ADHI COLLEGE OF ENGINEERING AND TECHNOLOGY

(An ISO Certified Institution Approved by AICTE, New Delhi Affiliated by Anna University, Chennai)

CHENNAI-631 605

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

PROJECT REPORT

PROJECT TITLE

IOT BASED SAFETY GADGET FOR CHILD SAFETYMONITORING AND NOTIFICATION

TEAM ID: PNT2022TMID37747

TEAM MEMBERS

N.PRIYADHARSHINI (TEAM LEAD)

P.DURGA

P.JANANI

E.PRABADEVI

ABSTRACT

This paper is mainly streamed towards child safety solutions by developing 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, also a wireless technology is implemented on device which is useful to bound the device within a region of monitoring range, If device is moving out of monitoring range then an alert will be triggered on binding gadget, this helps you keep a virtual eye on child. 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 on hand or not using contact switch and alert the parent as soon as it is unplugged.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

The introduction about the child safety monitoring and notifying using IOT based gadgets are briefly discussed in this chapter.

1. PROJECT OVERVIEW

The internet of things (IOT) refers to the set of devices and system that stay 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 phone to 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 from hand, 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

1.1 PURPOSE

a. 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 their child.

b. 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.

C. 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 database.

d.Child can also initiate emergency notification to the parents in-case of unsafe situation.

Fig 1.1 Child Safety Using Geofence

a. Enable tracking of the child's location and capturing of data remotely such as where the child located distance etc.

b. To show the child's actual data with reference values .

c. Enable sending of notification if the child is out of location or when the device realizes abnormal conditions/ situations.

d. Develop a prototype of IOT wearable smart band connected to parent's Mobile apps so that they can monitor the actual condition of children at anytime and anyplace.

The remaining chapters of the project are organized as follows, Chapter 2 discusses the literature survey gone through for the project, Chapter 3 briefs about the ideation & proposed solution, Chapter 4 explains the requirement analysis, Chapter 5 explains about the project design, Chapter 6 depicts the project planning and scheduling of this project, Chapter 7 and 8 shows the coding and outcome of the project, Chapter 9 shows the advantages and disadvantages of the project,Chapter 10 concludes the project continued with the futurescopeexplainedinChapter11.

CHAPTER 2

LITERATURE SURVEY

The introduction about the literature survey gone through for the project are briefly discussed in this chapter.

2.1 EXISTING PROBLEM

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 their child. 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. 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 can also initiate emergency notification to the parents in-case of unsafe situation.

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.

2.2REFERENCE

[1] **SMART IOT DEVICE FOR CHILD SAFETY AND TRACKING.**

Authors: M Nandini Priyanka, S Murugan, K. N. H. Srinivas, T. D. S. Sarveswararao, E. Kusuma Kumari. **Published in**: 2019 IEEE.

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 .

Merits: 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

[2] CHILD SAFETY WEARABLE DEVICE

Authors: Akash Moodbidri, Hamid Shahnasser **Published in**: 2017 IEEE.

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

Merits: This wearable 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.

Demerits: 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 fora longer time.

[4**] CHILD SAFETY&TRACKING MANAGEMENT SYSTEM USING GPS**

Author:AditiGupta,VibhorHarit.**Publishedin:** 2016 IEEE.

This paper 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.

Merits: The advantages of smart phones which offers rich features like Google-maps, GPS, SMS etc.
Demerits: This system is unable to sense human behavior of child.

[4]CHILDREN LOCATION MONITORING ON GOOGLE MAPS USING GPS AND GSM
Authors: Dheeraj Sunehera, Pottabhatini Laxmi Priya.**Published in**: 2016 IEEE.

This paper 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.

Merits: A child tracking system using android terminal and hoc networks.

Demerits:This device cannot be used in rural areas.

[5**]Child Safety Monitoring System Based on IOT**

Author:N.senthamilarasi1,N.Divyabharathi2,D.Ezhilarasi3,R.B.Sangavi4

A.**RIID-based system for school Children Transportation Safety Enhancement** :

This paper presents a system to monitor pick-up/drop-off of school children to enhance the safety of children during daily transportation from and to school. The system consists of two main units, a bus unit, and a school unit. The bus unit the system is used to detect when a child boards or leaves the bus. This information is communicated to the school unit that identifies which of the children did not board or leave the bus and issues an alert

message accordingly. The system has a developed web-based database-driven application that facilities its management and provides useful information about the children to authorized personnel. A complete prototype of the proposed system was implemented and tested to validate the system functionality. The results show that the system is promising for daily transportation safety.

B**. Design and development of an IOT based wearable device for the safety and security of women and girl children:**

The aim of this work is to develop a wearable device for the safety and protection of women and girls. This objective is achieved by the analysis of physiological signals in conjunction with body position. The physiological signals that are analyzed are galvanic skin resistance and body temperature. Body position is determined by acquiring raw accelerometer data from a triple axis accelerometer. Acquisition of raw data is then followed by activity recognition which is a process of employing a specialized machine learning algorithm. Real-time monitoring of data is achieved by wirelessly sending sensor data to an open source Cloud Platform. Analysis of the data is done on MATLAB simultaneously. This device is programmed to continuously monitor the subject's parameters and take action when any dangerous situation presents itself. It does so by detecting the change in the monitored signals,following which appropriate action is taken by means of

sending notifications/alerts todesigned individuals.

C.Child Safety Wearable Device: Parents need not have a smart mobile. Set of keywords are used to gain information from the kit. LOCATION keyword is used to obtain the location of the child. UV keyword is used to obtain the temperature of the surroundings. BUZZ keyword is used to turn on the buzzer which is fixed in that device. SOS is used to send a signal to the device. D. Smart Intelligent System for Women and Child Security: A portable device which will have a pressure switch. As soon as an assailant is about to attack the person or when the person senses any insecurity from a stranger, he/she can then put pressure on the device by squeezing or compressing it. Instantly the pressure sensor senses this pressure and a conventional SMS, with the victim's location will be sent to their parents/guardian cell phone numbers stored in the device while purchasing it, followed by a call. If the call is unanswered for a prolonged time, a call will be redirected to the police and the same message will be sent. Additionally, if theperson crosses some area which is usually not accessed by the person then a message with the real-time location is sent to the parent/guardian's phone via conventional SMS.

2.3 PROBLEM STATEMENT DEFINITION

There are multiple news-sharing apps used by a single user and are often spammed with notifications. There is also a lot of fake news which gets shared. A news sharing app wants to help users find relevant and important news easily every day and also understand explicitly that the news is not fake but from proper sources. While Opening app for reading a news, I'm literally getting too much of advertisements in between the content because of these ads I was unable to read the content properly and it makes me feel irritated, App wants to help users find relevant and important news easily every day and also understand explicitly without the ads.

Proble Statem ent (PS)	**I am (Custom er)**	**I'm trying to**	**But**	**Because**	**Which makesme feel**	
PS-1	PAREN T	TRACK THE LOCATIO N OF MY CHILD	I'M UNAB LE TO TRAC K IT	I DON'T HAVE ANYWA Y TO TRACK MY CHILD FROM ANYWHE RE	PANIC, FEAR AND LACK OF CONCENTRATION	

PS-2	KID	ESCAPE FROM EMERGENCY SITUATION	I DON'T KNOW TO CONTACT MY PARENTS	I'M TOO YOUNG IN AGE TO HAVE THE ENOUGH KNOWLEDGE	TO CRY,ANXIOUS AND FEAR
PS-3	Parent	Take care of my child	can't look after him/her after he/she leaves anywhere	there is no way of tracking him/her	worried
PS-4	Child	I give information about where am i to my parents frequently	not able to give	i tend to forget	worried

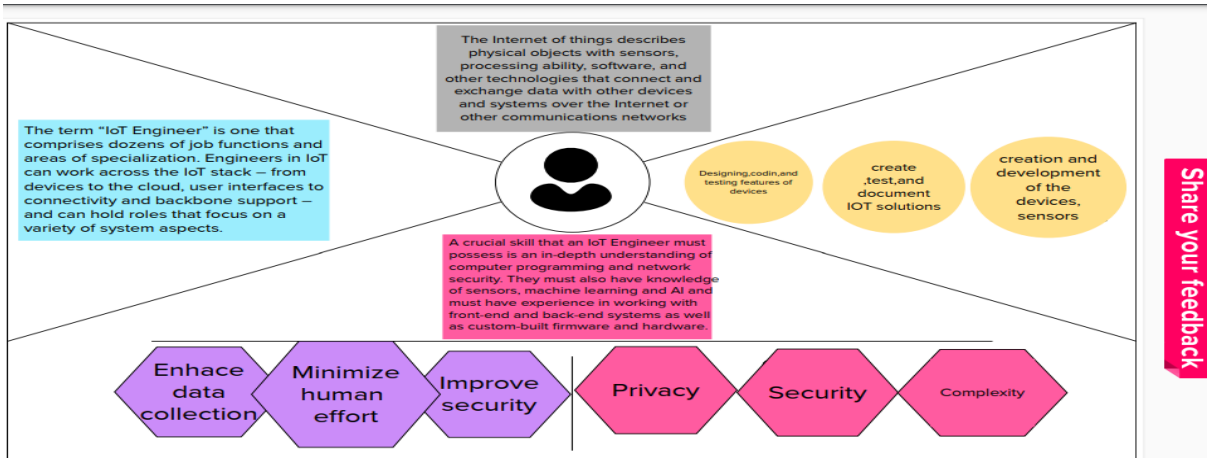
CHAPTER 3

IDEATION &PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS:

An empathy map is a simple, easy –to-digest visual that captures knowledge about a user's behaviors and attitudes. It is a useful tool to helps teams better understand their users.

Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenge.



3.2 IDEATION & BRAINSTORMING

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

PRIYADHARSHINI N

High dependability and data accuracy

Eradicates ambiguity and Pays way for a tech-driven community

instantaneous Message generation

Create unassailable environment

DURGA P

Real time Monitoring and safety support

Device that measures subterranean distance

Detect the status of the child

Toddlers in hamlet and metropolis can be saved

JANANI P

Acquiring location coordinates

Short response time

It gives a sense of assurance and peace of mind to the parents

Information is effortlessly accessible even if we are away from the actual location

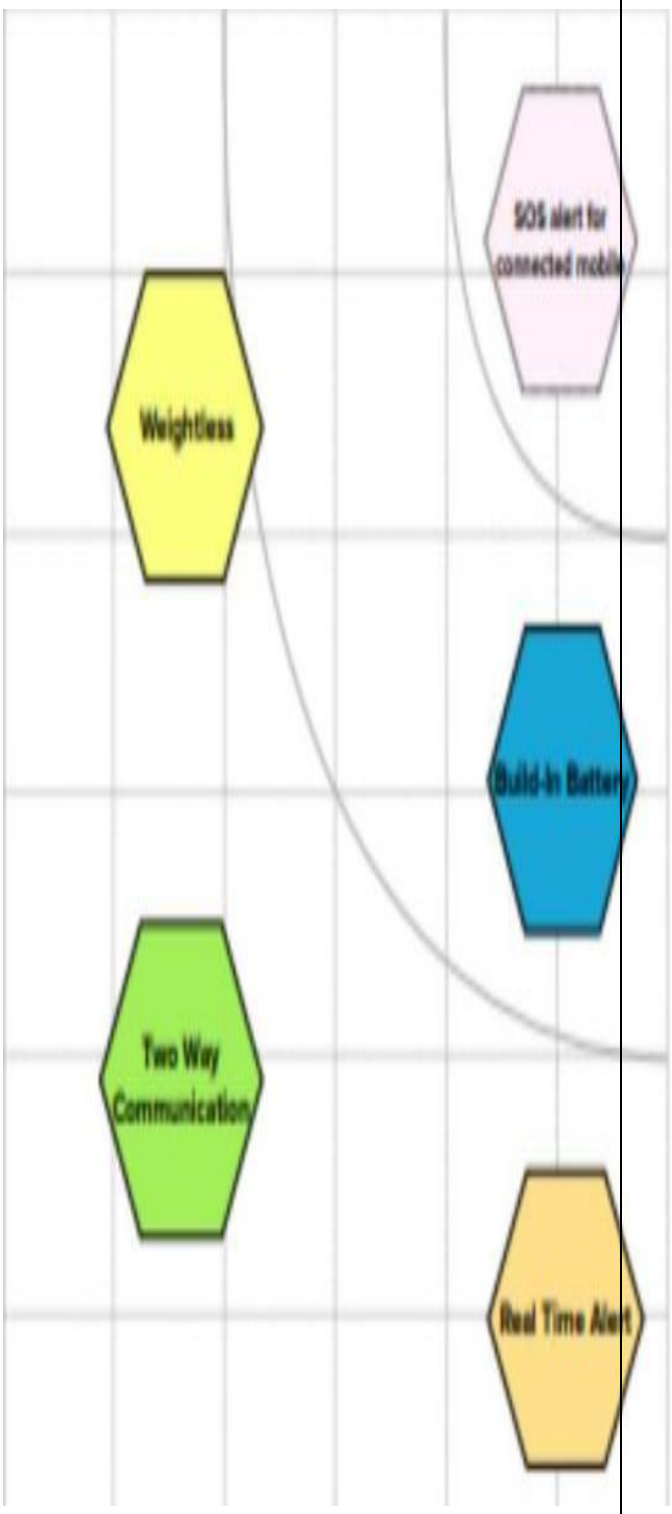
PRABADEVI ES

Trace whereabouts and Minimise the Tragedy

GPRS block is activated with SIM card on board

Durability and flexibility

ceaseless Surviliance and instantaneous notification regime

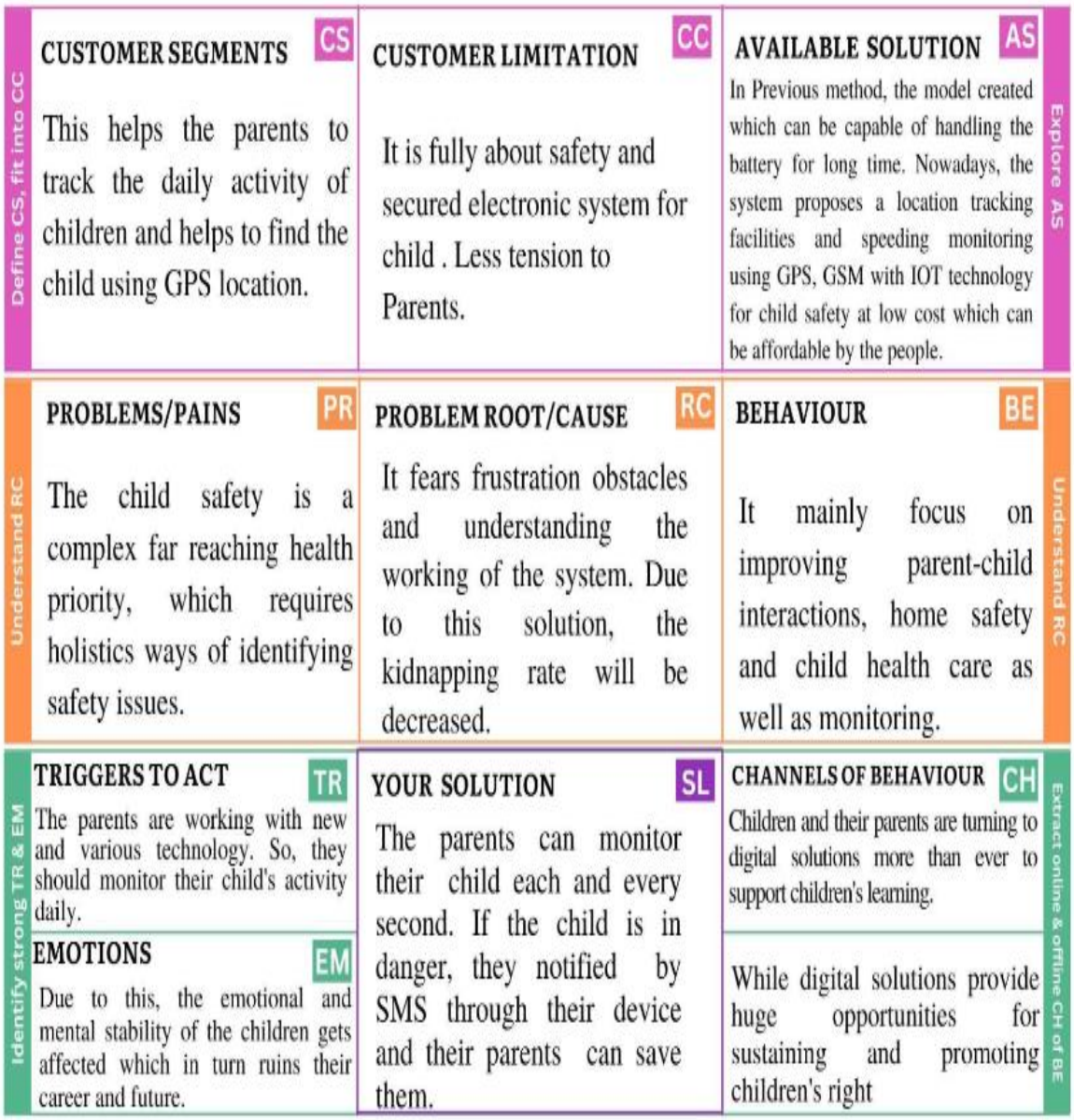


3.1PROPOSED SOLUTION

S. No	Parameter	Description
1.	Problem Statement (Problem to be solved)	Child abductors are continually abducting the children from parents/legally appointedguardians to get the ransom/money for their benefit. Where the Parents have no supplementary option but to view the exactscenario of children's intuitions. The crisis outturn of kidnapping can be highly cynicaland perpetual, more measures must be taken to protect children against abductionand its impacts.
2.	Idea / Solution description	Our Smart IOT device for tracking the children is developed to aid parents fordetection. In this project, we are going to develop a wearable safety gadget to display the live location of a children at anytime on the parent's mobile to set the seal on their safety. The application is to track down the children when they're within Bluetooth range, also functions when the kids go farther afield. Its competence as a trackeris outstanding if you live in densely populated areas like citiesor big towns. This means that will able to see the identity of the participating devices andalso It helps to diminish their vulnerability in harmful situations and also protects the children in any emergency situations.
3.	Novelty / Uniqueness	The system software involuntarilyalerts the parent/guardian by redirecting a text Message. Contrary to other devices, it has plenty of characteristics like the development of sensors technology, availability of internet-connected devicesand the data analysis algorithms makingIOT devices act smart in emergencies without human intervention.

