

# IoT BASED SAFETY GADGET FOR CHILD SAFETY MONITORING & NOTIFICATION

## A PROJECT REPORT

*Submitted by*

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SALEM.

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# **1. INTRODUCTION**

## **1.1 Project Overview**

- A Web page is designed for the public where they can book tickets by seeing the available seats.
- After booking the train, the person will get a QR code which has to be shown to the Ticket Collector while boarding the train.
- The ticket collectors can scan the QR code to identify the personal details.
- A GPS module is present in the train to track it. The live status of the journey is updated in the Web app continuously
- All the booking details of the customers will be stored in the database with a unique ID and they can be retrieved back when the Ticket Collector scans the QR Code.

## **1.2 Purpose**

The Purpose of our Project is

- ✓ To reduce the work load of the parents.
- ✓ To monitoring the children via. Online notification
- ✓ To track the live location of children.
- ✓ To ensure the safety of the children
- ✓ To maintain proper pampering of children when parent is not present.

## **2. LITERATURE SURVEY**

### **2.1 Existing Problem:**

#### ➤ Real-Time Child Abuse and Reporting System

In the existing system, we use a voice recognition module in which the alert commands from the child are stored and kept for further reference. If the same child delivers the same command, it will compare with the alert command which was previously stored and sets an emergency level according to the alert command. The GSM has a SIM which is used to send an alert message or an alert call to the trusted peoples. GPS is used to track the live location and it is used when needed. The server will search the respective device ID from the database and search for respective contacts according to that device ID and helps in alerting the registered guardians.

### **2.2 References :**

☆ Asmita Pawar, Pratiksha Sagare, Tejal Sasane, Kiran Shinde (March–2017) ‘Smart security solution for women and children safety based on GPS using IoT’, International Journal of Recent Innovation in Engineering and Research, vol. 2, Issue 3, pp. 85-9.

☆Anwaar Al-Lawati, Shaikha Al-Jahdhami, ‘RFID-based System for School Children Transportation Safety Enhancement’, Proceedings of the 8th IEEE GCC Conference and Exhibition, Muscat, Oman, 1-4 February 2015.

☆Starner, T Schiele, B and Pentland, A. (1998) ‘Visual contextual awareness in wearable computing’, Second International Symposium on Wearable Computers, Pittsburgh, PA, IEEE Computer Society, pp. 50-57.

☆AkashMoodbidri, Hamid Shahnasser (Jan 2017) 'Child safety wearable device', International Journal for Research in Applied Science & Engineering Technology, Vol. 6 Issue II, IEEE, pp. 438-444.

☆Nitishree, (May-June, 2016) 'A Review on IOT Based Smart GPS Device for Child and Women Safety', International Journal of Engineering Research and General Science, Vol.4, Issue. 3, pp. 159-164.

### **2.3 Problem Statement definition :**

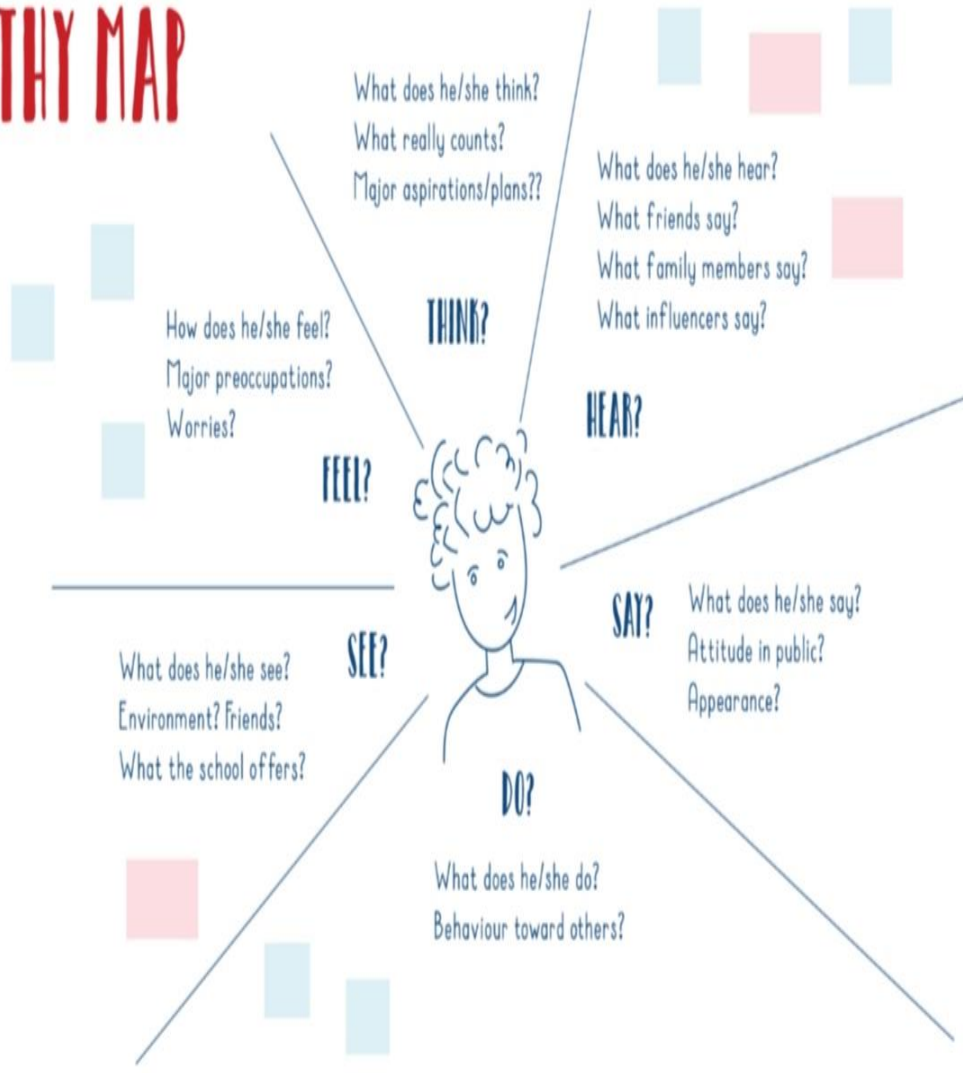
Enable tracking of the child's location and capturing of data remotely such as temperature, pulse, respiratory rate, quality of sleep and many more.

- To show the child's actual data with reference values.
- Enable sending of notification if the child is out of location or when the device realizes abnormal conditions/situations.
- To trigger the alarm and enable automatic video recording whenever the emergency button is pressed. Then, emergency notification along with real-time video will be sent to and display in the parents' mobile apps.
- Develop a prototype of IoT wearable smart band connected to parents' mobile apps so that they can monitor the actual condition of children at anytime and anyplace.

