IOT BASED SAFETY GADGET FOR CHILD SAFETY MONITORING AND NOTIFICATION

TEAM ID: PNT2022TMID44808

PROJECT REPORT

SUBMITTED BY

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CHAPTER 1

INTRODUCTION

1.1 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 technologybased 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.

1.2 PURPOSE

- 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 help 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 location.
- By continuously checking the child's location notification will be generated if the child cross the geo fence. Notification 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.
- Enable tracking of the child's location and capturing of data remotely such as where the child located distance etc.To show the child's actual data with reference values
- Enable sending of notification if the child is out of location or when the device realizes abnormal condition or situation.
- Develop a prototype of IOT wearable smart band connected to parent's Mobile apps so,they can monitor the child activities from anywhere at anytime

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CHAPTER 2

CHAPTER 2

LITERATURE SURVEY

2.1 EXISTING PROBLEMS

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 geo-fence around the 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. 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 CHAPTER 2 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.

2.2 REFERENCES

[1] SMART IOT DEVICEFOR CHILD SAFETYAND TRACKING :

Authors: M Nandini Priyanka, S Muranga, 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.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 plottedfor the same.

Demerits:

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

[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 WIFi 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 willhave to be used which can be capable of giving the battery life fora longer time.

[3] CHILD SAFETY&TRACKING MANAGEMENT SYSTEM BY USING :GPS

Authors: Aditi Gupta, VibhorHarit

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 childrenas well as in case of emergencychildren isable to send a quickmessage and its current locationvia Short Messageservices.

Merits:

The advantages of smart phoneswhich offers rich features like Google-maps,GPS, SMS etc.

Demerits:

This systemis unable to sense human behavior of child.

[4] CHILDREN LOCATIONMONITORING ON GOOGLEMAPS USING GPSAND 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 devicesare 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 currentlocation via SMS.

Merits:

A child tracking systemusing android terminaland hoc networks.

Demerits:

This devicecannot be used in rural areas.

2.3 PROBLEM STATEMENT DEFENITION

There are multiplenews-sharing apps used by a single user and are often spammedwith notifications.There is also a lot of fake news which gets shared. A news-sharing app wants to help users find relevantand 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.

I am	Describe customer with 3-4 key characteristics - *who are they?*	Describe the customer and their attributes here
I'm trying to	*List their outcome or "job" the care about - what are they trying to achieve?*	List the thing they are trying to achieve here
but	Describe what problems or barriers stand in the way – *what bothers them most?*	Describe the problems or barriers that get in the way here
because	Enter the "root cause" of why the problem or barrier exists – *what needs to be solved?*	Describe the reason the problems or barriers exist
which makes me feel	Describe the emotions from the customer's point of view – *how does it impact them emotionally?*	Describe the emotions the result from experiencing the problems or barriers

Problem Statement:

Problem Statement (PS)	I am (Customer)	I'm Trying to	But	Because	Which make me Feel

