IoT - BASED SAFETY GADGET FOR CHILD SAFETYMONITORING AND NOTIFICATION

A PROJECT WORK REPORT

Submitted by

SUBA JAI VARTHINI A (737819ECR189)

SRI HARINI S (737819ECR184)

SRIVARSHAN N (737819ECR188)

SURIYA S R (737819ECR199)

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ABSTRACT

This paper is mainly streamed towards child safety solutions by developing a gadget which can be tracked via its GPS locations and also a panic button on gadget is provided to alert the parent via GSM module calling for help. Parental android app is developed to manage and track the device anytime. Smart gadget device is always connected to parental phone which can receive and make phone calls and also receive SMS on gadget via GSM module, 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.on-device health monitoring system Checking for factors that can be monitored by a parental app include heart rate, pulse, and temperature.Using a contact switch, the gadget also keeps track of whether it is plugged in or not and notifies the parent if it is unplugged.

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LIST OF ABBREVIATIONS

IoT	: INTERNET OF THINGS
GPS	: GLOBAL POSITIONING SYSTEM
FR	: FUNCTIONAL REQUIREMENTS
NFR	: NON-FUNCTIONAL REQUIREMENTS
DFD	: DATA FLOW DIAGRAM
SQL	: STRUCTURED QUERY LANGUAGES
STT	: SECURITY TRANSACTIONS TAX
DB	: DATABASE
UAT	: USER ACCEPTANCE TESTING
WIFI	: WIRELESS FIDELITY

CHAPTER 1

INTRODUCTION

1.1 Project Overview

A tracking device that enables parents to keep tabs on their child's whereabouts to prevent dangerous situations for them.

The main source of inspiration for this wearable was the growing concern for tiny children's safety in modern society due to the possibility of child wandering off in heavily populated regions. This primary screenplay largely concentrates on the vital aspects of a missing child who can be aided by the people nearby and plays a significant role in the child's safety until the parent is reunited with them at that area.

1.2 Purpose

These days Parents are more accountable than older people for their children. In order to prevent crimes like child amusement, rapes, murders, and illegal relationships, which are on the rise in our nation, parents must keep an eye on their kids at all times. Mobile devices eventually give rise to serious accusations against our culture. It is our responsibility to bring many teenagers' parents' attention to them. However, occasionally kids will argue with their parents over them tracking their every move. To get around this, we need to watch them online.

CHAPTER 2

LITERATURE SURVEY

2.1 Existing Problem

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 this ensures the complete solution for child safety problems.

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 wearables' in the market which helps to track the daily activity of children and also helps to find the child using Wi-Fi and Bluetoothservices 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 savvyindividual to operate.

Demerits: As, this device's battery gives short life-time.

Authors: Aditi Gupta, Vibhor Harit. Published in: 2016 IEEE. Title: Child Safety & Tracking Management System by using GPS. 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.

Authors: Dheeraj Sunehera, Pottabhatini Laxmi Priya. Title: Children Location Monitoring on Google Maps Using GPS and GSM. Published in: 2016 IEEE. This paper provides an Android based solution for the parents to track their children in real time. Different devices relate to 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.

2.2 REFERENCES

M Nandini Priyanka, S Murugan, K. N. H. Srinivas, T. D. S. Sarveswararao, E. Kusuma Kumari, 'Smart IoT Device for Child Safety and Tracking' International Journal of Innovative Technology and Exploring Engineering, Volume 8, Issue 8, June 2019. Akash Moodbidri, Hamid Shahnasser (Jan. 2017) 'Child safety wearable device', International Journal for Research in Applied Science & Engineering Technology, Vol. 6 Issue 2, pp. 438-444.Aditi Gupta, Vibhor Harit, 'Child Safety & Tracking Management System by using GPS, GeoFencing & Android Application: An Analysis,' 2016 Second International Conference on Computational Intelligence & Communication Technology.

2.3 PROBLEM STATEMENT DEFINITION

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.

CHAPTER 3

IDEATION & PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS

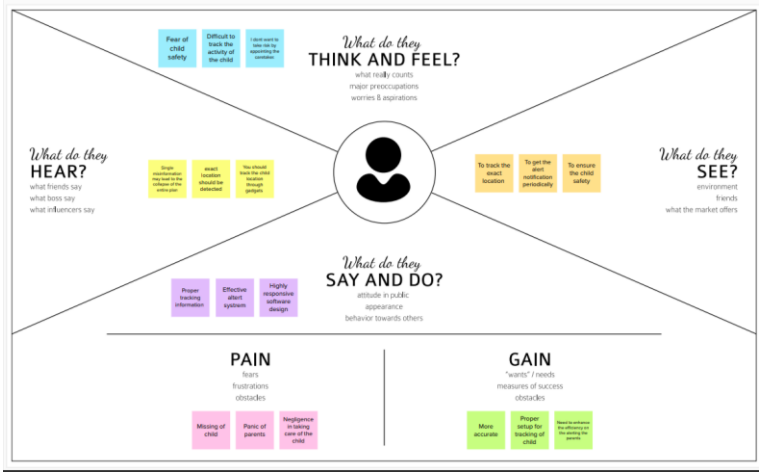


Fig 3.1.1 Empathy Map

To assist parents in keeping tabs on where their kids are at all times, this initiative was developed.Nowadays, kids are more easily swayed by their friends, and they could be tricked or kidnapped by strangers. This approach might be created to monitor a child's current location. The device's Web application will update the application with the child's position after a predetermined amount of time.Parents can even intervene if their children are unsteady or in an inappropriate location by pressing the special button that has been introduced.WFPS, a WIFI positioning system that doesn't connect to the internet but connects to Wi-Fi access points, will be used to track the child's whereabouts

