IOT BASED SAFETY GADGET FOR CHILD SAFETY MONITORING & NOTIFICATION

PROJECT REPORT

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ABSTRACT

Child safety and tracking is a major concern as the more number of crimes on children are reported nowadays. With this motivation, a smart IoT device for child safety and tracking is developed to help the parents to locate and monitor their children. So many Families spent more time in work and social accountability where they need to take care of their child. The current status in our country is not habitable for monitoring children. With the absence of an child monitoring system, it is hard to monitor the child every seconds. Where Under age children may be impulsive in the way they act and in places to be. Most of the human behaviour are shaped in their childhood stage, In order to get this behaviour child monitoring system is necessary. Children are prone to many incidents and accidents. The safety of children is very indispensable as children cannot protect themselves.

The paper provides a smart solution for deflecting losing kids while going out alone or with their parents based on the Internet of Things. Our proposed system will ensures utmost security and ensure live tracking for kids. It proposes a model for child safety through android phones that can track their children's location and provide the precise coordinates of the child's location in real-time Anywhere by monitoring the activities, the security state of the children are examined.

INTRODUCTION

The main aim of this project is to provide safety to child using smart IoT wearable gadget and android application. The Internet of Things System (IoT) refers to set of devices and systems that stay interconnected with real-world sensors and actuators to the Internet. The motivation for this wearable comes from the increasing need for safety for little child in current times as there could be scenarios of the child getting lost in the major crowded areas. The proposed system focuses on the key aspect that the lost child can be helped by the people around the children and can play a significant role in the child's safety until reunited with the parents. In this project we use SMS as the mode of communication between the parent and child's wearable device, as this has fewer chances of failing when compared to Wi-Fi and Bluetooth. The platform on which the project will be running is Raspberry Pi3 board. The sending and receiving SMS, connecting to the internet is provided by Raspberry Pi3.

PROBLEM STATEMENT

The increasing need for protection of the children at present times and also when children can be lost in crowded areas. Using Bluetooth and Wi-Fi not possible to track larger distance.

SOLUTION STATEMENT

Wearable gadget which tracks health conditions of the children using temperature, heartbeat and accelerometer sensors and sends notifications to parents about child's health conditions through and smartphone application.

OBJECTIVES

Protection of child using wearable gadget which keeps tracking on health condition and android application for parents to monitor the child's activities.

SCOPES

The wearable gadget acts as a smart IoT device. Gives real time location and monitors child's health condition. The crime rate is day by day increasing. Schools and working places need high surveillance for ensuring the safety among children and women. Smart phones are playing major role for ensuring the safety, where some mobile based applications provide alert system. During the emergency, mobile apps alert the control room of nearby police station and caretakers of children. The literature shows that location tracking devices are available in the market, but it does not provide the complete solution to the problem. The solution to this problem is to design an IoT device, which senses the child's location and environment and during emergency, it should send the alert to the parents automatically.

LITERATURE SURVEY

[1] Authors: Sadhana B, Navya A, Nidhishree, Vidhyashree Vishwa.

Title: : Smart IoT Device for Child Safety and tracking

In this project, a child belt is attached with sensor in order to keep track of child's Activity. Whenever child get into school bus from home the parents will get message and through GPRS the location of child is monitored by parents through a developed software. Whenever Child get into classroom the camera inside classroom get activated and the video clip is send to parents. Here Cloud Computing is used to store video. And whenever child play in playground the information is sent to parents. Hence these are safety zone for child

[2] Authors: Lai Yi Heng, Intan Farahana, Binti Kamsi.

Title: IoT-based Child Security Monitoring System.

An IoT-based wearable smart band for children is proposed in this research for child security purposes. Some of the sensors used are the heart rate, sleep quality, motion, and temperature sensors. The altimeter and pedometer are also included in this smart band. The information indicating children's status, along with reference values will be sent to parents' devices with the app installed and if this data is not along the reference values then an alert notification is sent to the parent. Also, when children leave geofences, notification will be sent to parents' devices

[3] Authors: Dipali Badgujar Neha Sawan, Prof. Dnyaneshwar Kundand.

Title: Smart and Secure IOT based Child Monitoring System

This system mainly focuses on a child remote monitoring system. Obstacle sensors which will detect the alert when the child enters the danger zone or else he/she is approaching towards harmful object then alert will be given to the caretaker through the mobile using an alarm or notification. For sensing purpose Waterproof Ultrasonic Obstacle Sensor is used which are placed in the simple locket that is given to the baby so that locket will give an alert to the caretaker and for battery backup, we are using

a solar panel through which the energy will get stored in the care taker's shoes and this energy will be dependent on the steps covered by the caretaker.

[4] Authors: Vibha Chandrala, Niveditha N, Neha B Reddy ,Urmila N.

Title: Child monitoring system using IOT.

It will share the current location of the child using GSM, GPS, G-MAPS CLOUD,CAMERA and RFID. It will detect when the child entering and leaving the school. This can be monitored by the parents time to time. It has a panic button, if it is pressed the will send a message to the nearby police stations and hospitals.

[5] Authors: N. Senthamilarasi, N.Divya Bharathi, D.Ezhilarasi R.B.Sangavi,

Title: Child Safety Monitoring System Based on IoT

In this autonomous real-time monitoring system, the collected values are used to detect the child's status and alert the respective guardians using GSM. The major components are temperature, pulse sensors, GPS, GSM, Web camera, and Rasberry Pi. Any abnormal rise or fall in temperature will be notified to the parent and they can also monitor the child lively through a web camera following they can check the live location through GPS as well. If the device moves out of that boundary the server transfers an alert call by activating the GSM the user.

[6]Authors: David Hanes, Gonzalo, Patrick Grosetete, Robert, Barton, Jerome.

 Title : Child Safety & Tracking Management System by using GPS.

Location Monitoring on Google Maps Using GPS and GSM. Published in: 2016 IEEE. This paper provides an Android- based solution for parents to track their children in real time. Different devices are connected with a single device through channels of the internet. The concerned device is connected to the server via the internet. The device can be used by parents to track their children in real time or for women's safety. The proposed solution takes the location services provided by the GSM module. It allows the parents to get their child's current location via SMS. Merits: A child tracking system using android terminal and hoc networks. Demerits: This device cannot be used in rural areas

[7]Authors: : Aditi Gupta, Vibhor Harit. Published in: 2017 IEEE.

 Title : Henry "IoT Fundamental and Networking Technologies, Protocols".

