**PARISUTHAM INSTITUE OF TECHNOLOGY AND SCIENCE**



**PROJECT REPORT**

**IOT BASED SAFETY GADGETS CHILD SAFETY**

**MONITORING &NOTIFICATION**

**TEAM ID:PNT2022TMID46787**

**SUBMITTED BY**

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## SI.NO. CONTEXT

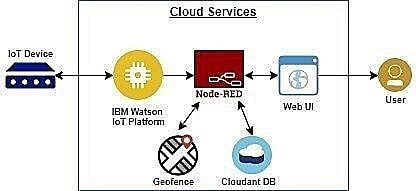
1. Introduction
2. Literature Survey
3. Ideation and Proposed Solution
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5. Project Design
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7. Coding and Solution
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9. Results
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## 

## 1. INTRODUCTION

**1.1 Project Overview**

Internet of Things (IoT) plays a major role in every day to day life. The major difference between IoT and embedded system is that a dedicated protocol/software is embedded in the chip in case of embedded system, whereas, IoT devices are smart devices, which are able to take decisions by sensing the environment around the device. The development of sensors technology, availability of internet connected devices; data analysis algorithms make IoT devices to act smart in emergency situations without human interventions. So, IoT devices are applied in different fields such as agriculture, medical, industrial, security and communication applications. IoT systems are useful within a system to do deeper automation, analysis, and integration. IoT contributes to technology by advances in software, hardware and modern tools. It even uses existing and upcoming technology in the fields of sensing, networking and robotics. IoT brings global changes by its advanced elements in the social, economic, and political impact of the users.



1.2 **Purpose**

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.

### 2. LITERATURE SURVEY

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

**Title:** Smart IoT Device for Child Safety and Tracking.

**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. 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.

**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 the complete solution for child safety problems.

**2.Authors:** Akash Moodbidri, Hamid Shahnasser

**Title:** Child safety wearable device.

**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’s 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 for a longer time.

**3. Authors:** Aditi Gupta, Vibhor Harit.

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

**Published in:** 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.

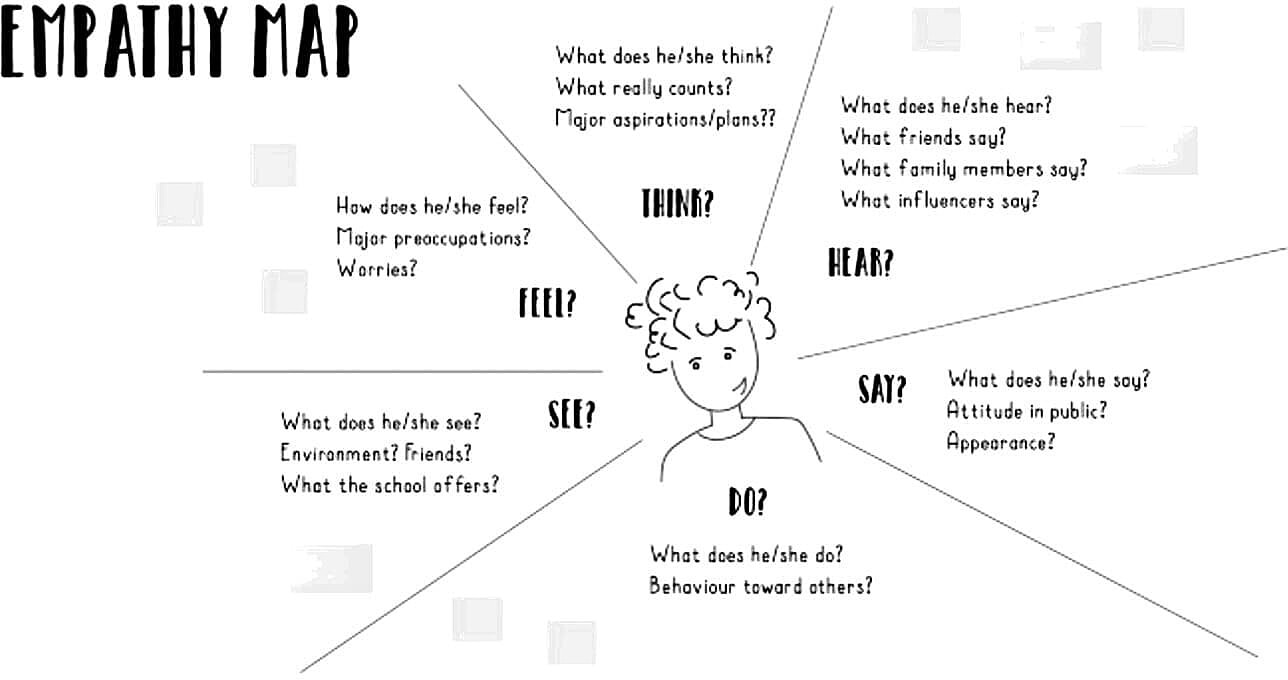
**Merits:** The advantages of smart phones which offers rich features like Google maps, GPS, SMS etc.

### 3. IDEATION AND PROPOSED SOLUTION

**3.1 PROBLEM STATEMENT**

1. This paper describes a method for tracking school-age children's pick-up and drop-off times to improve their safety while travelling to and from school every day. • Children are the foundation of a country; if their future was threatened, it would have an impact on the development of the whole country. In this world, a child goes missing every 40 seconds.
2. As a result of the abuse, children lose their emotional and mental stability, which has a negative impact on their career and future.
3. Parents are in charge of raising their own children. However, parents are compelled to want for money because of the state of the economy and their desire to concentrate on their child's future and job. Consequently, it becomes challengingfor them to constantly cling to their kids.
4. The system features a created web-based database-driven application that facilitates its operation and gives authorized staff relevant information about the kids.
5. The development of a wearable gadget for women's and girls' protection and safety is the goal of this endeavor. By examining physiological signals in conjunction with bodily position, this goal is accomplished. The body temperature and galvanic skin resistance are the physiological signs that are examined.
6. Wirelessly transferring sensor data to an open-source cloud platform enables real-time data monitoring. This equipment is set up to continuously track the subject's parameters and react to any potentially hazardous circumstances. It accomplishes this by noticing changes in the signals being tracked, after which the proper action is done by sending notifications or alerts to the right parties.
7. With our system, we offer a setting where this issue can be solved effectively. It enables parents to keep an eye on their kids in real time without having to intervene manually, just as they were standing next to them.

