

**IOT BASED SAFETY GADGET
FOR CHILD SAFETY MONITORING
& NOTIFICATION**

Submitted by

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of*

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J.K.K.MUNIRAJAH COLLEGE OF TECHNOLOGY**

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BONAFIDE CERTIFICATE

Certified that this project report on “**IOT BASED SAFETY GADGET FOR CHILD SAFETY MONITORING & NOTIFICATION**” is the bonafide work of “**BHUVANESHWARI M (731219104005), INDHUMATHI P (731219104010) , MAHESHWARI M (731219104012) , PAVITHRA R (731219104015)**” who carried out the project work Under my supervision.

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ABSTRACT

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 particular location. By continuously checking the child's location notifications will be generated 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. Child safety solutions by developing a gadget which can be tracked via its GPS locations and also a panic button on gadget is provided to alert the parent via GSM module calling for help. Parental android app is developed to manage and track the device anytime. Smart gadget device is always connected to parental phone which can receive and make phone calls and also receive SMS on gadget via GSM module. Health monitoring system on gadget checking for parameters like heart beat/pulse rate and temperature is included which can be monitored on parental app. Gadget also monitors whether it is plugged onhand or not using contact switch and alert the parent as soon as it is unplugged.

ACKNOWLEDGEMENT

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We wish to express our heartfelt thanks to our respectful Head Of The Department **Dr.N.SATHYABALAJI M.E., M.I.S.T.E., Ph.D** for his inspiring help, guidance, effort and energy in the right direction for completing this project.

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We sincerely thank our lovable parents for their motivation and great support to complete this project successfully.

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IOT BASED SAFETY GADGET FOR CHILD SAFETY MONITORING AND NOTIFICATION

TEAM ID	PNT2022TMID44407
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1. INTRODUCTION

The Internet of things (IoT) refers to the set of devices and system that stay interconnected with real-world sensor and to the internet. During years' Child safety is under threat and it is very important to provide a technology- based solution which will help them under panic situations and monitor them using a smart gadget. The proposed system is equipped with GSM and GPS modules for sending and receiving call and SMS between safety gadget and parental phone, the proposed system also consists of Wi-Fi module used to implement IoT and send all the monitoring parameters to the cloud for android app monitoring on parental phone. Android application can be used to track the current location of safety gadget using its location coordinates on parental phone android app and also via SMS request from parent phoneto safety gadget. Panic alert system is used during panic situations and automatic SMS alert and phone call is triggered from safety gadget to the parental phone seeking for help and also monitored for plug and unplug fromhand, as soon the gadget is unplugged from hand a SMS is triggered to parental phone and the alert parameter is also updated to the cloud.

Project overview

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 geo-fence around the particular location.

By continuously checking the child's location notifications will be generated if the child crosses the geo-fence. 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.

Purpose

It assists parents to monitor their children remotely. In case situations happen, notifications will be sent to parents so that actions can be taken. Through this, child safety can be ensured and crime rate will be reduced. Health monitoring system on gadget checking for parameters like heart beat/pulse rate and temperature is included which can be monitored on parental app.

2. LITERATURE SURVEY

1. The system is developed using Link-It ONE board programmed in embedded C and interfaced with temperature, heartbeat, touch sensors and also GPS, GSM & digital camera modules. The novelty of the work is that the system automatically alerts the parent/caretaker by sending SMS, when immediate attention is required for the child during emergency.

Advantages:

The parameters such as touch, temperature & heartbeat of the child are used for parametric analysis and results are plotted for the same.

Disadvantages:

To implement the IoT device which ensures the complete solution for child safety problems.

2. The purpose of this device is to help the parents to locate their children with ease. At the moment there are many wearable's in the market which helps to track the daily activity of children and helps to find the child using Wi-Fi and Bluetooth services present on the device.

Advantages:

over other wearable is that it can be used in any phone and it is not necessary that an expensive smartphone is required and doesn't want to be very tech savvy individual to operate.

Disadvantages:

As, this device's battery gives short life-time. High power efficient model will have to be used which can be capable of giving the battery life for a longer time.

Algorithm:

Machine learning algorithm.

3. This method proposed a model for child safety through smart phones that provides the option to track the location of their children as well as in case of emergency children is able to send a quick message and its current location via Short Message services.

Advantages:

The advantages of smart phones which offers rich features like Googlemaps, GPS, SMS etc.

Disadvantages:

This system is unable to sense human behavior of child.

4. This method provides an Android based solution for the parents to track their children in real time. Different devices are connected with a single device through channels of internet. The concerned device is connected to server via internet. The device can be used by parents to track their children

in real time or for women safety. The proposed solution takes the location services provided by GSM module. It allows the parents to get their child's current-location via SMS.

Advantages:

A child tracking system using android terminal and hoc networks.

Disadvantages:

This device cannot be used in rural areas.

5. This is proposed for youngster security and following, created to assist guardians with observing and find their kids. This framework is constructed utilizing LinkIt ONE board that is encoded in implanted C language and is likewise interfaced with different sensors, an advanced camera, GSM and GPS functionalities. The framework is intended to consequently alarm the watchman/parent by sending SMS when quick consideration is required during a crisis.

Advantages:

Tracking of missing kids can be made easily. Short response time and high accuracy.

Algorithm :

k nearest neighbor, artificial neural network, support vector machine, and kernel Fisher discriminant.

Existing problem

Existing system, we use a voice recognition module in which the alert commands from the child are stored and kept for further reference.

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.

References

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[9]Wan-Jung Chang, " Design and Implementation of a Drowsiness - FatigueDetection System Based on Wearable Smart Glasses to Increase Road Safety, " DOI 10.1109/TCE.2018.2872162, IEEE, 2018

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[11]Pooja.K.Biradar¹, Prof S.B.Jamge²,” An Innovative Monitoring Application for Child Safety”, DOI:10.15680/IJIRSET.2015.0409093.

Problem Statement Definition

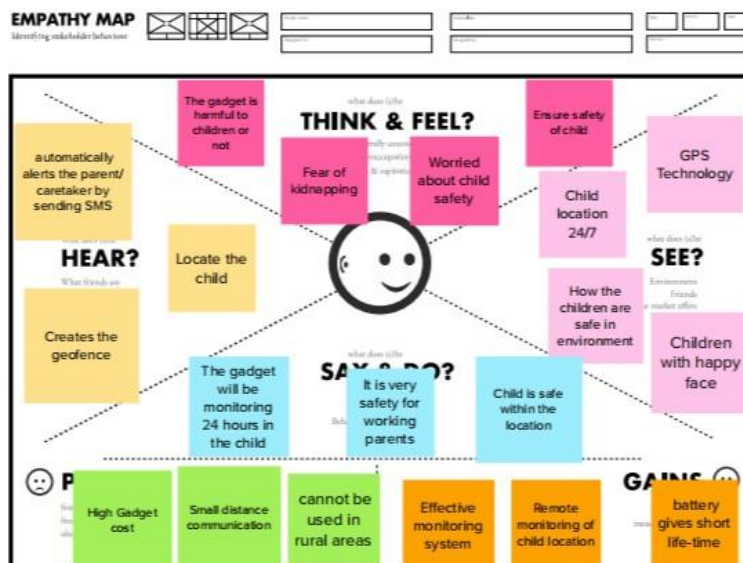


The system also consists of Wi-Fi module used to implement to IOT and send all the monitored parameters to the cloud for android app monitoring on parental phone. panic alert system is used during panic situations alert are sent to the parental phone, seeking for help also the alert parameters are updated to the cloud.

3. IDEATION & PROPOSED SOLUTION

Empathy Map Canvas

Empathy Map



Ideation & Brainstorming



Proposed Solution

S.No	Parameter	Description
1	Problem Statement (Problem to be solved)	A tracker that helps parents track a child's location so that the child does not get into dangerous situations.
2	Idea / Solution description	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 particular location. By continuously checking the child's location notifications will be generated 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.

3	Novelty/Novelty/UniquenessUniqueness	Novelty/Novelty/UniquenessUniqueness
4	Social Impact/ Customer Satisfaction	<p>Reduce the anxiety, worry and nervousness of a parent when they are not around the child.</p> <p>Having a peace of mind on the child's whereabouts will increase customer satisfaction, as well as the inclusion of an easy to use and interactive user interface.</p> <p>The reduction of child kidnappings, injuries, accidents, and missing children in the country.</p>
5	Business Model (Revenue Model)	<p>Business to Consumer Model</p> <p>Licensing model Subscription Model</p> <p>Freemium Model</p>
6	Scalability of the Solution	<p>By adopting multiple data storage technologies, controlling the IoT data pipeline, and using automated bootstrapping</p> <p>we ensure that the device is highly scalable.</p>

Problem Solution fit

Project Title: IOT based safety gadget for child safety monitoring and notification