Some of the existing works done on these similar lines are for example the low-cost, lightweight Wristband Vital which senses and reports hazardous surroundings for people who need immediate assistance such as children and seniors. The major drawback of the Vital band is that it uses Bluetooth as the mode of communication between the child and the parent.Since the distance between the two in some cases could be substantial and the Bluetooth just won't be able to establish a close link between the two. Hence this system combines both GPS and GSM technology to provide a hand a such situations. The GPS is used for identifying the location and GSM is used for sending them a sms.

[8]Authors: Dheeraj Sunehera, Pottabhatini Laxmi Priya. Title: Children

Title:Children monitoring system.

During an emergency, mobile apps alert the control room of nearby police stations or caretakers of children. The literature shows that location tracking devices are available in the market but it does not provide a complete solution to the problem. The solution to this problem is to design an IoT device, which senses the child's location and environment and during an emergency, it should send the alert to the parents automatically

[9]Authors: Akash Moodbidri, Hamid Shahnasser.

 Title: Child safety wearable device.

Published in: 2017 IEEE.

 The purpose of this device is to help parents to locate their children with ease. At the moment there are many wearables in the market which help to track the daily activity of children and also help to find the child using Wi-Fi and Bluetooth services present on the device. Merits: This wearable over other wearables is that it can be used on any phone and it is not necessary that an expensive smartphone is required and doesn't want to be a very tech-savvy individual to operate. Demerits: This device's battery gives a short lifetime.High power efficient model will have to be used which can be capable of giving the battery life.

[10] Authors: K N H Srinivas, T D S Sarveswara Rao, E Kusuma Kumari.

Title: Smart IoT Device for Child Safety

The absence of an information system which could display conditions, actual activity, and annual reporting of kindergarten students in a platform which could be accessed easily anywhere and anytime has led to a major block in the coordination of students, parents, and teachers. One of the most difficult technical implementations is how to compile and display the updates of children's position in a fast (near real-time) duration while accessed from outside communication.

EXISTING SYSTEM:

 In the existing system,we employ a voice recognition module where the child's alarm commands are recorded and retained for future use. In the event that the same child issues the same command, it will compare it to the alert command that was previous recorded and adjust the emergency level in accordance with the alert command.

 The GSM features a SIM that is used to phone or send notification SMS to persons you can trust. When necessary, GPS is used to track the current location. The server will look up the appropriate device ID in the database, look for the appropriate contacts using that device ID, and assist in notifying the registered guardians.

The project's drawbacks include the following:

1. The youngster could not accurately produce the alert order while experiencing a panic attack.
2. The command generated might not coincide with the command previously stored.
3. Manual labour is needed for this job.

PROPOSED SYSTEM:

 In the existing system, manual intervention was required. But in the proposed system, we make every action autonomously.

CLOUD SERVICE
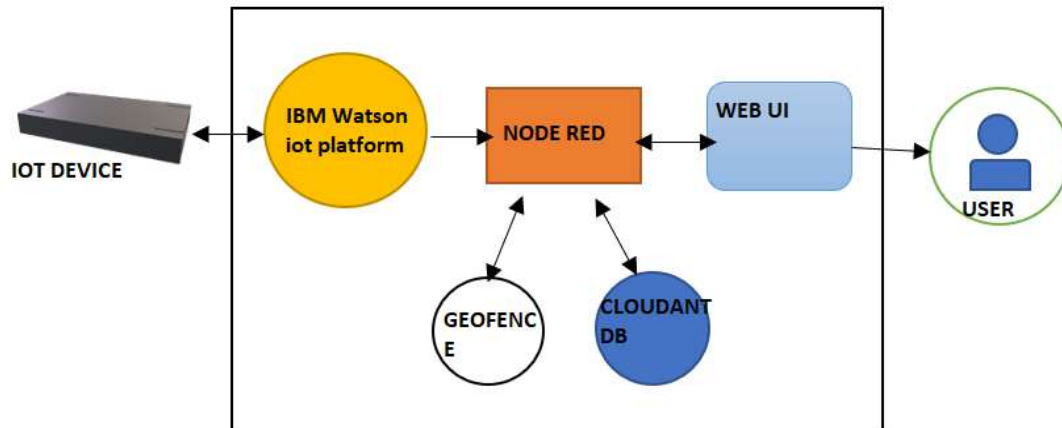
We can use both web application as well as mobile application or either one of it as the front end user interface, cloud, and database as the back end for storing and retrieving information, and a device for monitoring.

HARDWARE REQUIREMENT

GPS

GPS, or the Global Positioning System, is a global navigation satellite system that provides location, velocity and time synchronisation. GPS is everywhere. You can find GPS systems in your car, your smartphone and your watch. GPS helps you get where you are going, from point A to point B.

GPS

Location — Determining a position.

Navigation — Getting from one location to another.

Tracking — Monitoring object or personal movement.

Mapping — Creating maps of the world.

Timing — Making it possible to take precise time measurements.

GSM

A GSM modem or GSM module is a device that uses GSM mobile telephone technology to provide a wireless data link to a network. GSM modems are used in mobile telephones and other equipment that communicates with mobile telephone networks. They use SIMs to identify their device to the network.

GSM is a mobile communication modem; it stands for global system for mobile communication (GSM). The idea of GSM was developed at Bell Laboratories in 1970. It is a widely used mobile communication system in the world. GSM is an open and digital cellular technology used for transmitting mobile voice and data services operate at the 850MHz, 900MHz, 1800MHz, and 1900MHz frequency bands.