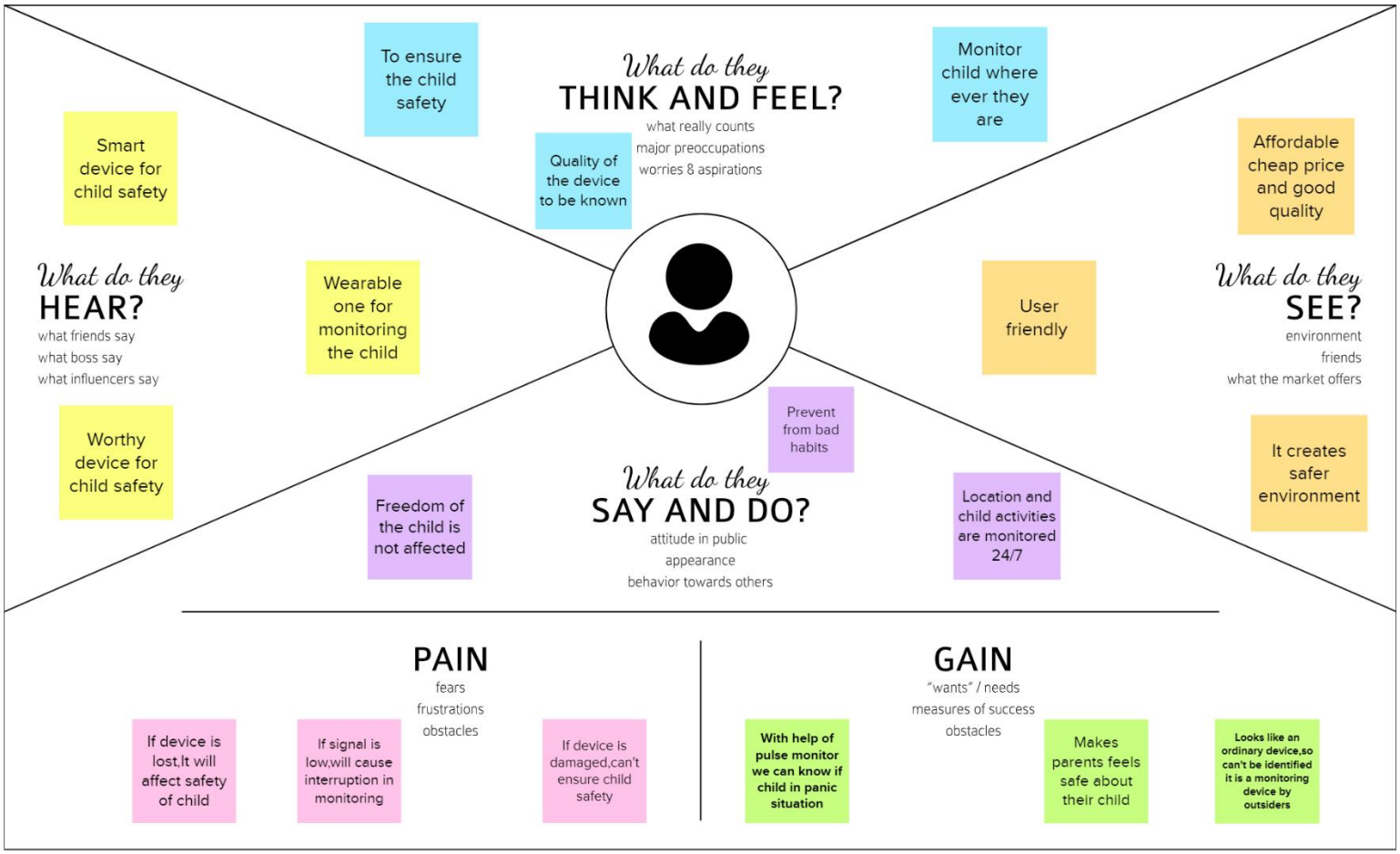
CHAPTER 3

CHAPTER 3

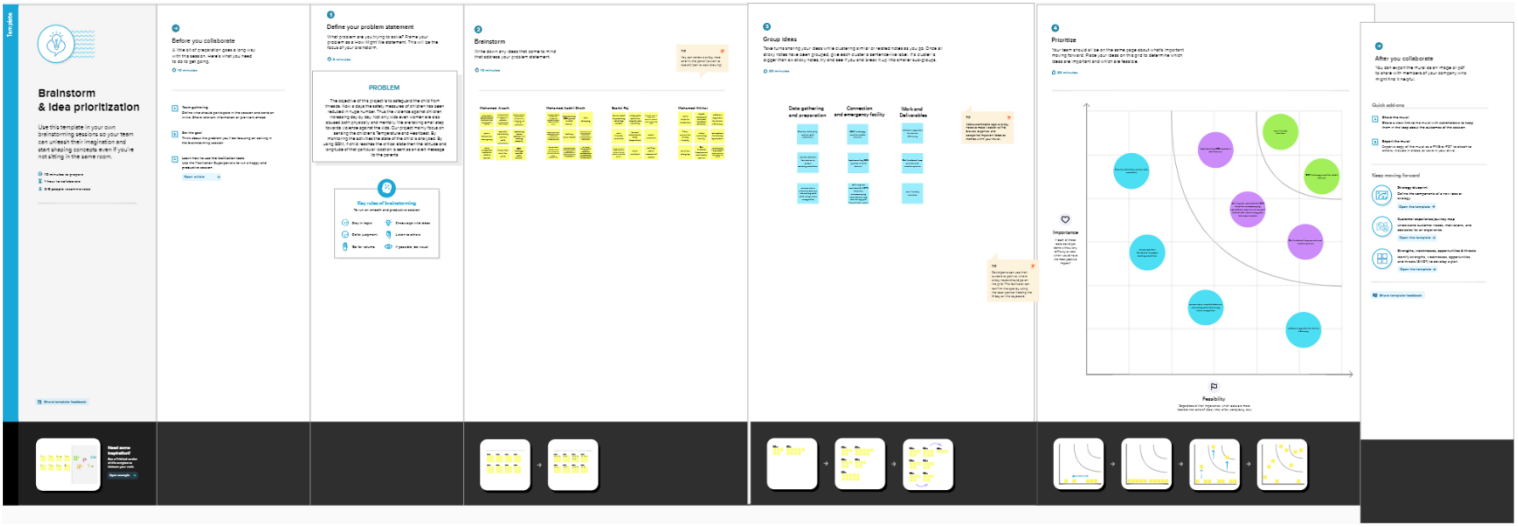
IDEATION AND PROPOSED SOLUTION

3.1.EMPATHY MAP

An empathy map is a simple, easy to digtal visual that captures knowledge about user's behaviors and attitudes. it is a usefull tool hep tems 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 help participants consider things from the user's sperspective along with his or her goals and challenge.



3.2 IDEATION AND BRAINSTORMING



3.2 PROPOSED SOLUTION

S.N.O	Parameter	Description
1.	Problem Statement (Problem to be solved)	When someone near the child this device alerts the parents whereas the parents in other distanced place.

2.	Idea / Solution description	The aim of this device is to provide safety to the child by allowing the parent to locate the child and view their surroundings. This device can be used to monitor the temperature and motion of the child. The other features of the device are emergency light and alarm buzzer which are activated when the ultrasonic sensor sense something near child. After automatically send the SMS to parents and call also received to the parents .
3.	Novelty / Uniqueness	The enchantments will be adding more features, software, applications, hardware to make the proposed system.

4.	Social Impact / Customer Satisfaction	The feedbacks of parents and children were highly promising. Results showed that 86.4% of the parents are satisfied with the time controller, around 91.1% of the children are satisfied with the proposed interface and 100% of the children are satisfied with the multiple sessions of the time allowed and video algorithm

5.	Business Model (Revenue Model)	ot based risk monitoring device for child is done through smart device i.e., smart watch Through this device the respected parameters are monitored by the connected person.
6.	Scalability of the Solution	It can be given up to 4 out of 5.

3.3 PROBLEM SOLUTION FIT

Project Title: IoT Based Safety Gadget for Child Safety Monitoring and Notification

Project Design Phase-I Solution Fit Template

TeamID:PNT2022TMID44808

Define CS, fit into CC

1. CUSTOMER SEGMENT(S) CS

Who is your customer?
working parents who are not able to safe their child
(0-5) willing to use these .

6. CUSTOMER CONSTRAINTS CC

What constraints prevent your customers from taking action or limit their choices
of solutions? i.e., spending power, budget, no cash, network connection, available devices.
For predictive analytics to make the most impact on child protection practice and outcomes, it must embrace established criteria of validity, equity, reliability, and usefulness.

5. AVAILABLE SOLUTIONS AS

Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? i.e., pen and paper
The most important reason for monitoring each child's development is to determine whether a child's is on track. Looking for developmental milestones is important to understanding each child's development and behaviour.

Explore AS, differentiate

Focus on J&P, tap into BE, understand RC

2. JOBS-TO-BE-DONE / PROBLEMS J&P

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

9. PROBLEM ROOT CAUSE RC

What is the real reason that this problem exists? What is the back
It's exactly what it sounds like—an exercise to determine the root cause for a failure or issue, so that the solution is based on the true problem, not just addressing the symptoms.

7. BEHAVIOUR BE

What does your customer do to address the problem and get the job done?
The parents can monitor their child from their workplace when children have frequent emotional outbursts, it can be a sign that they haven't yet developed the skills they need to cope with feelings like frustration, anxiety and anger. Handling big emotions in a healthy, mature way requires a variety of skills, including.

Focus on J&P, tap into BE, understand RC

Identify strong TR & EM

3. TRIGGERS TR

What triggers customers to act?
i.e., seeing their neighbour installing solar panels, 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 EM

How do customers feel when they face a problem or a job and afterwards?
i.e., lost, insecure > confident, in control - use it in your communication strategy & design.
BEFORE: Divergent thinking is a style of thinking that generates a range of alternative solutions or ideas to a problem that has multiple answers.
AFTER: Feeling protective of your child is often manifested in the form of 'motherly' instincts. The feeling of protecting and wanting the best for your children is the ultimate parenting goal

10. YOUR SOLUTION SL

If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality.
If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.