Project Design Phase-I - Solution Fit Template

Team ID: PNT2022TMID44407

1. CUSTOMER SEGMENT(S) Our Customers are mainly parents who are working and do not have enough time to take care of their children. Such parents are not provided with availability at anytime to look after their children. If the case so they are in need of something to make their children under the surveillance of them.	6. CUSTOMER CONSTRAINTS The constraints our customers facing are such connectivity issues or may be the protocols being used for communication. There may be chances of issues arising due to technical deficiencies. Giving a second thought, price to be afforded for buying the developed solution kit might be the one they could not afford.	5. AVAILABLE SOLUTIONS Of course the solutions are available readily in the market such as angel monitoring system, Child GPS Tracking System, Child Safety GSM Kit, etc. ... One such constraint the customers facing are cost and inefficiencies in the working once purchased.
2. JOBS-TO-BE-DONE / PROBLEMS To enhance the operating condition of the developed solution the way it is not supposed to deal with any fault at any point of time so that the child safety can be highly ensured. To ensure the parents that their surveillance on their children can never be taken off.	9. PROBLEM ROOT CAUSE Considering the origination of the problem, it occurs in the base of merely irrespective persons that are no way relatable to the children but for the currency kind of thing and also the child abuse (mainly in case of girl children).	7. BEHAVIOUR The proposed solution always keeps/tends to make the gadget work in an efficient way so that it is not supposed to meet up with any further constraints. Also the solution tries to ensure that efficient functionalities are to be provided to the fullest to the customers.
3. TRIGGERS The trigger which induces the customers is the one that when other working parents give a try to this and comment a positive review on this, they also tend to have a try to enhance their child safety.	10. YOUR SOLUTION Our Team has highly been intending to develop an efficient solution to overcome all the flaws that the existing solutions hold back still. We are highly on demand to ensure the efficient functionalities of the developing module the way it.	8. CHANNELS of BEHAVIOUR Our proposed solution has the modes of working in both offline and Online. In case of any disconnectivities happen the gadget which has been developed might tend to work on a plan B which includes the backup of the failure of actual working kit backup of the failure of actual working kit.

4. REQUIREMENT ANALYSIS

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 Email Registration through Mobile number Registration in person
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Notifications	Email and SMS message

FR-4	User Interface	Mobile app for parents Web interface for registrations, record tracking, information and payment
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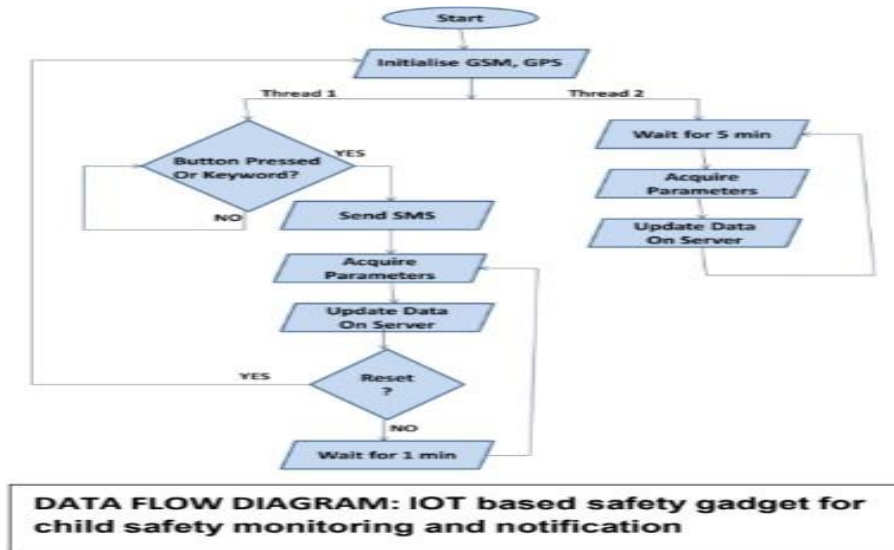
Non-functional Requirements:

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

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	To find out whether the child crosses the geofence or not, upon which the parent/guardian of the child gets an alert.
NFR-2	Security	Database security must meet HIPAA requirements. Extra security protocols and measures are also in place.
NFR-3	Reliability	Web page gets automatically logged out unless password has been saved in the Google account. In case of server crash data gets backed up beforehand.
NFR-4	Performance	Site gets updated every 1 hour. Speed per transaction depends on the internet strength.
NFR-5	Availability	Available world wide, and requires an internet source.
NFR-6	Scalability	Short term scalability where memory is stored and erased, can be scaled to keep records in the future.

5. PROJECT DESIGN

Data Flow Diagrams



Solution & Technical Architecture

Solution Architecture

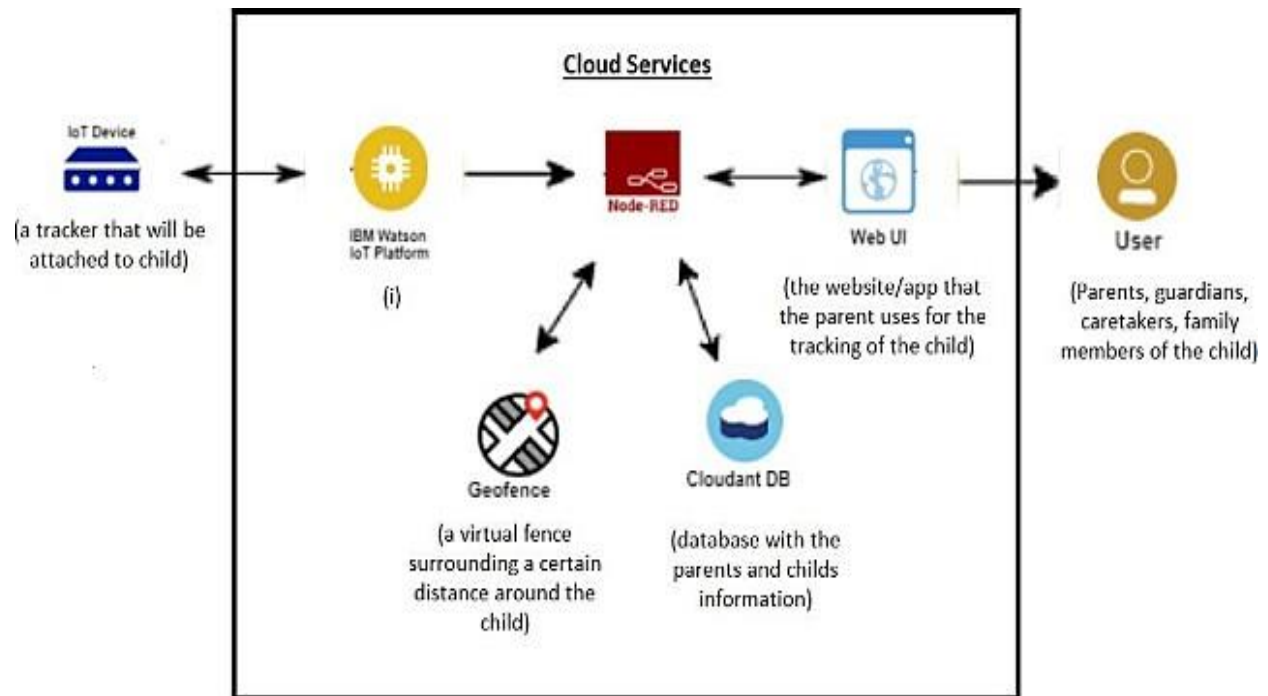
Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems.

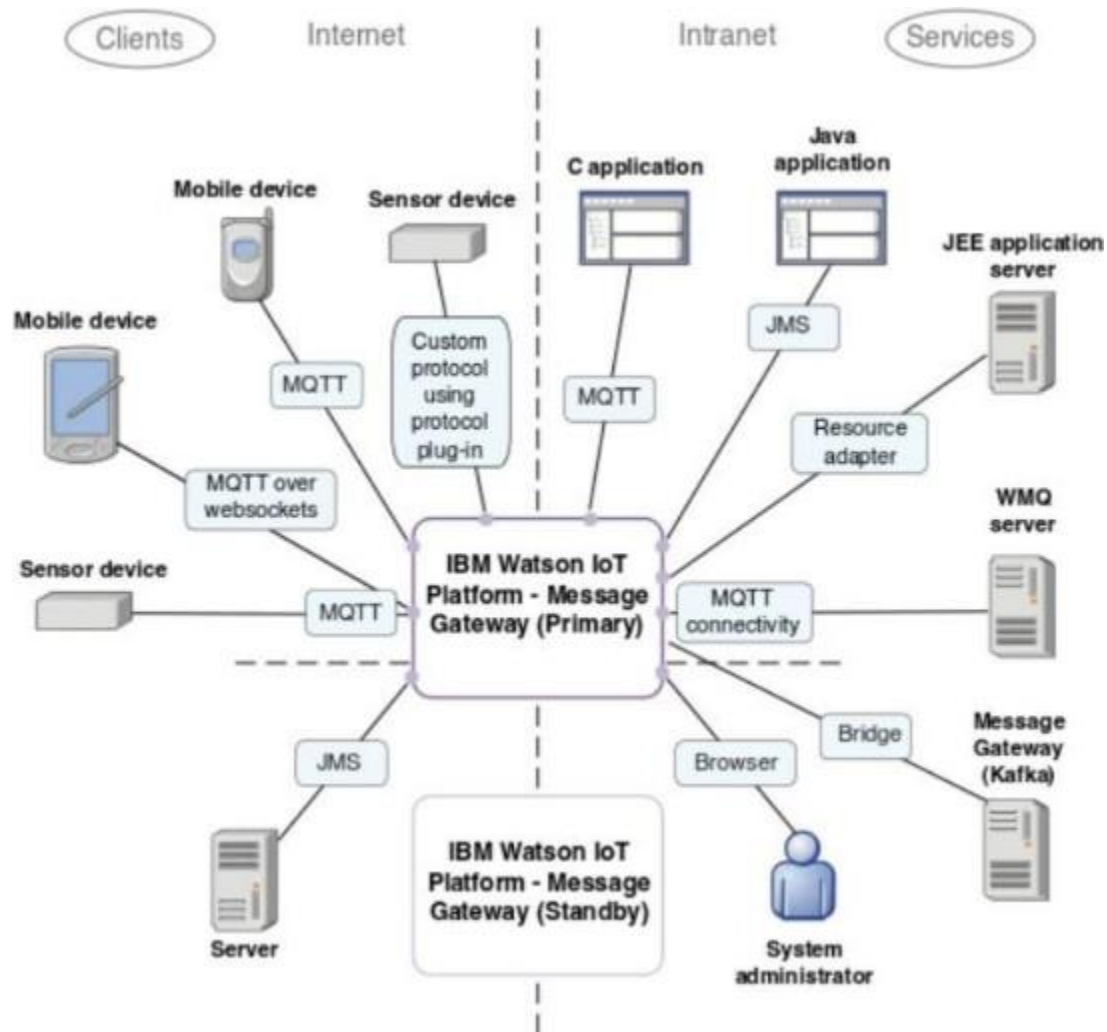
- Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.