4.	Social Impact / Customer Satisfaction	Child abduction is a scorching subject all over the world. It is a complex crime thatcan impair a child's future. Parents should ensure that
		their little ones are secure and are been protected from the menace of injury. In case of situation arises, notifications will beconsigned to the Parents so that measurescan be done at the apparent time, Via this, Child Safety can be assured and will take the edge off the crime rate. The parent can keep their children Securewith tension-free minded when they are away from them. Precisely predicting the circumstances of the children and swiftly sensing the problems around children will make parents at ease. It will be great helpful to parents who are busy workers not having time to watch over their children, and easy to operate so anyone can handle it.
5.	Business Model (Revenue Model)	In this contemporary market,this would be desired as kids need more protection in the current times. The gadget can be acquired at an affordable rate. Where Our gadget possesses a lot of ingenious attributes andit would be accessible and beneficial to everyone so it is a foundation for a prominent revolution in merchandise. It is adevice with numerous subscriptions for tracing and notification assistance.
6.	Scalability of the Solution	This solution could be further enhanced by the installation of the mini camera inside a smart gadget for exemplary security and protection so that a glimpse can be caught on the live footage on the parental phone during panic circumstances. If an intricacy arises parents can see some of the attributes like the location, temperature andheartbeat of the child along with living perspective around the children without deterrence.

3.4 PROBLEM SOLUTION FIT



CHAPTER 4

REQUIREMENTS ANALYSIS

In this chapter, the requirement analysis of the proposed system has been discussed along with the brief explanation about its advantages.

4.1 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 website Registration through app
FR-2	User Confirmation	Confirmation via EmailConfirmation via OTP
FR-3	User login	Setting up User Id and password
FR-4	App permission	Grant the permission for the app to access location, contact etc..
FR-5	Interface with the Device	Connecting the device with the registered app with the device ID.
FR-6	Setting Geo-location	Creating the Geo-location area in the map
FR-7	Database	Location history is stored in the cloud. Can be accessed from the dashboard.
FR-8	Tracking location	Tracking the location through app. Tracking the location through website.

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution

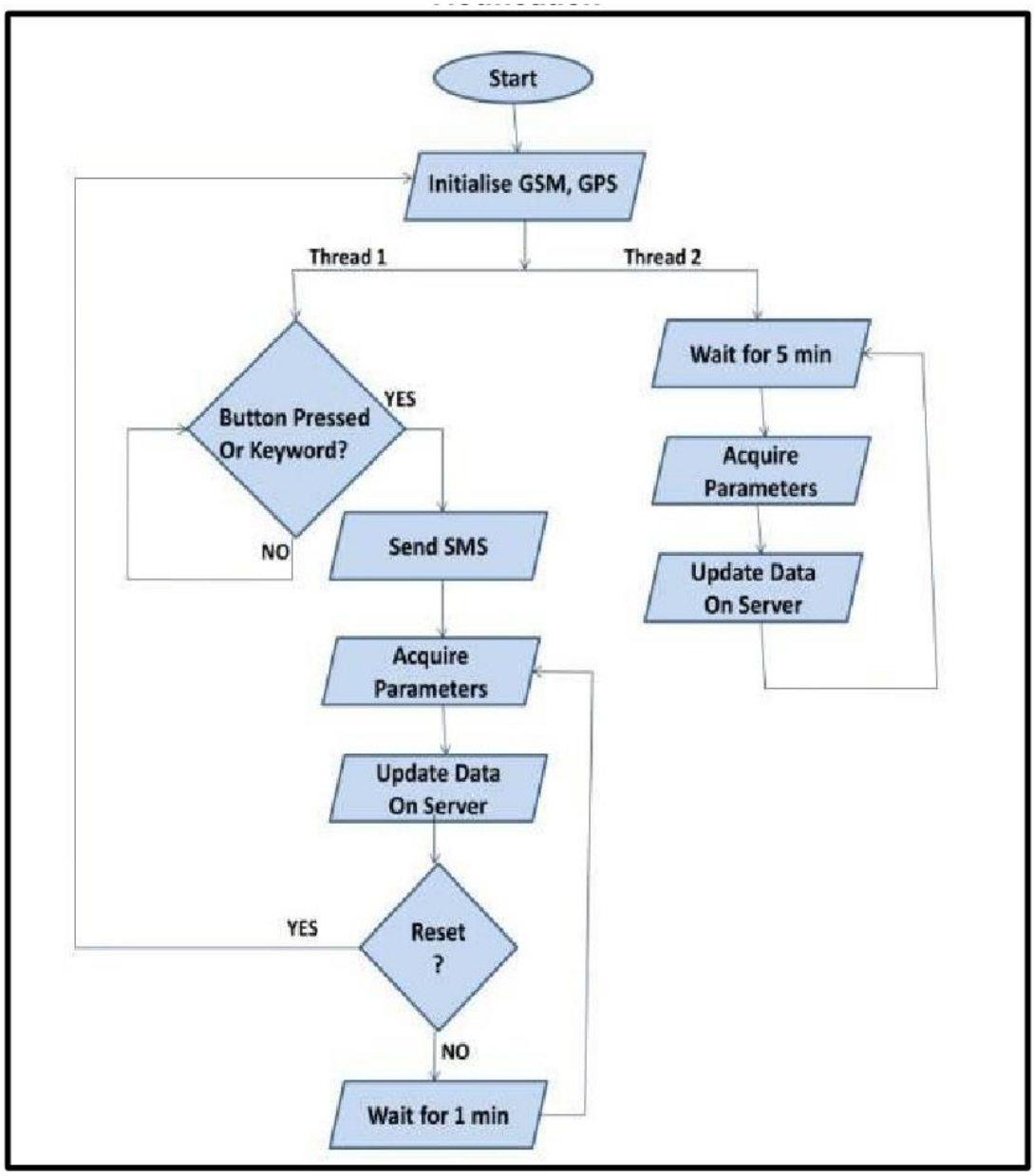
FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	The device and its applications are user-friendly. The device is portable and easy to use.
NFR-2	**Security**	Providing permission for some information can only be decided by the user. Location data can only be viewed by the user.
NFR-3	**Reliability**	An update will be provided if any errors are found in the device.

NFR-4	**Performance**	The performance of the device decrease in a network less area. No interference between users. Location tracking will be accurate.
NFR-5	**Availability**	If there is any update then the device wont be ableto operate for a amount of time.
NFR-6	**Scalability**	A single device can be monitored by two users.

CHAPTER 5

PROJECT DESIGN:

5.1 DATA FLOW DIAGRAMS



5.2.2 SOLUTION & TECHNICAL ARCHITECTURE

5.2.1SOLUTION ARCHITECTURE

Track current location of the child using GPS and continuous monitoring of the same is done. When the gadget detects the activity to be outside the given geofence (as mentioned by the parent or guardian), alert messages or notifications are sent to the registered device, appropriately. Additional features such as recording of messages could be done if any kind of danger is sensed.

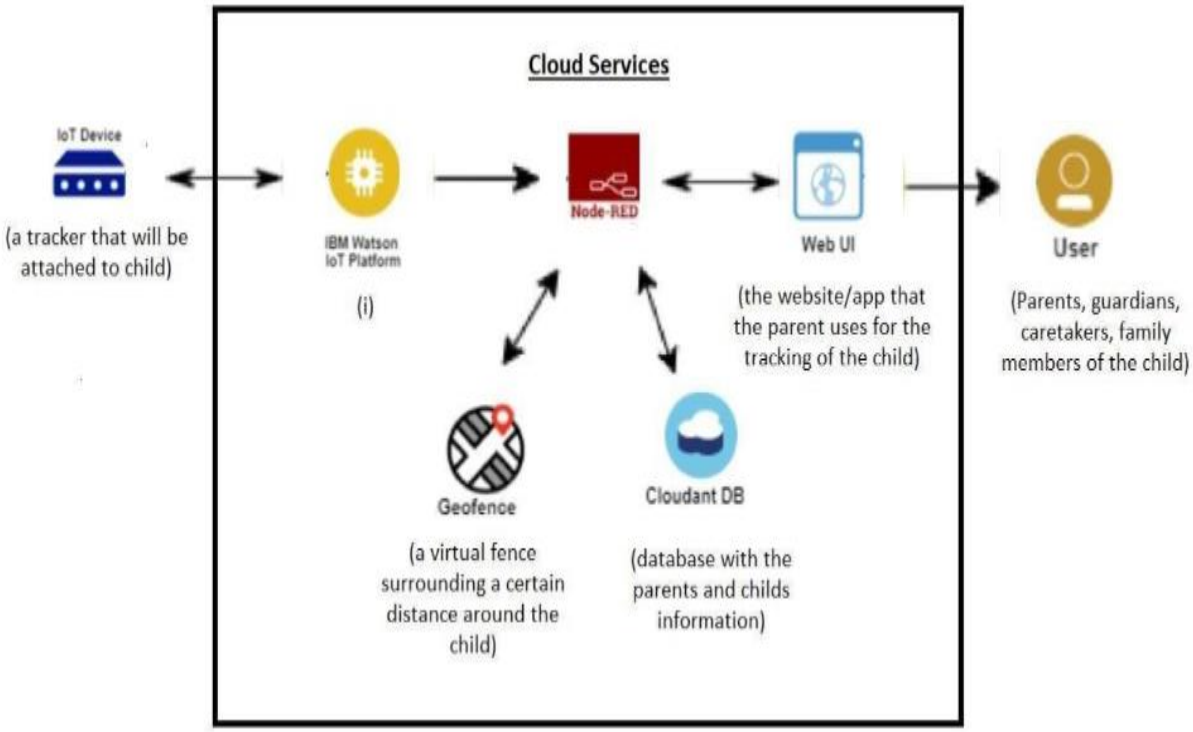


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Users had to register and outlook the otherdevice's location e.g.Web UI, Mobile App, etc.	HTML, CSS, JavaScript / AngularJs / React Js etc.
2.	Application Logic-1	Registration of child's and parent's device in eachother device.	Python,Embedded C.
3.	Application Logic-2	The child's GPS should be in ON condition, Parent'sdevice should always be correlated to Child's appliance.	IBM Watson STT service IBM Watson Assistant
4.	Application Logic-3	The information is to be collected and dispatchedto the authenticator via GSM equipping the GPS coordinates to efficiently locate access and monitor the Child.	IBM Watson Assistant IBM Watson STT service
5.	Database	Data Type can be any configuration such as arbitrary binary data, or text. Location history isstored in the cloud and the values include distance, latitude, and longitude. A user-definedblob of data transmitter from Cloud IOT Core to a device etc.	MySQL, NoSQL,SQLite, InFluxDB, etc.
6.	Cloud Database	Users install tracking software on a cloudinfrastructure to perpetrate the database.	IBM DB2, IBM Cloudant etc.
7.	File Storage	Files will be labelled with what they encompass andhow long they should be kept.	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	The purpose of the external API employed in the device is to exploit the internet for communicatingand executing allotted operations efficiently.	IBM Weather API, etc.
9.	External API-2	External API laboured in the device to unveil the data that permits those gadgets to disseminate data to your device/mobile, functioning as a data interface.	Aadhar API,City Geo-Location Lookup API, etc.