GSM

CREATE IBM WATSON IOT PLATFORM AND DEVICE
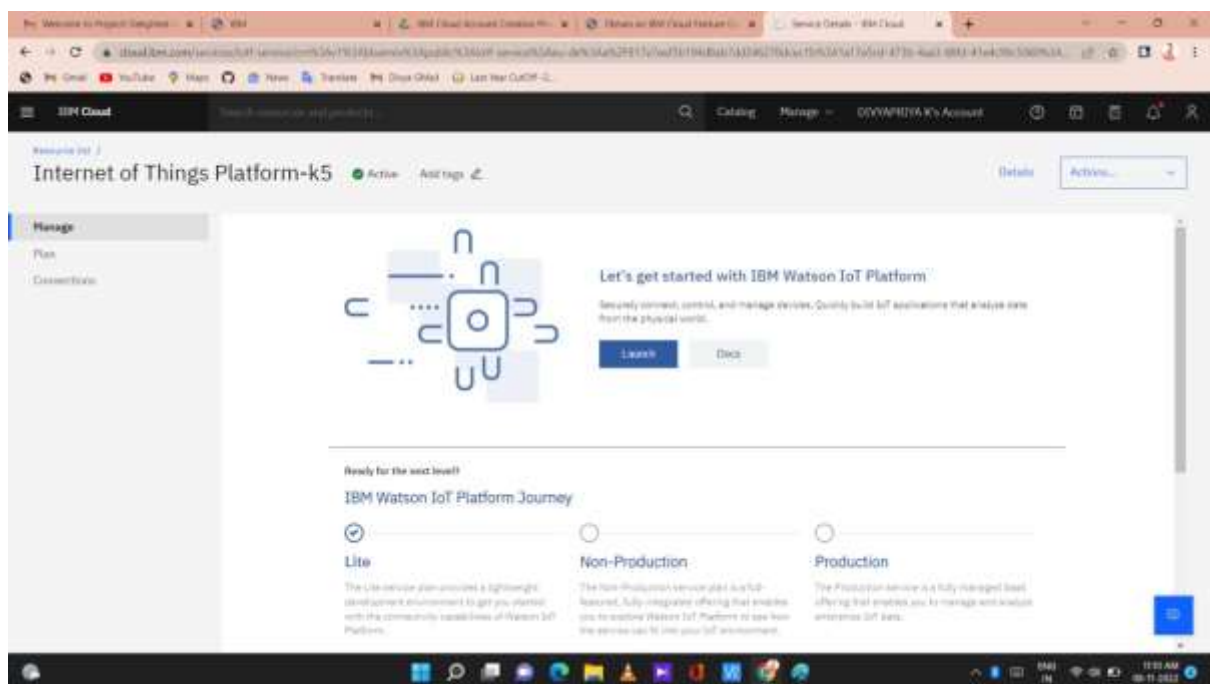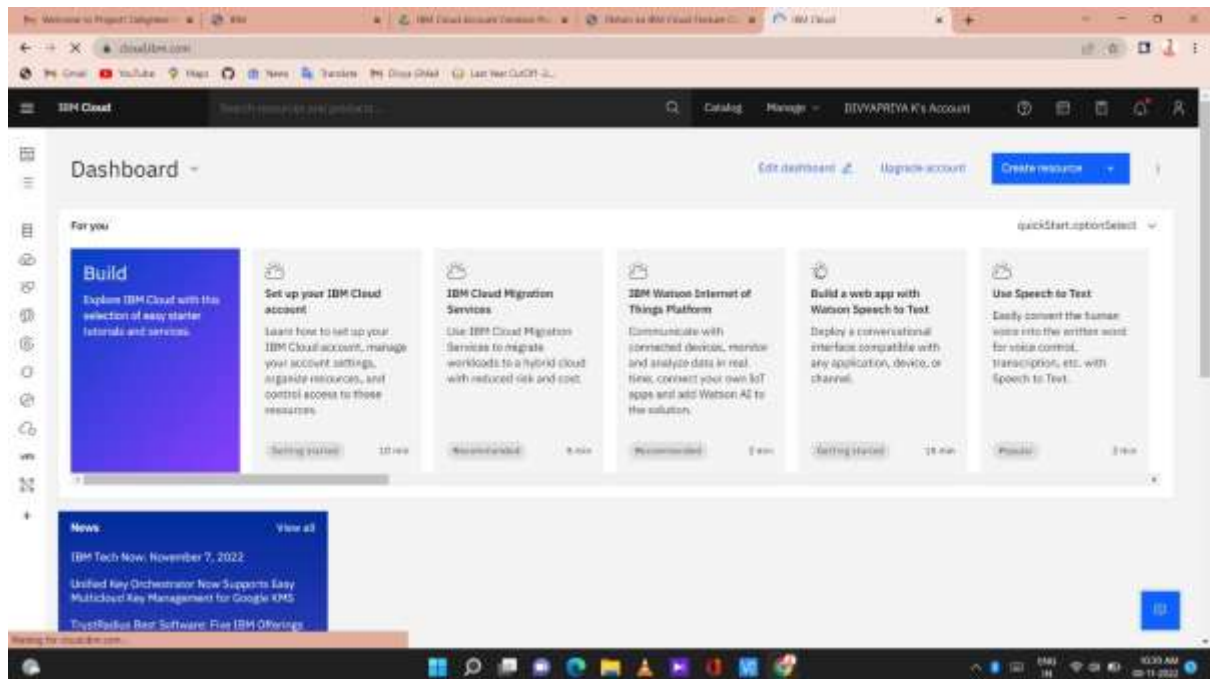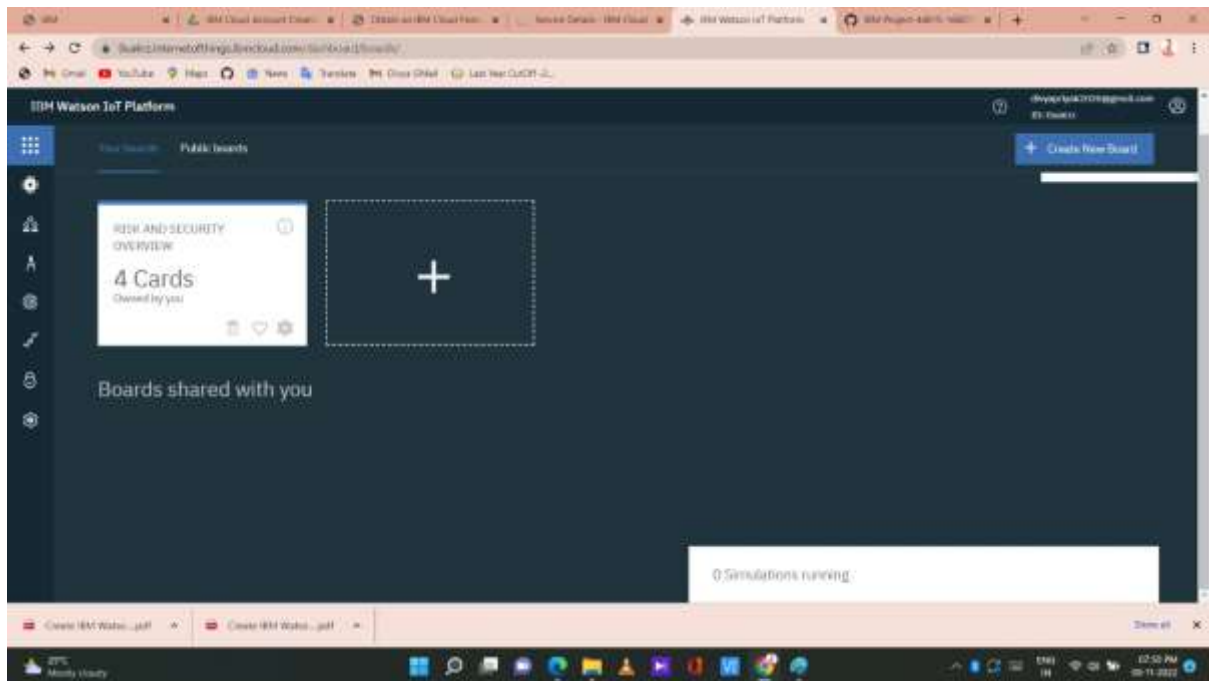
A DATABASE IN CLOUDANT DB
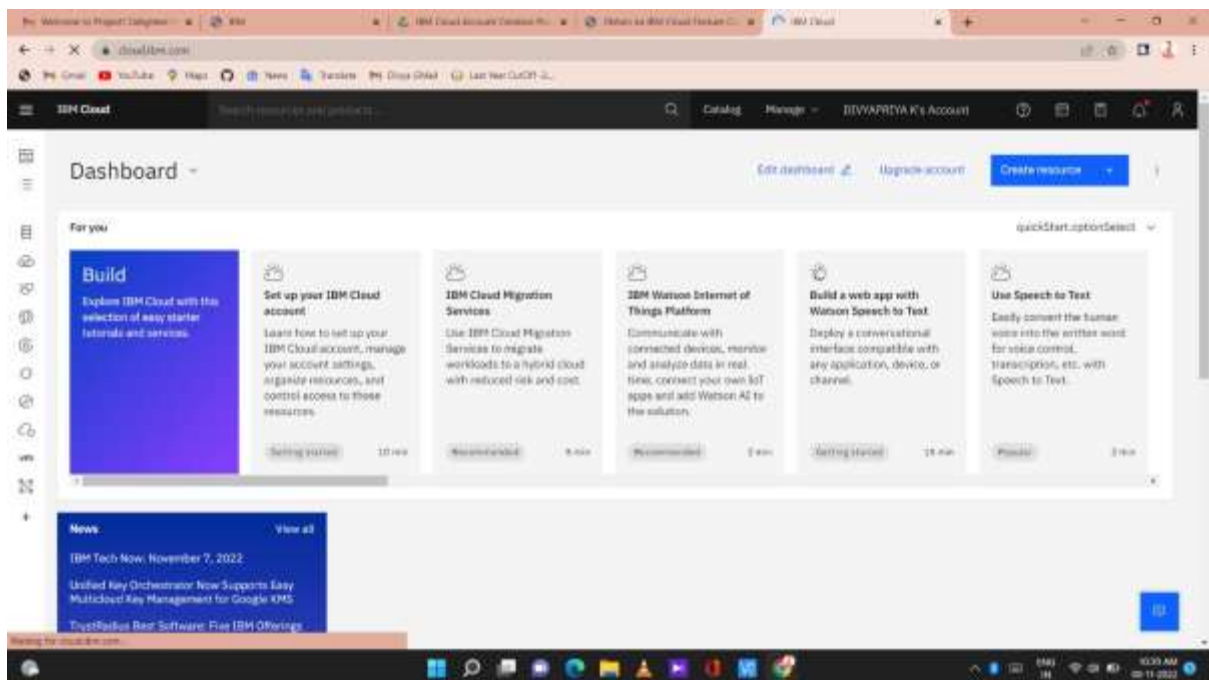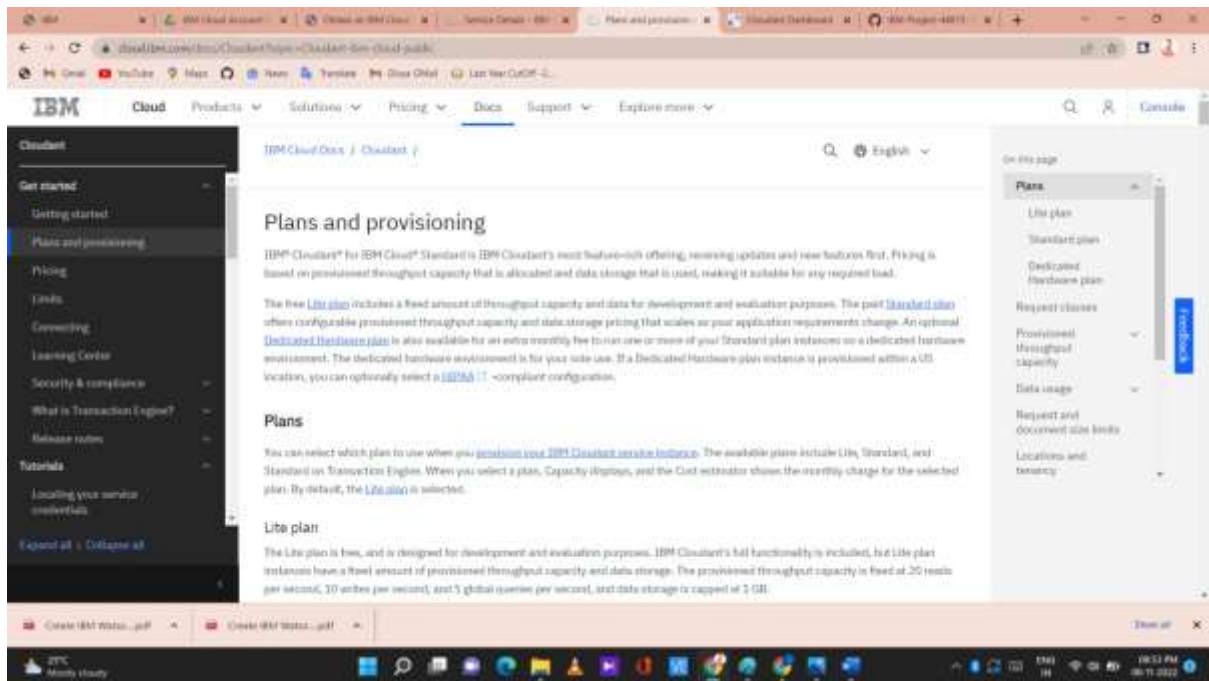