- Define features, development phases, and solution requirements. Provide specifications according to which the solution is defined, managed

Solution Architecture Diagram



Architecture and data flow of the application



Architecture of the IBM Watson IoT Platform

User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Priority
Customer (Parents Mobile user)	Registration	USN-1 (FATHER)	I can access the location of my children using the credentials provided as a Father.	I can access my account/dashboard and receive confirmation email & click confirm	High	Sprint-1
		USN-2 (MOTHER)	I can access the location of my children using the credentials provided	I can access my account/dashboard and receive confirmation email & click confirm	High	Sprint-1

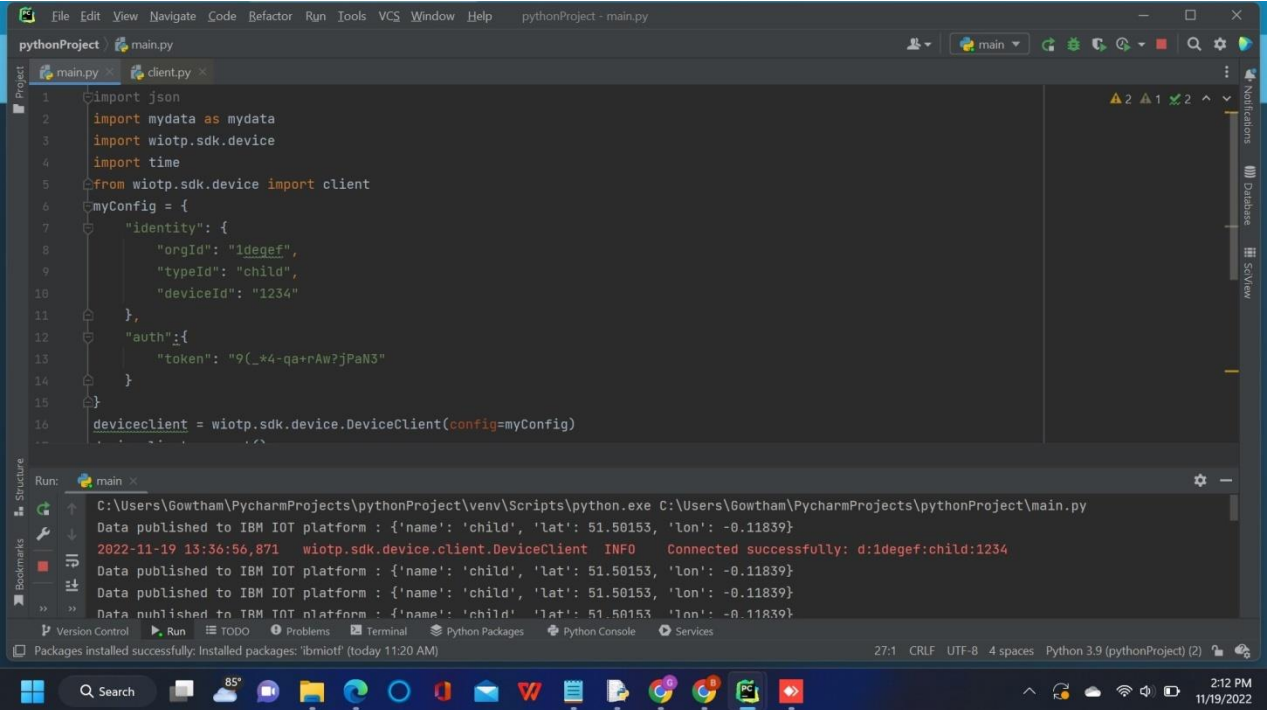
			as a Mother.			
		USN-3 (GUARDIAN)	I too can monitor the children's activities using safety gadget monitoring system.	I can access my account/dashboard and receive confirmation email & click confirm	Medium	Sprint-2
	Login	USN-4 (if required)	Same function to be performed as in previous cases.	Same function to be performed as in previous cases.	Not Yet Determined	----
	Dashboard	USN-5 (if required)	Same function to be performed as in previous cases.	Same function to be performed as in previous cases.	Not Yet Determined	----

6. PROJECT PLANNING & SCHEDULING

Sprint Planning & Estimation

IBM WATSON IOT PLATFORM

The Watson IoT platform to find the In-Area and out-Area Locations



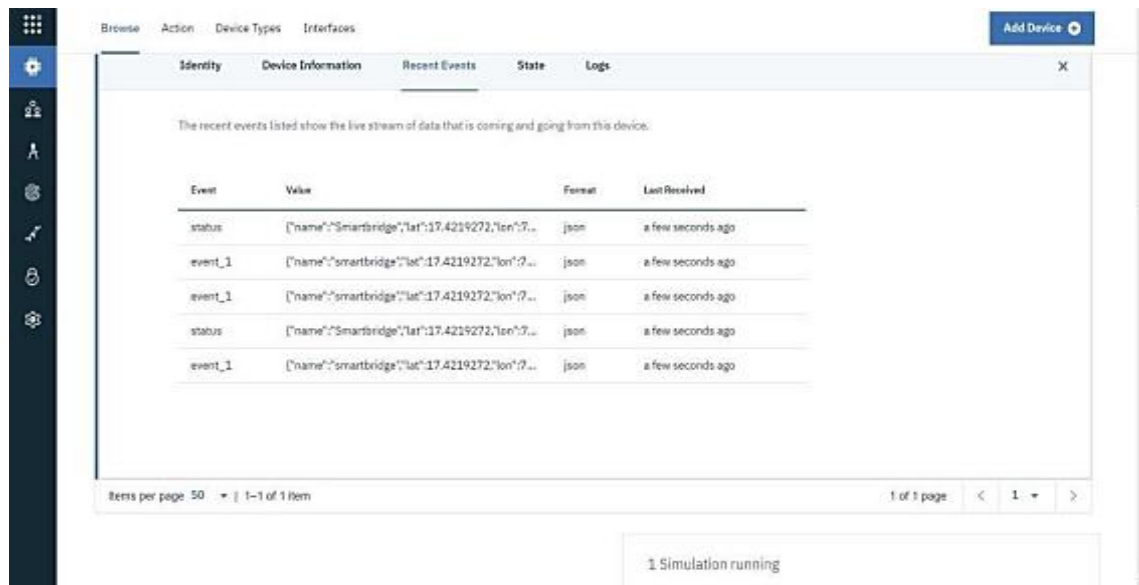
The screenshot displays the PyCharm IDE interface. The main editor window shows a Python script named `main.py` with the following code:

```
1 import json
2 import mydata as mydata
3 import wiotp.sdk.device
4 import time
5 from wiotp.sdk.device import client
6 myConfig = {
7     "identity": {
8         "orgId": "1degef",
9         "typeId": "child",
10        "deviceId": "1234"
11    },
12    "auth": {
13        "token": "9(_#4-qa+rAw?jPaN3"
14    }
15 }
16 deviceclient = wiotp.sdk.device.DeviceClient(config=myConfig)
```

The bottom panel shows the Run console output, indicating successful execution and data publication to the IBM IoT platform:

```
Run: C:\Users\Gowtham\PycharmProjects\pythonProject\venv\Scripts\python.exe C:\Users\Gowtham\PycharmProjects\pythonProject\main.py
Data published to IBM IoT platform : {'name': 'child', 'lat': 51.50153, 'lon': -0.11839}
2022-11-19 13:36:56,871 wiotp.sdk.device.client.DeviceClient INFO Connected successfully: d:1degef:child:1234
Data published to IBM IoT platform : {'name': 'child', 'lat': 51.50153, 'lon': -0.11839}
Data published to IBM IoT platform : {'name': 'child', 'lat': 51.50153, 'lon': -0.11839}
Data published to IBM IoT platform : {'name': 'child', 'lat': 51.50153, 'lon': -0.11839}
```