### 3. IDEATION & PROPOSED SOLUTION

#### 3.1 EMPATHY MAP CANVAS

## EMPATHY MAP





### 3.2 Ideation phase



AVON FIRE & RESCUE

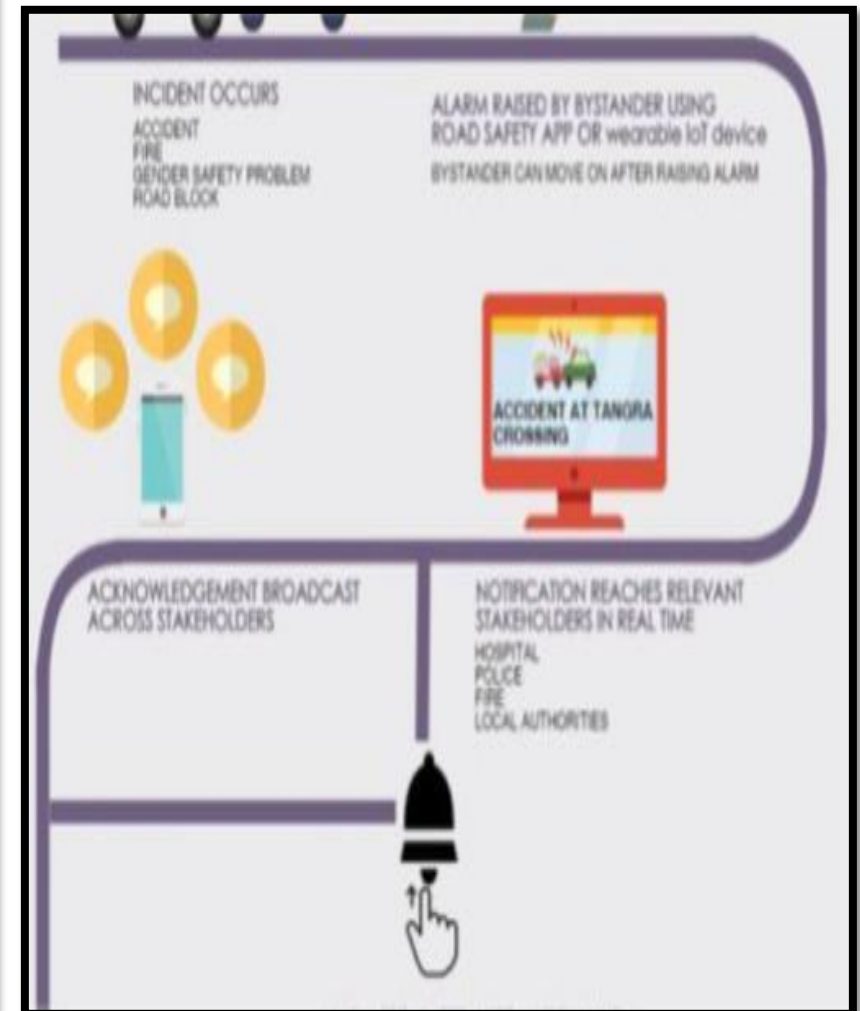
Eyezeon Commander 2.0 application

IDEATION REVOLUTIONIZES FIRE SERVICE CONTROL THROUGH ANALYTICS

SIGN & DEVELOP  
COGNITIVE INNOVATION  
PLANNING & STRATEGY  
DATA ANALYTICS  
TEST & DELIVER  
DESIGN & DEVELOP

THE LATEST VERSION OF IDEAL ANALYTICS IS MORE HANDY, STATISTICAL AND USER FRIENDLY

TOP





### **3.3 Proposed Solution**

<b>S.No .</b>	<b>Parameter</b>	<b>Description</b>
<u>1</u>	Problem Statement (Problem to be solved)	<ul style="list-style-type: none"> <li>*As we all know, kids are the heartbeat of every parent, and when it comes to a child with special needs, parents have to be extra careful. They have to take extra care of the child.</li> <li>*Parents will not be able to monitor their children's whereabouts at all times and can't relax without knowing the exact location of them.</li> <li>*Parents cannot know if their children are in a hazardous or unsafe environment.</li> <li>*Parents cannot know the previous location history of their children to find any lost belongings of them.</li> <li>*Parents can neither contact nor instruct their children when they are far away from them</li> </ul>
<u>2</u>	Idea / Solution description	<ul style="list-style-type: none"> <li>*Child tracker helps the parents in continuously monitoring the child's location. They can simply leave their children in school or parks and create a geofence around the location.</li> <li>*By continuously checking the child's location notifications will be provided if the child crosses the geofence. Notifications will be sent according to the child's location to their parents or caretakers. The entire location data will be stored in the database.</li> <li>*Child can also initiate emergency notifications to the parents in case of an unsafe situation.</li> </ul>
<u>3</u>	Novelty / Uniqueness	<ul style="list-style-type: none"> <li>*Easily understandable UI</li> <li>*Highly scalable</li> <li>*Security</li> <li>*Economical</li> <li>*24/7 monitoring</li> <li>*Waterproof</li> <li>*Fast tracking</li> </ul>
<u>4</u>	Social Impact / Customer Satisfaction	<ul style="list-style-type: none"> <li>*Cases of child disappearances, kidnapping, child accidents can be reduced drastically.</li> <li>*Provide liberty for children, especially children with special needs.</li> <li>*Parents can be relaxed knowing their child's status especially when they are at a far distance from them.</li> <li>*Parents can act quickly when their children are in a danger.</li> <li>*Economical and waterproof features, long-lasting battery and consistent performance of the tracker improves customer satisfaction.</li> </ul>
<u>5</u>	Business Model (Revenue Model)	<ul style="list-style-type: none"> <li>*Selling the product directly to the parents (Device + Monthly subscription)</li> <li>*Selling the product to child care organizations or centers.</li> <li>*Selling the product via e-commerce.</li> </ul>

6	Scalability of the Solution	*Increase and decrease of resources like memory and computing power with the help of cloudant db.
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### 3.4 Problem Solution fit

Define CS, fit into	<b>1. CUSTOMER SEGMENT(S)</b> <b>CS</b> Our customers are mainly parents who are unable to monitor their children as they need to go to work. Some of our customers includes the guardians of children of age 0-7 with special needs whose activities must be monitored every now and then for their safety.	<b>6. CUSTOMER CONSTRAINTS</b> <b>CC</b> The constraints of the customers includes the high cost of these devices, the knowledge about these gadgets that are available in the market, the connectivity issues and its inefficiencies due to various reasons leading to low sales performance.	<b>5. AVAILABLE SOLUTIONS</b> <b>AS</b> The available solutions provide some benefits like real time tracking, safe zone alerts, panic button, etc. Though these devices come with such advantages, the increasing costs of such devices, its connectivity issues and the parents no proper knowledge about these gadgets leads to low sales of these items in the market.	Explore AS, CS
	<b>2. JOBS-TO-BE-DONE / PROBLEMS</b> <b>J&amp;P</b> The parents must be able to track the child's location every now and then and receive notifications if he/she is in an emergency situation. Parents should also be able to ensure that their child is in a safe zone and must be provided with options like tracking the child's location and forecasting the weather for safety measures.	<b>9. PROBLEM ROOT CAUSE</b> <b>RC</b> The root cause for the need of child tracking devices in the market the rising cases of child disappearances, abuses, kidnappings and accidents. To prevent these unfortunate incidents, parents are now aware of devices like these that ensures the protection of their children.	<b>7. BEHAVIOUR</b> <b>BE</b> Some of the customers behaviours that leads to buying these child tracking gadgets includes the insecurity they suffer when their children are left alone in their house when they go to work. When their children are travelling or playing with their friends the parents are always concerned about the child's environment and the weather conditions and the use of these devices can reduce their tension in their working place.	
Focus on J&P, lap	<b>3. TRIGGERS</b> <b>TR</b> The increasing cases of child disappearances, child abuses, kidnappings and accidents triggers the parents to use child tracking gadgets for their child safety and to work peacefully.	<b>10. YOUR SOLUTION</b> <b>SL</b> A child tracking device which is capable of monitoring the child's location, the weather conditions, notifications features to make sure their children does not move out of his safe zone and the history of child's locations to find out his/her lost belongings can provide solutions to the existing child's safety problems.	<b>8. CHANNELS of BEHAVIOUR</b> <b>CH</b> <b>8.1 ONLINE</b> When the parents are online they can always keep an eye on their children using their live location. They can also check for the weather conditions using the child's location.	Focus on J&P, lap C
	<b>4. EMOTIONS: BEFORE / AFTER</b> <b>EM</b> The parents are very anxious about the condition of their children when they are all alone in a house or playing with their friends in some places. The growing insecurity leads them to perform badly in their work and causes a lot of mental problems. With the help of these child tracking gadgets, the parents can feel secure about their child's conditions and his activities and can always keep an eye on their location.		<b>8.2 OFFLINE</b> When the parents are present physically they can often visit their child's location to ensure they are safe and the climate looks optimal.	
Identify strong TR & EM			Extract online & offline CH of BE	

## 4. REQUIREMENT ANALYSIS

### 4.1 Functional requirement

**Functional Requirements:**

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIN
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Login	Validate username Validate password Take to homepage
FR-4	Track child location	Get the map Get the coordinates of the child's location Display result
FR-5	Create geo fence	Get the map Create the geofence Store the geofence in db
FR-6	View location history	Fetch history from db Display history
FR-7	Get child's weather condition	Get the coordinates of the child's location Get the weather updates Display results
FR-8	Receive out of safe zone notification	Get the coordinates of the child's location Check and notify if out of safeZone
FR-9	Receive emergency notification from the child	Listen to child emergency notification API If notification initiated , notify the user
FR-10	Communicate with the child	Connect with the device Transmit the voice data

## 4.2 Non-Functional requirement

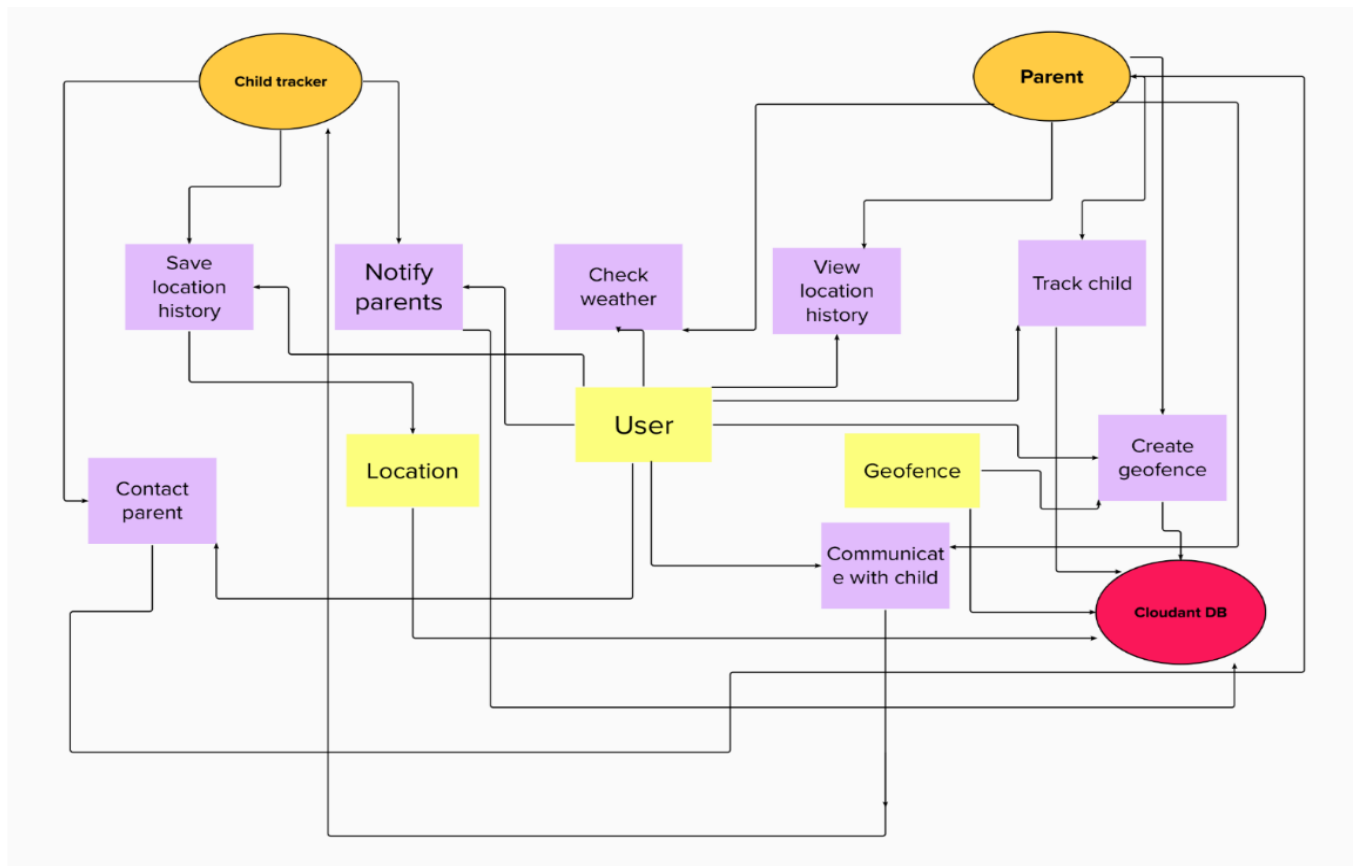
### **Non-functional Requirements:**

Following are the non-functional requirements of the proposed solution.