**3.2 EMPATHY MAP**

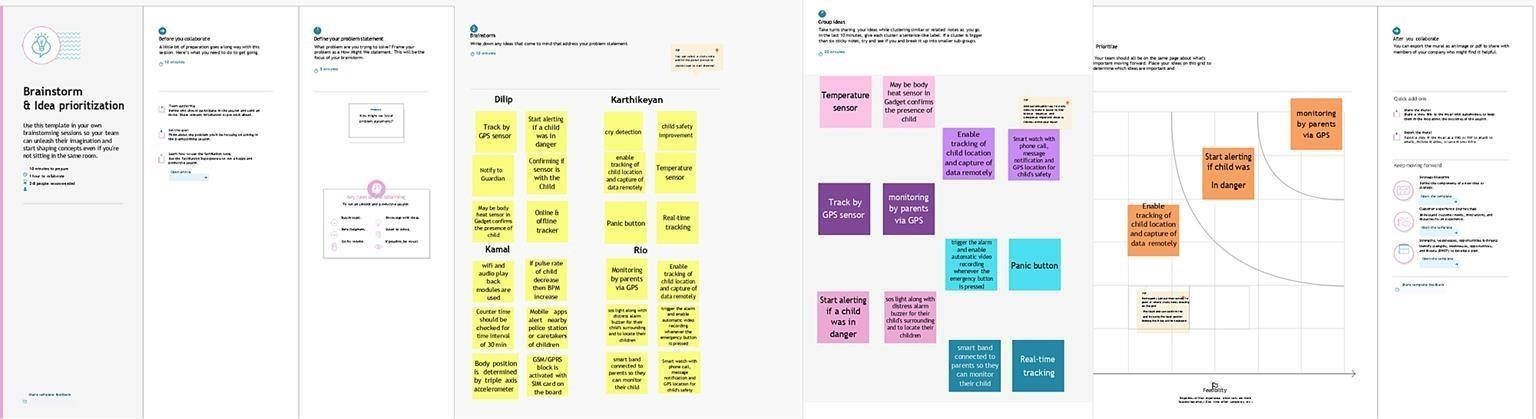


**3.3 IDEATION & BRAINSTORMING**

**Idea 1:** The device has IoT monitoring and a GSM module that allows the child to be monitored at all times. It also has numerous sensors that are connected to a CPU and are used to detect exact signals such as heart rate, temperature, and other dangers and alert the parents. In the event of a power outage, the wearable serves as a backup. On the device, there is an additional panic button.The purpose of this button is to notify parents and the police of a child's current location whenever they are in a perilous scenario. A GPS module is utilized to access their present location, and a GSM module assists in transmittingthe information via SMS to designated contacts. In this approach,the device tries to provide child safety while remaining unobtrusive.

**Idea 2:** Our proposed system is based on the Internet of Things-based Smart Child Safety Wearable Device System designed as an efficient and low-cost IoT- based system for monitoring infants in real-time. This system plays a key role inproviding better care for the lost children until they reconvene with the parents. In this present era, most of the wearable devices today are designed based on the location, activity, temperature, pressure etc. of the child and inform the parents via GPS. Therefore, it is intended to use voice call asthe way of communication between the parent mobile and child’s wearable device. The system operates on the microcontroller board and the functions of sending and receiving notifications, calls, voice messages via GPS.

**Idea 3:** 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 tothe 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.



### 3.3 PROPOSED SOLUTION

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Parameter** | **Description** |
| 1. | Problem Statement (Problem to be solved) | With the increasing rate of child kidnapping and trafficking and lack of tracking technology for child, there is limited application for child monitoring. Hence an **IoT based safety gadget** for child safety is probably the need of the hour today |
| 2. | Idea / Solution description | A good solution to this issue would be to design a smart wearable Internet of Things sensor based device for monitoring the environment of a child along with a mechanism for tracking the child. The gadget will make use of **GPS and** a python script topublish the location details to the IBM IoT platform. The wearable also functions to send **immediate alerts** to the user throughin case if the child crosses the geofence. |
| 3. | Novelty / Uniqueness | All the existing systems make use of GPS and a mobile app to track and receive alerts regarding the  child’s location, while this system make use of the  IBM Watson IOT Platform and IBM Cloud  Services which is reliable and efficient to maintain the database of the child’s location. The parent can setgeofence and receive alerts through the web application which is user friendly and securecreated using the Node Red Service.  . |

|  |  |  |
| --- | --- | --- |
| 4. | Social Impact / Customer  Satisfaction | The main concern of any parent would be the safety and security of their kids. The design of this model does not mandate a lot of technical knowledge from the user to operate and it is simple. The purpose of this device is to facilitate the guardian or parents in locating their child with ease and ensuring its well-being. |
| 5. | Business Model (Revenue Model) | The target audience of this device is majorly the  parents. Considering the Tracking ability of the device, **Hardware quality, used technology and sensors,** the starting range of price would go from Rs. 6000 and above. This type of wearable safety system is of utmost importance today and would be a must buy gadget in the market today. |
| 6. | Scalability of the Solution | With the present needs for monitoring the child, the system is designed. It has a location database to maintain the entire location history of the child and the parent can set the geofence to determine the safer boundary of the child. . If there is a need for integrating additional sensors to improve accuracy, it can be done to make the system efficient in the long run. |

### **3.4 PROBLEM SOLUTION FIT**

|  |  |  |
| --- | --- | --- |
| 1 | CUSTOMER SEGMENT | Working parents who are not able to  safe their child (0-5) willing to use these |
| 2 | JOBS-TO-BE-DONE / PROBLEMS | Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.  Parents can’t able to save their child from their workplace and Over parenting tends to deprive children of bad and negative experiences, which are crucial to a child’s emotional growth. One form of overparenting is excessive monitoring |
| 3 | TRIGGERS | What triggers customers to act?  i.e., seeing their neighbour using the  gadget, reading about a more efficient solution in the news.It’s not the situation or the feeling that’s the problem; it’s how kids think about these things and what they say to themselves that causes problems and child (0-2) years didn’t know about anything this will trigger. |
| 4 | EMOTIONS: BEFORE / AFTER | How do customers feel when they face a problem or a job and afterwards? |

### 

#### 4. REQUIREMENT ANALYSIS

#### **4.1 FUNCTIONAL REQUIREMENTS**

|  |  |  |
| --- | --- | --- |
| **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 |

Following are the functional requirements of the proposed solution.