Table-2: Application Characteristics:

S.No	***Characteristics***	***Description***	***Technology***
1.	Open-Source Frameworks	The framework is exemplified for child safety utilizing a Sensor network and IoT. The Key attribute of the system is the deployment of a smart detector for the collection of Data, cloudbased analysis, and decision- based on Monitoring for children's Safety. The framed solution is in the form of an android applicationfurnishing the end user leisure surveillance of their children.	Mainflux, Thinger.io, and Zettafor non-stop streaming of childcondition Open remote.
2.	Security Implementations	To activate the alarm and facilitate video recordingwhenever 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.	e.g. SHA-256, Encryptions,regardingchild condition, Firewalls, Antivirus,and Data Loss Prevention,etc.
3.	Scalable Architecture	This methodology can be further enhanced by theinstallation of the mini camera inside a smart gadget for exemplary security and protection so that a glimpse can be caught on the live footage on the parental phone during panic circumstances. If an intricacy arises parents can see some of the attributes like the location, temperature, and heartbeat of the child along with living perspective around the children withoutdeterrence.	Multiple Data Storage Technologies, Reliable Microservices, Automated Bootstrapping
4.	Availability	The device is used to keep tabs on your child evenin a horde. It also provides the current location along with travel details. This system is advanced using a board programmed in embedded C and python. It is a site that is available online	Temperature, Pulse sensor, GPS, GSM,Web camera, Raspberry pi,

5.	Performance	The web Page's load time should be no more than one second for the user's elevated performance concerning simple aidance and security. The originality of the system is that itspontaneously alerts the parents/caretaker bysending an SMS when instant attention is indispensable for the child during a crisis. The complete data of the children's location will bestocked in the repository and the execution of the device diminishes in a less network Area.	GSM tracker, High Durable DeviceBattery

6.PROJECT PLANNING PHASE

TITLE	DESCRIPTION	DATE
Literature Surveyon The Selected Project and Information Gathering	A Literature Survey is a compilation summary of research done previously in the given topic. Literature survey can be taken from books, research paper online or from any source.	25 September 2022
Prepare Empathy Map	Empathy Map is a visualization tool which can be used to get a better insight of the customer	19 September 2022
Ideation-Brainstorming	Brainstorming is a group problem solving session where ideas are shared, discussed and organized among the team members.	20 September 2022
Define Problem Statement	A Problem Statement is a concise description of the problem or issues a project seeksto address. The problem statement identifies the current state, the desired future state andany gaps between the two.	17 September 2022
Problem Solution Fit	This helps us to understand the thoughts of the customer their likes, behaviour, emotions etc.	02 October 2022
Proposed Solution	Proposed solution shows the current solution and it helps is going towards the desired result until it is achieved.	18 September 2022

Solution Architecture	Solution Architecture is a very complex process I.e. it has a lot of sub-processes and branches. It helps in understanding the components and features to complete our project.	29 September 2022
Customer Journey	It helps us to analyse from the perspective of a customer, who uses our project.	9 October 2022
Functional Requirement	Here functional and non-functional requirements are briefed. It has specific features like usability, security, reliability, performance, availability, and scalability.	16 October 2022
Data Flow Diagrams	Data Flow Diagram is a graphical or visual representation using a standardized set of symbols and notations to describe a business's operations through data movement.	14 October 2022
Technology Architecture	Technology Architecture is a more well defined version of solution architecture. It helps us analyze and understand various technologies that needs to be implemented in the project.	15 October 2022
Prepare Milestone &Activity List	It helps us to understand and evaluate our own progress and accuracy so far.	29 October 2022
Spring Delivery Plan	Sprint planning is an event in scrum that kicks off the sprint. The purpose of sprint planning is to define what canbe delivered in the sprint and how that work will be achieved.	14 November 2022

6.2 Sprint Delivery Plan:

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority
Sprint-1	IBM Cloud services	US-1	Create the IBM Cloud services which are being used in this project.	6	High
Sprint-1	IBM Cloud services	US-2	Configure the IBM Cloud services which are beingused in completing this project.	4	Medium
Sprint-2	IBM Watson IoT platform	US-3	IBM Watson IoT platform acts as the mediator to connect the web application to IoT devices, so create the IBM Watson IoT platform.	5	Medium
Sprint-2	IBM Watson IoT platform	US-4	In order to connect the IoT device to the IBMcloud, create a device in the IBM Watson IoT platform and get the device credentials.	5	High
Sprint-3	IBM Watson IoT platform & Node-REDservice	US-1	Configure the connection security and create APIkeys that are used in the Node-RED service for accessing the IBM IoT Platform.	10	High

PROJECT TRACKER:

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

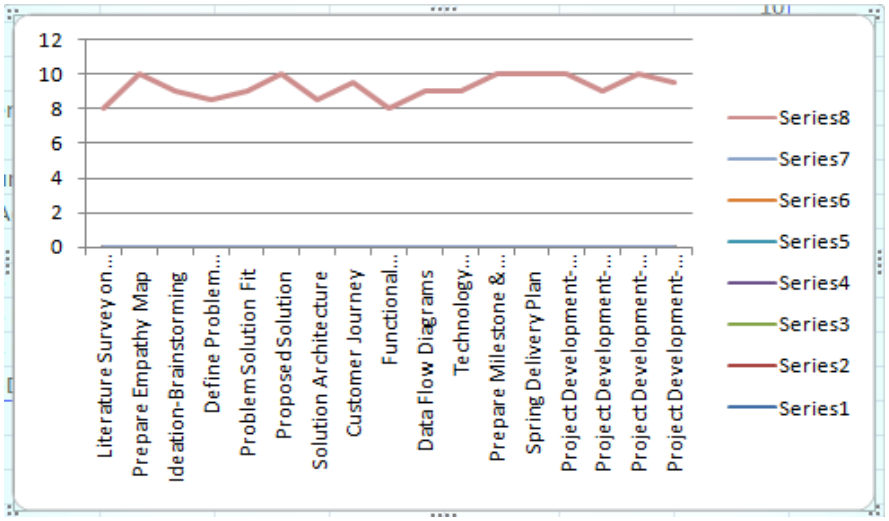
Velocity:

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) periteration unit (story points perday)

$$AV = \frac{sprint\ duration}{velocity} = \frac{20}{10} = 2$$

Burndown Chart:

6.1 A burndown chart is a graphical representation of work left to do versus time However, burndown charts can be applied to any project containing measurableprogress overtimE **REPORTS FROM JIRA**



CHAPTER 7 CODING AND SOLUTIONING

7.1 Project Development-Delivery of Sprint-1:

Creating Python Code:

```
import time
import sys
import ibmiotf.application
import ibmiotf.device
import random
#Provide your IBM Watson Device
Credentialsorganization = "zwx6lb"
deviceType="nodeMCU"
 deviceId = "12345678"
authMethod = "token"
authToken = "12345678"
#api key {a-illza1-mbdxqo6z0s}
#api  token
{zSYzISuAWF&F_x7GkT}


try:
        deviceOptions = {"org": organization, "type": deviceType, "id": deviceId, "auth-method": authMethod,  "auth-token":  authToken}
        deviceCli =
        ibmiotf.device.Client(deviceOptions)
        #.....
except Exception as e:
        print("Caught exception connecting device: %s" % str(e))
        sys.exit()


# Connect and send a datapoint "hello" with value "world" into the cloud as an event of type
```