<b>FR No.</b>	<b>Non-Functional Requirement</b>	<b>Description</b>
NFR-1	<b>Usability</b>	Attractive and effective UI that gives complete enjoyable and user friendly experience.
NFR-2	<b>Security</b>	Protecting the users data and storing their children's location history safely
NFR-3	<b>Reliability</b>	Ever consistent API that never fails and gives proper response to the user.
NFR-4	<b>Performance</b>	Fast tracking and providing instant updates about the child's location to his/her parent.
NFR-5	<b>Availability</b>	The APIs should be readily available to satisfy the users' needs.
NFR-6	<b>Scalability</b>	Ability to process and update thousands of users data instantly

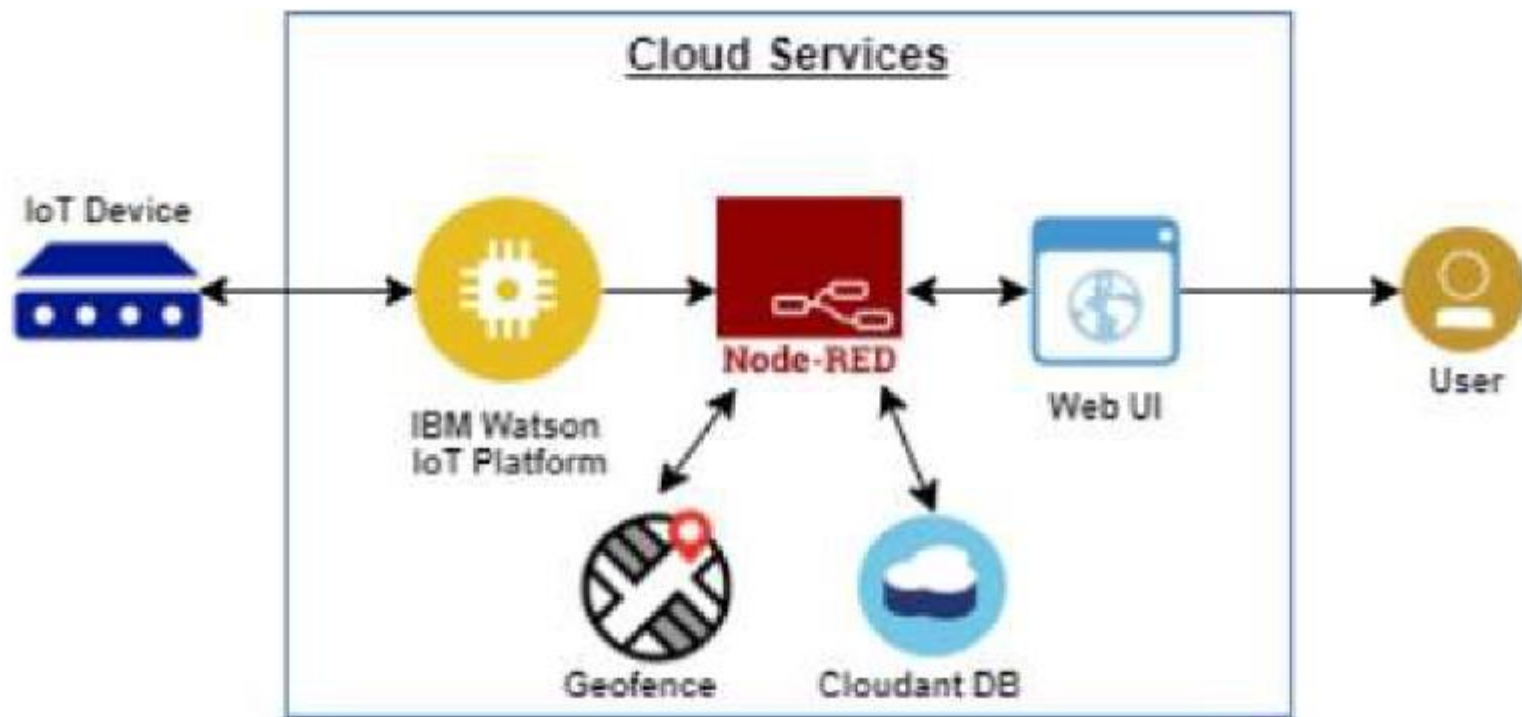
## 5. PROJECT DESIGN

### 5.1 Data Flow Diagram



## 5.2 Solution and Technical Architecture

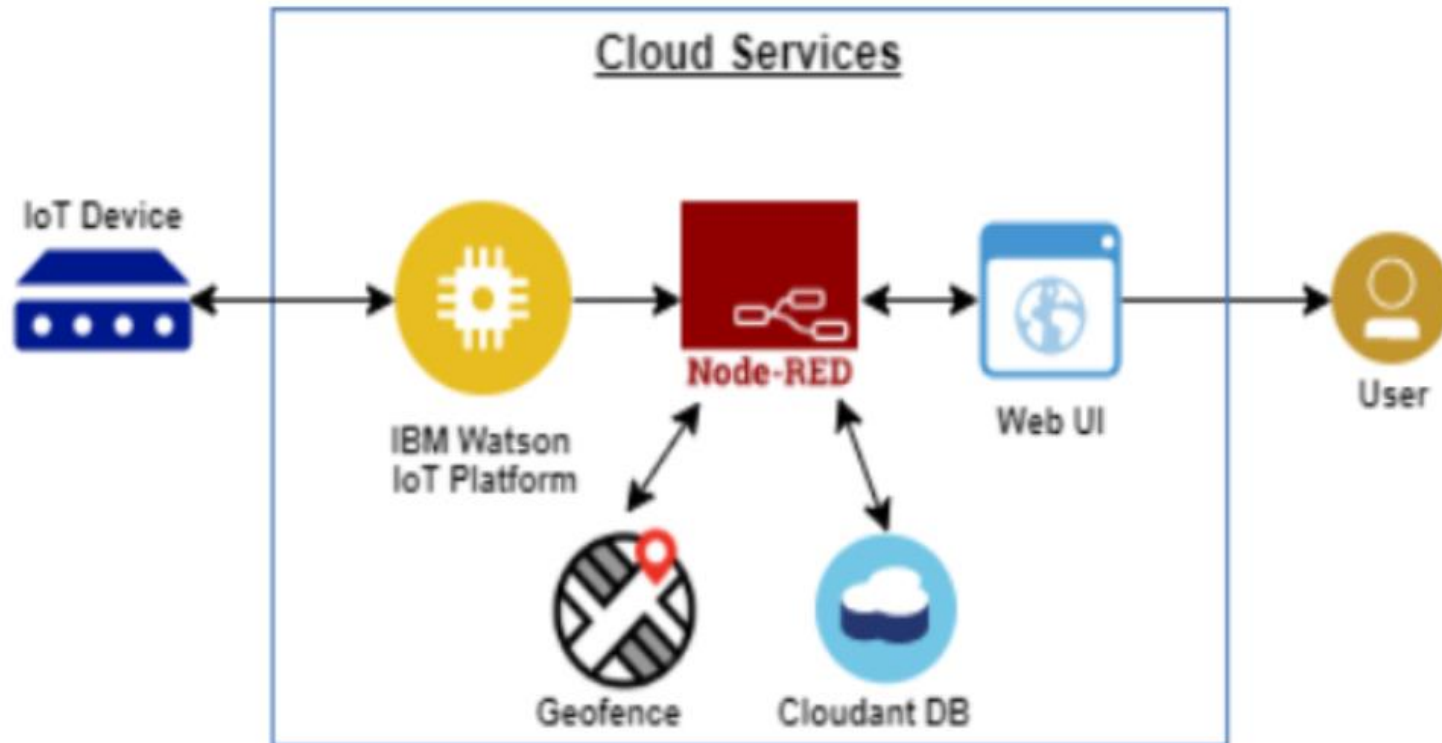
**Solution Architecture:**



**Technical Architecture:**



## Technical Architecture:



### 5.3 User Stories

## User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Parent	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Gmail		Medium	Sprint-1
	Login	USN-4	As a user, I can log into the application by entering email & password		High	Sprint-1
	Dashboard	USN-5	As a user , I need to be able to view the functions that I can perform		High	Sprint-1
Child	Notification	USN-1	As a user , I should be able to notify my parent in emergency situations		High	Sprint-2
	Store data	USN-2	As a user , I need to continuously store my location data into the db.		Medium	Sprint-2
	Communication	USN-3	I should be able to communicate with my parents		Low	Sprint-3