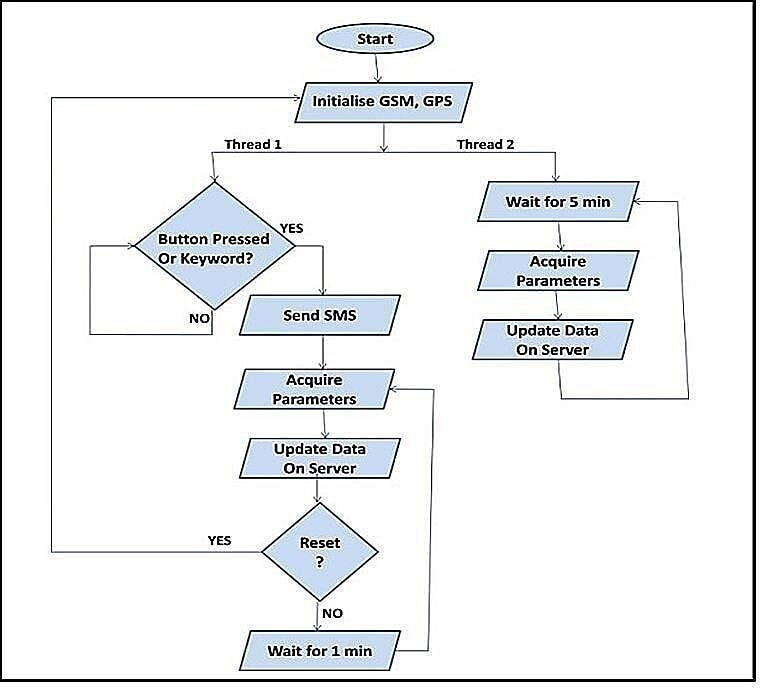
## 4.2 NON-FUNCTIONAL REQUIREMENT

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** | Webpage gets automatically logged out unless password has been saved in the Google account. In case of server crash datagets backed up beforehand. |
| NFR-4 | **Performance** | Site gets updated every 1 hour. Speed per transaction dependson 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, canbe scaled to keep records in the future. |

**5.PROJECT DESIGN**

**5.1 DATA FLOW DIAGRAMS**



**5.2 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:

1. Find the best tech solution to solve existing business problems.
2. Describe the structure, characteristics, behaviour and other aspects of the software to project stakeholders.
3. Define features, development phases and solution requirements.
4. Provide specifications according to which the solution is defined, managed and delivered.

**FEATURES:**

Development of a safety gadget for children to ensure their protection without direct monitoring of their parents. The various features involve:

1. GPS
2. Geo fence
3. Notify alert signal

**SOLUTION:**

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 geo fence (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.N o** | **Component** | **Description** | **Technology** |
| 1. | User Interface | How user interacts with application e.g. Web UI, Mobile App,  Chatbotetc. | HTML, CSS, JavaScript / Angular  Js  / React Js etc. |
| 2. | Application Logic-1 | Logic for a process in the application | Java / Python |
| 3. | Application Logic-2 | Logic for a process in the application | IBM Watson STT service |
| 4. | Application Logic-3 | Logic for a process in the application | IBM Watson Assistant |
| 5. | Database | Data Type, Configurations etc. | MySQL, NoSQL, etc. |
| 6. | Cloud Database | Database Service on Cloud | IBM DB2, IBM Cloudant etc. |
| 7. | File Storage | File storage requirements | IBM Block Storage or  OtherStorage Service or  Local Filesystem |
| 8. | External API-1 | Purpose of External API used in theapplication | IBM Weather API, etc. |
| 9. | External API-2 | Purpose of External API used in theapplication | Aadhar API, etc. |
| 10. | Machine Learning Model | Purpose of Machine Learning Model | Object Recognition Model, etc. |
| 11. | Infrastructure (Server / Cloud) | Application Deployment on Local System / Cloud Local Server Configuration:  Cloud Server Configuration : | Local, Cloud Foundry, Kubernetes,etc. |

**Table-2: Application Characteristics**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **Characteristics** | **Description** | **Technology** |
| 1. | Open-Source Frameworks | List the open-source frameworks used | Technology of Opensource framework |
| 2. | Security Implementations | List all the security / access controls implemented, use of firewalls etc. | e.g. SHA-256, Encryptions, IAM Controls, OWASP etc. |
| 3. | Scalable Architecture | Justify the scalability of architecture (3 – tier, Micro-services) | Technology used |
| 4. | Availability | Justify the availability of application (e.g.use of load balancers, distributed servers etc.) | Technology used |
| 5. | Performance | Design consideration for the performance of the application (number of requests per sec, use of Cache, use of  CDN’s) etc. | Technology used |