3.1 IDEATION & BRAINSTORMING

BRAINSTORMING

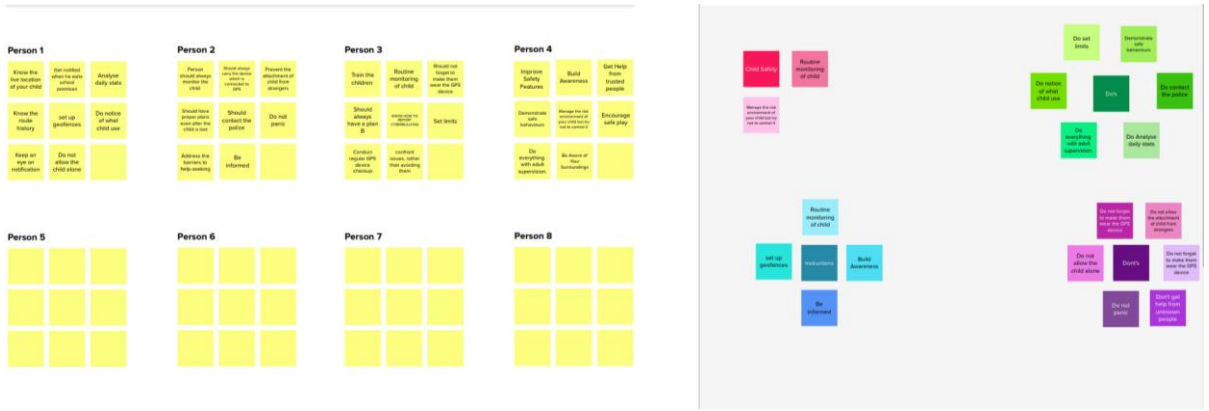


Fig 3.2.1 Ideation & Brainstorming

IDEATION PRIORITIZATION

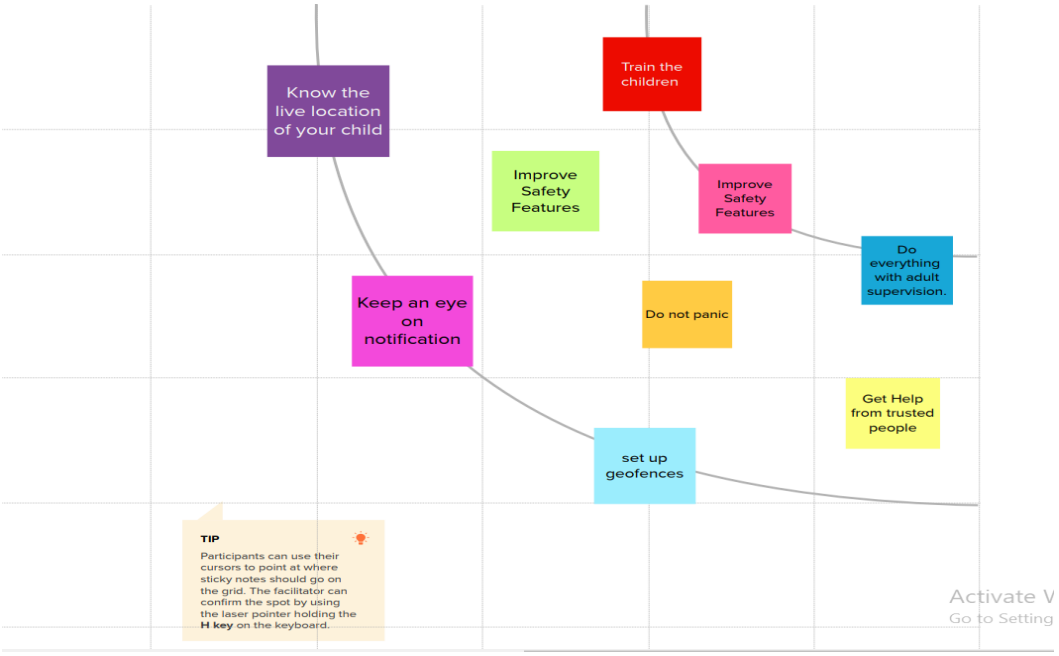


Fig 3.2.1 Ideation Prioritization

3.3 PROPOSED SOLUTION

S. No.	Parameter	Description
1.	Problem Statement (Problem to besolved)	risks and dangers for young children and newborns left home alone
2.	Idea / Solution description	Use IoT enabled devices to check and ensure the safety of toddlers and kids
3.	Novelty / Uniqueness	Hassle-free operation mode. Efficient functioning with user friendly interface
4.	Social Impact / Customer Satisfaction	Safety and well-being of children can be made sure of by their parents who may go for work or be busy in work
5.	Business Model (Revenue Model)	Currently, there are no devices in the market that can carry out the function of providing child safety in an easy manner
6.	Scalability of the Solution	It can be further extended to provide safety for aged persons as well

Table 3.3.1 Proposed Solution

3.4 PROBLEM SOLUTION FIT

Fig 3.4.1 Problem Solution Fit

CHAPTER 4

REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENT

FR No.	Functional Requirement(Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Utilizing a Form for Registration signing up with Gmail
FR-2	User Confirmation	Email confirmation required Reassurance through OTP
FR-3	User Notification	Sending a notification to a mobile number notification sent through phone or message
FR-4	User Location Check	Examine the Account

Table 4.1.1 Functional Requirements

4.2 NON-FUNCTIONAL REQUIREMENTS

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Permit parents to keep an eye on their children and track their whereabouts.
NFR-2	**Security**	Establishes a safe environment for kids to explore
NFR-3	**Reliability**	Increased reliability towards technology

NFR-4	**Performance**	High functionality in terms of ease of use and security
NFR-5	**Availability**	Backup power supply
NFR-6	**Scalability**	Increase in scalability