## **6. PROJECT PLANNING & SCHEDULING**

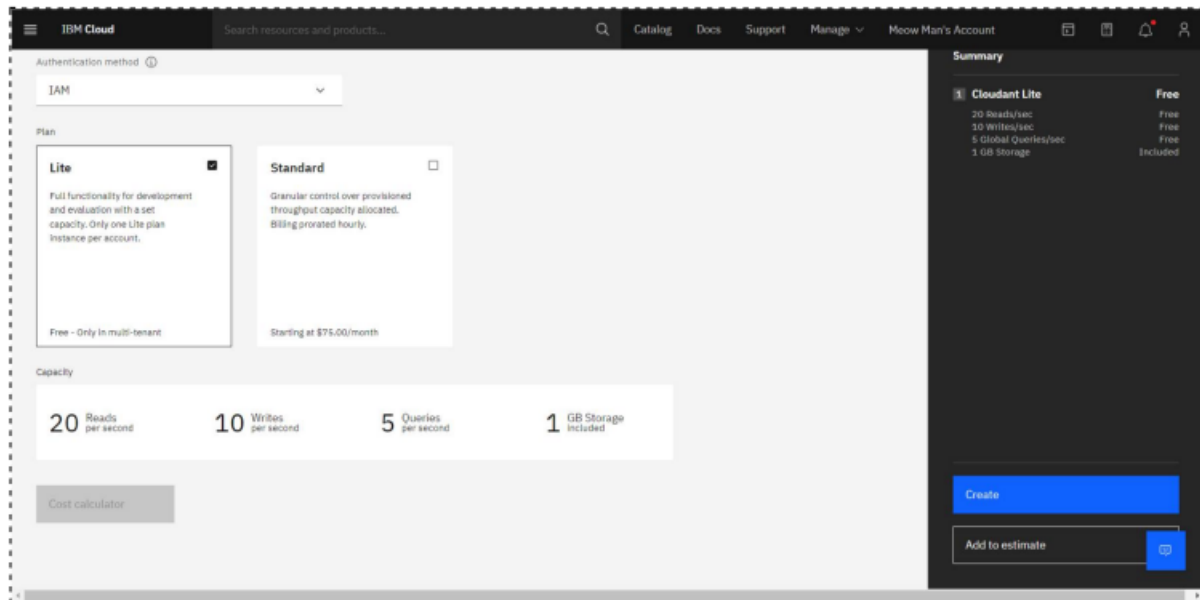
### **6.1 Sprint Planning , Estimation & Sprint Delivery Schedule**

<b>Sprint</b>	<b>Functional Requirement (Epic)</b>	<b>User Story Number</b>	<b>User Story / Task</b>	<b>Story Points</b>	<b>Priority</b>
<b>SPRINT 1</b>					
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, and password, and confirming my password.	4	High
Sprint-1	Confirmation Email	USN-2	As a user, I will receive a confirmation email once I have registered for the application	4	High
Sprint-1	Authentication	USN-3	As a user, I can register for the application through Gmail and mobile app.	4	Medium
Sprint-1	Login	USN-4	As a user, I can log into the application by entering email & password	4	High

Sprint-1	Dashboard	USN-1	As a user, I need to be able to view the functions that I can perform	4	High
Sprint-2	Notification	USN-1	As a user, I should be able to notify my parent and guardian in emergency situations	10	High
Sprint-2	Store data	USN-2	As a user, I need to continuously store my location data into the database.	10	Medium
Sprint-3	Communication	USN-1,3	I should be able to communicate with my parents	6	Low
Sprint-3	IoT Device – Watson communication	USN-1,4	The data from IoT device should reach IBM Cloud	7	Medium
Sprint-3	Node RED-Cloudant DB communication	USN-1,2	The data stored in IBM Cloud should be properly integrated with Cloudant DB	7	High
Sprint-4	User – Web UI interface	USN-1,4	The Web UI should get inputs from the user	6	High
Sprint-4	Geofencing	USN-1,3,4	The geofencing of the child should be done based on the geographical coordinates	7	High

## 6.2 Database and Cloudant:

- Chose the “Lite Version” and clicked on “Create”



- The Cloudbant database resource was created successfully

The screenshot displays the IBM Cloud console interface. At the top, the header shows 'IBM Cloud' and a search bar. Below the header, the 'Resource list' section shows 'Cloudbant-jp' with a green 'Active' status and tags for 'cloud-safety' and 'ibm'. The 'Manage' tab is selected, showing a sidebar with 'Service credentials', 'Plan', and 'Connections'. The main content area is titled 'Overview' and contains 'Deployment details' for a Cloudbant instance. The details include: CRN (crn:v1:bluemix:public:cloudbant:sg:in-cha/b77e43c07e04aa8abx85ca562dba69f1fc021c-6402-486d-b705-aa3eca0c66bf...), Location (Chennai), External endpoint (https://2a616e22-619b-4c94-95bb-5957f5396206-bluemix.cloudbant.com), External endpoint (preferred) (https://2a616e22-619b-4c94-95bb-5957f5396206-bluemix.cloudbant.com/appdomain.cloud), Authentication methods (IBM Cloud IAM), Activity Tracker event types (Management), and Disk encryption (Yes, Automatically generated disk encryption key). A 'Launch Dashboard' button is visible in the top right of the details panel.

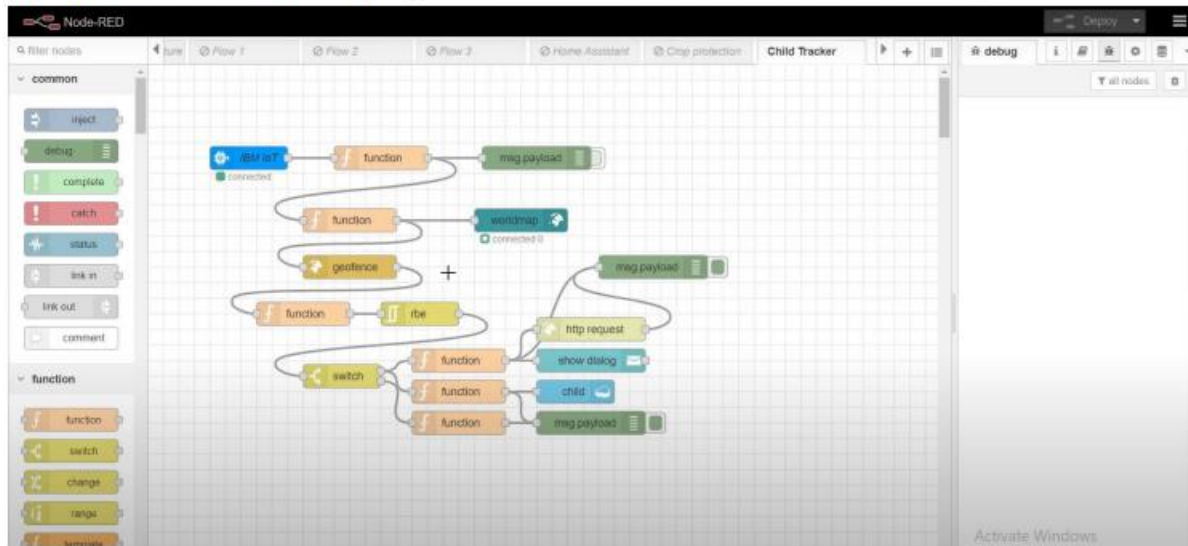
Below the console view, a document view is shown with a search bar containing 'meowman'. A sidebar on the left shows 'All Documents'. A right-hand panel titled 'Which should I choose?' provides guidance on database partitioning, stating: 'If your data can be modelled within the constraints that it imposes, partitioning can improve performance for large databases. See guide and the extra service limits for more details. If in doubt, choose a non-partitioned database.'