"greeting" 10 times

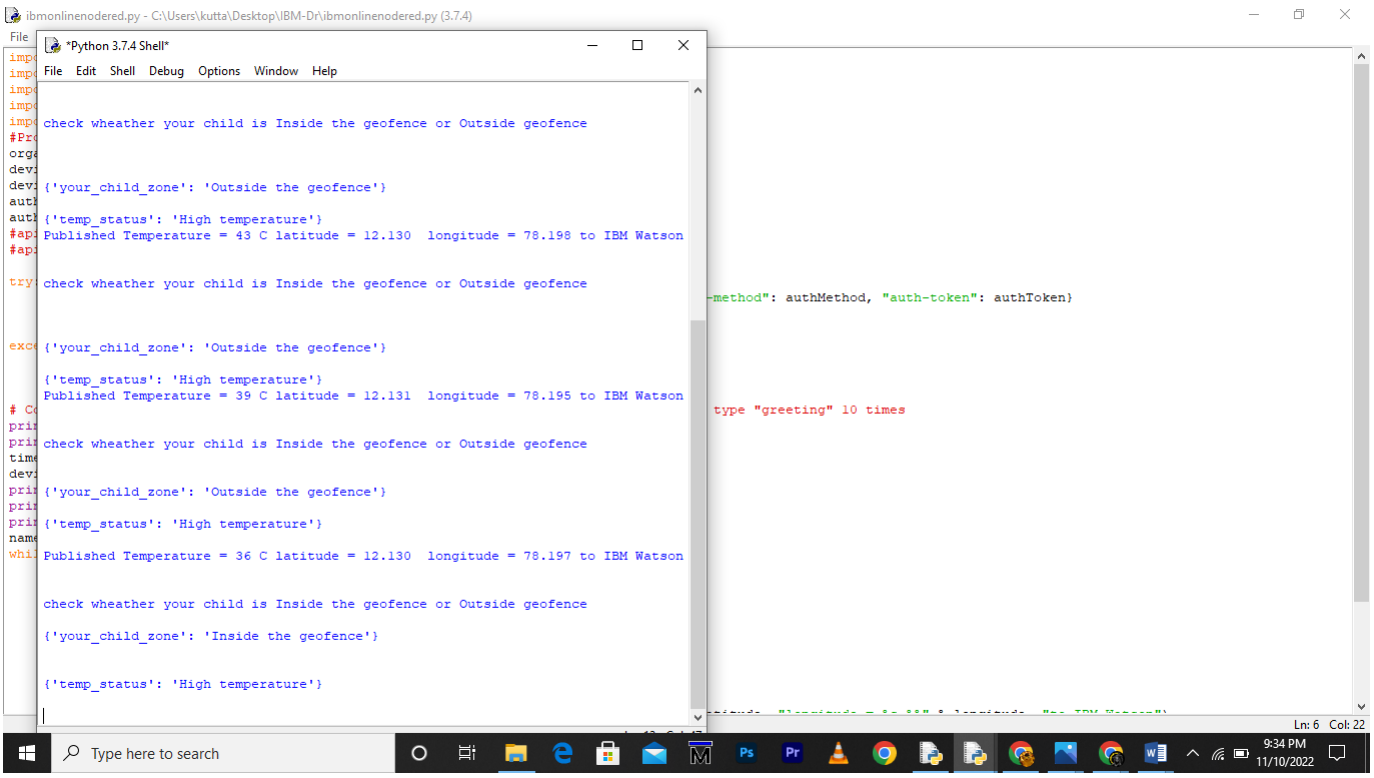
print("power on ")

```
print("checking connection to waston iot...")
time.sleep(2)
deviceCli.connect()
print("dear user ... welcome to IBM-IOT ")
print("i can provide your children live location and temperature ")print()
name=str(input("enter your child name:"))
while True:


    temperature=random.randint(20,50)#random temperature for your child
    latitude=random.uniform(10.781377,10.78643)#random latitude for your child
    longitude=random.uniform(79.129113,79.134014)#random longitude for your child
    a="Child inside the geofence"
    b=" Child outside the geofence"
    c="High temperature"
    d="Low temperature"
    x={'your_child_Zone':a
    }
    y={'your_child_Zone':b}
    z={'temp_condition':c}
    w={'temp_condition':d}



    data = { 'temp' : temperature, 'lat': latitude,'lon':longitude,'name':name }
    #print data
    def myOnPublishCallback():
```

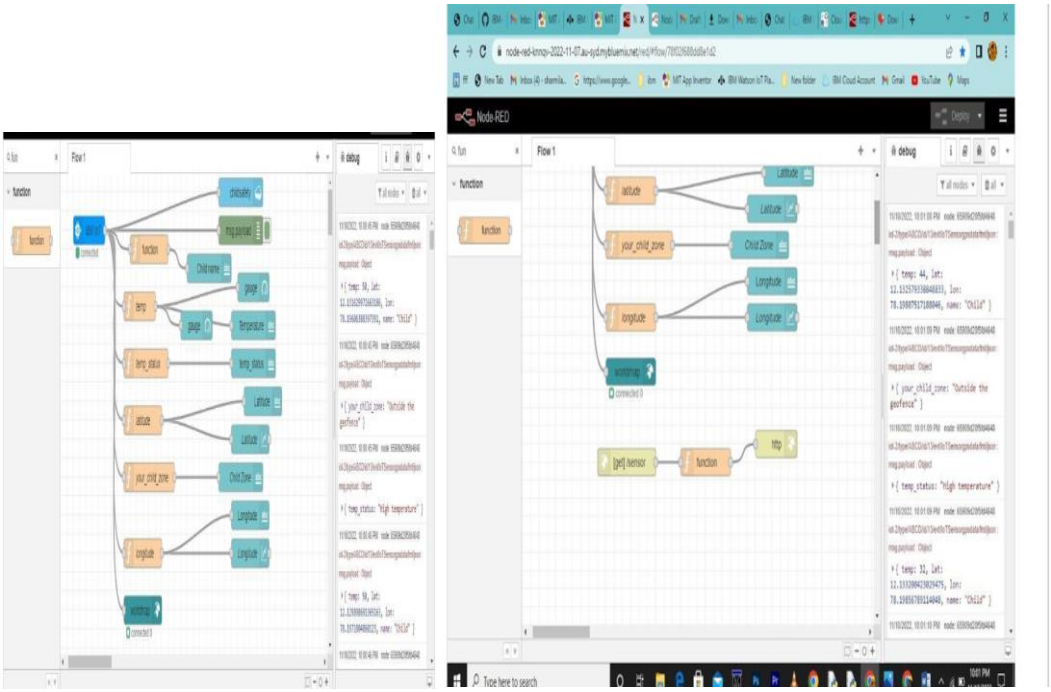
```
        print ("Published Temperature = %s C" % temperature, "latitude = %s %%" % latitude,
"longitude = %s %%" % longitude, "to IBM Watson")

        print("\n")

    success = deviceCli.publishEvent("IoTSensorgpsdata", "json", data, qos=0,
on_publish=myOnPublishCallback)

    if latitude>=10.78200 and latitude<=10.786000 and longitude >=79.130000 and longitude
<=79.133000:


deviceCli.publishEvent("IoTSensorgpsdata","json",data=x,qos=0,on_publish=myOnPublishCallb
ack)

        print(x)

        print("\n")

    else:


deviceCli.publishEvent("IoTSensorgpsdata","json",data=y,qos=0,on_publish=myOnPublishCallb
ack)

        print(y)

        print("\n")


    if (temperature>35):


deviceCli.publishEvent("IoTSensorgpsdata","json",data=z,qos=0,on_publish=myOnPublishCallb
ack)

            print(c)

            print("\n")

    else:


deviceCli.publishEvent("IoTSensorgpsdata","json",data=w,qos=0,on_publish=myOnPublishCall
back)

            print(d)
```

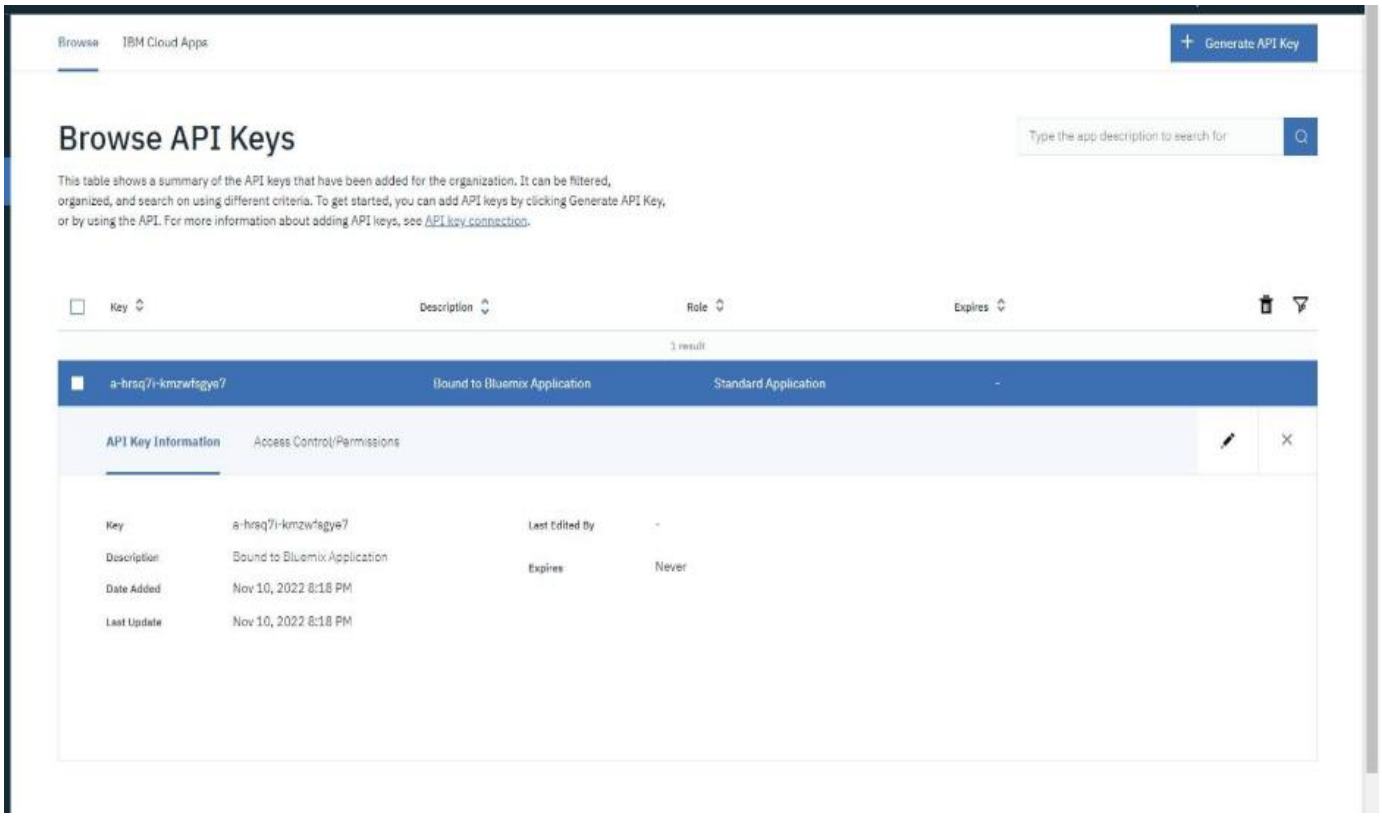
```
            print("\n")


        if not success:
            print("Not connected to IoTF")
            print("\n")
        time.sleep(3)
# Disconnect the device and application from the cloud
deviceCli.disconnect()
```