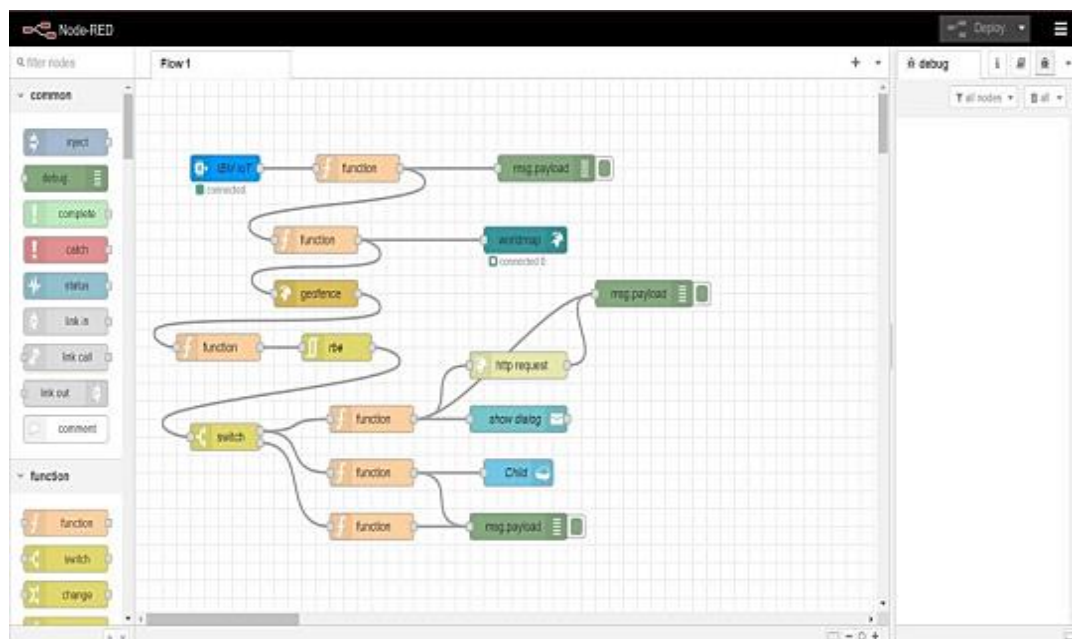
The status bar at the bottom indicates the file encoding is UTF-8, 4 spaces indentation, and Python 3.9 (pythonProject) (2) is the active interpreter.

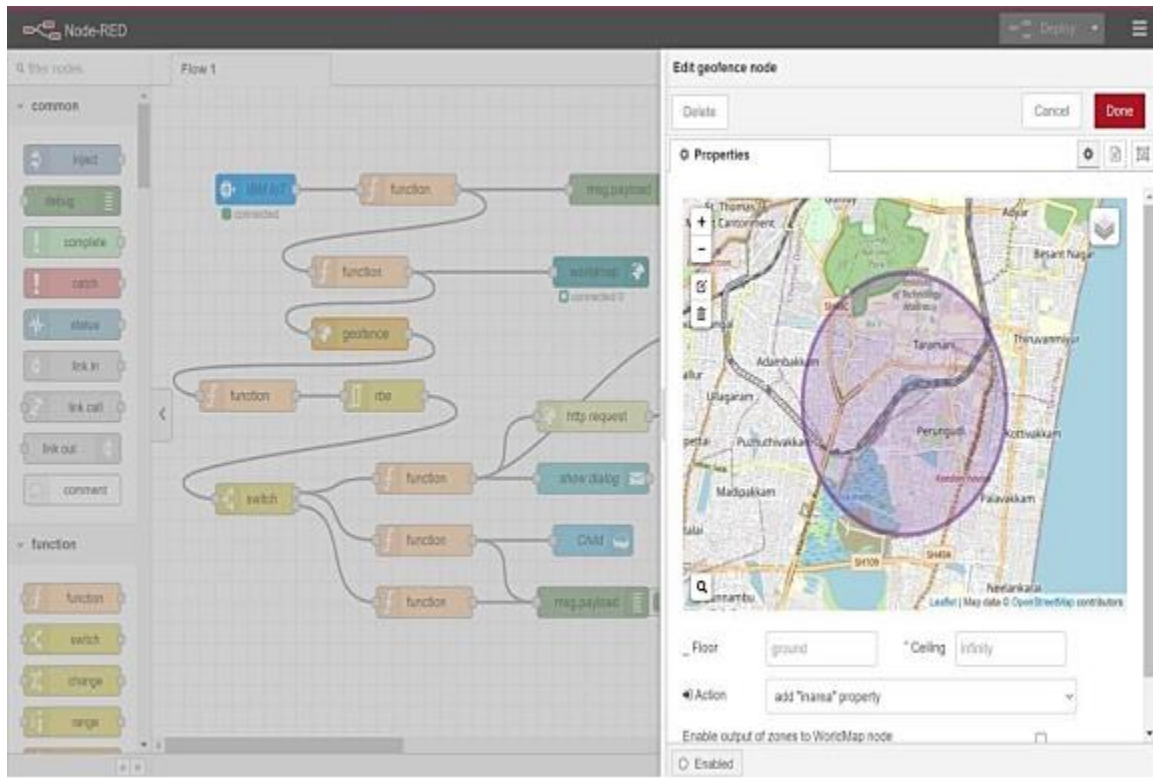


IBM Watson IoT

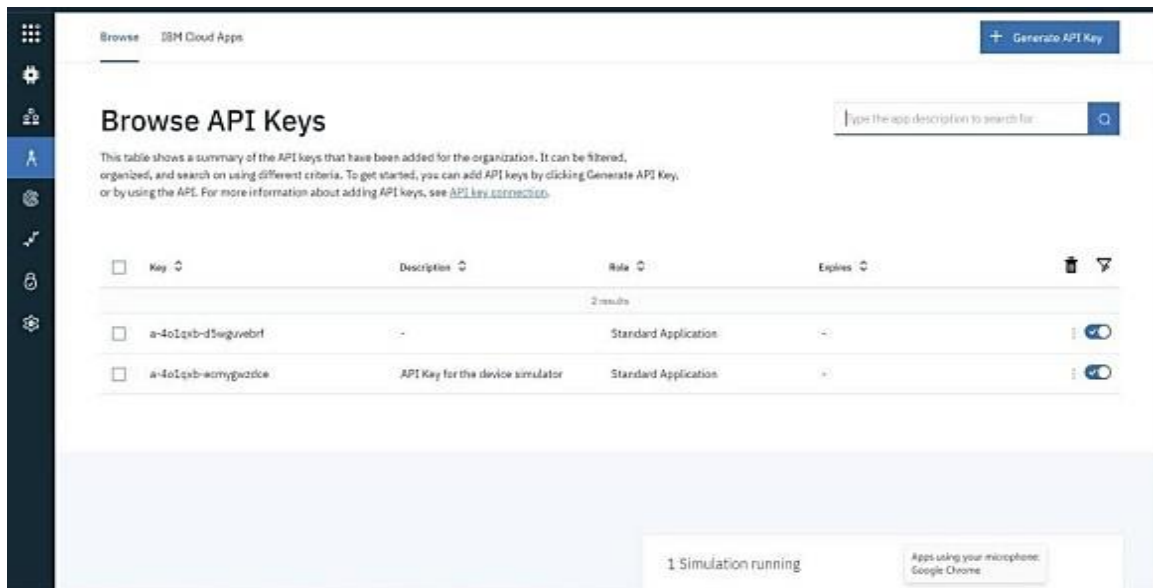
NODE-RED SERVICE

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

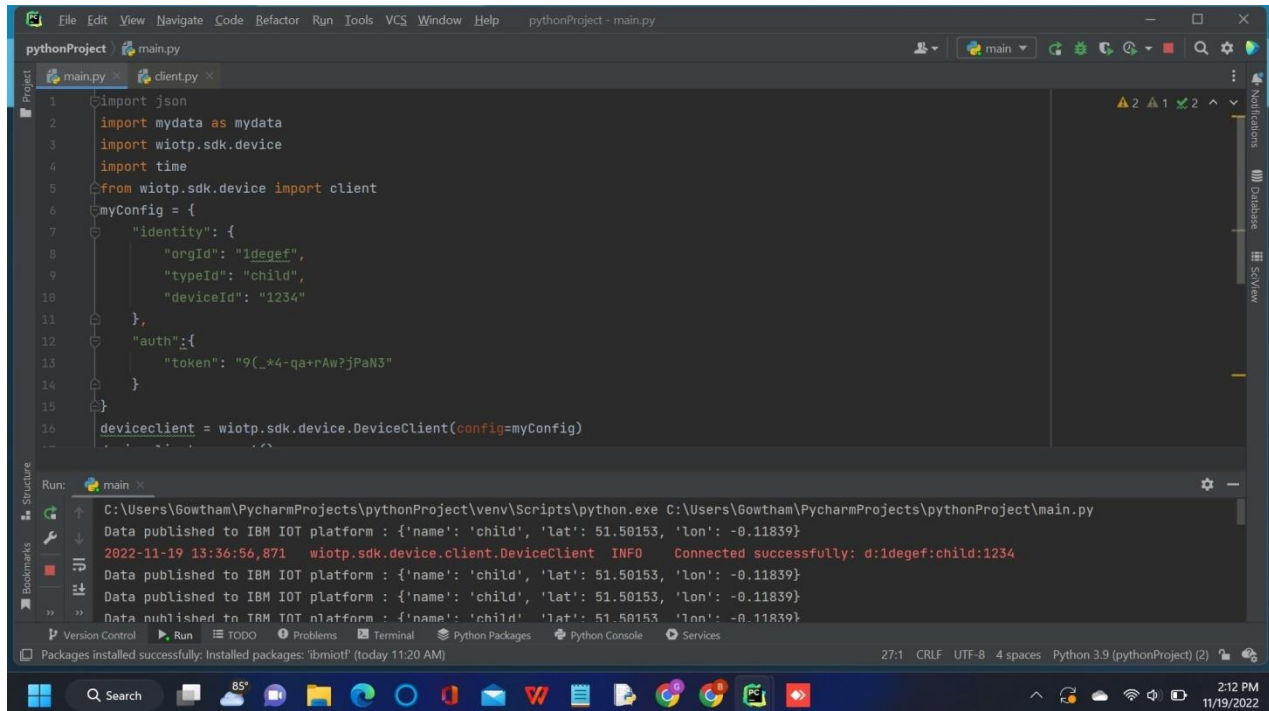




Connecting with IBM Cloud: Using IBM IOT nodethrough the API key



Transferring values from Python Code:



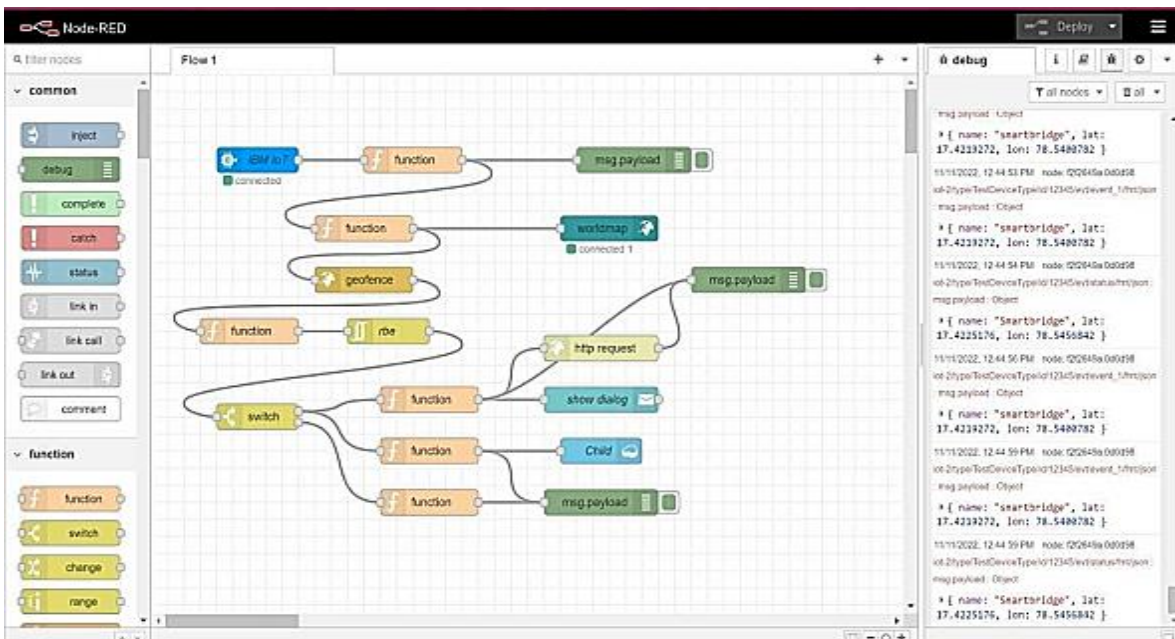
The screenshot shows the PyCharm IDE with a Python file named `main.py`. The code imports `json`, `mydata`, `wiotp.sdk.device`, and `time`. It defines a `myConfig` dictionary with `identity` and `auth` sections. The `identity` section contains `orgId`, `typeId`, and `deviceId`. The `auth` section contains a `token`. A `deviceclient` is instantiated using `wiotp.sdk.device.DeviceClient` with the `myConfig` dictionary. The code then publishes data to the IBM IoT platform.

```
1 import json
2 import mydata as mydata
3 import wiotp.sdk.device
4 import time
5 from wiotp.sdk.device import client
6 myConfig = {
7     "identity": {
8         "orgId": "1degef",
9         "typeId": "child",
10        "deviceId": "1234"
11    },
12    "auth": {
13        "token": "9(*4-qa+rAw?jPaN3"
14    }
15 }
16 deviceclient = wiotp.sdk.device.DeviceClient(config=myConfig)
```

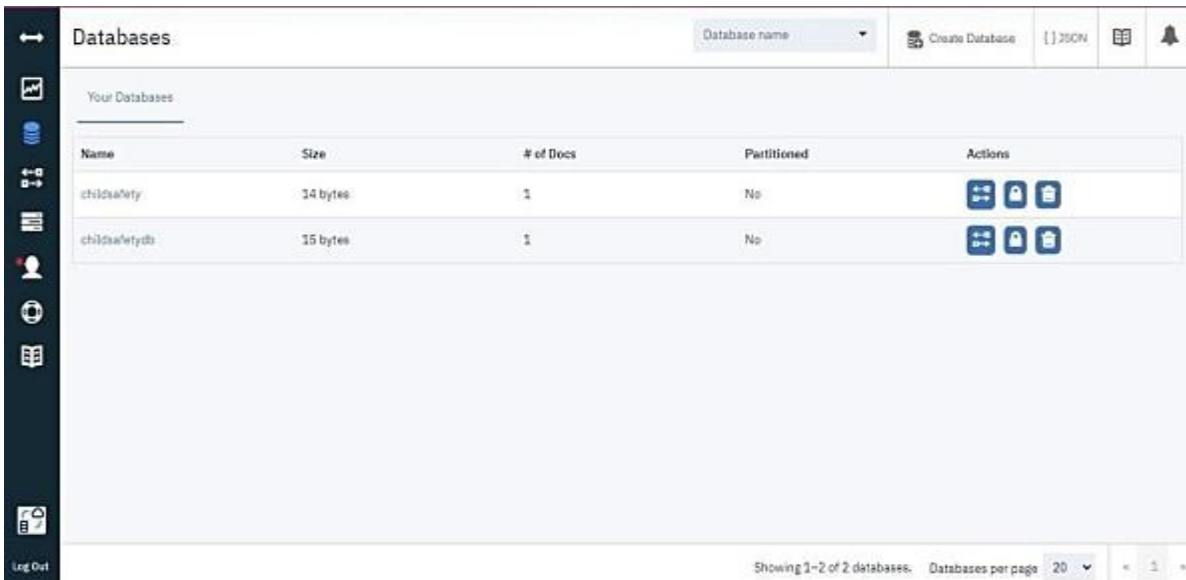
The Run console shows the following output:

```
C:\Users\Gowtham\PycharmProjects\pythonProject\venv\Scripts\python.exe C:\Users\Gowtham\PycharmProjects\pythonProject\main.py
Data published to IBM IoT platform : {'name': 'child', 'lat': 51.50153, 'lon': -0.11839}
2022-11-19 13:36:56,871 wiotp.sdk.device.client.DeviceClient INFO Connected successfully: d:1degef:child:1234
Data published to IBM IoT platform : {'name': 'child', 'lat': 51.50153, 'lon': -0.11839}
Data published to IBM IoT platform : {'name': 'child', 'lat': 51.50153, 'lon': -0.11839}
Data published to IBM IoT platform : {'name': 'child', 'lat': 51.50153, 'lon': -0.11839}
```

Node -RED



Creating Cloudant DB and integrating Node-Red with the Web UI

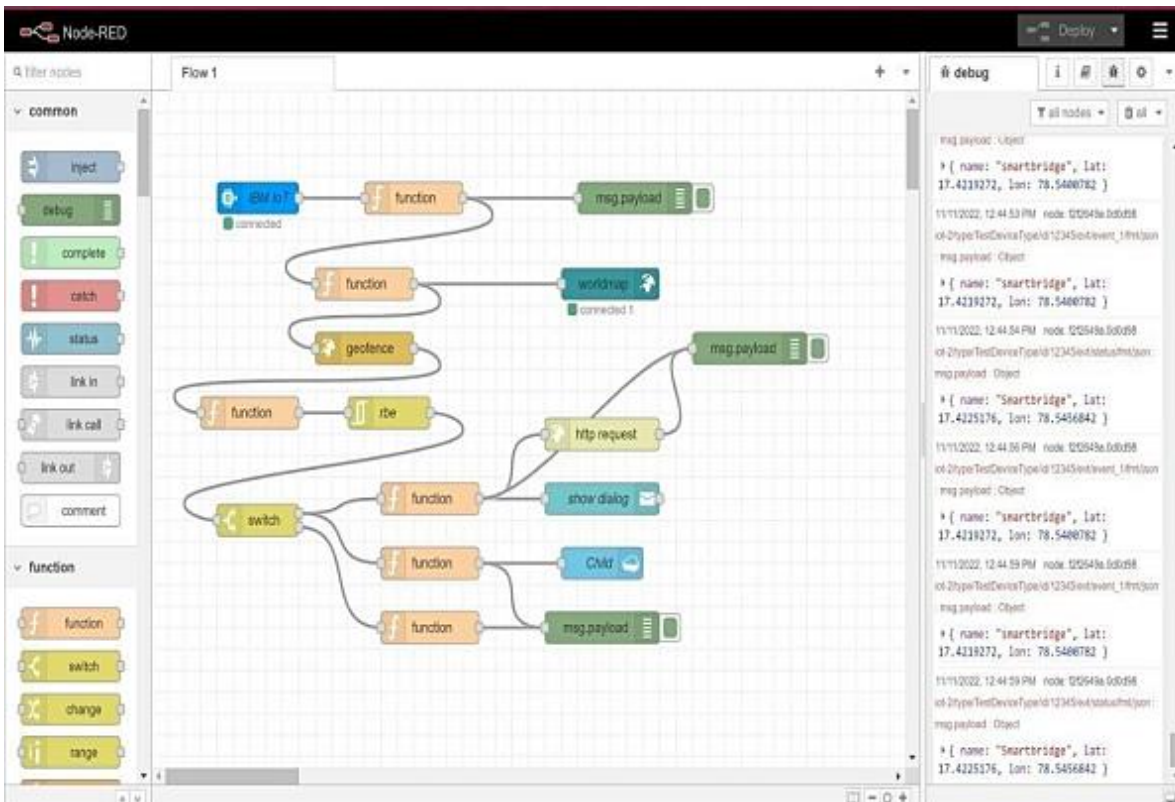


The screenshot shows the Cloudant web interface. At the top, there's a 'Databases' section with a 'Database name' dropdown, a 'Create Database' button, and links for 'JSON', 'API', and 'Help'. Below this, a table lists 'Your Databases'.