- The database "meowman" was created successfully

## 6.3 DEVELOP WEB APPLICATION USING NODE RED:

### Steps Followed:

- Opened a Node-RED project



- Added code to get child location in python

```
import json
import wiotp.sdk.device
import time

myConfig = {
    "identity": {
        "orgId": "hj5fmy",
        "typeId": "NodeMCU",
        "deviceId": "12345"
    },
    "auth": {
        "token": "12345678"
    }
}

client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandlers=None)
client.connect()

while True:
    name= "Smartbridge"
    #in area location

    latitude= 17.4225176
    longitude= 78.5458842

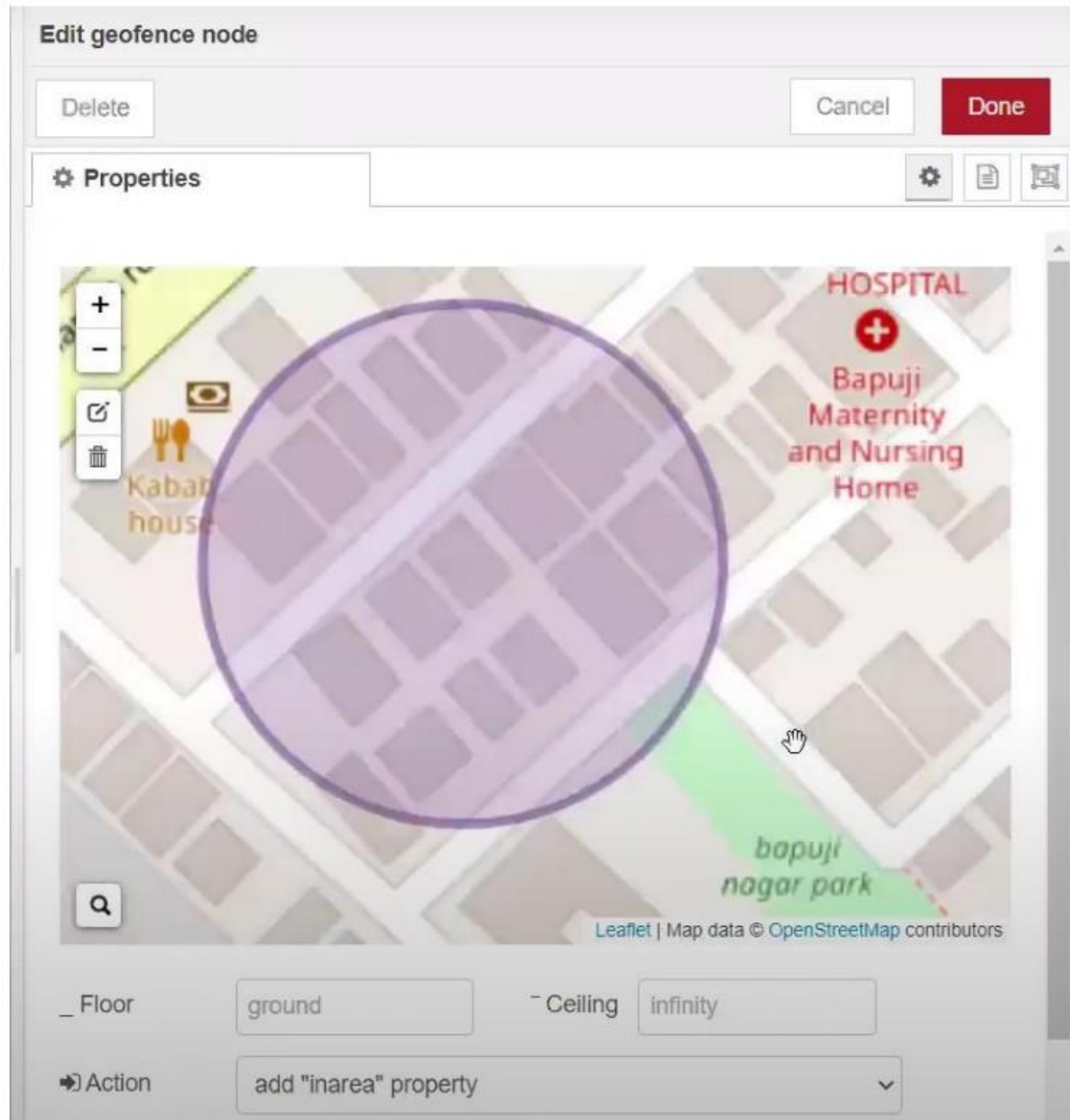
    #out area location

    #latitude= 17.4219272
    #longitude= 78.5488783
    myData={'name': name, 'lat':latitude,'lon':longitude}
    client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0, onPublish=None)
    print("Data published to IBM IoT platfrom: ",myData)
    time.sleep(5)

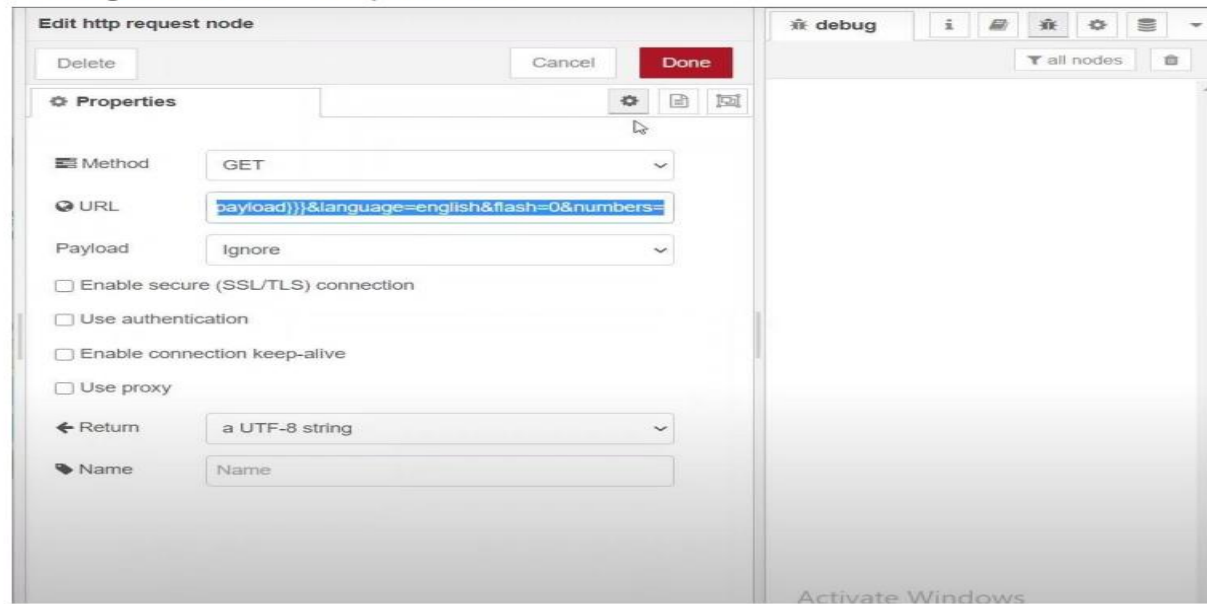
client.disconnect()
```