PYTHON CODE:

```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
```
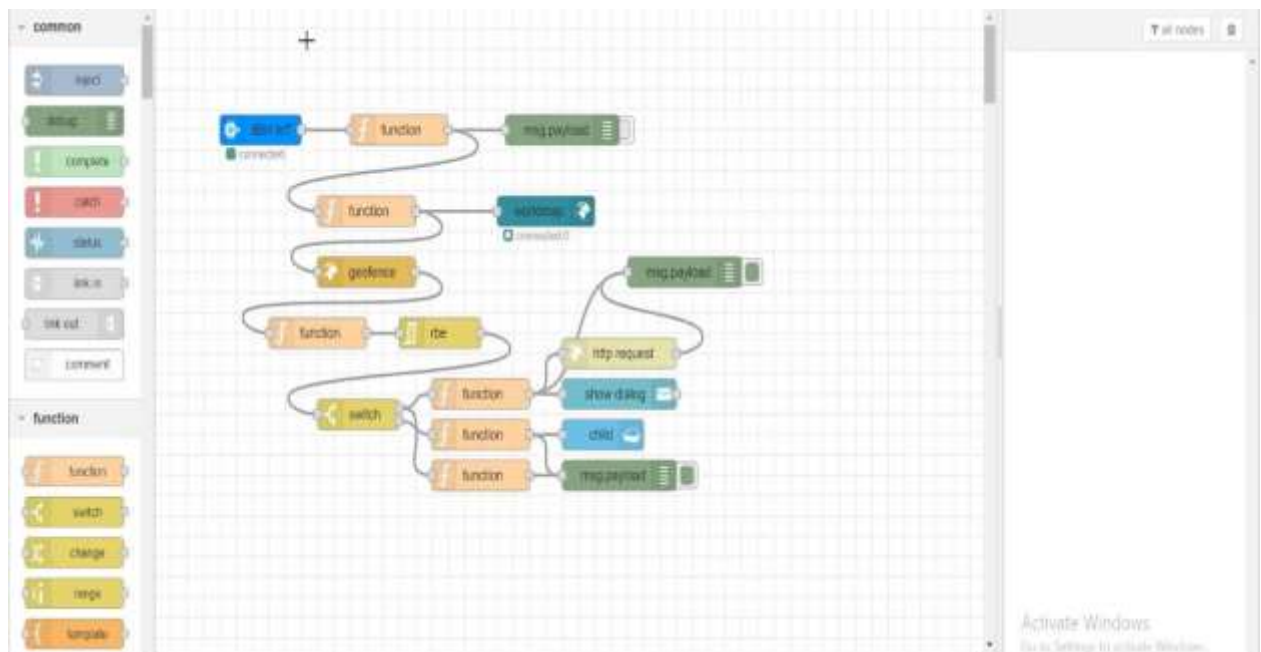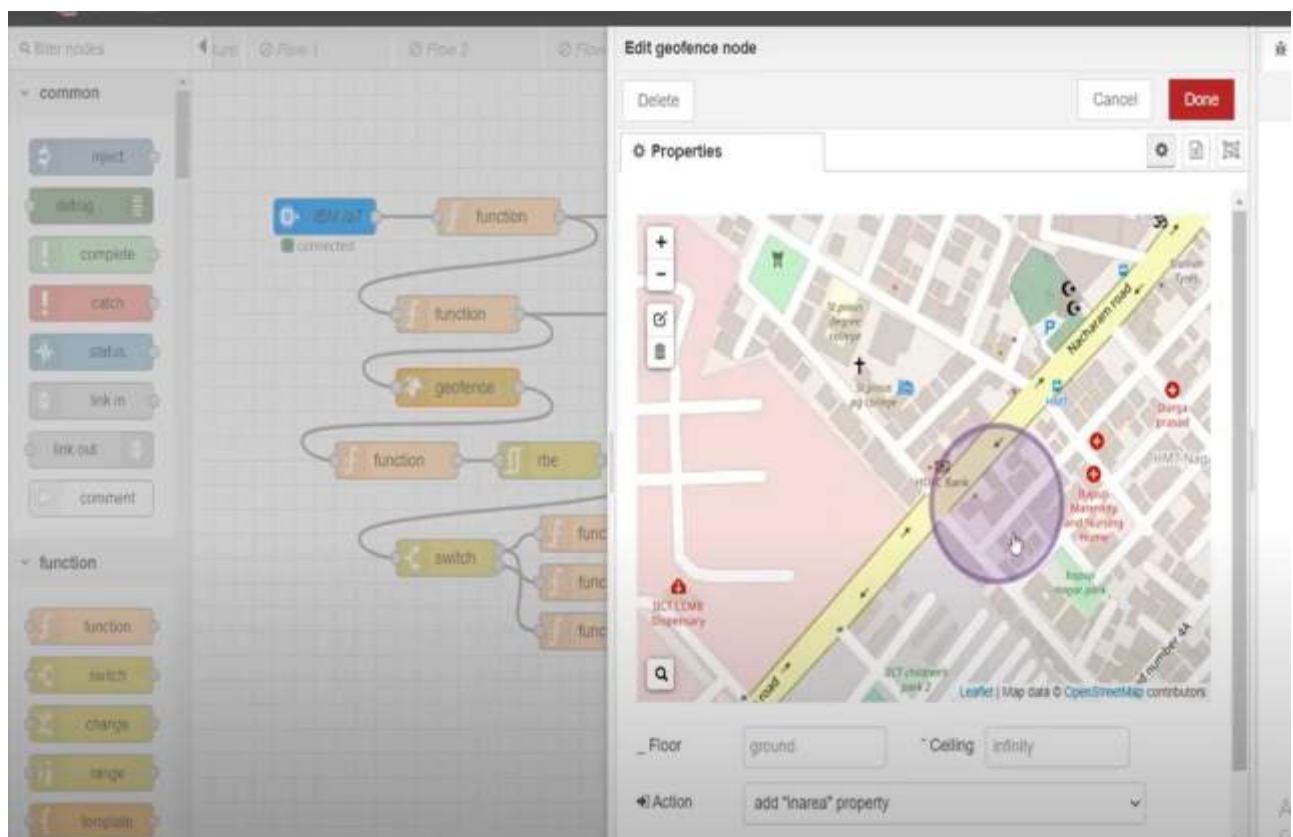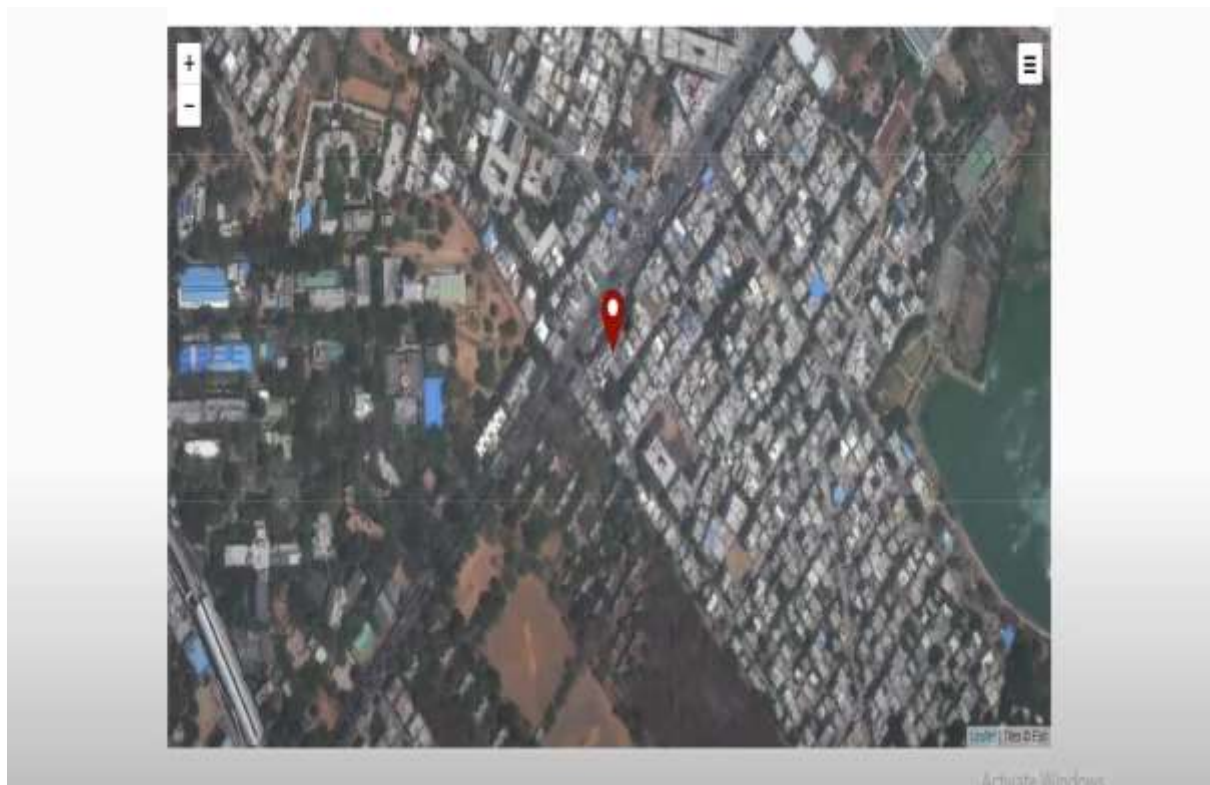
```
    #latitude=17.4219272

    #longitude=78.5488783


    #out area location      latitude=17.4219272      longitude=78.5488783
myData={'name':name,'lat':latitude,'log':longitude}
client.publishEvent(eventId="status",msgFormat="json", data=myData,qos=0,onpublish=None)
print("Data published to IBM IOT platform:",myData)

    time.sleep(5)


client.disconnect()
```