Name	Size	# of Docs	Partitioned	Actions
childda/safety	14 bytes	1	No	[Icons: Add, Lock, Delete]
childda/safetydb	15 bytes	1	No	[Icons: Add, Lock, Delete]

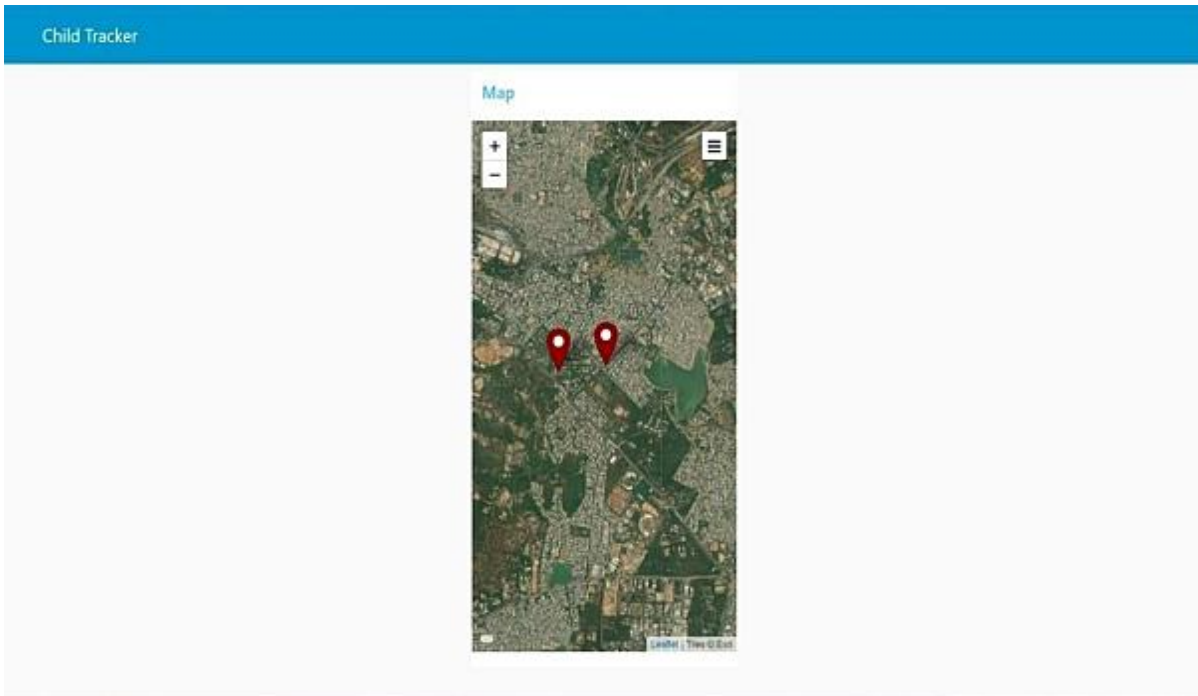
At the bottom right, it says 'Showing 1-2 of 2 databases. Databases per page 20'.

Node-Red Service with Cloudant Database:

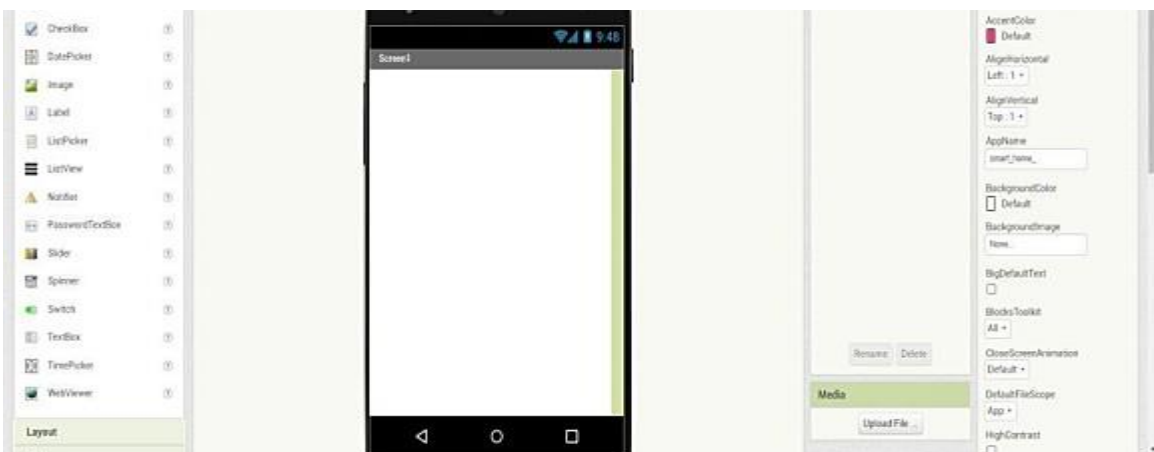


The screenshot shows the Node-RED web interface. On the left, there's a 'common' section with nodes like 'inject', 'debug', 'complete', 'catch', 'status', 'link in', 'link out', 'link call', and 'comment'. Below that is a 'function' section with 'function', 'switch', 'change', and 'range' nodes. The main workspace shows a flow diagram with several 'function' nodes, a 'switch' node, a 'geofence' node, a 'worldmap' node, a 'http request' node, and a 'show dialog' node. On the right, there's a 'debug' console showing a series of log messages, including 'msg.payload: Object' and 'msg.payload: Client'.

Node-RED Dashboard(Web ui):

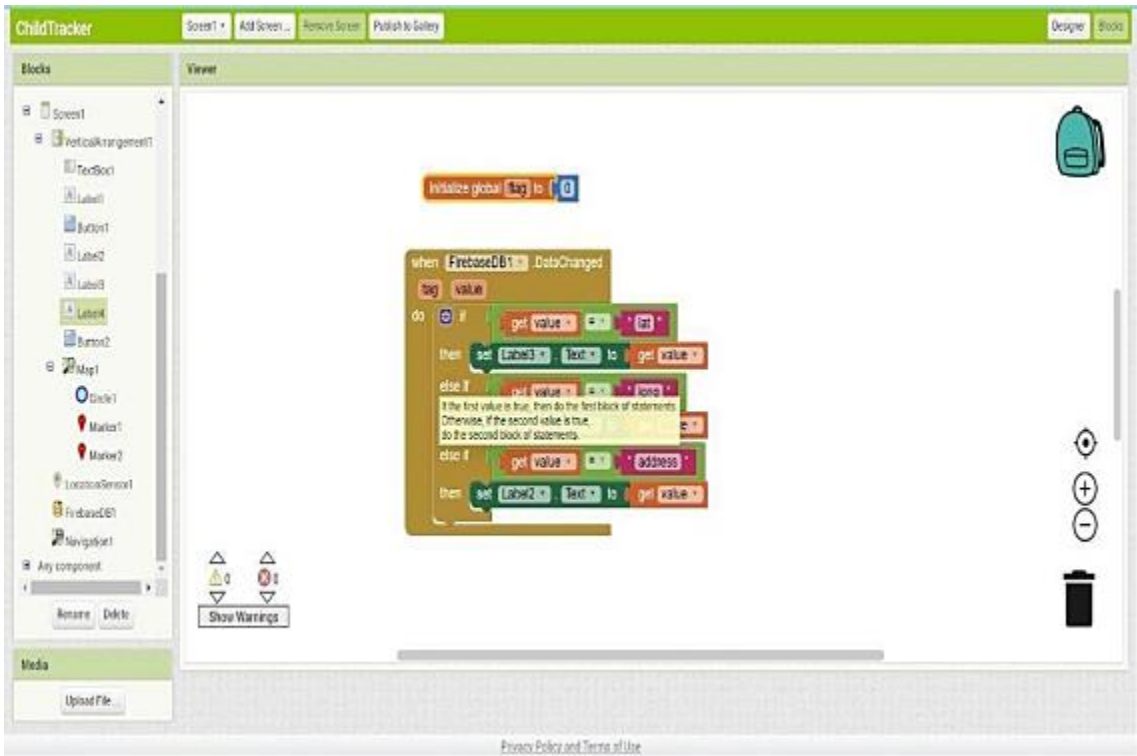


Creating the MIT app and Showing the child's locationCreate App in MITApp inventor:

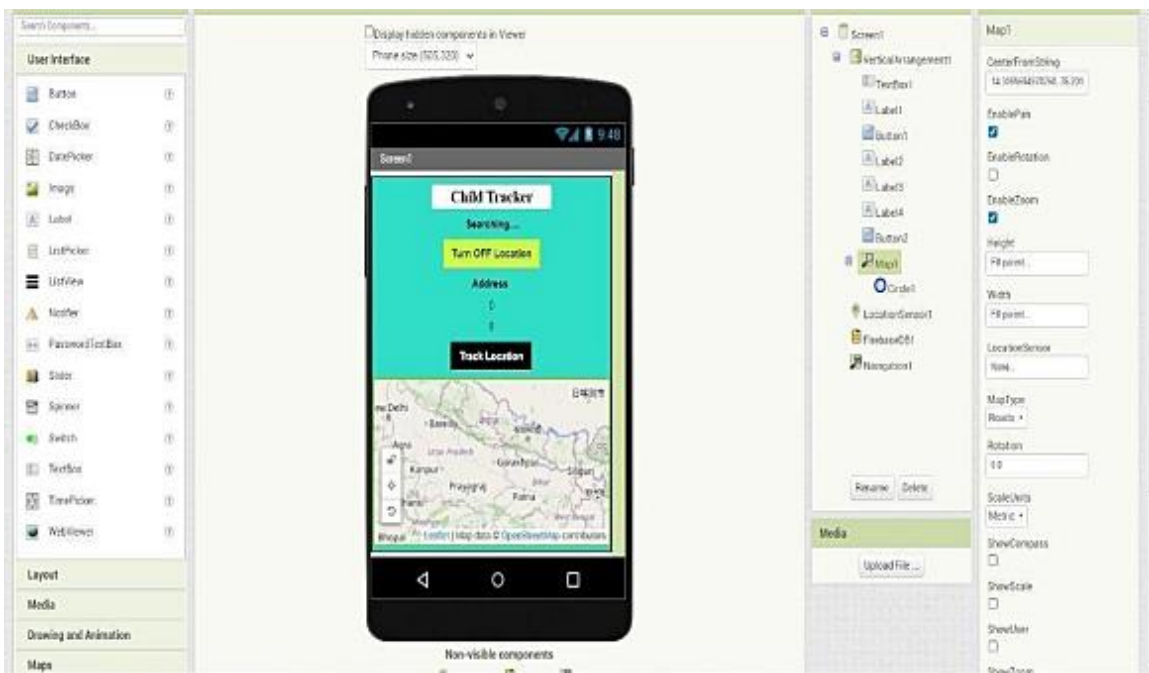


Block

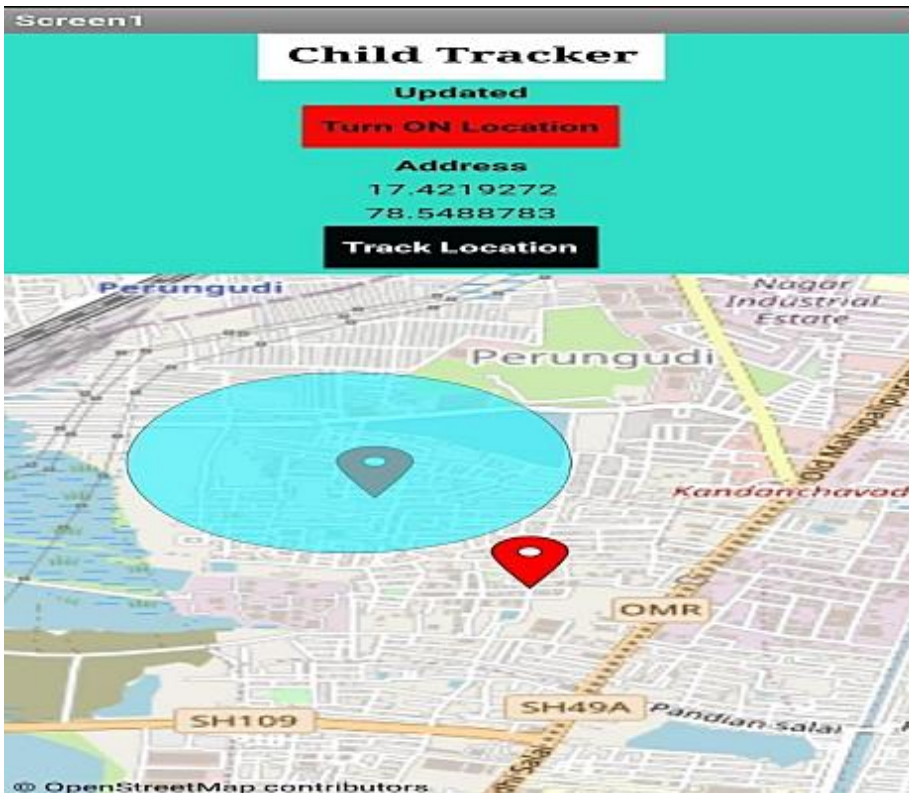
Configuration:



Output(App inventor):



Location Status:



Sprint Delivery Schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Create device	USN-1	Create the Iot platform	10	High	BHUVANESHWARI.M MAHESHWARI.M PAVITHRA .R INDHUMATHI.P
Sprint-1	Database	USN-2	Connect to IBM Cloud	5	High	BHUVANESHWARI.M MAHESHWARI.M PAVITHRA .R INDHUMATHI.P
Sprint-1	Authentication	USN-3	Connecting IBM Watson and Run the python code	5	High	BHUVANESHWARI.M MAHESHWARI.M PAVITHRA .R INDHUMATHI.P
Sprint-2	service	USN-4	Creating node red service	5	Low	BHUVANESHWARI.M MAHESHWARI.M PAVITHRA .R INDHUMATHI.P

Sprint-2	Use API key	USN-5	Using IBM Iot node through API key	10	Medium	BHUVANESH W ARI M MAHESHWAR I .M PAVITHRA .R INDHUMATHI .P
Sprint	Functional Requirement (Epic)	User Story Number	User Story Task	Story Points	Priority	Team members
Sprint-2	Pythoncode	USN-6	Transferring values from python code	5	Medium	BHUVANESH W ARI M MAHESHWAR I .M PAVITHRA .R INDHUMATHI .P

Sprint-3	App information	USN-8	Create app in Mit app inventor	10	High	BHUVANESHW ARI M MAHESHWARI .M PAVITHRA .R INDHUMATHI .P
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Sprint-4	Service	USN-9	Connecting the Node-Red Service	10	Medium	BHUVANESH WARI M MAHESHWAR I .M PAVITHRA .R INDHUMATHI .P
Sprint-4	User interface	USN-10	MIT app With Web UI .	5	Low	BHUVANESH WARI M MAHESHWAR I .M PAVITHRA .R INDHUMATHI .P
Sprint-4	Location tracking	USN-11	Show the child location and notify	5	Medium	BHUVANESHW ARI M MAHESHWARI .M PAVITHRA .R INDHUMATHI .P

Project Tracker, Velocity & Burn down Chart

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date(Planned)	Story Points Completed (as on Planned End Date)	Sprint ReleaseDate (Actual)
Sprint	20	6 Days	24 Oct 2022	24 Oct 2022	20	29 Oct 2022
Sprint	20	6 Days	05 Nov 2022	05 Nov 2022		
Sprint	20	6 Days	06 Nov 2022	06 Nov 2022		
Sprint	20	6 Days	06 Nov 2022	06 Nov 2022		

Velocity:

Imagine we have a 10-day sprint duration, and the velocity of the team is 20(points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

7. CODING & SOLUTIONING

FEATURE 1

Camera Module

For a better alternative than Bluetooth, Wi-Fi or ZigBee due to the short range and connectivity issues. Therefore, for this project using the GSM technologies is beneficial for us as the cellular range is vast and since all the communication between the wearable and the user is taking place via SMS, therefore no internet connectivity is required. But, still, the GSM module possesses the added advantage of using GPRS which enables the board to use the internet if required. Whereas for camera module which supports video streaming but due to the constraint of trying to use only SMS, therefore only four wire connections will be taking place. The red and black wires will be connected directly to +5V and GND respectively to the Arduino Uno board.

Whereas for the RX pin which will be used for sending data via Arduino Uno and GSM board and for the TX pin which will be utilized for surveillance of the child surroundings, to get a clearer picture of the location or place, this wearable can also be incorporated a camera module in it. The hardware that can be used would be an Adafruit TTL serial camera or any other camera module. Since the major focus of this wearable is the GSM module which is receiving incoming data via from the modules.