▪ The most important reason for monitoring each child's activities is to determine whether a child's activities is on track. Using ultrasonic sensor sense something near child and activate pieze buzz and SMS and dialing function to parents will be done immediately.

8. CHANNELS of BEHAVIOUR CH

8.1 ONLINE

What kind of actions do customers take online? Extract online channels from #7

8.2 OFFLINE

What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.
Understanding how children perceive and interact with the point of sale has been the focus of various studies in the past decade. It is well
documented that children have preferences in terms of shopping destinations .For working parents necessarily needed one.

Identify strong TR & EM

CHAPTER 4

CHAPTER 4

REQUIREMENT ANALYSIS

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 Gmail Registration through Application
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Application Installation	Install through play store/App store Install through links
FR-4	Detect the location of the child	Detect the location through web sites Detect the location via app
FR-5	Database	History of location stored in cloud server
FR-6	Notification to User	Notification via Gmail Notification via Message

4.2 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. It is portable and easy to use.
NFR-2	**Security**	It gives a sense of assurance to parents about their children's security as the gadget uses GPS and GSM to track their live location.
NFR-3	**Reliability**	It is transportable, Easy to access, and Flexible. The user will be notified with an update if any errors are found, for the efficient functioning of the device
NFR-4	**Performance**	Data Accuracy. Poor performance in Network less area.
NFR-5	**Availability**	It provides the live location details. The site is available on online.
NFR-6	**Scalability**	Camera and sensors are embedded wiith the device for ensuring the safety and security. It provides live footage.

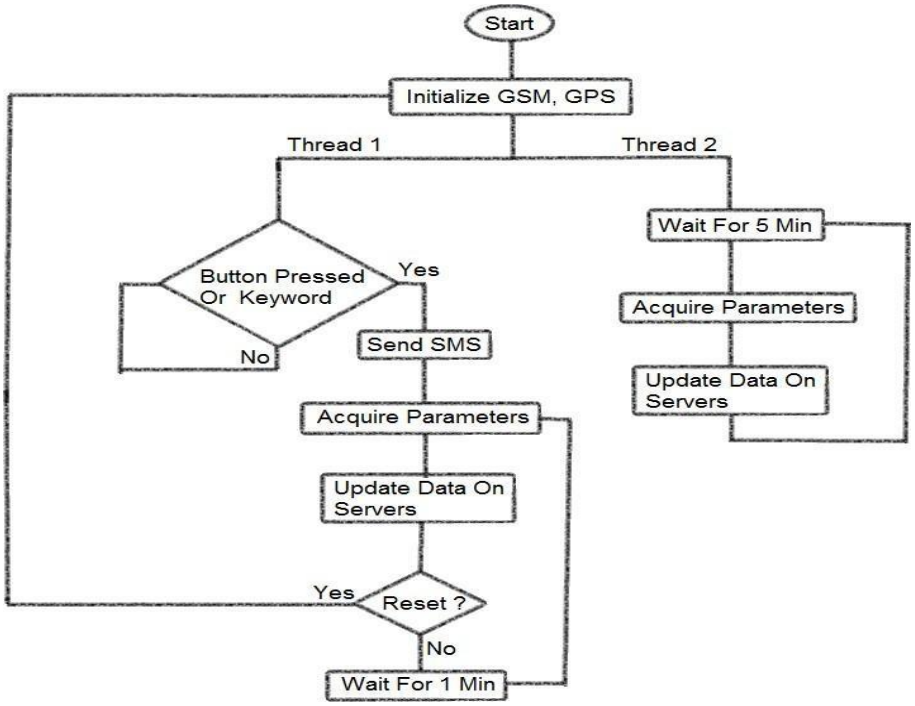
CHAPTER 5

CHAPTER 5

PROJECT DESIGN

5.1 DATA FLOW DIAGRAM

IOT based safety gadget for child safety monitoring and notification



5.2 SOLUTION AND TECHNICAL ARCHITECTURE

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

- Find the best tech solution to solve existing business problems.
- Describe the structure, characteristics, behaviour, 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, and delivered.