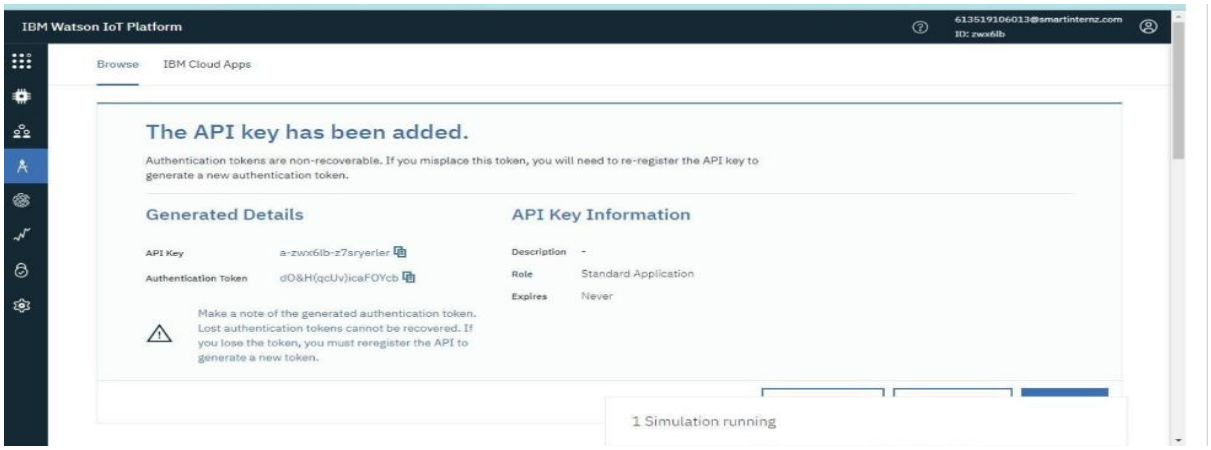
Connecting IBM Watson and python Code:

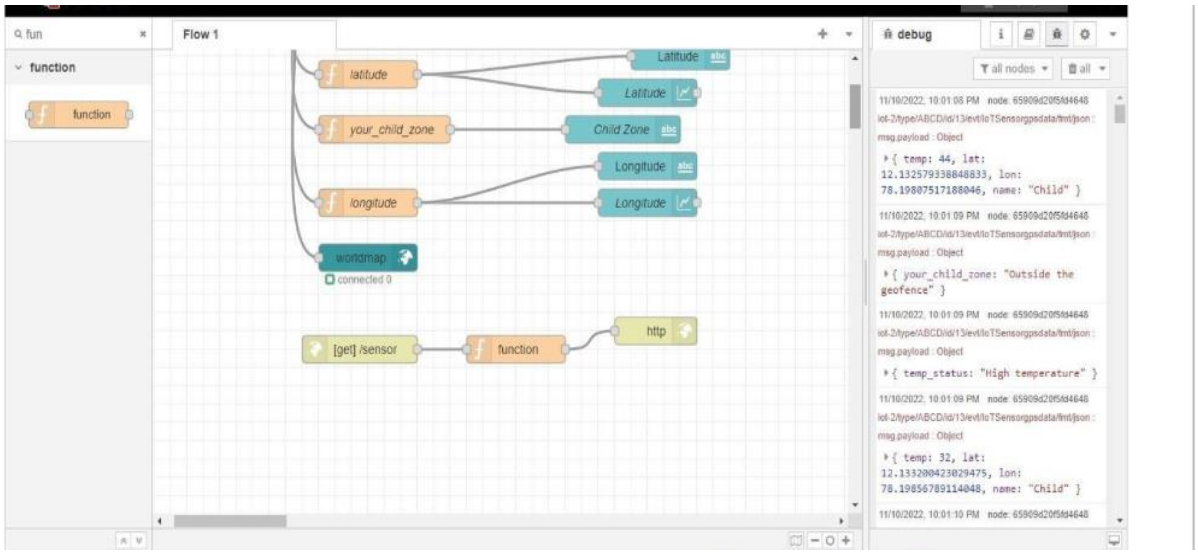


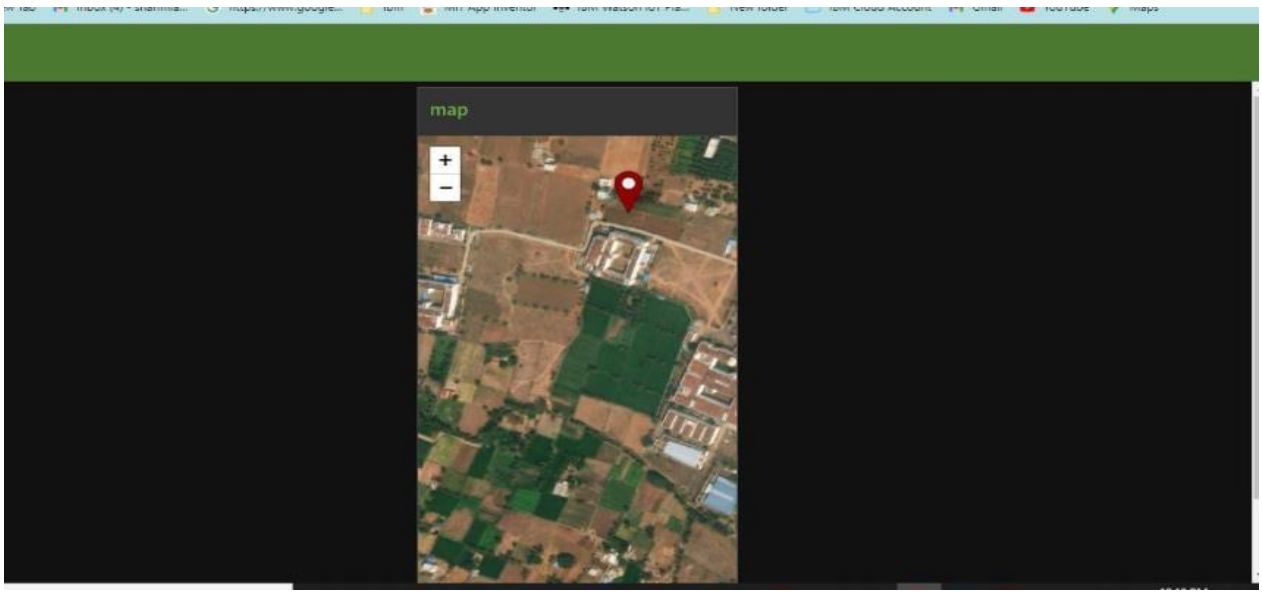
7.2 Project Development-Delivery of Sprint-2:



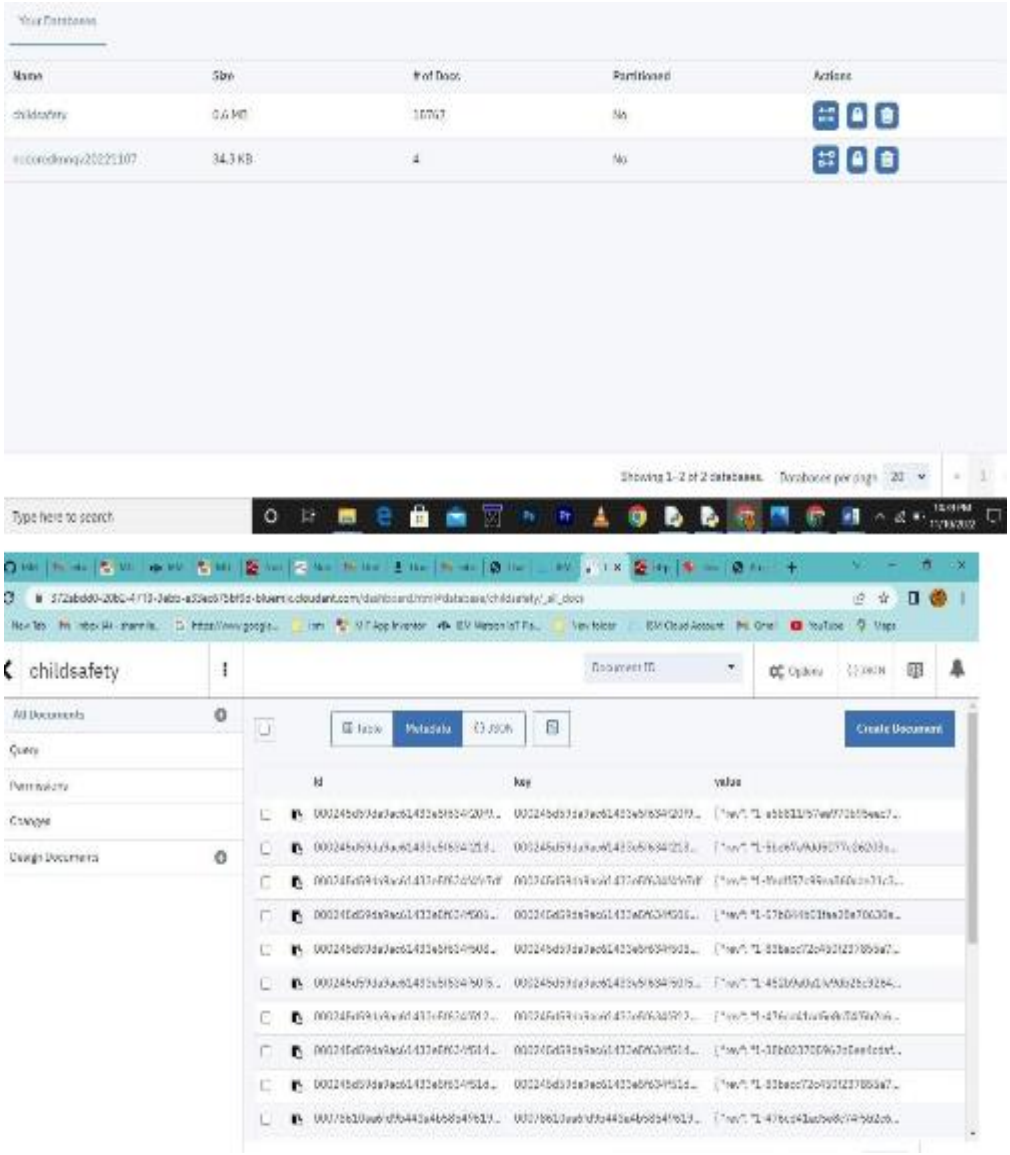



IBM Watson IoT Platform
Browse
IBM Cloud Apps
The API key has been added.
Authentication tokens are non-recoverable. If you misplace this token, you will need to re-register the API key to generate a new authentication token.
Generated Details
API Key
a-zwx6lb-z7sryerler
Authentication Token
dO&H(qcUv)icaF0Ycb
Make a note of the generated authentication token. Lost authentication tokens cannot be recovered. If you lose the token, you must reregister the API to generate a new token.
API Key Information
Description
Role
Standard Application
Expires
Never
1 Simulation running

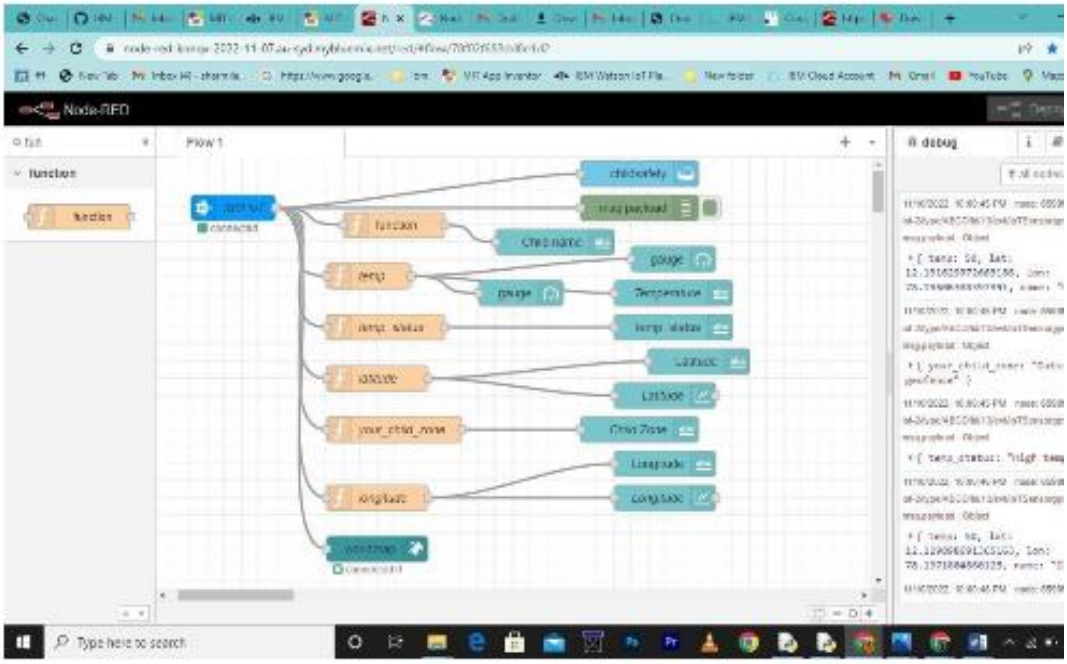

fun
function
function
Flow 1
latitude
Latitude
Latitude
your_child_zone
Child Zone
Longitude
longitude
Longitude
worldmap
connected 0
[get] /sensor
function
http
debug
all nodes
all
{ temp: 44, lat: 12.132579338848833, lon: 78.19807517188046, name: "Child" }
{ your_child_zone: "Outside the geofence" }
{ temp_status: "High temperature" }
{ temp: 32, lat: 12.133200423029475, lon: 78.19856789114048, name: "Child" }


map

7.3 Project Development-Delivery of Sprint-3:

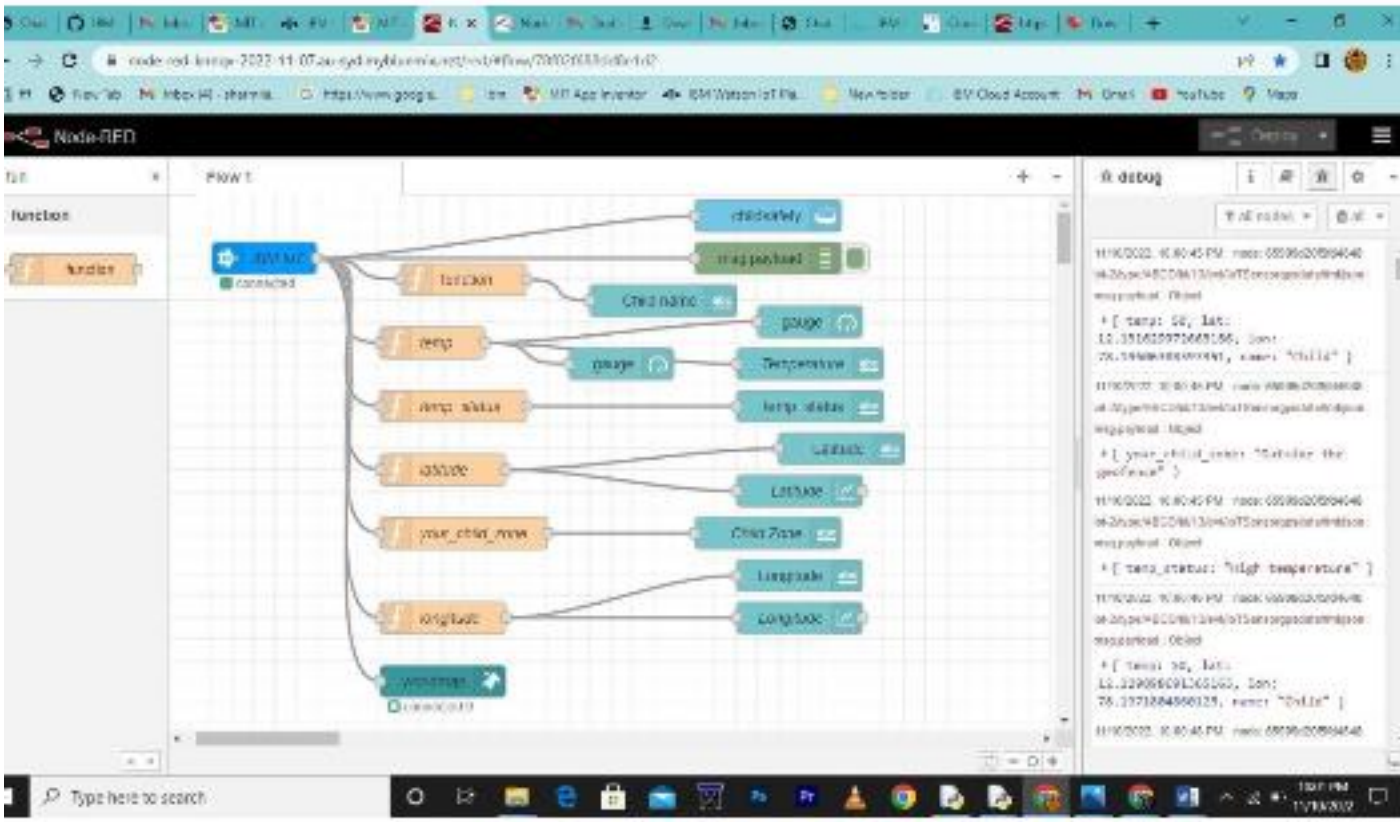


Node-Red Service with Clodant DB:

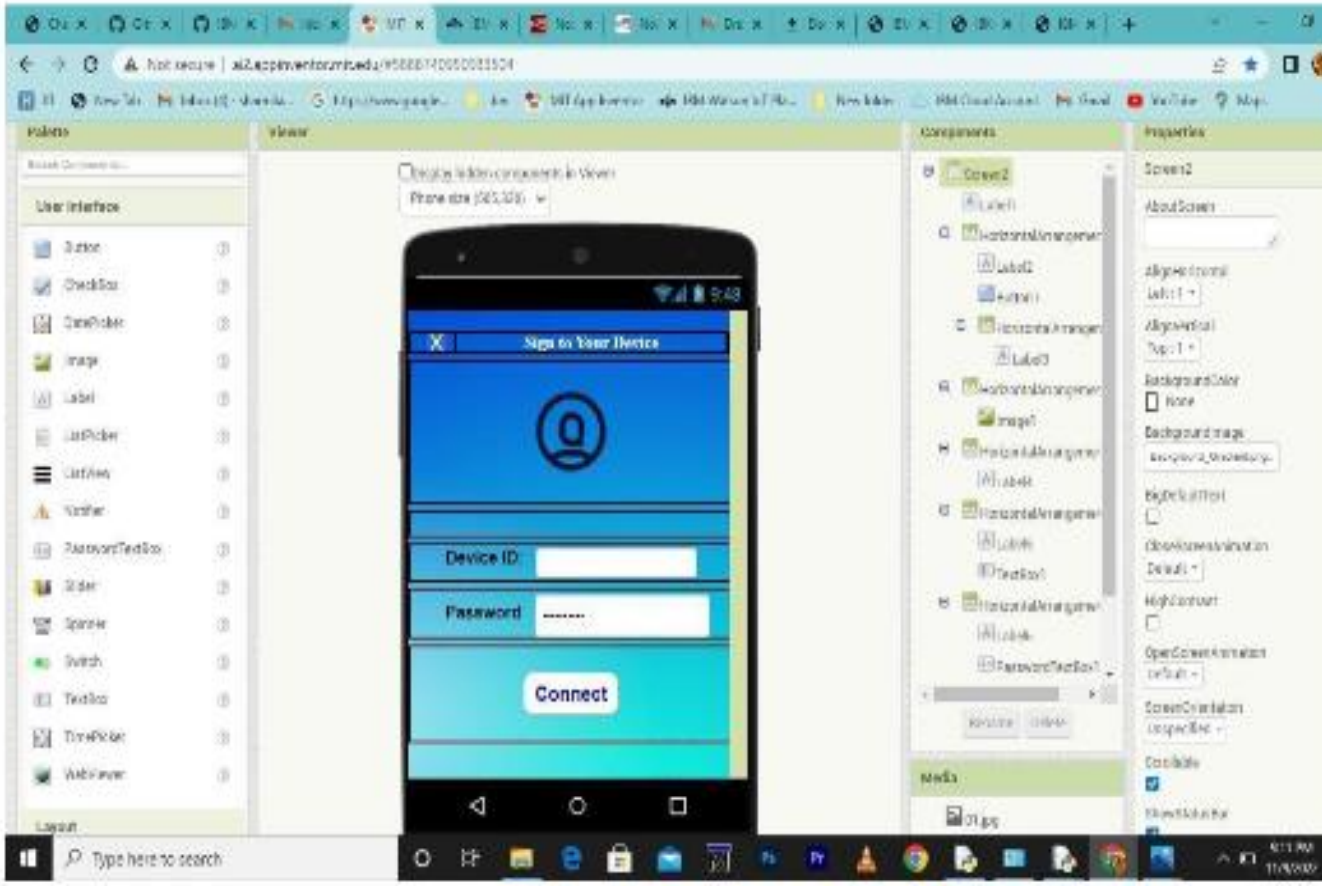


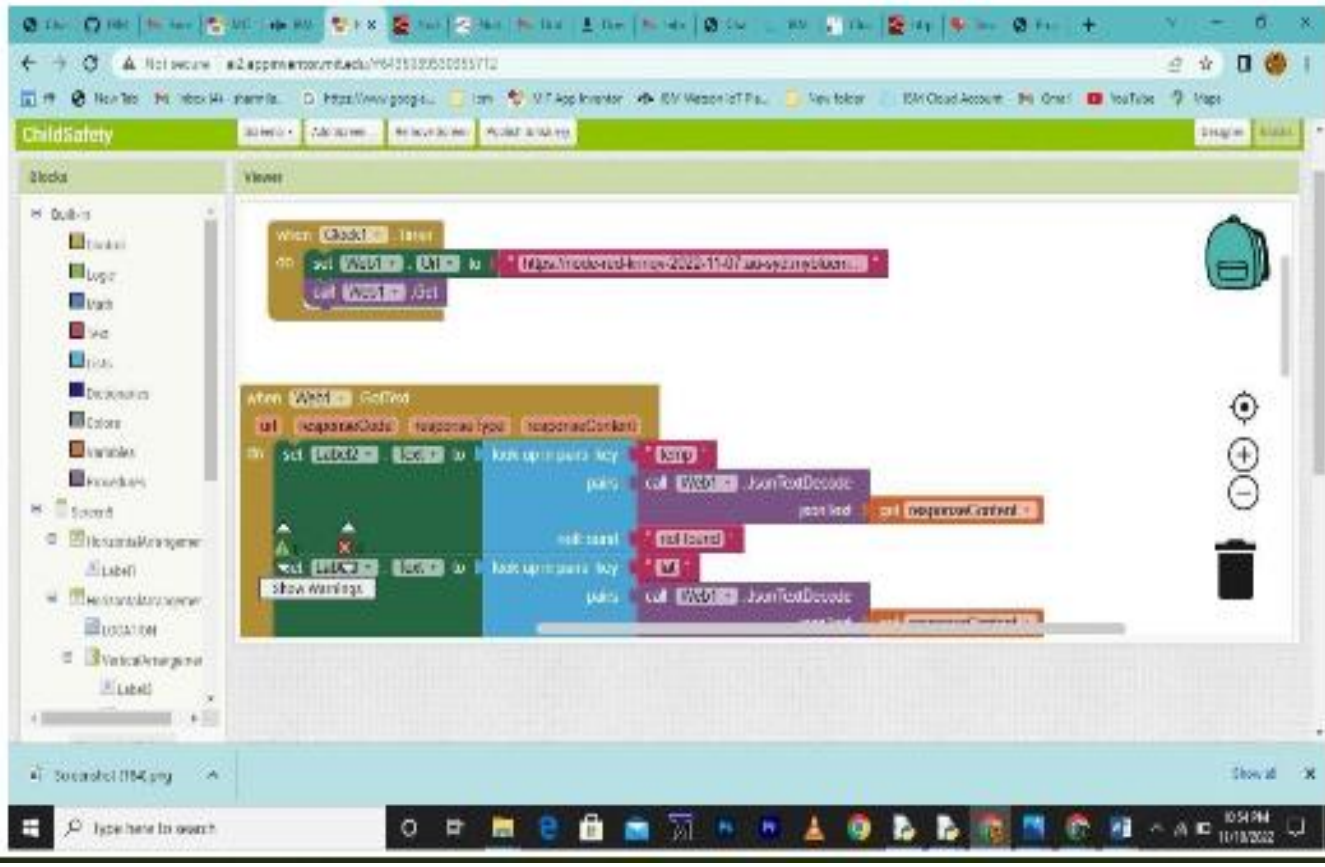
Create App in MIT app inventor:

lode-Red Service with Clodant DB:



reate App in MIT app inventor:


Sign in Your Device
Device ID
Password
Connect


ChildSafety
Blocks
Viewer

7.4 Project Development-Delivery of Sprint-4:

CHAPTER 9

ADVANTAGES AND DISADVANTAGES

9.1 ADVANTAGES

- A Child's GPS Tracker reports any potential dangers and protects them in the process.
- It acts as a communication tool for parents and can be helpful even when traveling.
- Usually, children tend to wander a lot. With the help of GPS Tracking devices, you can easily and quickly know where your children are.
- Parents will get all the details like their kid boarding/de-boarding school bus. Also, they can get emergency alerts when the child fails to board or de-board at the other stop.
- Prevent abduction and let your children play and walk around safely. Our Personal GPS trackers for kids are great options for parents for monitoring their children 24/7

9.2 DISADVANTAGES

- Young children may refuse to cooperate unless allowed to play with their gadgets.
- Excess use of electronic gadgets can lead to children spending less time outdoors and limiting their social interaction.
- It may lead to poor concentration in studies and lack of interest in day-to-day activities.
- Excessive gadgets use can lead to poor health, a sedentary lifestyle, and bad eating habits.

CHAPTER 10

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.

This wearable device has a superior mode for viewing and locating the children\'s whereabouts with correct latitude and longitude, which is especially useful when using Google maps. This could assist to reduce the number of attacks on children while also making them feel protected and secure. The major goal of this project is to create a device that protects youngsters from risky circumstances while also assisting them in combating them.

CHAPTER 11

FUTURE SCOPE

A camera module for surveillance of the child's surrounds can be added to improve the system's performance. It's also possible to do it with a Raspberry Pi and Lily pad. It is possible to develop a more energy-efficient type that can keep the battery for a longer period of time.

This system can be further enhanced by installation of mini camera 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.

For surveillance of the child's surroundings, to get a clearer picture of the location, this wearable can also contain a camera module incorporated in it. The camera will be collecting information in the same manner as the GPS module. It will be on stand by conserving power waiting for the particular keyword "SNAPSHOT" to be sent from the user's smart phone to the GSM shield will activate the camera to start clicking a snapshot of the surrounding and save the file temporarily on the external micro SD card. After which Arduino UNO will access the saved image from the micro SD storage and transfer it to the GSM module which send it to the user via SMS/MMS text.

Github Link

https://github.com/IBM-EPBL/IBM-Project-15040-1659593527