NODE-RED SERVICE

In Node-RED Service first to create the node connections and then code in each of the nodes.

Create python code

World map to see the location
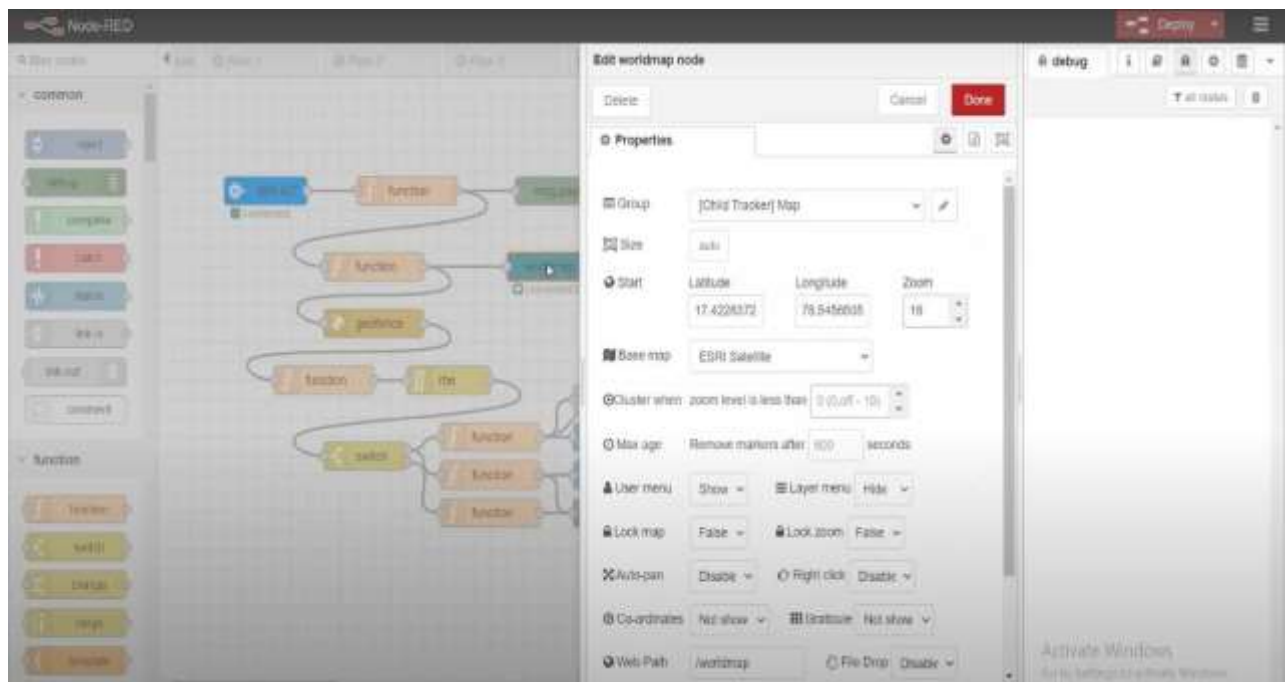
WORKING

Live Location Tracking:

GPS installed in the device is used to trace the contemporary location and we can keep tabs on it through the android app and SMS requests sent from the safety gadget to the parent's phone. The child's precise locations are found by parents through the Wearable gadget which in turn employs Global Positioning System to track realtime locations. The software along with relinquishing it allows you to trace down your wards when they're within Bluetooth limit, it also works when your kids go farther afield. Its adroitness as a tracker is exceptional if you live in densely colonized neighborhoods like cities.

Panic Alert Systems:

The panic alert mechanism on the device is set off during emergencies, the system software involuntarily alerts the parent/guardian by redirecting a text message where expeditious scrutinize is essential for the child during a catastrophe. The alert is also refurbished to the cloud for the motive of app monitoring.