CHAPTER 5

PROJECT

DESIGN

5.1 DATA FLOW DIAGRAMS

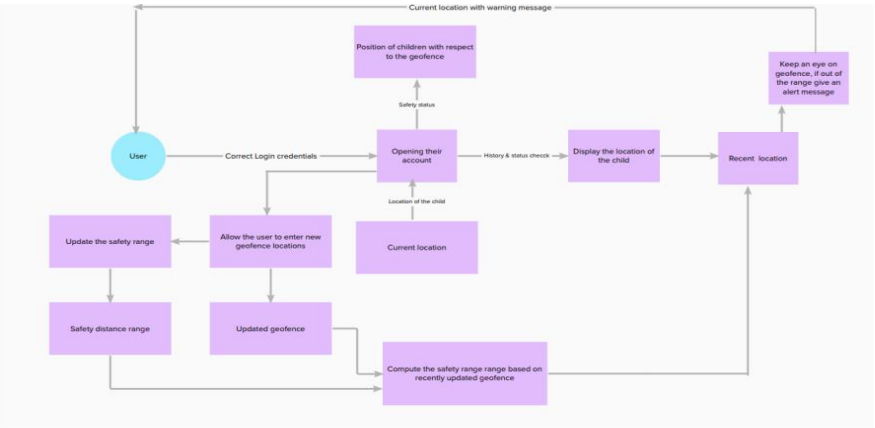
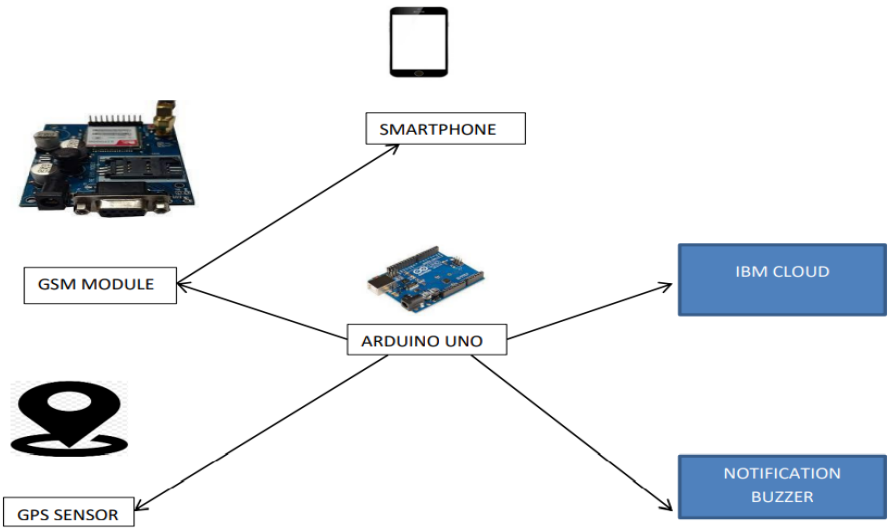


Fig 5.1.1 Data Flow Diagrams

5.2 Solution & Technical Architecture



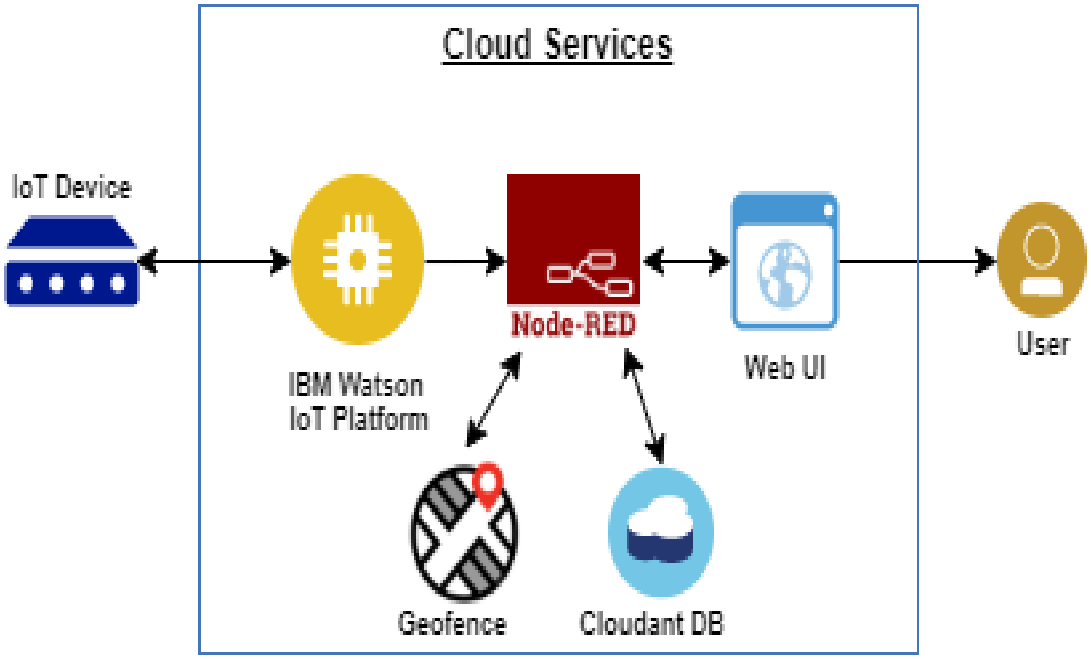


Fig 5.2.2 Technical Architecture

COMPONENTS & TECHNOLOGIES:

S. No	Component	Description	Technology
1.	User Interface	The communication protocol being used in the proposed result might act as an interface the waylike WiFi, Bluetooth and ZigBee	MIT app
2.	Application Logic	The data to be collected and sent to the authenticator's(parent) via GSM providing the GPS coordinates to easily locate access and monitor thechild	IBM Watson STT service, python etc
3.	Database	Data to be segregated and secured in the form ofrelational DBMS	MySQL,PHP
4.	Cloud Database	Database Service on Cloud	IBM Cloudant
5.	File Storage	File storage requirements	IBM Block Storage or Other StorageService or Local Filesystem
6.	External API	To access the children location	GPS location monitoring ,etc.
7.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
8.	Infrastructure (Server / Cloud)	Application Deployment on Local System / CloudLocal Server Configuration.	Cloud Foundry, Kubernetes, etc.

Table 5.2.3 Components & Technologies

APPLICATION CHARACTERISTICS:

S. No	Characteristics	Description	Technology
1.	Open-Source Frameworks	The suggested remedy is designed as an Android app that allows users to quickly view their children (users should ideally be parents).	UI/UX design development
2.	Security Implementations	The created application must be used in a way that allows it to only reply to comments made by the appropriate people.	Encryption, IAM Controls.
3.	Scalable Architecture	The app format is much simpler to use and handle.	Not yet determined
4.	Availability	The designed solution typically has a quick time to market.	Not yet determined
5.	Performance	Functionalities for improvement and highly appropriateness must be guaranteed in the design solution.	Not yet determined