**5.3 USER STORIES**

Use the below template to list all the user stories for the product.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **User Type** | **Functional Requiremen t(Epic)** | **User**  **Story**  **Numbe**  **r** | **User Story / Task** | | **Acceptanc ecriteria** | **Priority** | **Release** |
| Customer (Mobile user) | Registration | USN-1  (FATHE  R  ) | As a user, I can register by entering my email, password, and confirming my password. 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  (MOTH  ER) | As a user, I can register by entering my email, password, and confirming my password. I can access the location of my children using the | | I can access my account / dashboard and receive confirmation | High | Sprint-1 |
|  |  |  | credentials provided as a Mother. | | email &  clickconfirm |  |  |
|  |  | USN-3  (GUARDI  AN/  CARETA  KER) | As a user, I can also monitor the children’s activities using a safety gadget monitoring system. | | I can access my account / dashboard and receive  confirmation email & click confirm | Medium | Sprint-1 |
|  | Login | USN-4 | As a user, I can log into the application by entering email & password. | | I can access my account / dashboard. | Medium | Sprint-2 |
|  | Dashboard | USN-5 | As a user, I can | fix the | I can monitor the | High | Sprint-2 |
|  |  |  | geofence for my | child’s | current location of |  |  |
|  |  |  | location so that I will receive alerts if my child crosses the geofence. | | my child. |  |  |
| Customer (Web user) | Registration | USN-1  (FATHE  R  ) | As a user, I can register by entering my email, password, and confirming my password. 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  (MOTH  ER) | As a user, I can register by entering my email, password, and confirming my password. I can access the location of my children using the credentials provided as a Mother. | I can access my account / dashboard and receive  confirmation email & click confirm | High | Sprint-1 |
|  |  | USN-3  (GUAR  DI  AN/  CARET  AKER) | As a user, I can also monitor the children’s activities using a safety gadget monitoring system. | I can access my account / dashboard and receive  confirmation email & click confirm | Medium | Sprint-1 |
|  | Login | USN-4 | As a user, I can log into the application by entering email & password. | I can access my account / dashboard. | Medium | Sprint-2 |
|  | Dashboard | USN-5 | As a user, I can fix the geofence for my child’s location so that I will receive alerts if my child crosses the geofence. | I can monitor the current location of my child. | High | Sprint-2 |
| Customer Care | Dashboard | USN-6 | As a customer care service person, whenever I receive a complaint, I forward the complaint and ensure that the complaint is resolved. | I can keep track of  all the complaints and the status of the complaints received. | Medium | Sprint-3 |
| Administrat or | Admin  Dashboard | USN-7 | As an administrator, I will takecare of all the payment processes, queries and complaints and login credentials. | I can access all the customer details, payment details and complaints received. | High | Sprint-4 |

#### 6. PROJECT PLANNING & SCHEDULING

**6.1 Product Backlog, Sprint Schedule, and Estimation**

**Use the below templateto create product backlog and sprint schedule**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Sprint | Functional  Requirement  (Epic) | User  Story  Number | User Story / Task |  | Story Points | Priority | Team Members |
| Sprint-1 | Enrolment | USN-1 | As a user, I can register for the application by entering my  email,password, and confirming my password. | 2 |  | High | 4 |
| Sprint-2 | IBM cloud | USN-2 | As a user, I will receive confirmation email once I have registered for the application. | 1 |  | High | 4 |
| Sprint-2 | Installin  g required software | USN-3 | As a user, I can register for the  application through  Facebook. | 2 |  | Low | 1 |
| Sprint-3 | Integration of IBM cloud andNODERED | USN-4 | As a user, I can register for the application through Gmail. | 2 |  | Medium | 2 |
| Sprint-4 | Account Creation | USN-5 | As a user, I can loginto the application by entering email& password. | 1 |  | High | 4 |
| Sprint-4 | Dashboard | USN-6 | I can instantly accessall of myTo Do checklists and dashboard features. | 2 |  | Medium | 2 |
| Sprint-4 | Testing and  Date of  Demo | USN-7 | If all goes as planned, I can testmy model and begin my demonstration the same day. | 2 |  | High | 4 |
| Sprint-4 | Overall | USN-8 | This app may helpwith costs, income, payments, trades, and many otherapplications. | 2 |  | High | 4 |

**Project Tracker, Velocity& Burndown Chart:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Sprint | Total  Story  Points | Duration | Sprint Start Date | Sprint End Date | Story Points Completed | Sprint  Release Date  (Actual) |
| Sprint-1 | 20 | 6 Days | 24 Oct 2022 | 29 Oct 2022 | 20 | 20 Oct 2022 |
| Sprint-2 | 20 | 6 Days | 31 Oct 2022 | 05 Nov 2022 | 20 | 04 Nov 2022 |
| Sprint-3 | 20 | 6 Days | 07 Nov 2022 | 12 Nov 2022 | 20 | 08 Nov 2022 |
| Sprint-4 | 20 | 6 Days | 14 Nov 2022 | 19 Nov 2022 | 20 | 19 Nov 2022 |

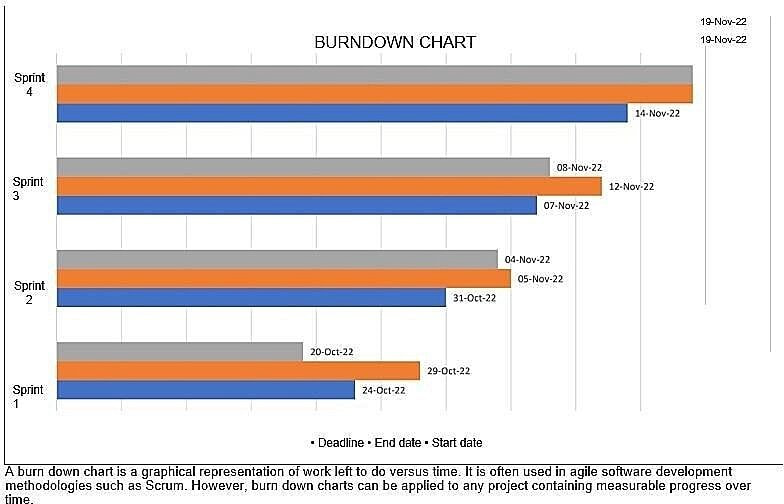
**Velocity:**

Imagine we have a 10-day sprint 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)



**Burndown Chart:**

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile [softwaredevelopmentm](https://www.visual-paradigm.com/scrum/what-is-agile-software-development/)ethodologies such as [Scrum.](https://www.visual-paradigm.com/scrum/scrum-in-3-minutes/) However, burn down charts can be applied to any project containing measurable progress over time.



