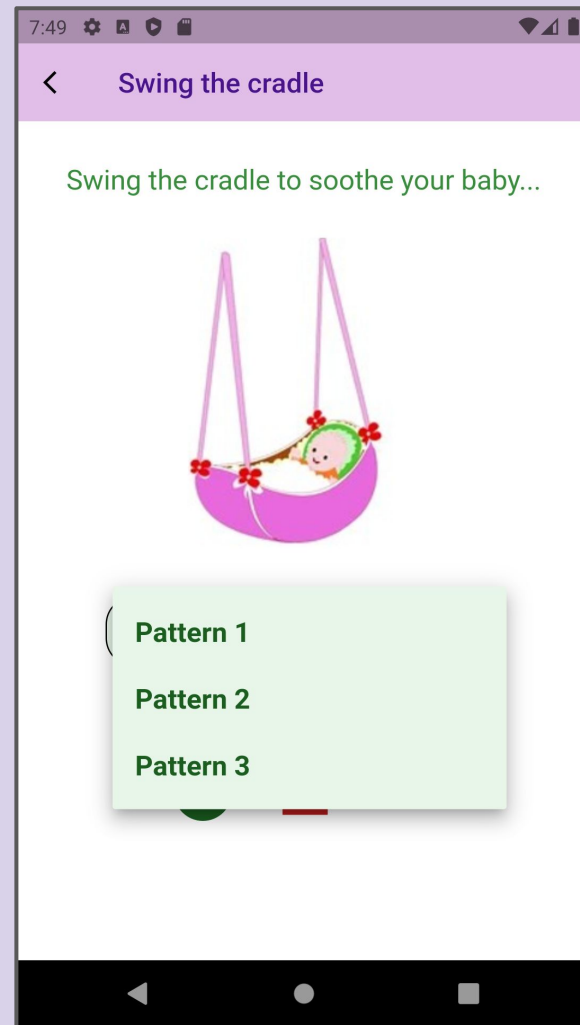
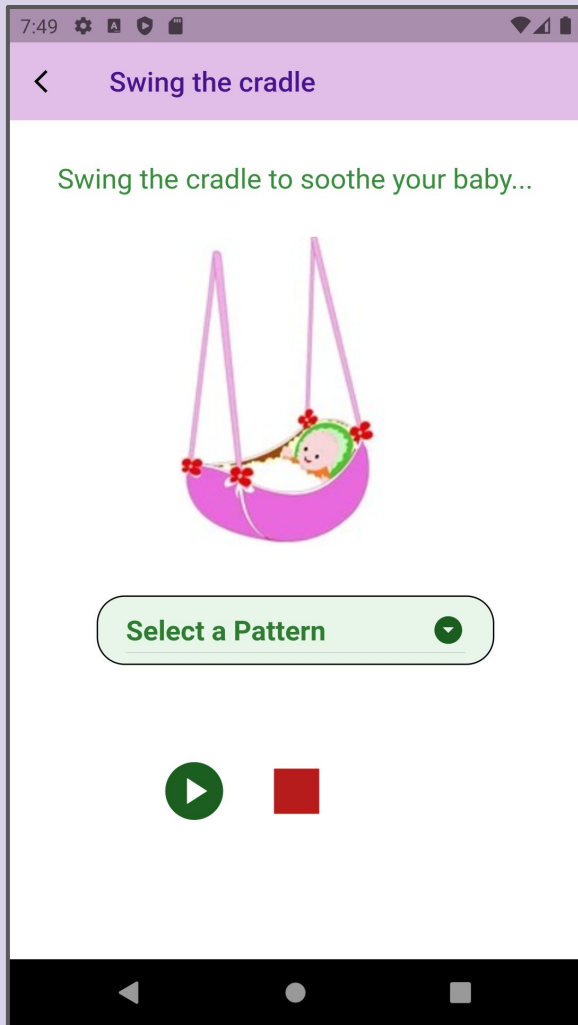
Register Get/Set