Table 5.2.4 Application Characteristics

5.3 USER STORIES

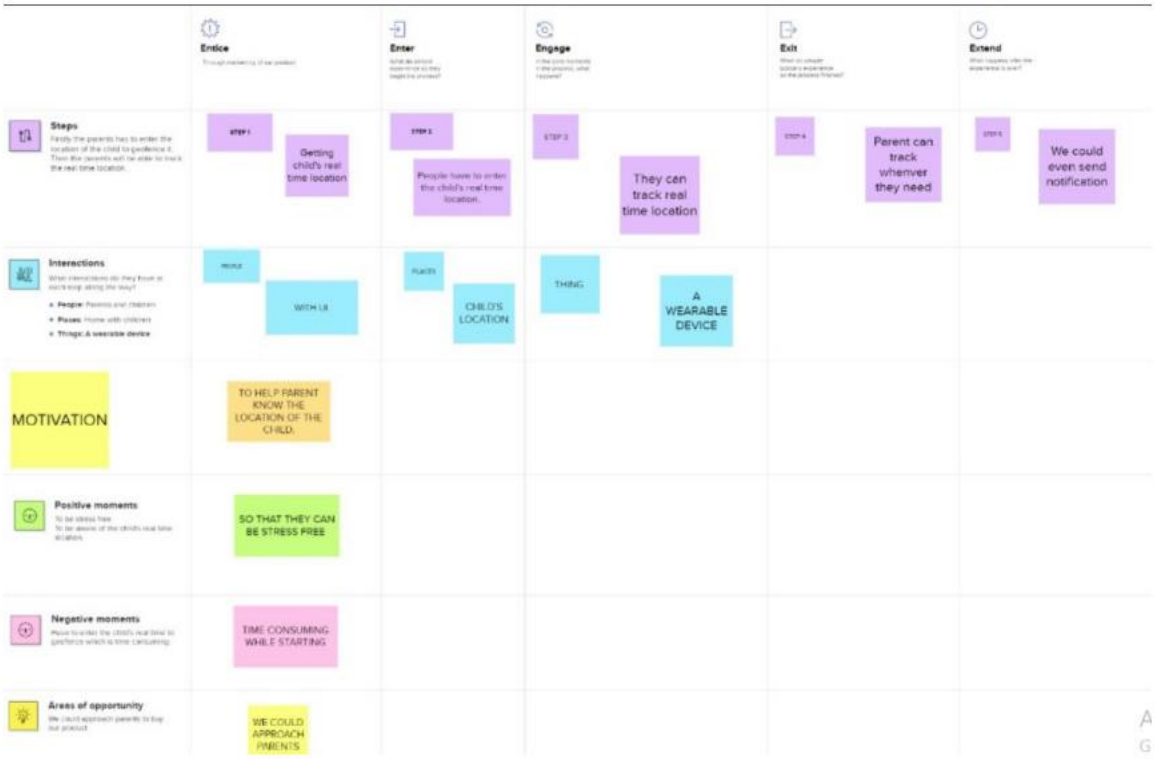


Fig 5.3.1 User Stories

CHAPTER 6

PROJECT PLANNING & SCHEDULING

6.1 SPRINT PLANNING & ESTIMATION

Sprint	Functional Requirement(Epic)	User Story Number	User Story / Task	Story Points	Priority	Team members
Sprint-1	Registration	USN-1	I may sign up for the programme as a user by providing my email address, a password, and a password confirmation.	3	High	Mohamed Riyas
Sprint-1		USN-2	After registering for the application, I as a user will receive a confirmation email.	3	High	Mohamm ed Hashim
Sprint-1	Login	USN-4	I may sign up for the application as a user.	3	Medium	Hadhi Sulaiman
Sprint-2	Dashboard	USN-3	I can access the application as a user by entering my email address and password.	5	High	Rumais Ahamed
Sprint-4		USN-6	If a user's movement crosses the geofence, they can receive alert alerts.	13	High	Mirshad KT
Sprint-3		USN-7	As a user I can add the geofence.	10	Medium	Mohamed Riyas

Sprint-3		USN-8	As a user I can update the geofence whenever necessary.	13	Medium	Moham m ed Hashim

Table 6.1.1 Sprint Planning & Estimation

6.2 SPRINT DELIVERY SCHEDULE

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority
Customer (Mobile user)	Registration	USN-1	I may sign up for the programme as a user by providing my email address, a password, and a password confirmation.	20	High
		USN-2	When I register for the application as a user, I will get a confirmation email.	20	High
		USN-3	I may sign up for the application as a user through Facebook.	5	Low
		USN-4	I can sign up for the application as a user through Gmail.	10	Medium
	Login	USN-5	As a user, I can log into the application by entering email & password	20	High
Dashboard					
Customer (Web user)	Login		When I enter, I can see how applications are working, scan and monitor the operations, and determine whether all users are authorized.	10	Medium
Customer Care Executive	Login		The locations database is kept up to date frequently and is kept accurate and secure for access.	20	High
Administrator	Login		I may sign up for the application as a user by providing my accurate information.	20	High