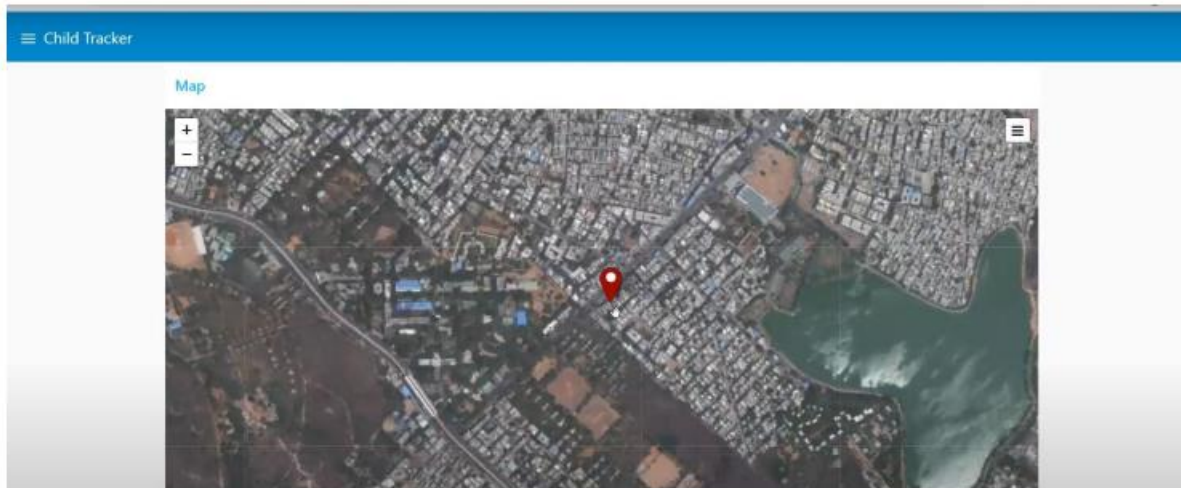
- Created the GeoFence



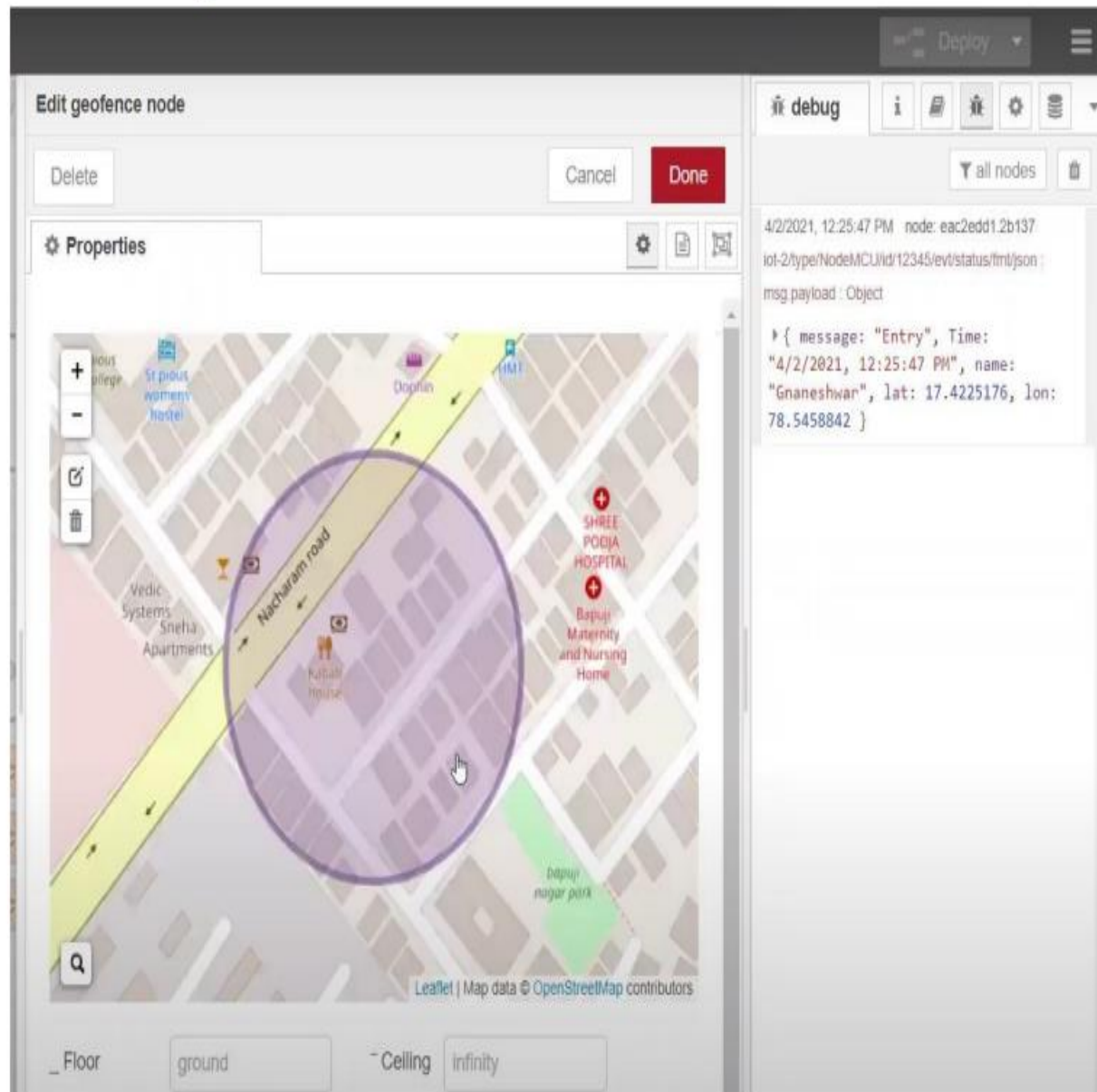
- Editing the HTTP RequestURL



- Located the child



- Created the geofence node



- Python script sending requests to IBM Cloud

Editor - C:\Users\HP\Desktop\child.py

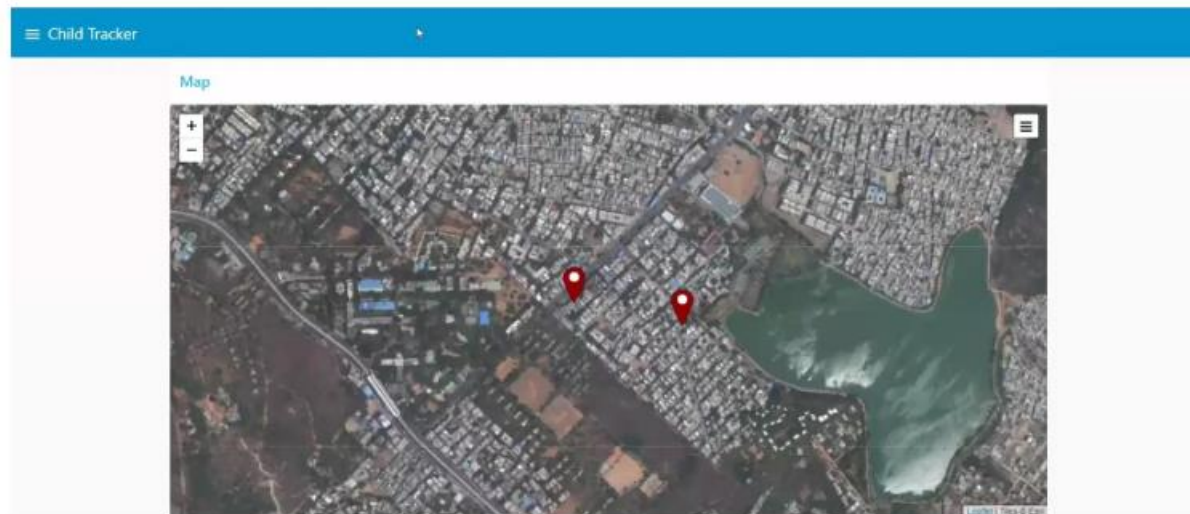
child.py

Python console

Console 2/A

```
1 import json
2 import wiotp.sdk.device
3 import time
4
5 myConfig = {
6     "identity": {
7         "orgId": "hj5fmy",
8         "typeId": "NodeMCU",
9         "deviceId": "12345"
10    },
11    "auth": {
12        "token": "12345678"
13    }
14}
15 client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandlers=None)
16 client.connect()
17
18 while True:
19     name= "Smartbridge"
20     #in area location
21
22     #latitude= 17.4225176
23     #longitude= 78.5458842
24
25     #out area location
26
27     latitude= 17.4219272
28     longitude= 78.5488783
29     myData={'name': name, 'lat':latitude,'lon':longitude}
30     client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0, onPub
31     print("Data published to IBM IoT platform: ",myData)
32     time.sleep(5)
33
34 client.disconnect()
35
36
```


- After running the script, the web UI shows “Person is not in the particular area”




## **7.1 Node-RED Service:**

Navigated to the App creation page




 IBM Cloud

Search resources and offerings...

 Catalog Docs Support Manage ▾

Catalog / Create app /

 Node-RED

AboutCreate


Details

Author IBM


Updated 2/11/2020


Type Starter kit

Source code

[GitHub](#) 

Helpful links

[Terms](#) 

[Tutorial](#) 

## Overview

This starter kit provides a pre-configured Node-RED application, including a Cloudant service to store the application flow configuration. Add services, generate and download the code, use the IBM Cloud Developer Tools CLI to run and debug locally, then deploy to Cloud Foundry or a DevOps Pipeline.

### This starter kit will help you

- Generate an application with Node-RED
- Generate an application with files for deploying to Cloud Foundry or a DevOps Pipeline
- Connect to provisioned services

Entered project details and clicked on create

IBM Cloud

Search resources and offerings...

Q

Catalog

Docs

Support

Manage

Examples: env:dev, version-1

Platform

☒ Node.js

Service details

Cloudant

Region

London

Resource group


Default


Pricing plan

Lite

[Pricing details](#)

[Terms](#)



 Creating app...

Clicking on the "Deploy your App" Button

## Deployment Automation



## Configure Continuous Delivery

Continuous Delivery is not enabled for this app. Enable Continuous Delivery to automate builds, tests, and deployments through Delivery Pipeline, GitLab, and more.

Deploy your app





## Setting up the environment and deploying the app

The screenshot displays the IBM Cloud console interface for configuring a new application deployment. The top navigation bar includes the IBM Cloud logo, a search bar, and links to Catalog, Docs, Support, and Manage. Below the navigation bar, a blue 'New' button is visible. The main configuration area includes a dropdown for 'Number of instances' set to 1, a slider for 'Memory allocation per instance' ranging from 64 MB to 2000 MB with a current value of 256 MB, and three dropdown menus for 'Region', 'Organization', and 'Space'. At the bottom, there are labels for 'Host' and 'Domain'.

IBM Cloud Search resources and offerings... Catalog Docs Support Manage

..... New +

Number of instances

1

Memory allocation per instance

64 MB 2000 MB 256

Region Organization Space

Region Organization Space

Host Domain

Successfully deployed the app

## Delivery Pipelines

Name	ci-pipeline <a href="#">↗</a>
Status	 Success <a href="#">↗</a>
Last input	Last commit by IBM Cloud DevOps Services (7 minutes ago) <a href="#">Clone from zip</a> <a href="#">↗</a>

- Welcomed by the instance editor

### Welcome to your new Node-RED instance on IBM Cloud

We know you're eager to start wiring up your flows, but first there are a couple of tasks you should do:

- Secure your Node-RED editor
- Learn how to install additional nodes

## Setting up credentials

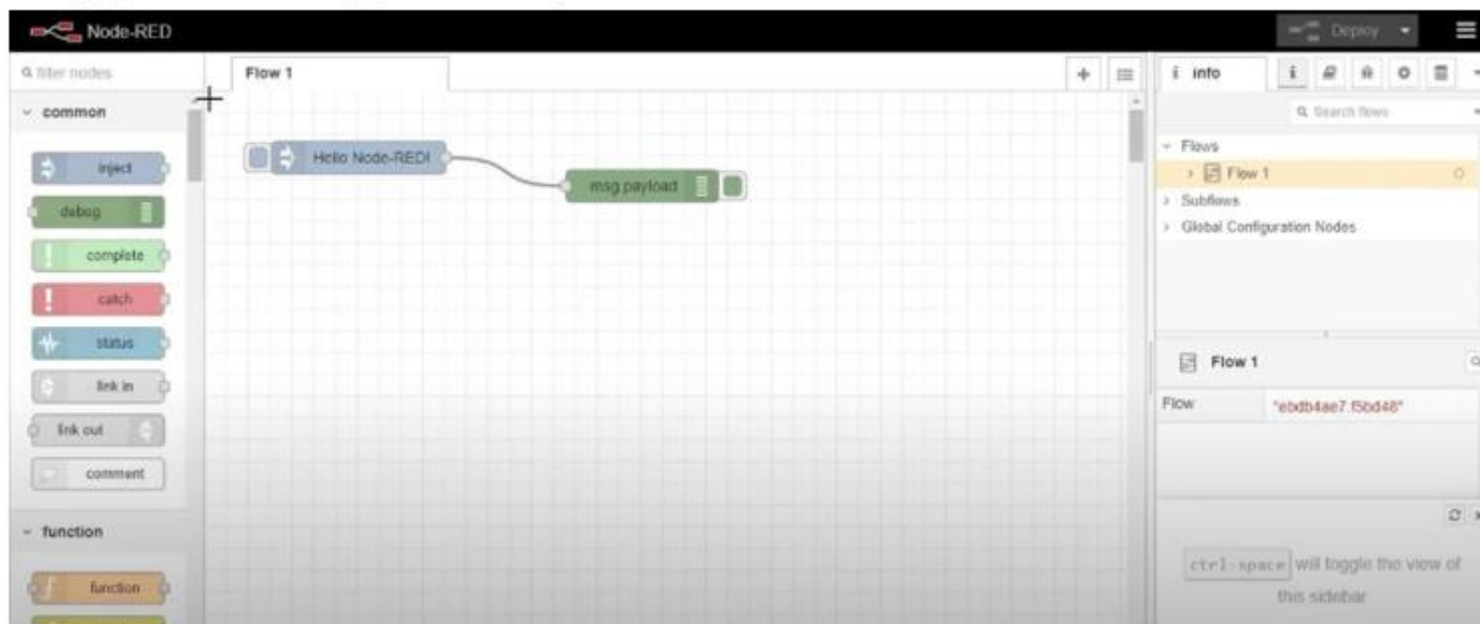
☐ Secure your editor so only authorised users can access it