TECHNICAL ARCHITECTURE

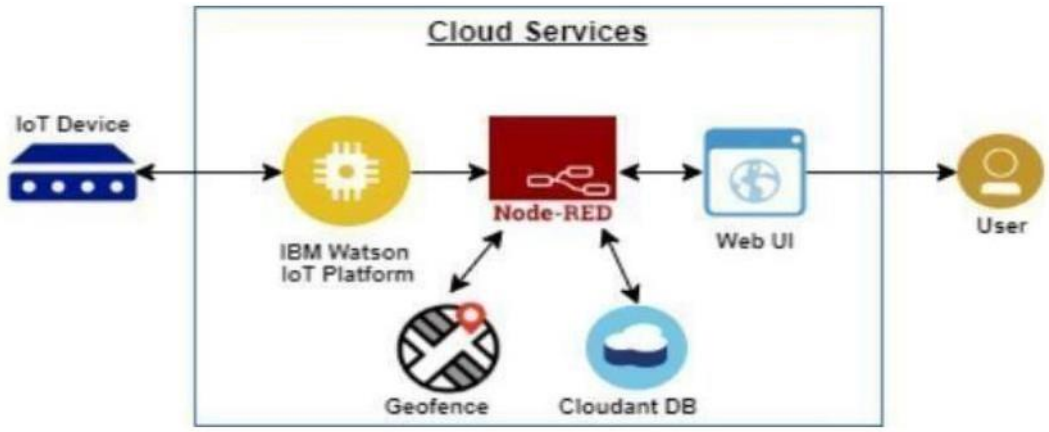


Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Users had to register and outlook the other device's location. e.g.web UI, Mobile App, etc.	HTML, CSS, JavaScript / Angular Js / React Js etc.
2.	Application Logic-1	Registration of child's and parent's device in each other device.	Python ,Embedded C.
3.	Application Logic-2	The child's GPS should be in ON condition, Parent's device should always be correlated to Child's appliance.	IBM Watson STT service IBMWatson Assistant
4.	Application Logic-3	The information is to be collected and dispatched to the authenticator via GSM equipping the GPS coordinates to efficiently locate access and monitor the Child.	IBM Watson Assistant IBMWatson STT service
5.	Database	Data Type can be any configuration such as arbitrary binary data, or text. Location history is stored in the cloud and the values include distance, latitude, and longitude. A user-defined blob 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 cloud infrastructure to perpetrate the database.	IBM DB2, IBM Cloudant etc.
7.	File Storage	Files will be labelled with what they encompass and how long they should be kept.	IBM Block Storage or Other StorageService or Local Filesystem
8.	External API-1	The purpose of the external API employed in the device is to exploit the internet for communicating and 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	Aadhar API, City Geo-Location Lookup API,
10.	Machine Learning Model	IoT and machine learning deliver insights otherwise hidden in data for prompt, automated retorts and enhanced Governing.	Object Recognition Model, Danger PredictionModel, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server chassis: Wearable high-tech mechanism. Cloud Server Configuration: a tremendous network that reinforces IoT devices and applications.	Local, Cloud Foundry, Kubernetes,Underlying Infrastructure,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 application furnishing the end user leisure surveillance of their children.	Mainflux, Thinger.io, and Zetta for non-stop streaming of child condition Open remote
2.	Security Implementations	To activate the alarm and facilitate video recording whenever the emergency button is pressed. We can use the cloud to accumulate the surveillance data of the children. The wifi modules are of assistance in sending the monitoring particulars, the user will be notified with an update if any errors are found, for the efficient functioning of the device.	e.g. SHA-256, Encryptions,regarding child condition, Firewalls, Antivirus, and Data Loss Prevention,etc.
3.	Scalable Architecture	This methodology can 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, and heartbeat of the child along with living perspective around the children without deterrence.	Multiple Data Storage Technologies, Reliable Microservices, Automated Bootstrapping
4.	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 it spontaneously alerts the parents/caretaker by sending an SMS when the children is in unsafe zone. The complete data of the children's location will be stocked in the repository and the execution of the device diminishes in a less network Area.	GSM tracker, High Durable Device Battery
5.	Availability	The device is used to keep tabs on your child even ina 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 asite that is available online	Temperature,Pulse sensor, GPS, GSM, Webcamera, Raspberry pi, Microprocessor

CHAPTER 6

CHAPTER 6

PROJECT PLANNING AND SCHEDULING

6.1 SPRINT PLANNING AND ESTIMATION

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a Parent/Guardian,I can register for the application by entering my email, password, and confirming my password.	2	High	Gokul
Sprint-1		USN-2	As a Parent/ Guardian, I can register for the application through Gmail	1	Medium	Sugumar Jagadeesh
Sprint-1	User Confirmation	USN-3	As a parent I will receive connection , location in sms / mail once I have entered this application	1	High	Ramya
Sprint-1	Login	USN-4	As a parent/ guardian , I can log into the application by entering mail and password.	2	High	Ragu

6.1 SPRINT DELIVERY SCHEDULE

Sprint	Total Story Points		Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20		24 Oct 2022	29 Oct 2022	20	29 Oct 2022

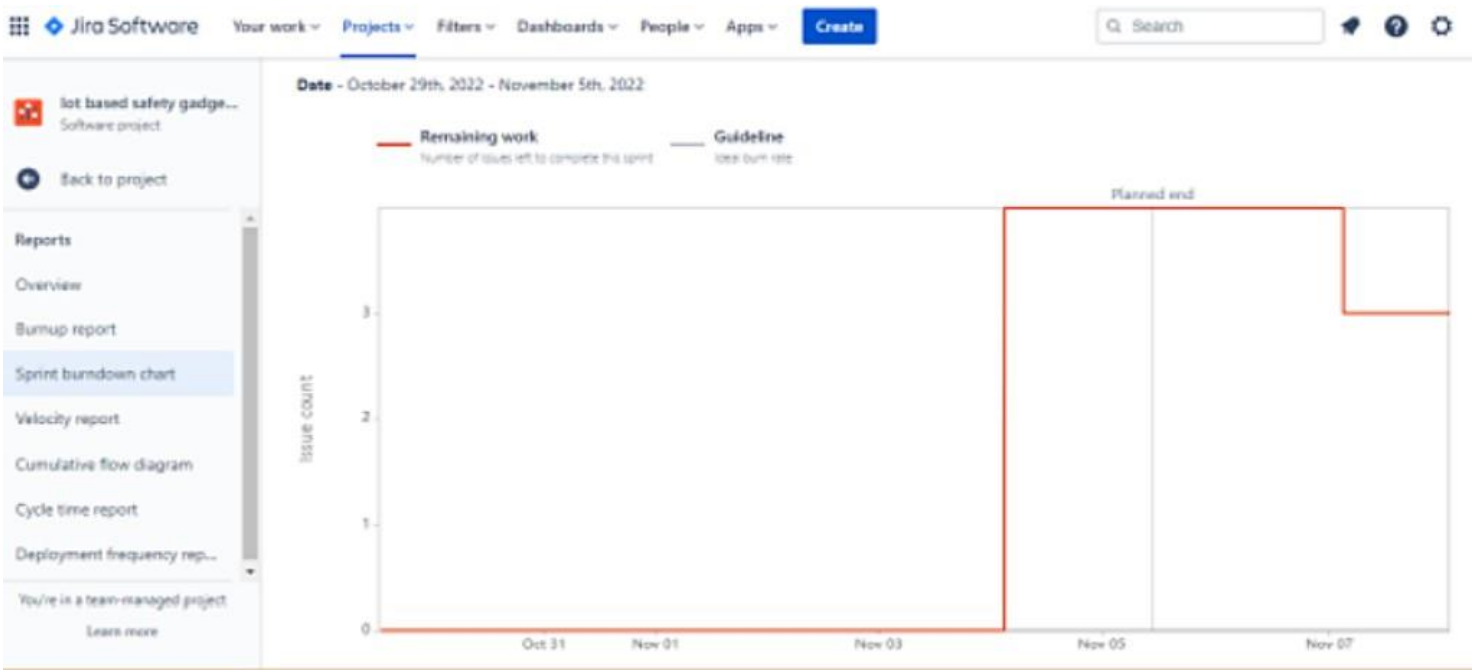
Sprint-2	20		28 Oct 2022	05 Nov 2022	20	04 Nov 2022
Sprint-3	20		02 Nov 2022	12 Nov 2022	20	11 Nov 2022
Sprint-4	20		10Nov 2022	19 Nov 2022	20	19 Nov 2022

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) per iteration unit (story points per day)