**Reference:** <https://www.atlassian.com/aqile/project-manaqement>[https://www.atlassian.com/aqile/tutorials/how-to-do-scrum-withiira-software](https://www.atlassian.com/aqile/tutorials/how-to-do-scrum-with-iira-software)<https://www.atlassian.com/aqile/tutorials/epics> <https://www.atlassian.com/aqile/tutorials/sprints>

[https://www.atlassian.com/aqile/proiectmanaqement/estimation](https://www.atlassian.com/aqile/proiect-manaqement/estimation) <https://www.atlassian.com/aqileltutorials/burndown-charts>

**7. CODING & SOLUTIONING**

**GEOFENCING CODE:** import time def stopwatch(seconds,d,lspoin

t):

start = time.time()

time.clock()

elapsed = 0 flag = False num = 0 while elapsed < seconds:

elapsed = time.time() - start print

"%02d" % elapsed if elapsed > d[num] and elapsed

< d[num+1] and flag == False:x = lspoint[num][0] y = lspoint[num][1] createpoint(x,y)

flag = True print "Shot Taken" print point\_in\_poly(x,y,polygon) if elapsed > d[num+1]:

print "Shot Taken"

flag == False

num = num+1

x = lspoint[num][0] y = lspoint[num][1] createpoint(x,y) print

point\_in\_poly(x,y,polygon) time.sleep(1)

def createpoint(x,y): crs =

"point?crs=epsg:27700&field=id:integer" layer

= QgsVectorLayer(crs, 'points' , "memory") pr = layer.dataProvider() pt = QgsFeature() point1 = QgsPoint(x,y) pt.setGeometry(QgsGeometry.fromPoint(point1)) pr.addFeatures([pt]) # update extent of the layer layer.updateExtents() # add the second

point pt = QgsFeature()

QgsMapLayerRegistry.instance().addMapLayers([layer]) def point\_in\_poly(x,y,poly): n = len(poly) inside = False p1x,p1y = poly[0] for i in range(n+1):

p2x,p2y = poly[i % n]if y > min(p1y,p2y):

if y <= max(p1y,p2y):

if x <= max(p1x,p2x):

if p1y != p2y:

xints = (y-p1y)\*(p2x-

p1x)/(p2y-p1y)+p1x

if p1x == p2x or x <=

xints:inside = not inside

p1x,p1y = p2x,p2y

return inside

#### define the polygon polygon =

[(512882.78819722467,120811.83924772343),(512960.84437170526,120809.7007223952),(51 2960.

84437170526,120809.7007223952),(512959.77510904113,120754.09906386107),(512882.788 19722 467,120756.2375891893)]

#### set how long the script will run (70 seconds will get you in and out of geofence) time\_seconds = 70 #### first coordinate x = 512915 y = 120728

#### time intervals, 10 seconds between shots / or points intervals = int(time\_seconds / 10) lspoint = [] #### build the list of coordinates to be plotted for iin range(0,intervals+1):

y1 = y + (i\*12.5) lspoint.append([x,y1])

#### to build the blocks of time in intervals, so we know the number of intervals (default is 7),

#### we need a list of time intervals [0,10,20,30 etc] to check against the clock this list is d, f is the gap ie 10 seconds, a is starting point (0)

### b is the number of intervals + 1 becuase the code will check the the next in the list f = 10 a = 0 b = intervals+1 d = [x \* f for x in range(a, b)] ### Run the stopwatch, or start the program! stopwatch(time\_seconds,d,lspoint)

**ALGORITHM:**

Import Packages

Create ‘myConfig’ location

Implement the wiotp.sdk.device.DeviceClient

Run a while Loop

Finally set the latitude and longitude range

Desired result Obtained

**Modified Version of Code according to main project:** import json import wiotp.sdk.device import time myConfig={

"identity":{ "orgI d": "zc4u6v",

"typeid": "ChildSafetyGadget", "deviceId":

"PNT2022TMID15707"

},

"auth": {

"token": "childsafety@123" }

}

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

while True:

name= "Smartbridge"

#in area location

#latitude=17.4225176

#longitude=78.5450842

#out area location latitude = 17.4219272 longitude=70.540073

myData = {'name':name, 'lat':latitude, 'lon': longitude}

client.publishEvent (eventId="Status", msgformat="json", data=myData, qos=0, onPublish=None) print ("Data published to IM IoT platfrom:”,myData) time.sleep(5)

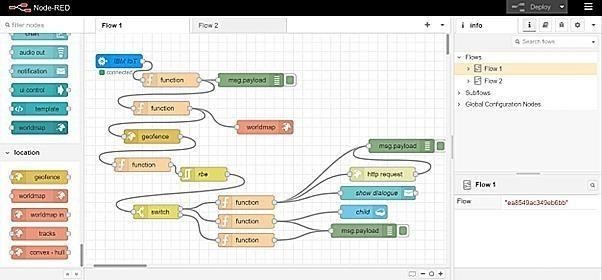
client.disconnect()