Table 6.2.1 Sprint Planning & Estimation

6.3 REPORTS FROM

JIRA ROADMAP

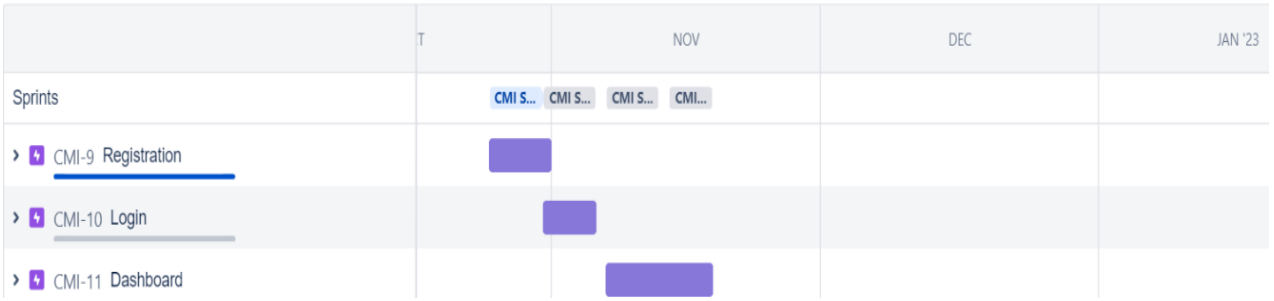
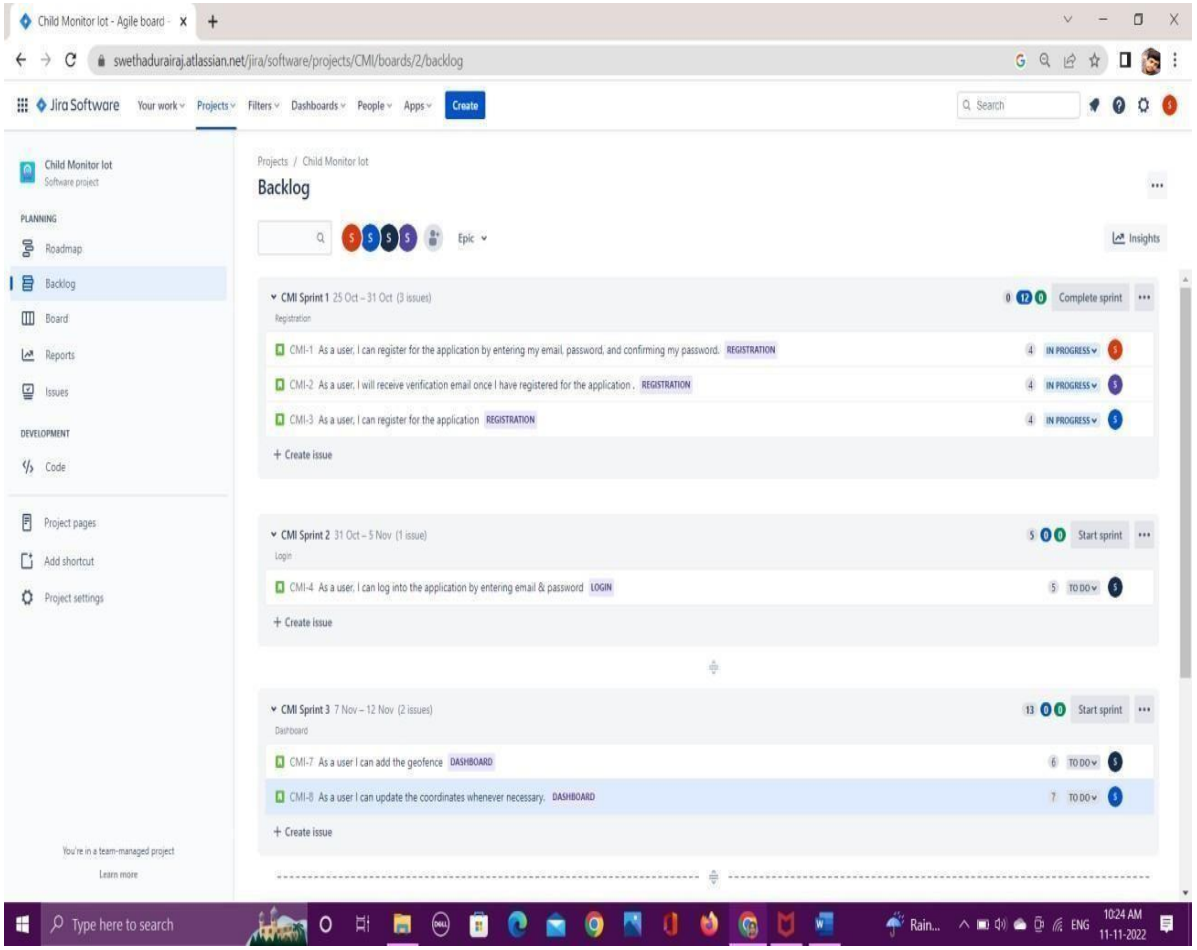


Fig 6.3.1 Road Map

BACKLOG



CHAPTER 7

CODING & SOLUTIONING

7.1 FEATURE 1 (ADDING GEOFENCE)

- A geofence encloses a certain area like a circular wall.In order to identify the place where their children are going, parents might utilise them.

```
package com.example.geofence; import android.app.PendingIntent;
import android.content.Context;
import android.content.ContextWrapper;
import android.content.Intent;import android.widget.Toast;
import com.google.android.gms.common.api.ApiException;
import com.google.android.gms.location.Geofence;
import
com.google.android.gms.location.GeofenceStatusCodes;
import
com.google.android.gms.location.GeofencingRequest;
import com.google.android.gms.maps.model.LatLng;
public class GeofenceHelper extends ContextWrapper {

        private static final String TAG =
        "GeofenceHelper";PendingIntent
        pendingIntent;

        public GeofenceHelper(Context base) {
                super(base);
        }
        public GeofencingRequest getGeofencingRequest(Geofence
geofence) {return new GeofencingRequest.Builder()
                                        .addGeofence(geofence)

                .setInitialTrigger(GeofencingRequest.INITIAL_TRIGGER_ENTER)
                                        .build();
      }
```

```
        public Geofence getGeofence(String ID, LatLng latLng,
float radius,int transitionTypes) {
                        return new Geofence.Builder()
                                .setCircularRegion(latLng.latitude,
                                latLng.longitude,
radius)


            .setRequestId(ID)
            .setTransitionTypes(transitionTypes)
            .setLoiteringDelay(5000)
            .setExpirationDuration(Geofence.NEVER_EXPIRE)
                .build();
}

public PendingIntent
        getPendingIntent() { if
        (pendingIntent != null) {
                return pendingIntent;
        }
        Intent intent = new Intent(this,
GeofenceBroadcastReceiver.class);
        pendingIntent = PendingIntent.getBroadcast(this, 2607,
intent, PendingIntent.FLAG_IMMUTABLE);
                        return pendingIntent;
                }

public String getErrorString(Exception
e) { if (e instanceof ApiException) {
        ApiException apiException =
        (ApiException) e; switch
        (apiException.getStatusCode()) {
                case GeofenceStatusCodes

.
                GEOFENCE_NOT_AVAILABLE:
                return
                "GEOFENCE_NOT_AVAILABLE";
case GeofenceStatusCodes
```

```
GEOFENCE_NOT_AVAILABLE:
        return "GEOFENCE_NOT_AVAILABLE";
case GeofenceStatusCodes
            .GEOFENCE_TOO_MANY_GEOFENCE
        S: return
        "GEOFENCE_TOO_MANY_GEOFENCES";
    case GeofenceStatusCodes
        .GEOFENCE_TOO_MANY_PENDING_INTENTS:
    return
    "GEOFENCE_TOO_MANY_PENDING_INTENTS";}}
```