☒ *Not recommended:* Allow anyone to access the editor and make changes

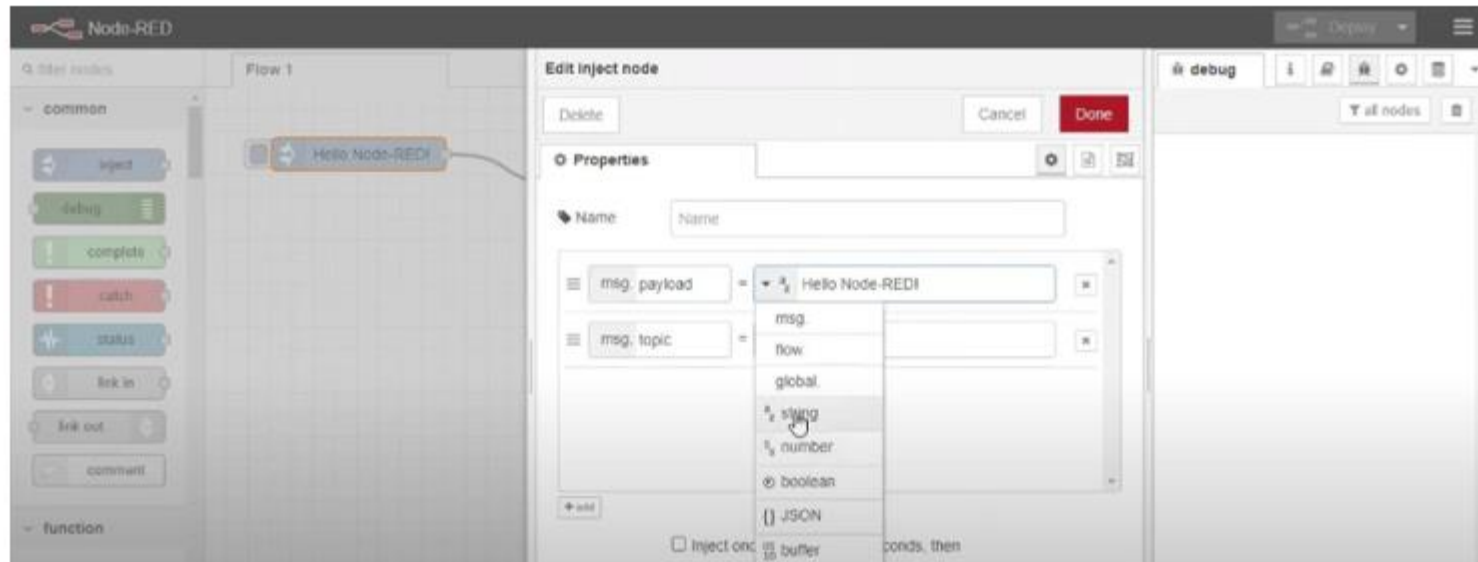
Your editor will not be secured. Anyone with the URL will be able to access your flows, data and bound services.

☒ Tick this box to confirm you want your editor to be insecure

## Dragged and dropped components into the editor



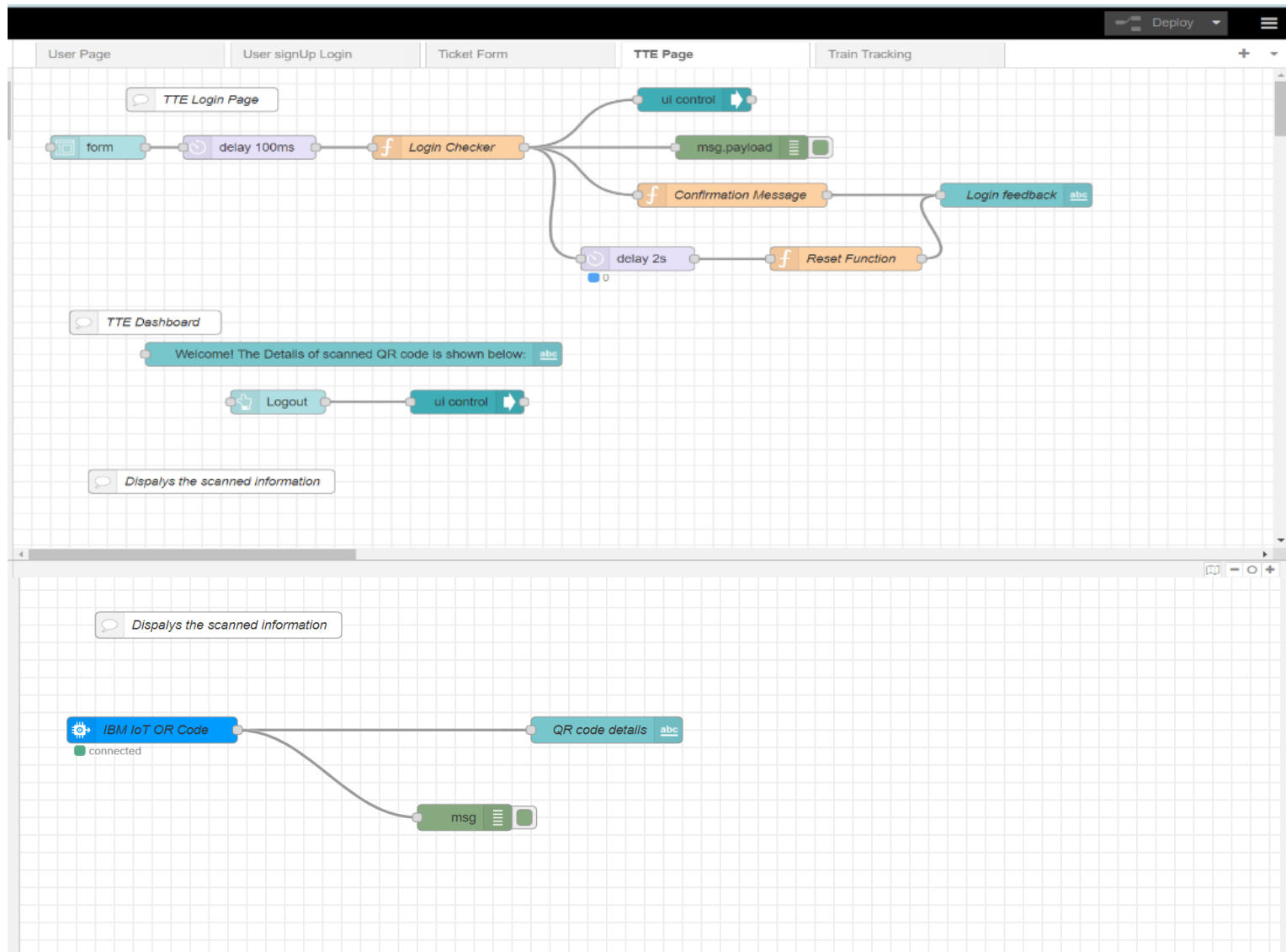
## Editing some values of the properties



## Successfully deployed the app



## NODE RED FLOWS :



## 7.2 IBM Watson IOT device

## Device Drilldown - Divyasri

Device Credentials

Connection Information

Recent Events

State

Device Information

Metadata

Diagnostics

Connection Logs

Device Actions

Device Credentials

You registered your device to the organization. Add these credentials to the device to connect it to the platform. After can navigate to view connection and event details.

Organization ID	460c95
Device Type	A2D2
Device ID	Divyasri
Authentication Method	use-token-auth
Authentication Token	FPdBS_F_MCV0HOfg_J

⚠

Authentication tokens are non-recoverable. If you misplace this token, you will need to re-register the device to generate a new authentication token.

## Device Drilldown - abirami

Device Credentials

Connection Information

Recent Events

State

Device Information

Metadata

Diagnostics

Connection Logs

Device Actions

Device Credentials

You registered your device to the organization. Add these credentials to the device to connect it to the platform. After the device is connected, you can navigate to view connection and event details.

Organization ID	agybtj
Device Type	A2D2
Device ID	abirami
Authentication Method	use-token-auth
Authentication Token	6VRG+qWv@Fib6h67*9

⚠

Authentication tokens are non-recoverable. If you misplace this token, you will need to re-register the device to generate a new authentication token.

## Device Drilldown - aruna

Device Credentials

Connection Information

Recent Events

State

Device Information

Metadata

Diagnostics

Connection Logs

Device Actions

Device Credentials

You registered your device to the organization. Add these credentials to the device to connect it to the platform. After the device is connected, you can navigate to view connection and event details.

Organization ID	3j8p5y
Device Type	A2D2
Device ID	aruna
Authentication Method	use-token-auth
Authentication Token	h59rcZR_Qb07G0HDV

⚠

Authentication tokens are non-recoverable. If you misplace this token, you will need to re-register the device to generate a new authentication token.