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

6.1 REPORT FROM JIRA



CHAPTER 7

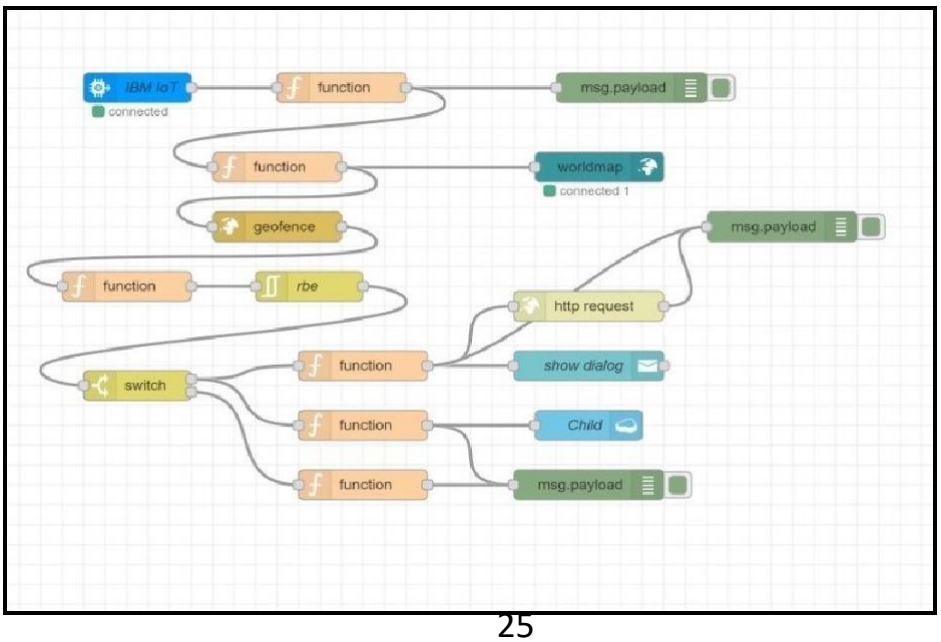
CHAPTER 7

CODING & SOLUTIONING (Explain the features added in the project along with code)

7.1 FEATURE

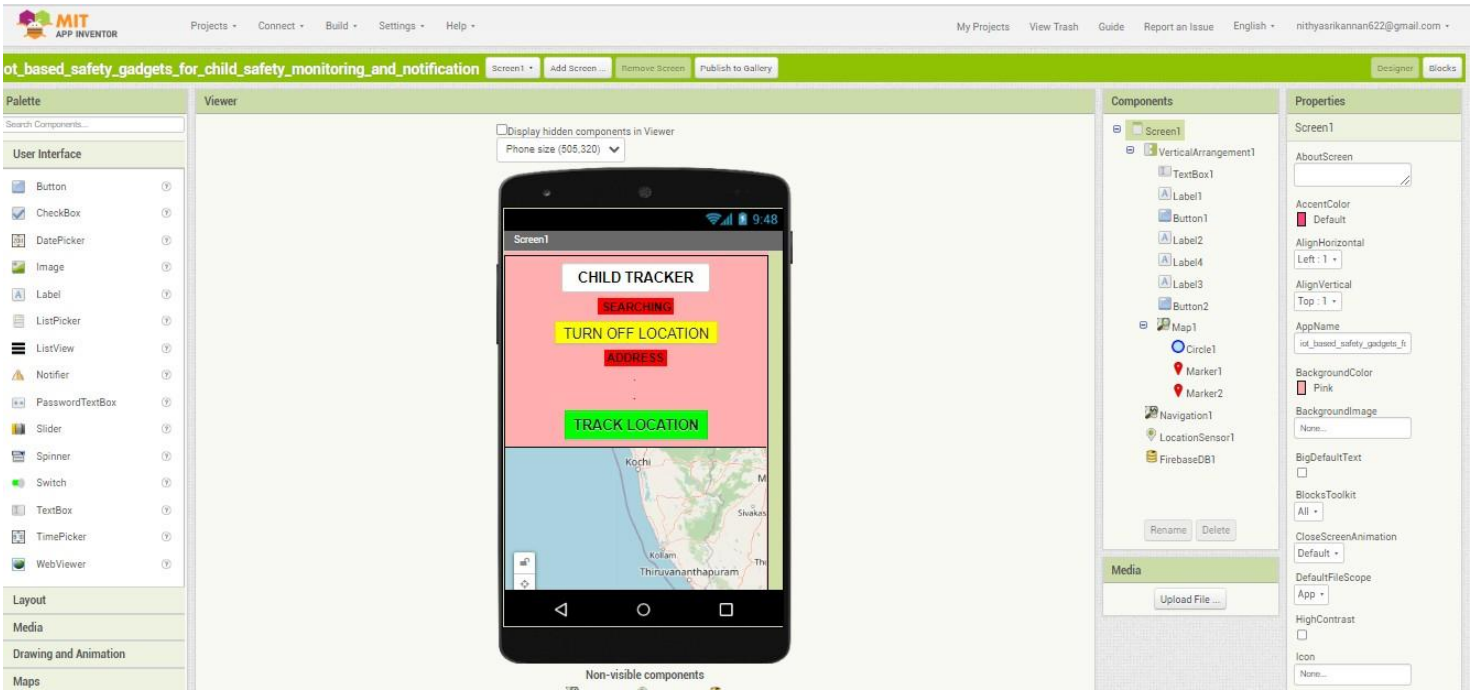
```
import json
import wiotp.sdk.device
import time

myconfig = {
   "identity": {
"orgId": "u5k7qv",
"typeId": "SAFETY-GADGET",
"deviceId": "SAFETY_GADGET_1"

},
"auth": {
"token":" qFA7m1REHT?PvWXu@e "

}
}
client = wiotp.sdk.device.Deviceclient(config=myconfig, logHandlers=None)
client.connect()

while True:
   name= "Smartbridge"
   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()
```