7.2 FEATURE 2 (ALERT NOTIFICATION)

- When a geofence is added, a notification is sent when the child enters the geofence.
  A notification will be delivered when the youngster exits the geofence.

```
    package com.example.geofence;
import android.content.BroadcastReceiver;import
android.content.Context;
import android.content.Intent; import android.location.Location;import
android.os.CountDownTimer;import android.util.Log;
import android.widget.Toast;
import com.google.android.gms.location.Geofence;
import
com.google.android.gms.location.GeofencingEvent
import java.util.List;
import android.os.Handler;
public class GeofenceBroadcastReceiver
extends BroadcastReceiver {
    private static final String TAG =
"GeofenceBroadcastReceiv";
    @Override
    public void onReceive(Context context, Intent intent) {
    // TODO: This method is called when the
```

```
        BroadcastReceiver is receiving
        // an Intent broadcast
       //.
      /*Toast.makeText(context,
"GEOFENCE_ENTERED",
Toast.LENGTH_SHORT).show();

final Toast mToastToShow;
int toastDurationInMilliSeconds = 1200000;
mToastToShow = Toast.makeText(context,
"GEOFENCE_EXITED", Toast.LENGTH_LONG);
// Set the countdown to display the toast
        CountDownTimer toastCountDown;
        toastCountDown = new
CountDownTimer(toastDurationInMilliSeconds, 100000)
                { public void onTick(long
                millisUntilFinished) {
                        mToastToShow.show();

                }

                public void onFinish() {
                        mToastToShow.cancel();
                }
        };
// Show the toast and starts the
        countdown
        mToastToShow.show();
        toastCountDown.start();*/
```

```
   NotificationHelper notificationHelper = new
NotificationHelper(context);
notificationHelper.sendHighPriorityNotification("GEOFENCE_TRANS
ITION_EN TER",
 "", MapsActivity.class);

GeofencingEvent geofencingEvent =
GeofencingEvent.fromIntent(intent); If (geofencingEvent.hasError())

        Log.d(TAG, "onReceive: Error receiving geofence
                event..."); return;
}


        List<Geofence> geofenceList =
geofencingEvent.getTriggeringGeofences();
        for (Geofence geofence: geofenceList) {
                Log.d(TAG, "onReceive: " + geofence.getRequestId());
        }
//      Location location =
         geofencingEvent.getTriggeringLocation(); int
         transitionType =
         geofencingEvent.getGeofenceTransition();

        switch (transitionType) {
                case Geofence.GEOFENCE_TRANSITION_ENTER:

        notificationHelper.sendHighPriorityNotification("Ent
ered the Location", "", MapsActivity.class);
                break;

        case Geofence.GEOFENCE_TRANSITION_EXIT:
notificationHelper.sendHighPriorityNotification("Exited the Location ", "",
MapsActivity.class);
                break;} } }
```

7.3 DATABASE SCHEMA

We assume that only one child can leave the set maximum distance at a time. The beacons take 20 seconds to update the previous location data, hence we assume the notification trigger has a 20-40 seconds' lag in updating the right location. We assume that Wi-Fi is readily available since the backend server is located in the cloud and then to use the mobile devices' location services.

Moto Xplay Mobile Device	1	Communication Hardware	OS:Android Qualcomn Snapdragon 615 Octa-core Memory:32GB
Google Asus Table	1	Communication Hardware	OS:Android Quad-core 1.2GHZ Cortex-A9 Bluetooth 3.0 Memory:1GB
Sony Xperia D5803	1	Communication Hardware	OS:Android Qualcomm MSM8974AC snapdragon RAM:2GB Memory:16GB Bluetooth 4.0
Cloud Storage Amazon EC2	1	Communication Hardware	OS:Ubuntu Memory:1G B RAM:2GB

CHAPTER 8

TESTING

8.1 TEST CASES

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Commnets	TC for Automation(Y/N)	BUG ID	Executed By
LoginPage_TC_001	Functional	Home Page	Verify user is able to see the Login/Signup popup when user clicked on App		1.Enter App 3.Verify login/Singup popup displayed or not		Login/Signup popup should display	Working as expected	Pass		Y		SnehaShri , Swetha
LoginPage_TC_002	UI	Home Page	Verify the UI elements in Login/Signup popup		1.Enter App 2.Verify login/Singup popup with below UI elements: a.email text box b.password text box c.Login button d.New customer? Register		Application should show below UI elements: a.email text box b.password text box c.Login button with orange colour d.New customer? Register	Working as expected	Pass		Y		Shanmugapriya , Shwetha
LoginPage_TC_003	Functional	Home page	Verify user is able to log into application with Valid credentials		1.Enter App 2..Enter Valid username/email in Email text box 3.Enter valid password in password text box 4.Click on login button	Username: abcd@gmail.com password: Testing123	User should navigate to user account homepage	Working as expected	Pass		Y		Shakthi
LoginPage_TC_004	Functional	Login page	Verify user is able to log into application with InValid credentials		1.Enter App 2..Enter InValid username/email in Email text box 3.Enter valid password in password text box 4.Click on login button	Username: abcd@gmail password: Testing123	Application should show "Login error. There is no user record corresponding to the identifier"	Working as expected	pass		Y		Shakthi , Shanmugapriya
LoginPage_TC_004	Functional	Login page	Verify user is able to log into application with Valid credentials		1.Enter App 2..Enter Valid username/email in Email text box 3.Enter Invalid password in password text box 4.Click on login button	Username: sec19ec020@sairamtap.edu.in password: Testing123678686786876876	Application should show "the Password is invalid "	Working as expected	Pass		Y		Shwetha B, SnehaShri
LoginPage_TC_005	Functional	Login page	Verify user is able to log into application with InValid credentials		1.Enter App 2..Enter InValid username/email in Email text box 3.Enter Invalid password in password text box 4.Click on login button	Username: abcd password: Testing123678686786876876	Application should show "Login error. There is no user record corresponding to the identifier"	Working as expected	Pass		Y		Swetha
Dasboard	Funcational	Dashboard	Adding geofecne in the location need		1.Enter App 2.Enter the valid username and password 3.Click the Geofence		Application show a red circle around the location	Working as expected	Pass		Y		Sneha Shri
Alert Notification	Funcational	Notification	Notification when the user entered the geofence		1.Enter App 2.Enter the valid username and password 3.Add the Geofence		Application sent the notifcation " Entered the location"	Working as expected	Pass		Y		Shanmugapriya , Shwetha
Alert Notification	Funcational	Notification	Notification when the user exited the geofence		1.Enter App 2.Enter the valid username and password 3.Add the Geofence		Application sent the notifcation " Exited the location"	Working as expected	Pass		Y		Shakthi , Swetha