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Device Drilldown - Dharani

Device Credentials

Connection Information

Recent Events

State

Device Information

Metadata

Diagnostics

Connection Logs

Device Actions

Device Credentials

You registered your device to the organization. Add these credentials to the device to connect it to the platform. After the device is connected, you can navigate to view connection and event details.

Organization ID	yhwvku
Device Type	A2D2
Device ID	Dharani
Authentication Method	use-token-auth
Authentication Token	REvTepnRVMGjQnc

⚠

Authentication tokens are non-recoverable. If you misplace this token, you will need to re-register the device to generate a new authentication token.

## **CODE AND SOLUTION:**

### **HTML**

```
<!DOCTYPE html>
<html lang="en" style="height: 100%; margin: 0;">
<head>
<meta charset="UTF-8" />
<meta name="description" content="The Home Page after Logged In" />
<meta name="viewport" content="width=device-width, initial-scale=1.0" />
<title>IOT Based Safety Gadget for Child Safety Monitoring and Notification</title>
<script src="./LOCALFORAGE.js"></script>
<script>
if (window.location.hostname !== "localhost") {
if (location.protocol !== "https:") {
location.replace(
`https:${location.href.substring(
location.protocol.length
)}`
)
}
}
async function check() {
let data = localforage.getItem("userData")
if (data == null) {
window.location.href = "/login"
}
}
}
```

```
check()
</script>
</head>
<body
style="
height: 100%;
margin: 0;
font-weight: 300;
font-family: -apple-system, BlinkMacSystemFont, 'Segoe UI', Roboto,
Oxygen, Ubuntu, Cantarell, 'Open Sans', 'Helvetica Neue',
sans-serif;
"
>
<div
class="wrapper"
style="
height: 90%;
display: flex;
flex-direction: column;
align-items: center;
justify-content: center;
text-align: center;
"
>
<div
class="details"
style="
```



```
display: flex;
flex-direction: column;
align-items: center;
gap: 20px;
padding: 1rem;
border-radius: 5px;
box-shadow: 0 0 8px 0px #44444444;
max-width: 80%;
"

>
<h1 class="name" style="margin: 0"></h1>
<div
class="imageContainer"
style="padding: 10px; height: 10rem; width: 10rem"
>
<img class="image" alt="profile picture" />
</div>
<h2 class="email" style="margin: 0"></h2>
<a style="text-decoration: none;text-align: center;font-size: 1.2rem;color: #0070f3;fontweight: 400;"
href="/dashboard">Go to Dashboard ↗</a>
</div>
</div>
<script>
async function main() {
let name = document.querySelector(".name")
let image = document.querySelector(".image")
let email = document.querySelector(".email")
```

```
let userData = await localStorage.getItem("userData")
if(userData == null) {
  window.location.href = "/login"
}
name.innerHTML = `Welcome ${userData.firstName} ${userData.lastName}!`
image.src = userData.profilePic
email.innerHTML = `Your email is: <a style="text-decoration: none;color: #0072B5;"
href="mailto:${userData.email}">${userData.email}</a>`
}
main()
</script>
</body>
</html>
```

## CSS

```
html,
body {
  height: 100%;
  margin: 0;
  font-weight: 300;
  font-family: -apple-system, BlinkMacSystemFont, "Segoe UI", Roboto,
Oxygen,
  Ubuntu, Cantarell, "Open Sans", "Helvetica Neue", sans-serif;
}
.wrapper {
  height: 100%;
  display: flex;
```

```
align-items: center;
justify-content: center;
}
.loginContainer {
display: flex;
flex-direction: column;
gap: 1rem;
min-width: 25rem;
padding: 1rem 3rem;
border: 1px solid #44444444;
box-shadow: 0px 3px 2px 1px #44444444;
border-radius: 8px;
}
.loginContainer span {
text-align: center;
font-size: 3rem;
font-weight: 500;
margin: 1rem 1rem 3rem;
}
.traditionalLoginContainer form {
display: flex;
flex-direction: column;
align-items: center;
justify-content: center;
}
.traditionalLoginContainer :is(input[type="text"], input[type="password"],
input[type="email"]) {
```

```
margin: 0.3rem;
padding: 0.3em 0.5em;
border: 1px solid #44444444;
border-radius: 5px;
outline: none;
min-width: 200px;
font-size: 1.3rem;
}
.traditionalLoginContainer .loginButton {
background-color: #0070f3;
font-size: 1.6rem;
padding: 0.2em 0.8em;
color: white;
margin: 0.4rem;
border: none;
border-radius: 5px;
cursor: pointer;
margin-top: 2rem;
}
.traditionalLoginContainer .loginButton:hover {
background-color: #0071f3d6;
}
.loginWithFireContainer {
display: grid;
display: -ms-grid;
place-items: center;
}
```

```
.fire {
background-color: #f8f9fa;
border: 1px solid #3c404321;
border-radius: 4px;
color: #3c4043;
font-family: arial, sans-serif;
margin: 11px 4px;
padding: 0.4em 0.8em;
line-height: 27px;
min-width: 54px;
text-align: center;
cursor: pointer;
user-select: none;
font-size: 1.3rem;
font-weight: 500;
}
.hyperLink {
text-decoration: none;
text-align: center;
font-size: 1.2rem;
color: #0070f3;
font-weight: 400;
}
@media screen and (max-width: 480px) {
.loginContainer {
border: none;
box-shadow: none;
```

```
min-width: fit-content;  
min-width: -moz-fit-content;  
min-width: -webkit-fill-available;  
padding: 1rem;  
}  
}
```

## **9) RESULT**

### 1) Live Location Tracking:

GPS is installed on gadget to track its current location can be tracked on android app and via SMS request sent from parent phone to safety gadget.



### 2) Panic Alert Systems:

Panic alert system on gadget is triggered during panic situation, automatic call and SMS are triggered to parental phone. The alert is also updated to the cloud for purpose of app monitoring.

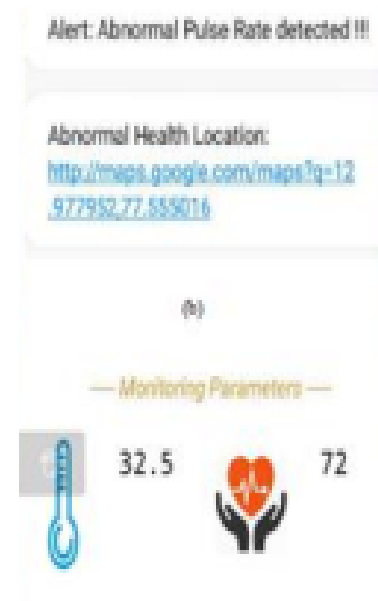


### 3) Stay Connected Feature:

Stay connected feature is used to trigger call and pre-defined SMS anytime from gadget to parental phone by just pressing a button and also parent can make SMS and call to the gadget anytime.

### 4) Health Monitoring System:

Health monitoring system is implemented using heart beat sensor, temperature sensor which is updated to the cloud and also can be monitored via app. The current value of sensors can be obtained using SMS request sent to gadget from parent phone. Fig. 5. Outputs of health monitoring system.



#### 5) Gadget Plugged or Unplugged Monitoring:

Gadget plug or unplugged is monitored using contact switch installed on smart gadget, as soon as the device is unplugged, an alert is provided to parent phone via SMS and it is also updated to cloud for app monitoring.

#### 6) Boundary monitoring system:

This is used to track the safety gadget using the binding gadget by implementing signal strength concept as soon as the safety gadget moves far away from the BLE listener gadget then an alert is provided to itself.

### 10) **ADVANTAGES :**

1. It assists parents to monitor their children remotely.
2. Parents will get all the details like their kid boarding and deboarding school bus.
3. By using this gadget child kidnapping is reduced.
4. Both the parents and school authorities can receive alerts, notification about the child's whereabouts through IoT.



### **DISADVANTAGES:**

- 1) The system is dependent on communication signal/network signal for the smart gadget to trigger automatic phone call/SMS during panic situation.
- 2) It can be difficult to detect when network signal is not reachable/weak/when the smart gadget moves outside the boundary range. Hence, it can be improved by increasing the range.
- 3) Young children may refuse to cooperate unless allowed to play with their gadgets.
1. 4) Electronic gadgets use can lead to poor health.

### **11.Conclusion:**

This research demonstrates Smart IoT device for child safety and tracking, to help the parents to locate and monitor their children. If any abnormal readings are detected by the sensor, then an SMS and phone call is triggered to the parents mobile. Also, updated to the parental app through the cloud. The system is equipped with GSM and GPS modules for sending and receiving call, SMS between safety gadget and parental phone. The system also consists of Wi-Fi module used to implement IoT and send all the monitored parameters to the cloud for android app monitoring on parental phone. Panic alert system is used during panic situations alerts are sent to the parental phone, seeking for help also the alert parameters are updated to the cloud. Boundary monitoring system is implemented on safety gadget with the help of BEACON technology, as soon as the safety gadget moves far away from the BLE listener gadget an alert is provided to itself.

## **12.Future Scope:**

This system can be further enhanced by installation of minicamera inside smart gadget for better security so that live footage can be seen on parental phone during panic situations. The system can be modified by installation of small solar panels for charging the battery of smart gadget to gain maximum battery backup.

## **13) APPENDIX :**

### **GITHUB LINK :**

<https://github.com/IBM-EPBL/IBM-Project-21191-1659774846.git>

### **PROJECT DEMO LINK:**

[https://drive.google.com/file/d/1OrdeonIK1UVQI7c7G0PpmNuNYFR6853Z/view?usp=share\\_link](https://drive.google.com/file/d/1OrdeonIK1UVQI7c7G0PpmNuNYFR6853Z/view?usp=share_link)