7.2 FEATURE

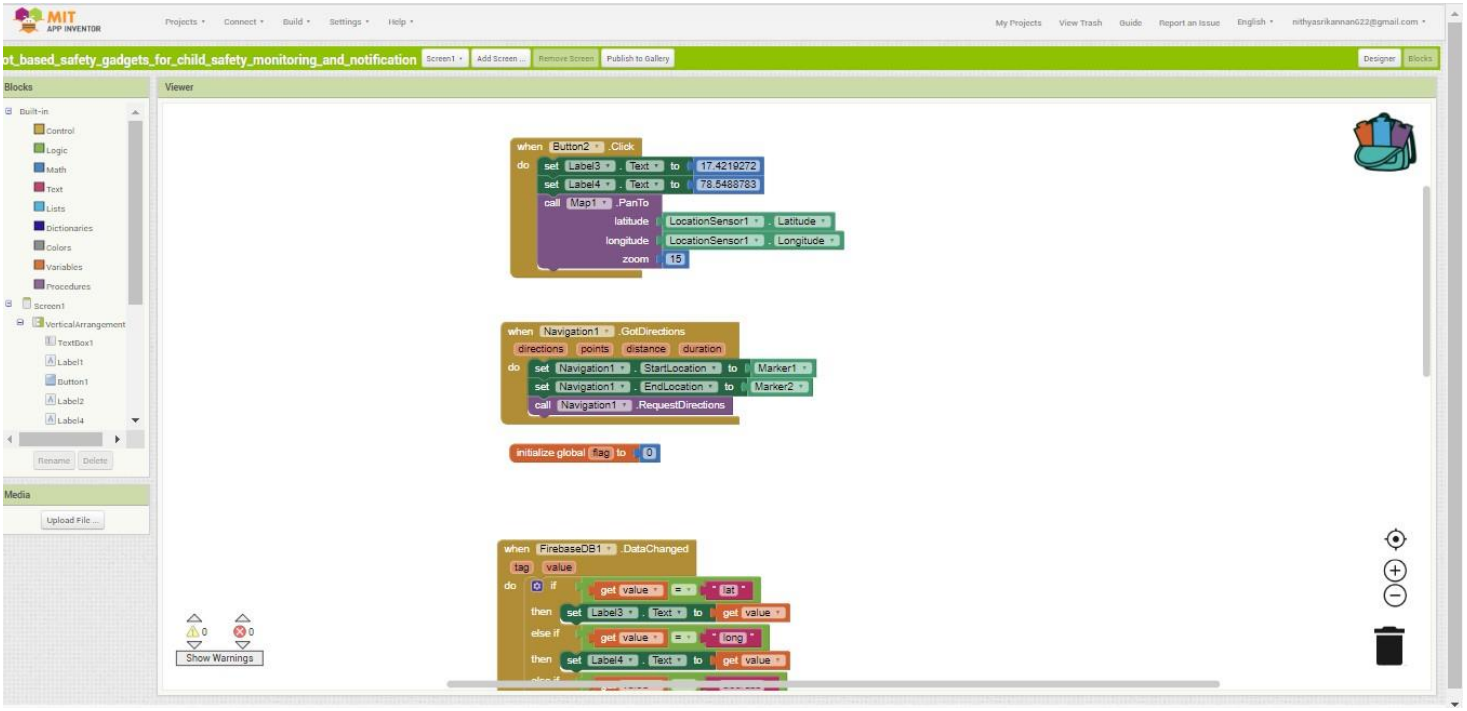


7.3 Database Schema (if Applicable)

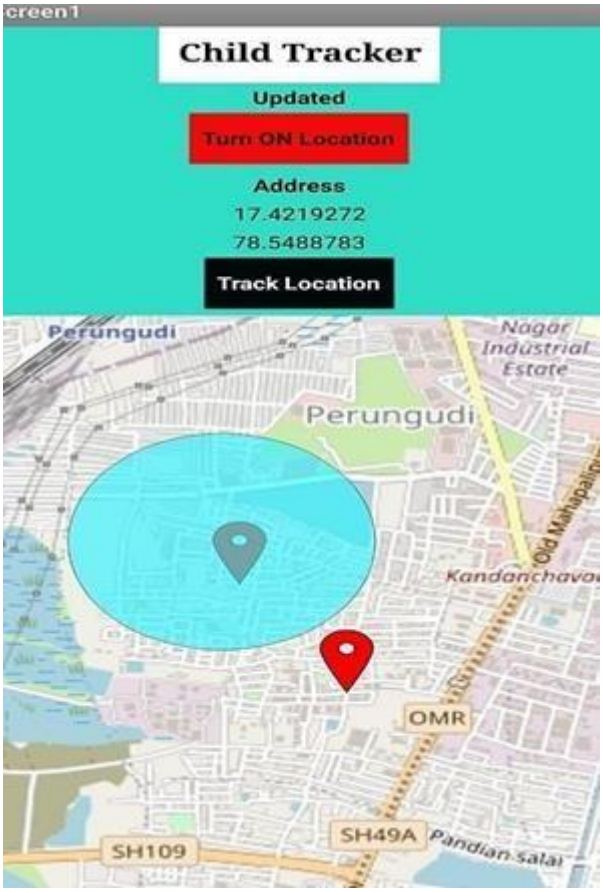
MIT App



MIT App Code




MIT APP INVENTOR
Blocks
Viewer
when Button1 .Click
do if get global flag = 0
then set global flag to 1
set Button1 . BackgroundColor to
set Button1 . Text to Turn ON Location
else set global flag to 0
set Button1 . BackgroundColor to
set Button1 . Text to Turn OFF Location
when LocationSensor1 .LocationChanged
latitude longitude altitude speed
do if get global flag = 0
then call FirebaseDB1 .StoreValue
tag lat
valueToStore get latitude
call FirebaseDB1 .StoreValue
tag long
valueToStore get longitude
call FirebaseDB1 .StoreValue
tag address
valueToStore LocationSensor1 . CurrentAddress
set latitude to 17.4219272
set longitude to 78.5488783
set Label1 . Text to updated
Show Warnings


Child Tracker
Updated
Turn ON Location
Address
17.4219272
78.5488783
Track Location
Perungudi
Nagar Industrial Estate
Perungudi
OMR
SH109
SH49A
Pandian Salai