Ceaseless Surveillance:

The gadget ensures utmost security and ensures live tracking for their kids. The device instills child safety through smart phones that can track their children's location and give the precise coordinates of the child's location in real-time anywhere. By monitoring the activities the security state of the child is examined.

Cloud Database:

The safety device is equipped with GSM and GPS modules for sending and receiving calls, and SMS between the gadget and the parental phones. The system also consists of a Wi-Fi/cellular data module used to implement IoT and send all the monitored parameters to the cloud for android app monitoring on the parental phones. The panic alert system is used during panic situations alert are Are sent to the parental phone, seeking help also the alert parameters are updated to the cloud. The history of the location can be stored in the cloud. The wearable devices should feature the child's exact locations and be updated continuously without being interpreted in the cloud database.

Security Implementations:

To activate the alarm and facilitate video recording whenever the emergency button is pressed. We can use the cloud to accumulate the surveillance data of the children. The wifi modules are of assistance in sending the monitoring particulars, the user will be notified with an update if any errors are found, for the efficient functioning of the device.

Extensive range monitoring system:

The application aside from conceding you to track down your children when they're within Bluetooth range also functions when your kids go farther afield. Its competence as a tracker is outstanding if you live in densely populated areas like cities or big towns. This means you will be able to see the identity of the participating devices and It helps to diminish their vulnerability in harmful situations and also protects the children in emergency situations.

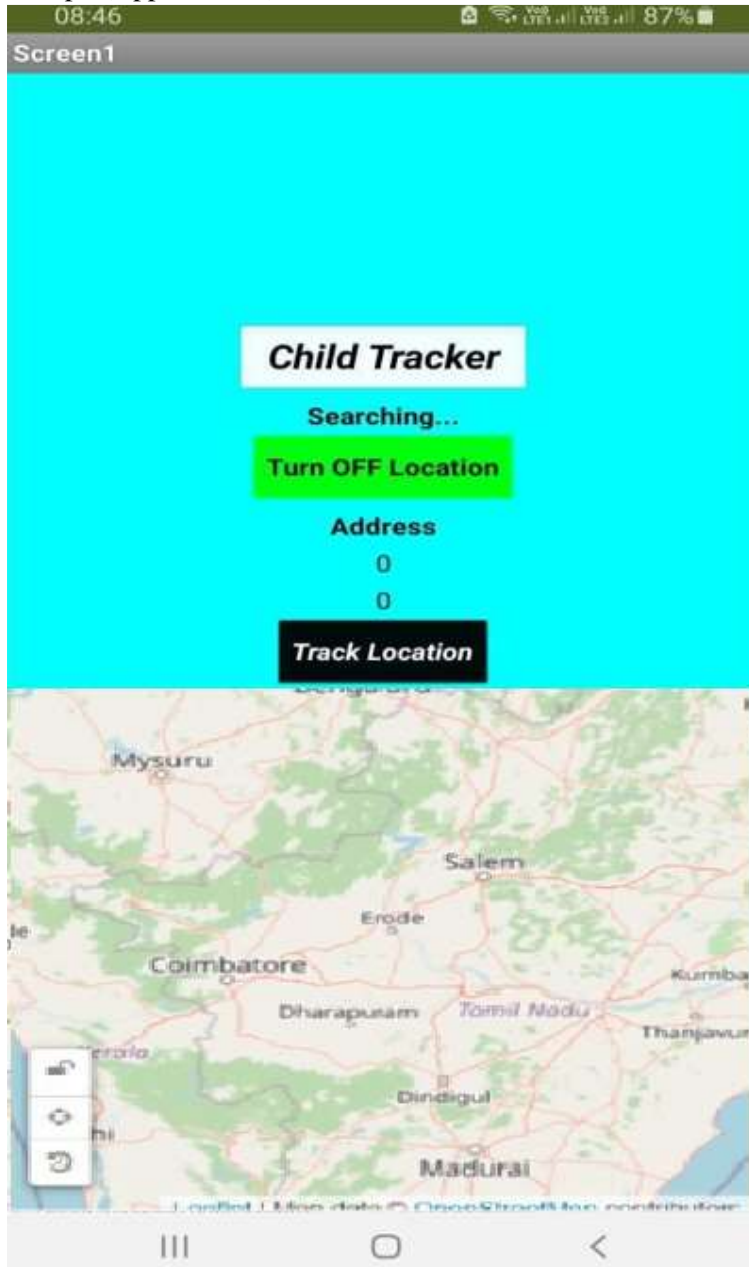**Creating the MIT app and Showing the child's location**