#### 

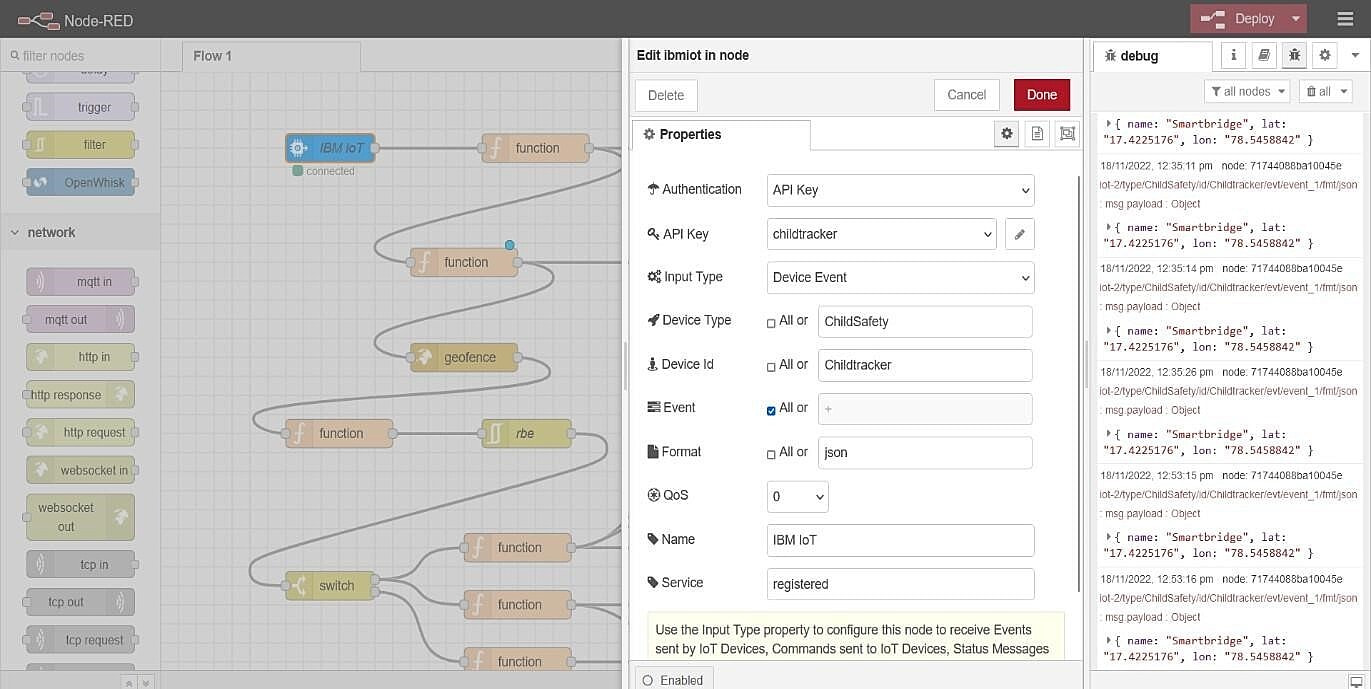
#### 8. TESTING

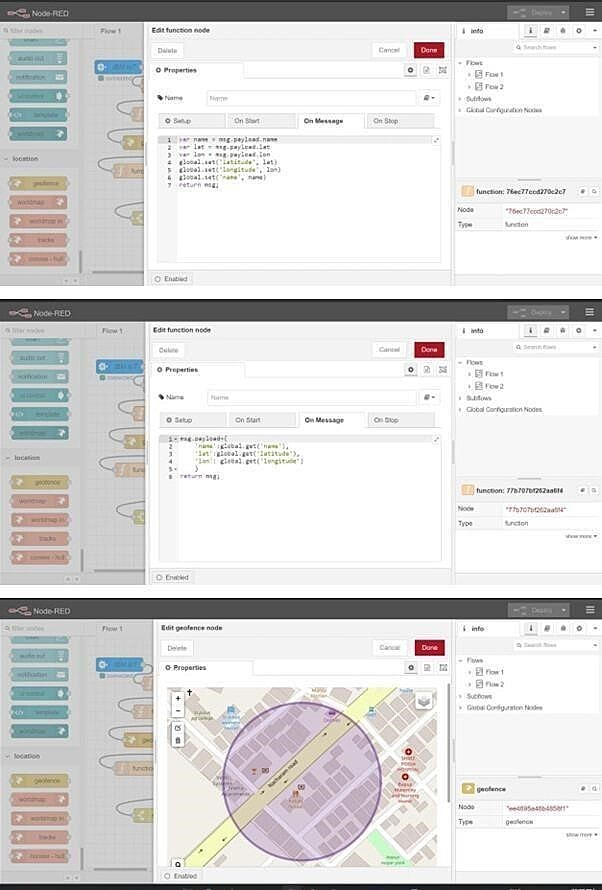
**8.1 TESTING IN NODE-RED**

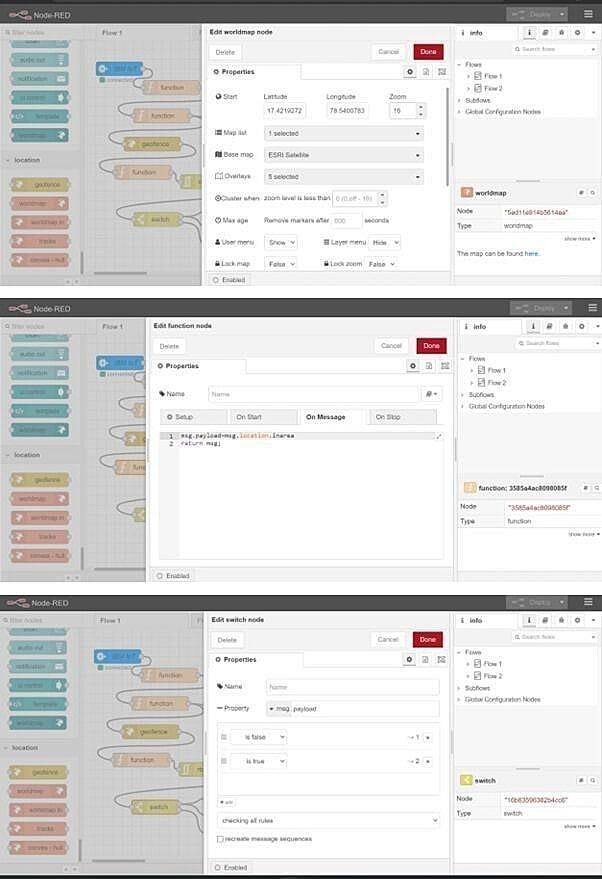
**Connections**

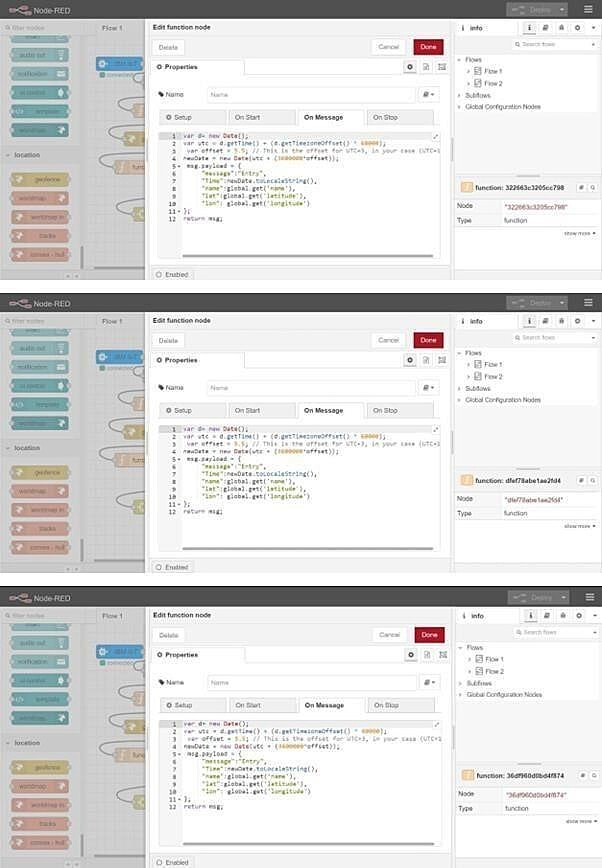


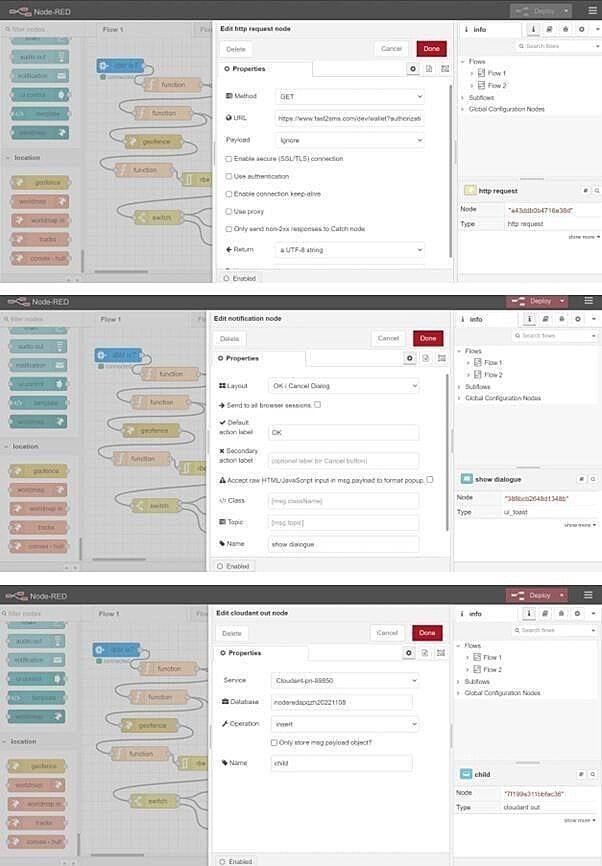
**Codes in Node’s**





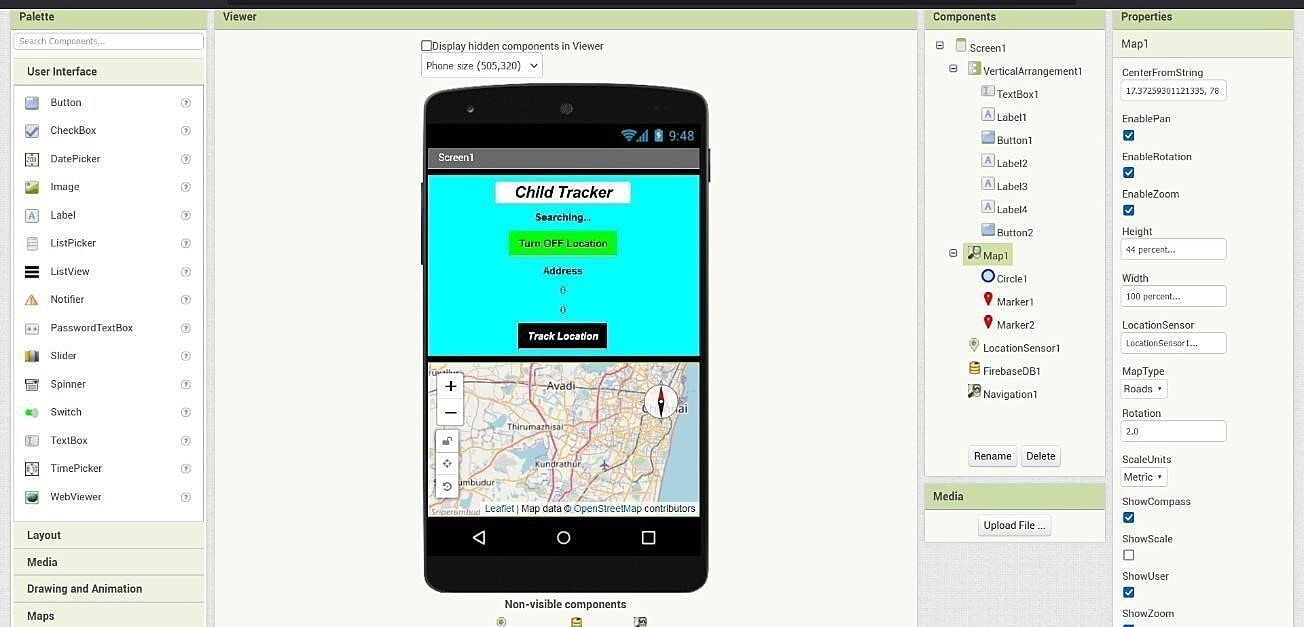




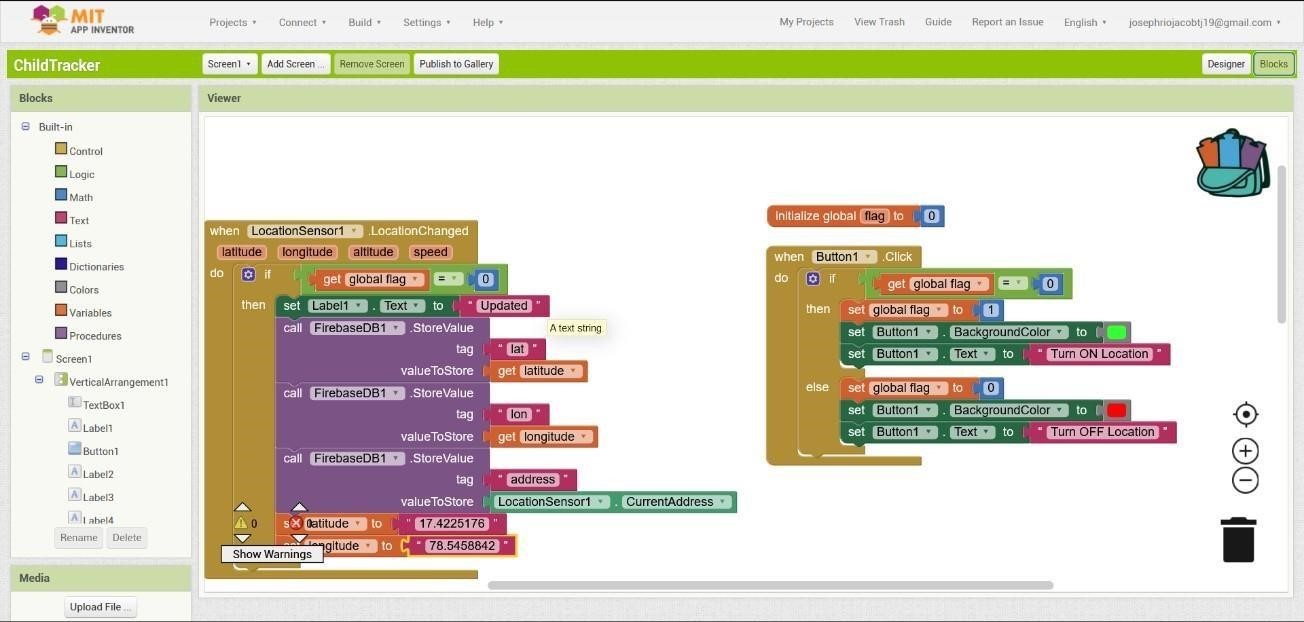


#### 9. RESULTS

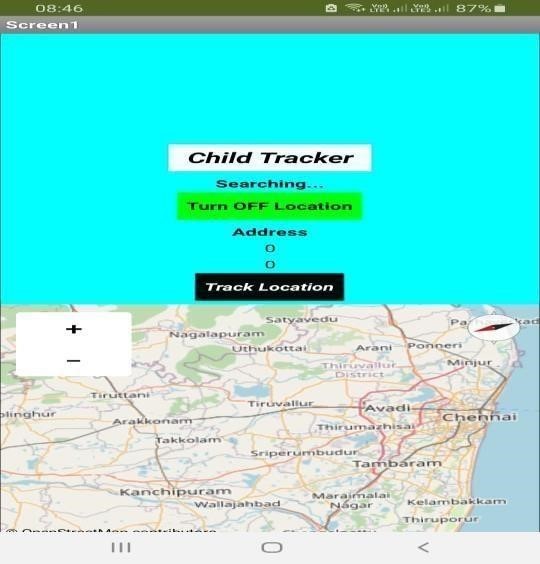
**MIT App inventor:**



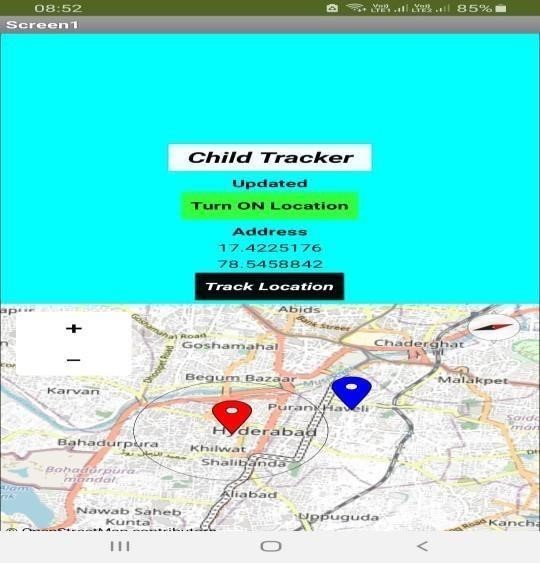
**Block Configuration:**



**Output(App inventor):**



### Child Location Status: Child live location founded



**10. ADVANTAGES & DISADVANTAGES**

### ADVANTAGES

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

2.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.

3.The advantages of smart phones which offers rich features like Google maps, GPS, SMS etc.

4.A child tracking system using android terminal and hoc networks.