CHAPTER 8

CHAPTER 8

TESTING

8.1 Test Cases

				Date	16 November 2022						
				Team ID	PNT2022TMID27117						
				Project Name	Project - IoT Based Safety Gadget for Child Safety Monitoring & Notification						
				Maximum Marks	4 marks						
Test case ID	**Feature Type**	**Component**	**Test Scenario**	**Pre-Requisite**	**Steps To Execute**	**Test Data**	**Expected Result**	**Actual Result**	**Status**	**TC for Automation (Y/N)**	**BUG ID**	**Executed By**
IBM CLOUD_TC_001	Functional	IBM Cloud Service	Verify the login cloud services	Software	1. Login in using cloud.ibm.com 2. Obtain promocode in ICT 3. Then apply code the and Login 4. The page will be directed to the IBM cloud account	email 310819106301@smartinternz.com Password : PNTIBMB622	Successfully created the IBM account	Working as expected	Pass	YES	NIL	1.MUTHURAJ S 2.ANGLEENA REJI 3. ANUPAMA M 4. DIVYA L
IBM Watson IoT Platform_TC_002	Functional	IBM Cloud Service	Verify create a device in the IBM Watson IoT platform and get the device credentials.	IBM Cloud Service	1.In IBM Cloud Service go to catalog 2.Create and launch the IBM Watson IoT Platform 3.Login to the Platform by clicking organization ID 4.Create a device & configure the device type and ID 5.Generate the API Key	Create a device & integrate with code	{'name': 'SmartBridge', 'iat': 17.4219272, 'iot': 78.5488783}	Working as expected	Pass	YES	NIL	1.MUTHURAJ S 2.ANGLEENA REJI 3. ANUPAMA M 4. DIVYA L
PythonCode_TC_003	Code	Python 3.9	Verify wheather the python code is without error by running it	Software	1.Download the python version3.9 2.Type the program and save it with the extention .py 3.Verify it by compiling the code	import json import wiotp.sdk.device import time import random myConfig = { "identity":{ "orgId": "4o1qzb",	022-11-18 12:25:57,235 wiotp.sdk.device.client.DeviceClient INFO Connected successfully: d:4o1qzb:TestDeviceType:12345	Working as expected	Pass	YES	NIL	1.MUTHURAJ S 2.ANGLEENA REJI 3. ANUPAMA M 4. DIVYA L
Node_Red_TC_004	Non-Functional	IBM Cloud Service	Verify to create a node-red services	IBM cloud services	1. In IBM cloud go to catalog 2. To create a Node-Red app 3. Click onto Deploy App 4. Visit the app URL 5. We need to connect the Node-Red with the IBM watson	We use a geofence mode to form a cefcr shaped range whether the child is present in the circle or not.	Successfully created the node-red	Working as expected	Pass	NO	NIL	1.MUTHURAJ S 2.ANGLEENA REJI 3. ANUPAMA M 4. DIVYA L
CloundantDB_TC_005	Dataset	IBM Cloud Service	Verify the events is stored in the database	IBM Cloud Service	1.Go to IBM Cloud Services 2.In resources list, click onto cloudant 3.Click onto the launch dashbord to redirect to the cloud DB 4.Click onto create DB	Document tracker	Successfully created the Database	Working as expected	Pass	NO	NIL	1.MUTHURAJ S 2.ANGLEENA REJI 3. ANUPAMA M 4. DIVYA L
Web UI_TC_006	Functional	Node-Red Service	To create a web UI to interact with user	Node-Red Service	1. Go to Node-Red Dashboard 2. Make the necessary connection and deploy it. 3. Copy the URL and paste it in the new tab with "/ui" extention 4. Display the child and geofence location.	Shows the location of parent and child	And as expected it displays the Position of the child and parent.	Working as expected	Pass	NO	NIL	1.MUTHURAJ S 2.ANGLEENA REJI 3. ANUPAMA M 4. DIVYA L
FastSMS Service_TC_007	Functional	Fast2SMS Service	To send SMS to the particular child's guardian	Software	1.Login to Fast2SMS Service 2.GO to Dev API and select quick API 3.SMS will be sent using Flash SMS option to the registered number	Show the pop up SMS	Alert: The person is not in the particular geofence area	Working as expected	Pass	NO	NIL	1.MUTHURAJ S 2.ANGLEENA REJI 3. ANUPAMA M 4. DIVYA L

Test Scenarios

1.) Verify the login cloud services

2.)Verify create a device in the IBM Watson IoT platform and get the device credentials.

3.) Verify wheather the python code is without error by running it

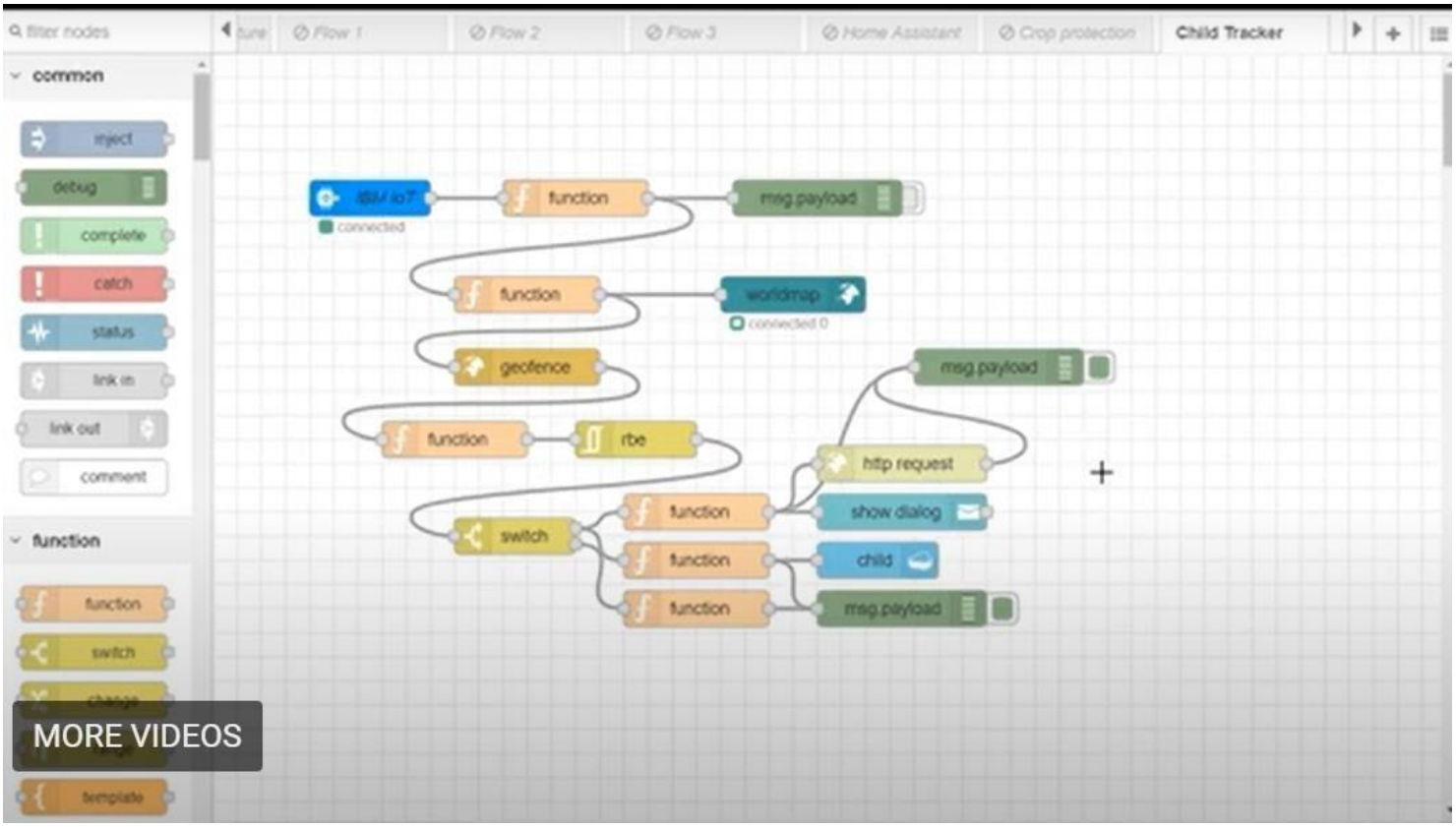
4.) Verify to create a node-red services