Fig 8.1.1 Test Cases

8.2 USER ACCEPTANCE TESTING

1. DEFECT ANALYSIS

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	11	4	2	2	19
Duplicate	1	1	2	0	4
External	2	3	0	1	6
Fixed	10	2	3	20	35
Not Reproduced	0	0	2	0	2
Skipped	0	0	2	1	3
Won't Fix	0	5	2	1	8
Totals	24	15	13	25	77

Table 8.2.1 Defect Analysis

2. TEST CASE ANALYSIS

Section	TotalCases	Not Tested	Fail	Pass
Print Engine	5	0	1	4
Client Application	47	0	2	45
Security	3	0	0	3
Outsource Shipping	2	0	0	2
Exception Reporting	11	0	2	9
Final Report Output	5	0	0	5
Version Control	3	0	1	2

Table 8.2.2 Test Case Analysis

CHAPTER 9

RESULTS

9.1 PERFORMANCE METRICS

1. USER REGISTRATION:

User gets registered to the app using their mail and create their password. On the user is registered a verification mail will be sent to the user mail id. The user needs to verify the account. All user details are stored in the firebase and verification mail is sent by firebase authentication.

Registration Page:

Fig 9.1.1 User Registration

Verification mail

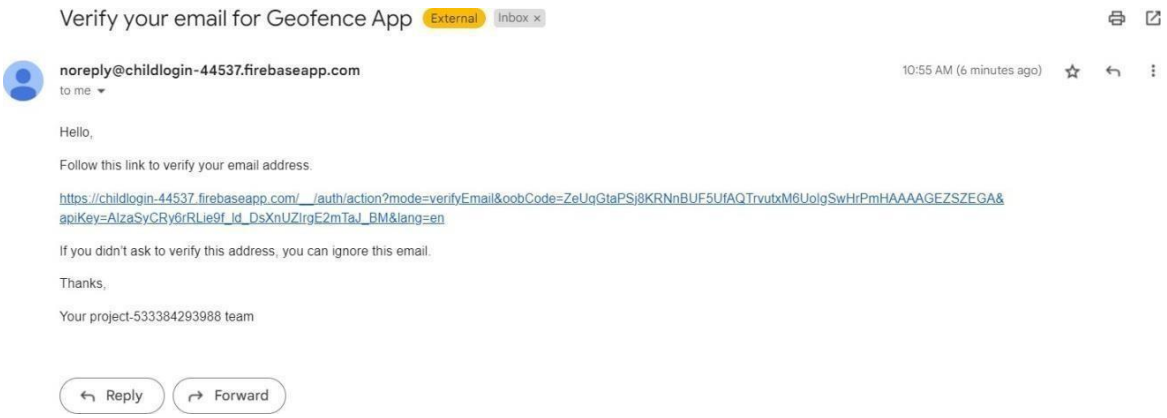


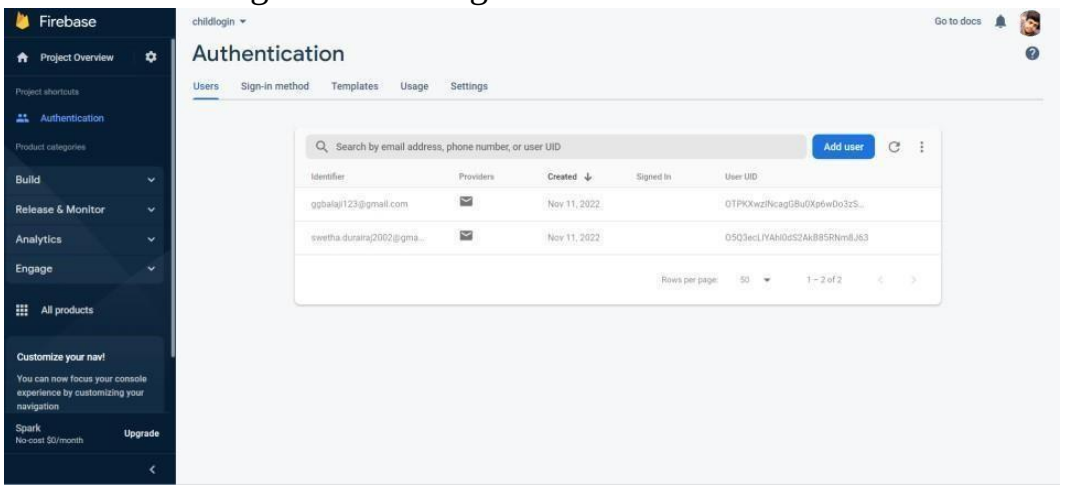
Fig 9.1.2 Verification Mail

2. USER LOGIN

User with their registered mail and password will login to the account. As the details are stored in firebase, when invalid mail or password is entered a message say invalid mail or password occur

Login page:

Fig 9.2.1 User login



3. ADDING GEOFENCE AND ALERT NOTIFICATION

User can add geofence in the location where they want to add or where their child is going play so they can monitor the child location. Once the child enters the geofence alert notification says entered the location will be displayed. When the child leaves the geofence alert notification says exited the location will have displayed.