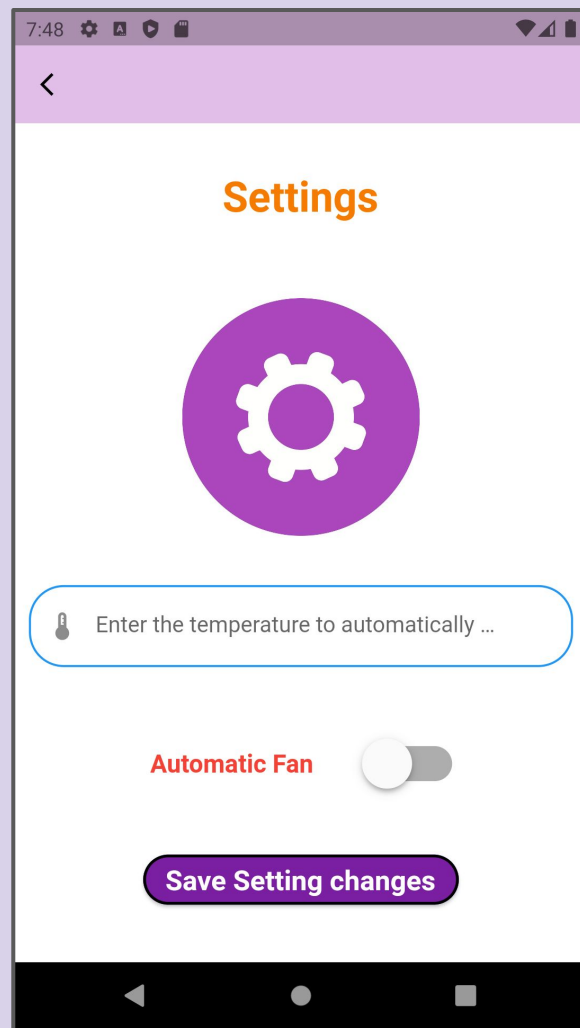
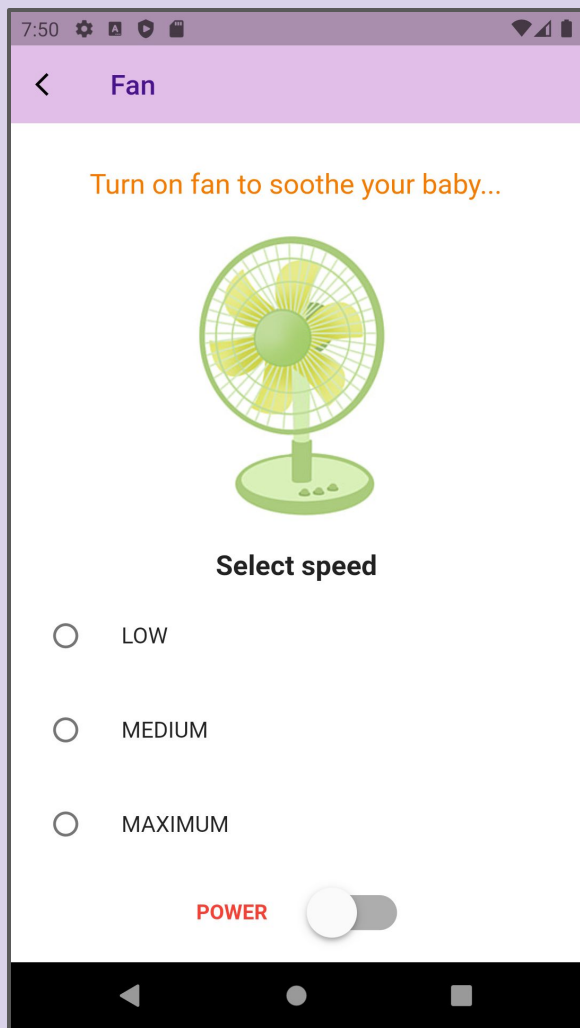
CLK