The 10 K resistor divider, the camera's serial data pins are 3.3V logic, and it would be a good idea to divide the 5V down so that it's 2.5V. Normally the output from the digital 0 pin is 5V high, the way we connected the resistors is so the camera input (white wire) never goes above 3.3V. To talk to the camera, the Arduino Uno will be using two digital pins and a software serial port to communicate to the camera. Since the camera or the Arduino Uno do not have enough onboard memory to save snapshots clicked and store it

temporarily, therefore an external storage source microSD board will be used to save the images temporarily. The camera works on a standard baud rate of 38400 baud. The camera will be collecting information in the same manner as the GPS module does. It will be on standby conserving power waiting for the particular keyword "SNAPSHOT" or any other defined in the program to be sent from the user's smartphone to the GSM module will activate the camera by the Arduino Uno to start clicking a snapshot of the surrounding and save the file temporarily on the external microSD card. After which Arduino Uno will access the saved images from the SD storage and transfer it to the GSM module which send it to the user via SMS/MMS text.

FEATURE 2

Android App

The idea behind the Android app has been derived from having an automated bot to respond to text message responses from the user. It will provide the user with predefined response options at just the click of a button. The user doesn't need to memorize the specific keywords to send. Also, the bot will be pre-programmed to present the user with a set of predefined keyword options such as "LOCATION," "SNAPSHOT," "SOS," etc. Whereas for the future aspect of this wearable device based on what type sensor is added to it, additional specific keywords could be added such as, "HUMIDITY," "ALTITUDE," etc. This android app provides more interface to the user which help to understand easily. The main idea in this android app is to provide keyword button i.e. that for getting location we have a specific button, by pressing this button we get the location instead of typing the keyword which ease our work.

8. TESTING

TEST CASES

This report shows the number of test cases that have passed, failed, and untested

Section	Total Cases	Not Tested	fail	pass
Print Engine	7	0	0	7
Client Application	51	0	0	51
Security	2	0	0	2

User Acceptance Testing

1 Purpose of Document The purpose of this document is to briefly explain the test coverage and open issues of the [ProductName] project at the time of the release to User Acceptance Testing (UAT).

2 Defect Analysis This report shows the number of resolved or closed bugs at each severity level, and how they were resolved

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Severity 5
By Design	10	4	2	3	20
Duplicate	1	0	3	0	4
External	2	3	0	1	6
Fixed	11	2	4	20	37
Not Reproduced	0	0	1	0	1
Skipped	0	0	1	1	2
Won't Fix	0	5	2	1	8

Totals	24	14	13	26	77
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9 RESULT

PERFORMANCE MERTICS

One of the module in our project is temperature sensor which is used to detect the temperature of the child as well as the surrounding temperature. If there occurs any abnormal rise or fall in temperature in the body of the child or in the surrounding it will notify the user as per the coded time delay as shown in the picture. It will show the temperature and humidity values notifies the user based on the predefined value abnormal fall or rise scenarios. The parameters such as touch, temperature & heartbeat of the child are used for parametric analysis and results are plotted for the same. Demerits: To implement the IoT device which ensures the complete solution for child safety problems.

10. ADVANTAGE & DISADVANTAGE

ADVANTAGES

- Staying Connected
- Data Accuracy
- Efficiency
- It can be used in any cell phone and doesn't necessarily require an expensive smartphone

DISADVANTAGES

- Security and privacy concerns
- Health Risks
- Limitations of wearable Technologies

- Linked Devices
- Distraction from work- related activities
- High cost but once it is implemented the expenses can be reduced

11. CONCLUSION

The word Future resembles the word Children. As Dr. A.P.J Abdul Kalam's words "Youngsters are the future pillars of one's nation", today's children are tomorrow's youngsters, preserving their dreams and life for a better future is necessary. Therefore, each and every parent should take care of their own children, without letting them to fall into the dark world of abuse, which entirely ruin them physically, mentally and emotionally destroying our future.

Hence, considering the importance of our future, our project makes it easy for parents to track their children and to visually monitor them on regular basis, which makes them ensure the safety of their children and reduces the rate of incidents of child abuse.

12. FUTURE SCOPE

In our system, we automatically monitor the child in real time using Internet of Things, with the help of GPS, GSM, and Raspberry Pi. This system requires network connectivity, satellite communication, and high-speed data connection when we use web camera and GPS to live monitor.

It is difficult to monitor when there occurs any hindrance to satellite communication or any network issue. There also occurs time delay in video streaming through the server.

Hence in the future, these issues can be overcome by using Zigbee concept or accessing the system without internet and using high-speed server transmission.

13. APPENDIX

PYTHON

SCRIPT

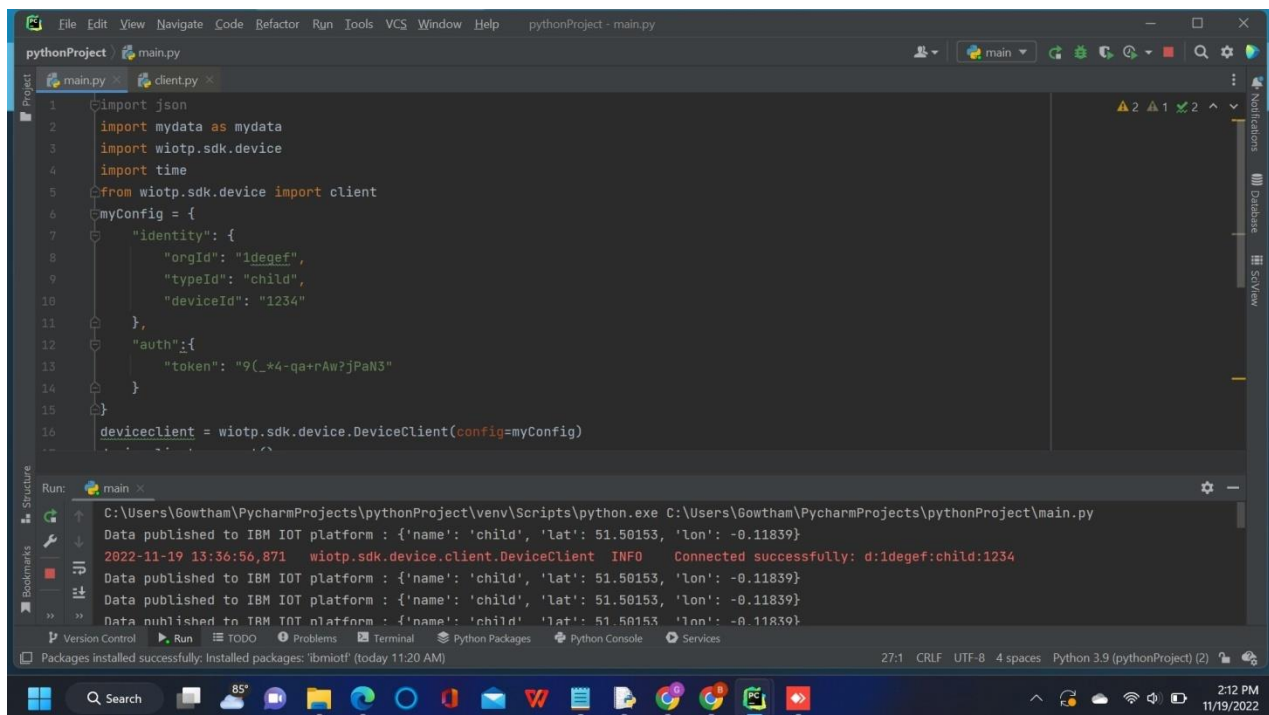
```
import json
import wiotp.sdk.device
import time
myconfig = {
    "identity": {
        "orgId": "bgfov",
        "typeId": "",
        "deviceId": "199795"
    },
    "auth": {
        "token": "&B1pNKBKBhkavi8KHc"
    }
}
client = wiotp.sdk.device.Deviceclient(config=myconfig,
logHandlers=None)
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 platform :",myData)time.sleep(5)
client.disconnect()
```

OUTPUT:

The screenshot shows the PyCharm IDE interface. The top pane displays a Python script named 'main.py' with the following code:

```
1 import json
2 import mydata as mydata
3 import wiotp.sdk.device
4 import time
5 from wiotp.sdk.device import client
6 myConfig = {
7     "identity": {
8         "orgId": "1degef",
9         "typeId": "child",
10        "deviceId": "1234"
11    },
12    "auth": {
13        "token": "9[_*4-qa+rAw?jPaN3"
14    }
15 }
16 deviceclient = wiotp.sdk.device.DeviceClient(config=myConfig)
```

The bottom pane shows the 'Run' output, which contains the following log messages:

```
C:\Users\Gowtham\PycharmProjects\pythonProject\venv\Scripts\python.exe C:\Users\Gowtham\PycharmProjects\pythonProject\main.py
Data published to IBM IOT platform : {'name': 'child', 'lat': 51.50153, 'lon': -0.11839}
2022-11-19 13:36:56,871 wiotp.sdk.device.client.DeviceClient INFO Connected successfully: d:1degef:child:1234
Data published to IBM IOT platform : {'name': 'child', 'lat': 51.50153, 'lon': -0.11839}
Data published to IBM IOT platform : {'name': 'child', 'lat': 51.50153, 'lon': -0.11839}
Data published to IBM IOT platform : {'name': 'child', 'lat': 51.50153, 'lon': -0.11839}
```

GITHUB AND PROJECT DEMO LINK

GITHUB LINK

<https://github.com/IBM-EPBL/IBM-Project-14466-1659585992>

PROJECT DEMO LINK

YOUTUBE LINK

<https://youtu.be/48IAEPLr7Ow>

DRIVE LINK

https://drive.google.com/file/d/1ONbfmSY1R4kwVyNN5pDdyoYhnuOGdpMb/view?usp=share_link