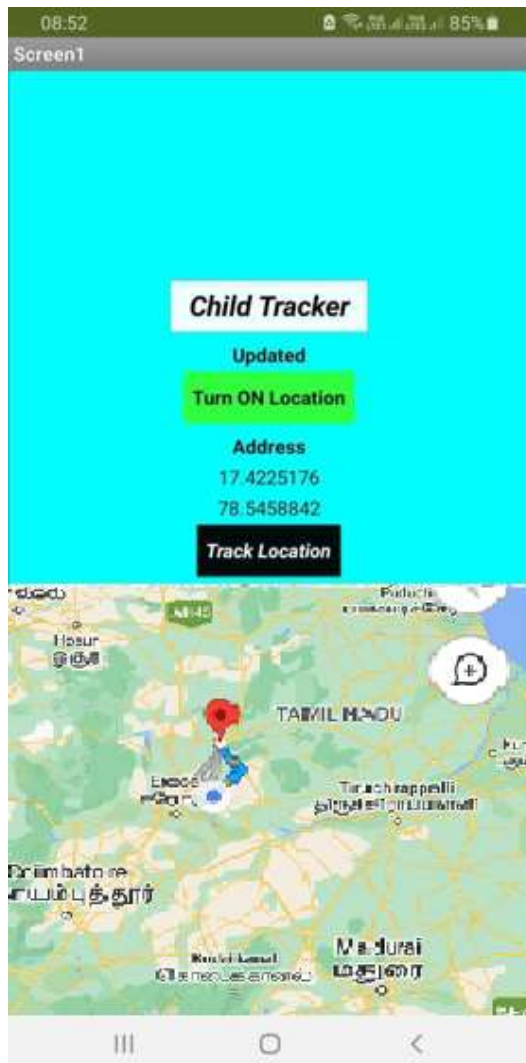**Create App in MIT App inventor:**
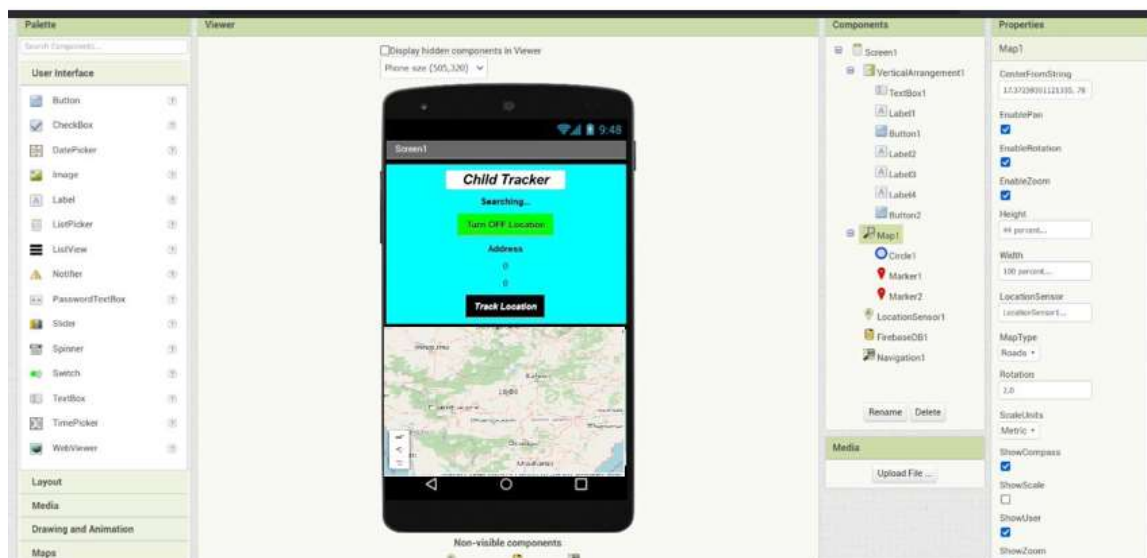
Block Configuration:
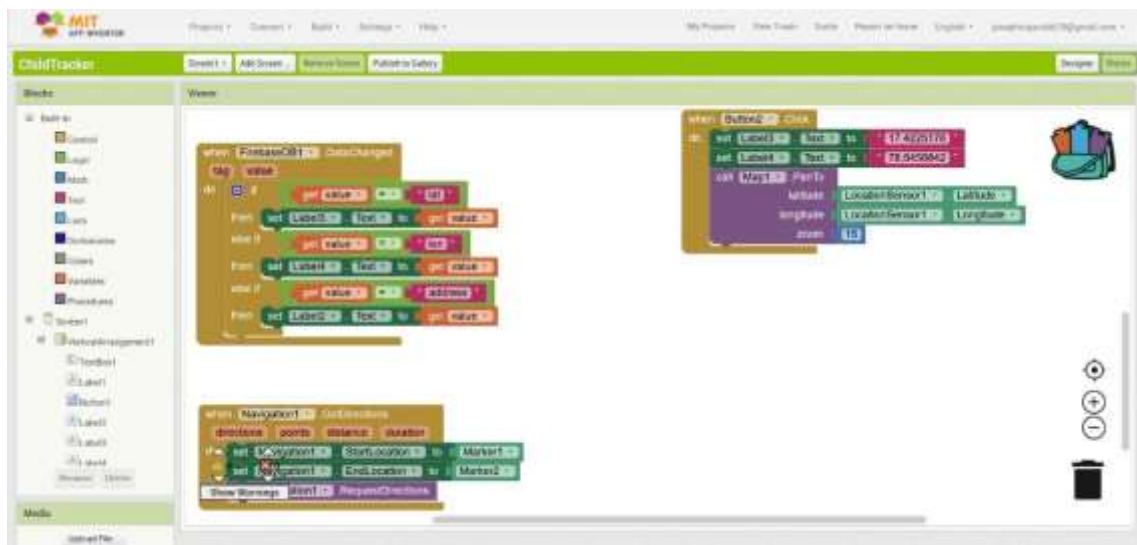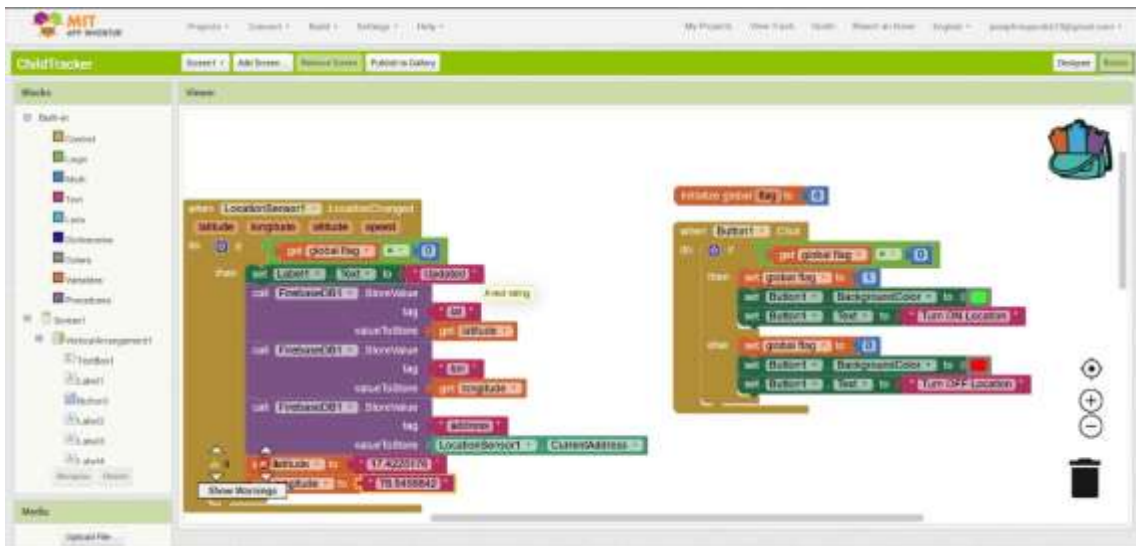
Output(App inventor)

Child Location Status: Child live location founded.

CONCLUSION

This paper to ensure the safety of children and increase their confidence. Many experimenters are operating in this area and have formulated different technologies to aid children. The key represented in this paper takes the advantage of smartphones which proposes affluent elements like Google maps, SMS, etc.

The child safety and protection device is proficient in acting as a smart IoT device. It equips parents with real-time location, the surrounding temperature, and along with an alarm buzzer for their child's circumstances and the capability to locate their child. This paper depicts the fundamental design concept and functionality along with the anticipated consequence

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