Window

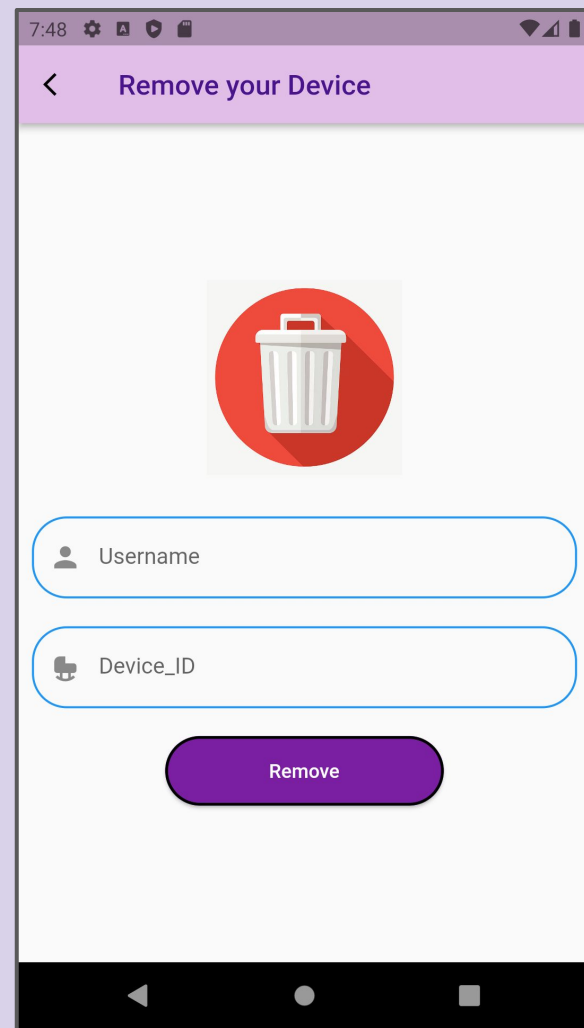
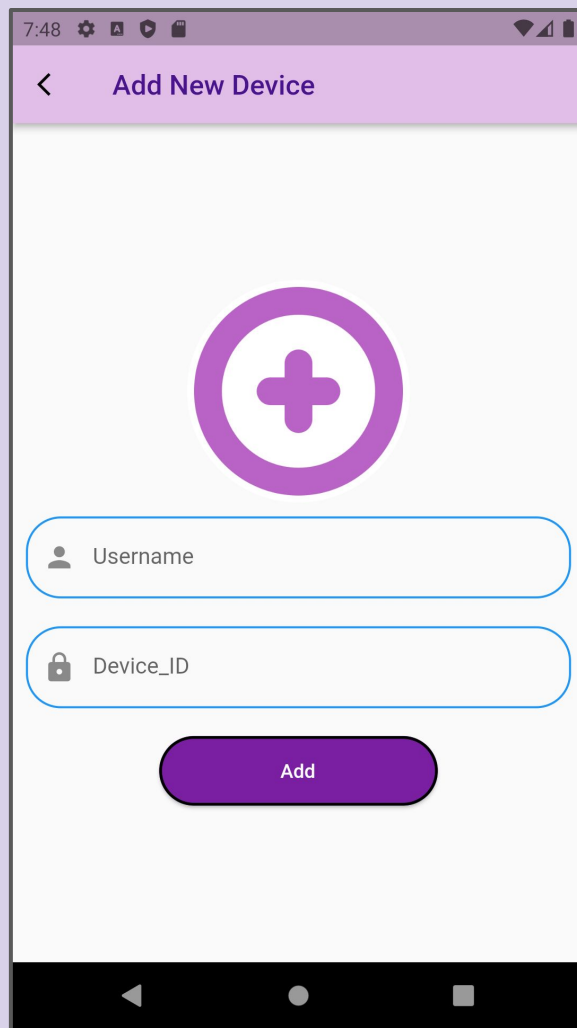
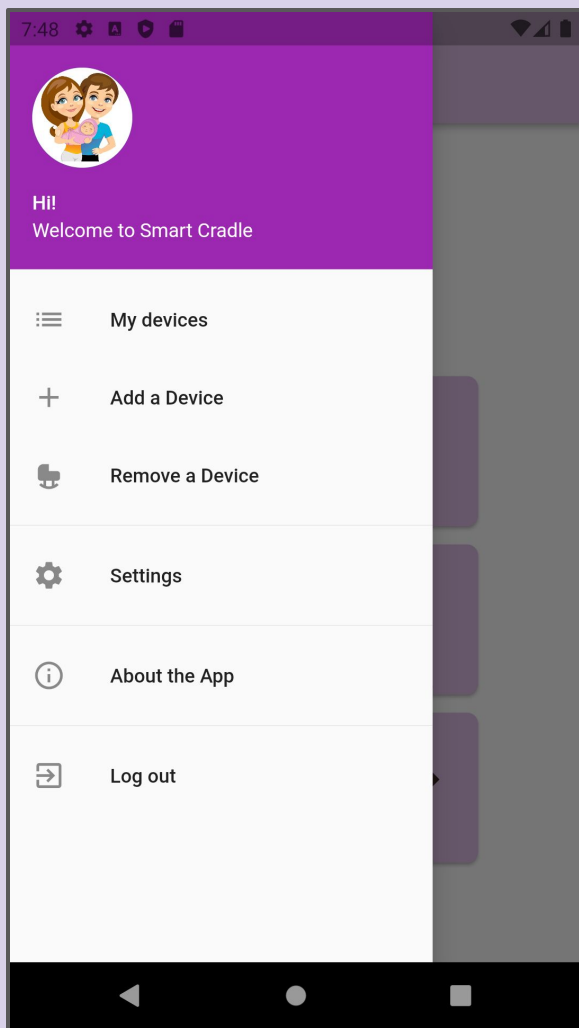












7:48



## Feature Availble in the App



### Monitor

You can monitor the baby at any time staying at any place..



### Music

Select your favourite music from the dropdown list..  
Contol the volume as you want



### Fan

Select power on  
Select the control speed as you want



### Temperature

You can check the room temperature where the cradle is placed



### Swing

Make it on  
Select your requiried swing pattern from the dropdown list..



### Settings

you can make turn on automatic fan Option  
Select the temperature to turn on it automatically

# Future plans

- **Modify the Product such that both baby and user can communicate with each other**

Q & A



**Thank You !**