5.) Verify the events is stored in the database

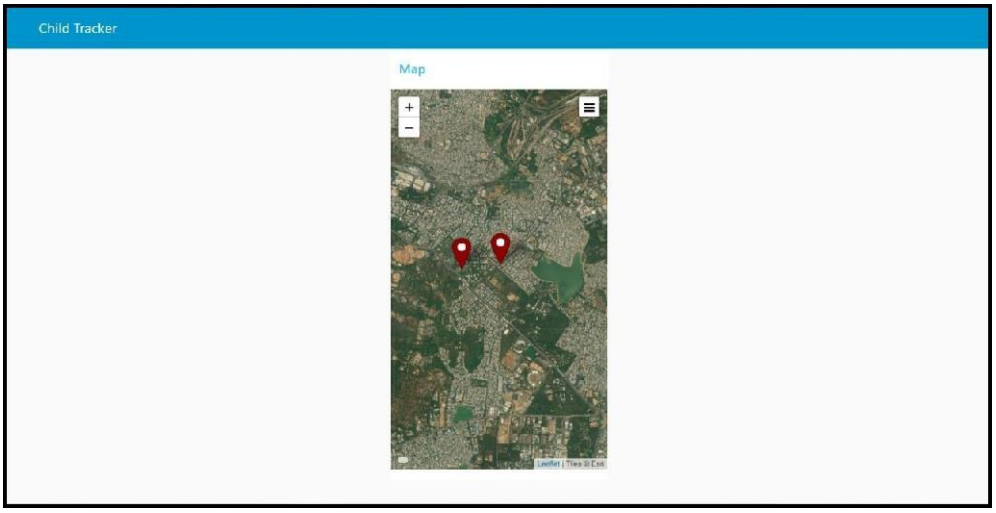
6.) To create a web UI to interact with user

7.) To send SMS to the particular child's guardian

Nod Red Connection


filter nodes
Flow 1
Flow 2
Flow 3
Home Assistant
Crop protection
Child Tracker
common
inject
debug
complete
catch
status
link in
link out
comment
function
function
switch
template
MORE VIDEOS
function
msg.payload
connected
function
worldmap
connected 0
geofence
function
rbe
msg.payload
http request
function
show dialog
switch
function
child
function
msg.payload

output



8.2 User Acceptances Testing

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Acceptance Testing UAT Execution & Report Submission

Date	18 November 2022
Team ID	PNT2022TMID44808
Project Name	Project – IoT based safety gadget for child safety monitoring and notification
Maximum Marks	4 Marks

Purpose of Document

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

CHAPTER 9

CHAPTER 9

RESULT

9.1 Performance Metrics

			NFT - Risk Assessment			
S No	Project Name	Scope/feature	Functional Changes	Hardware Changes	Risk Score	Justification
1	IoT Based Safety Gadget for Child Safety Monitoring & Notification	New	No Changes	No Changes	GREEN	As we have completed the project successfully

NFT - Detailed Test Plan		
S No	Project Overview	NFT Test Approach
1	This project proposes a model for child safety through smartphones that can track their children's location and give the precise coordinates of the child's location in real-time anywhere.	Load Test

			End Of Test Report		
S No	Project Overview	NFT Test approach	NFR - Met	Test Outcome	Approvals/SignOff
1	The application aside from conceding you to track down your children when they're within Geofence range, also functions when your kids go farther afield. Its convenience as a tracker is outstanding if you live in densely populated areas like cities or big towns.	Load Test	Nil	Respone time meet the actual Result	Approved

NFT Test approach	
Load Test	
Scenario Name	Load Test - Location Tracker SAMPLE PROJECT
Scenario Type	Load Test - Duration 15 minutes
Scenario Objectives	To Stimulate Python Code(Location Details) and to monitor the performance of Location Tracker SAMPLE PROJECT
Steps	1. We have integrate IBM Watson IoT Platform in order to get this Location details from python program. 2. We also integrate fast SMS service in order to send an alert to guardian or parent
Entry Criteria	Test data is set-up. All the Components(software & hardware) is set-up. It is completed successfully.
Exit Criteria	Response time meets the actual Result. Test completion report is agreed upon by mentors

CHAPTER 10

CHAPTER 10

ADVANTAGES AND DISADVANTAGES

ADVANTAGES:

- Keeps track of children in case of abduction.
- Allows children more freedom while being watched.
- Monitors children with special needs who wander.
- Helps monitor children with behavioural problems.
- Gives peace of mind to parents.

DISADVANTAGES

- The system is dependent on communication signal/network signal for the smart gadget to trigger automatic phone call/SMS during panic situation.
- It can be difficult to detect when network signal is not reachable/weak/when the smart gadget moves outside the boundary range.
- Improved by increasing the range
- Children may feel a loss of privacy.
- Losing confidence

CHAPTER 11

CHAPTER 11

CONCLUSION

The System put forward this paper to ensure the safety of children and increase their confidence. Many experimenters are operating in this area and have formulated different technologies to aid children. The key represented in this paper takes the advantage of smartphones which proposes affluent elements like Google maps, SMS, etc. The child safety and protection device is proficient in acting as a smart IoT device. It equips parents with real-time location, the surrounding temperature, and along with an alarm buzzer for their child's circumstances and the capability to locate their child. This paper depicts the fundamental design concept and functionality along with the anticipated consequensce.

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

Parents take measures both at home and outdoors to safeguard their kids from hurting themselves. But sometimes, it's impossible to pre-empt what can cause a treacherous encounter. However, it's possible to prevent such hazards with some forethought and simple measures using these safety gadgets.

CHAPTER 12

CHAPTER 12

FUTURE SCOPES

Ceaseless Surveillance :

If any deviant readings are disclosed by the sensor, then an SMS and phone calls are set off to the parent's mobile.

Create unassailable environment :

Precisely predicting the circumstances of the children and swiftly sensing the problems around children will make parents at ease.It helps to diminish their vulnerability in harmful situations and also protects the children in emergency situations.

Pays way for a tech-driven community :

Children and their parents are veering around to digital solutions more than ever to support children's cognition and it notifies the information about the child in a web application

CHAPTER 13

CHAPTER 13

APPENDIX

DEMO LINK:

https://drive.google.com/file/d/1SWoa1Sk2UhD7wurBb6gYEpupeukRGw7e/view?usp=drivesdk

GITHUB LINK:

https://github.com/IBM-EPBL/IBM-Project-45225-1660728909