**DISADVANTAGES**

1.To implement the IoT device which ensures the complete solution for child safety problems. 2.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.

3.This system is unable to sense human behaviour of child.

4.This device cannot be used in rural areas.

#### 11. CONCLUSION

This project demonstrates Smart IoT device for child safety and tracking helping the parents to locate and monitor their children.To save time and reduce crimeshappening we are developing smart child and adult security system which is wearable. This helps guardians to locate their children and women faster and precisely using internetof things. The present work reduces the human effortand particularly mother’sstresses in workingtimes about child. The device affords above scope for modifications for further improvements and operational efficiency, which should make it commercially available and attractive.

#### 12. FUTURE SCOPE

1. The size of components used in the project can be decreased by a processcalled micro fabrication, so that it can be transformed into a wristwatch.
2. Emergency calling featurecan be incorporated wherein women or child under panic circumstances can contact police for assistance.
3. SMS can be sent to more than one individual.
4. The future scope of the work is to implement the IoT device which ensures the complete solution for child safety problems.

#### 13. APPENDIX

##### **SOURCECODE**

import json import wiotp.sdk.device import time myConfig={

"identity":{ "orgId

": "zc4u6v",

"typeid": "ChildSafetyGadget",

"deviceId": "PNT2022TMID15707"

},

"auth": {

"token": "childsafety@123"

}

}

client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandlers=None) client.connect() while True: name= "Smartbridge" latitude =

17.4219272 longitude=70.540073

myData = {'name':name, 'lat':latitude, 'lon': longitude} client.publishEvent (eventId="Status", msgformat="json", data=myData, qos=0, onPublish=None) print ("Data published to IM IoT platfrom:”,myData)

time.sleep(5) client.disconnect()

**GITHUB LINK:**

**PROJECT DEMO LINK:**