Geofence

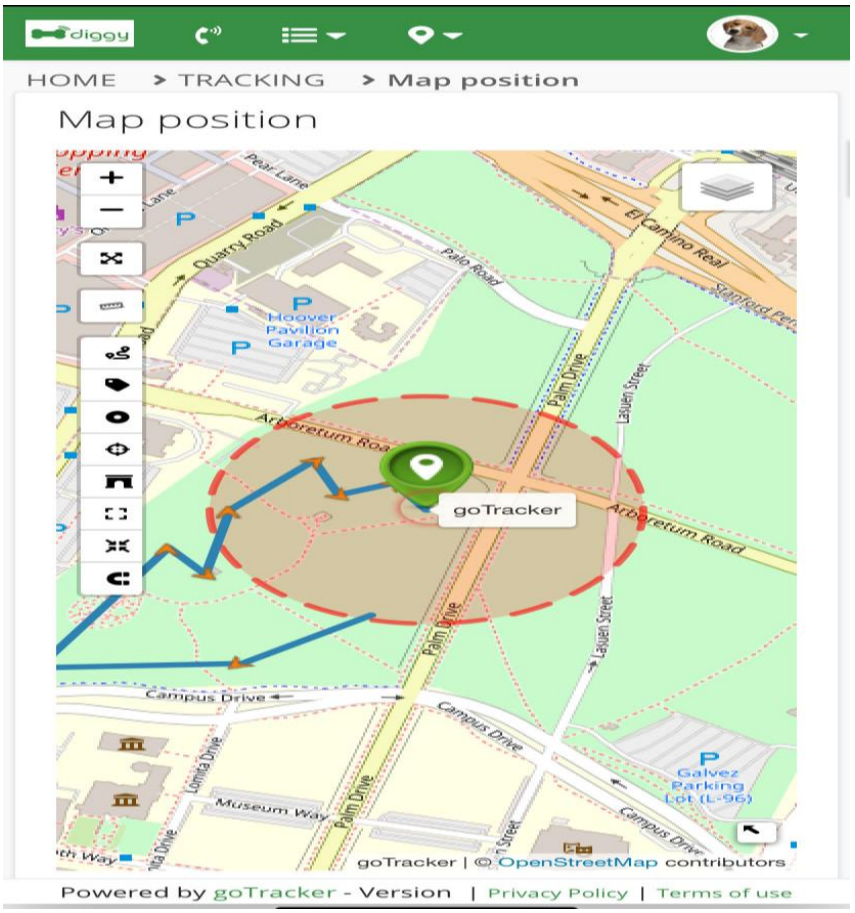


Fig 9.3.1 Adding Geofence

NOTIFICATION

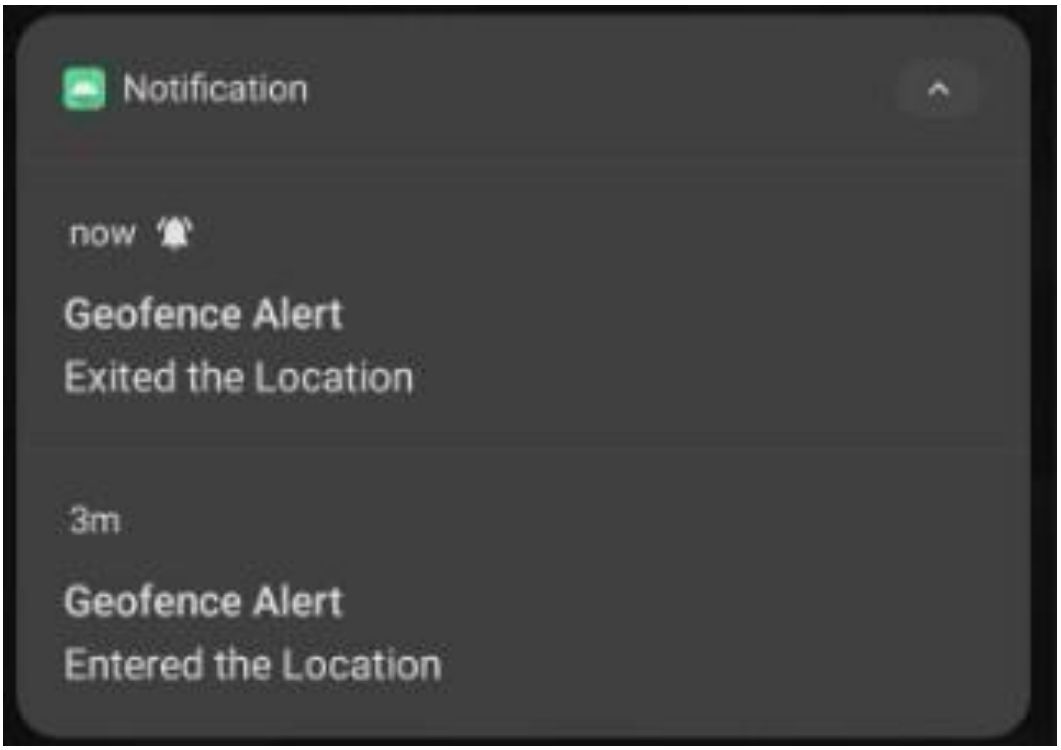


Fig 9.3.2 Alert Notification

CHAPTER 10

ADVANTAGES & DISADVANTAGES

ADVANTAGES:

- ✔ Simple and easy to use
- ✔ Parents can feel secure because if the child leave the desired location and immediately anotification will be sent.
- ✔ Geofence can be added easily.
- ✔ Accurate real-time data.
- ✔ Efficient use of resources.
- ✔ Accountability and Safety.
- ✔ Process automation

DISADVANTAGES:

- ✔ Multiple geofence can be a problem.
- ✔ Maintenance can be time-consuming.
- ✔ Pushback due to privacy concerns.
- ✔ Battery and data draining.
- ✔ Lack of formal policies.

CHAPTER

11

CONCLUSI

ON

His research shows how a smart IoT device may be used to track and protect youngsters while also assisting parents in finding and keeping an eye on them. With only a simple app, the parent may track and keep an eye on their child with this gadget. Since the majority of parents have to go for work, it is impossible to continually remain by the side of the kids. With the help of this project, parents may locate their kids and receive warnings when they leave the geofence. Parents now find it simple to care for their children while working. The usage of this tool is effective. As a result, we are creating a kid monitoring gadget while keeping in mind the benefits and uses. The child monitoring system is required to prevent abduction incidents.

CHAPTER

12 FUTURE

SCOPE

The safety wearable gadget will be further developed and put into use so that it may be worn as a watch or sewed into clothing using synthetic fibres. The main purpose of the proposed child tracking system is to send a signal when a breach of child safety is detected by a specific sensor in the kid module. This signal will be sent from the microcontroller by the microsensors and WFPS, which will then send it to the transmitter, which will send it to the parent module. The parent module will make the choice, and the violation management process will start. Hardware between the child and parent models is required for the kid tracking system to work. This hardware includes a driving circuit for thesensors' activation.

CHAPTER

13

APPENDI

X

Source Code
https://github.com/IBM-EPBL/IBM-Project-41285-1660640896/tree/main/Final%20Deliverables/Final%20Code

GitHub
https://github.com/IBM-EPBL/IBM-Project-41285-1660640896

Project Demo Link

https://github.com/IBM-EPBL/IBM-Project-41285-1660640896/blob/main/Final%20Deliverables/Demonstration%20Video%20Link/IBM%20IOT%20Demo%20Video.mp4