IOT BASED SAFETY GADGET FOR CHILD SAFETY AND MONITORING

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1. INTRODUCTION

a. PROJECT OVERVIEW

Creating a device that can be followed using GPS locations and has a panic button to inform the parent via a GSM module, this invention is primarily focused on improving child safety. An Android app for parents is created to controland monitor the device at any time. Smart gadget devices are always connected to parents' phones,which can receiveand make phone calls as well as SMS gadget via a GSM module.Additionally, wireless technology is implemented on the device, which is useful to bind the device within a region of monitoring range; if the device is moving out of monitoring range, an alert will be triggered on a binding gadget, helping you maintain a virtual watch over the child. An alert will be sent to a bound device if the device moves outside of the monitoring range, allowing you to keep a virtual check on the child. Devices come with a health monitoring system that checks for factorsincluding heart rate, pulse, and temperature. The parental app allows for the monitoring of these indicators. Using a contact switch, the device also keeps track of whether or not it is plugged in and notifies the parent the moment it is unplugged.

b. PURPOSE

Approximately 80% of all reports of child abuse are made nowadays, with 74% of the victims being girls and the remaining 20% being males. In this world, a child goes missing every forty seconds. Children are the foundation of a country; if their future was threatened, it would have an effect on the development of the

wholecountry.
The emotional and mental stability of the children is compromised as a result of the abuse, ruining their futures and careers. The things that happen to these defenseless kids are not their fault. Therefore, parents are in charge of raising their own children. However, parents are compelled to seek money because of the state of the economyand their desireto concentrate on their child'sfuture and job.

Consequently, it becomes challenging for them to constantly cling to their kids. We have created a setting in our system where this issue can be effectively solved. It enables parents to keep a close eye on their kids in real time while concentrating ontheir own careers without having to take any physical action. In essence, kids cannot tell their parents about the abuse they experience on a regular basis. They are too young to really comprehend what truly occurs to them. Parents find it challenging to recognize when their childrenare being abused.So, the main objective of this module is to help working parents to be free from worry about their children by tracking their movements at any time. An autonomous real-time monitoring system is required for every child worldwide in order to stop attacks onchildren.

2. Literature Survey

Employing an efficient Child Tracking Systemusing the Internetof Things

Themain concept of this paper talks about the idea of Child Tracking(CT) System for the safety of kids. Our purpose in this work is to track and secure the child at any place, over a command via SMS to communicate between device and parent with the help of GSM module wired to Arduino Mega Board. The proposed system provides the real-time location,child body temperature, environment temperature,

humidity of the environment and alarm to the parents so that they can rescue their child from strangers. The proposed CT system combines technologies and sensors to easily monitor the child and get the information. This paper provides the comfort of takingcare over the children remotelyat an instance of time.

Design and development of an IOT based wearable device for the safety andsecurity of women and girl children

The aim of this work is to develop a wearable device for the safety and protection of women and girls. This objective is achieved by the analysis of physiological signals in conjunction with body position. The physiological signals that are analysed are galvanic skin resistance and body temperature. Body positionis determined by acquiring raw accelerometer data from a triple axis accelerometer.

Acquisition of raw data is then followed by activity recognition which is a process of employing a specialized machine learning algorithm. Real-time monitoring of data is achievedby wirelessly sendingsensor data to an open-source Cloud Platform. Analysis of the data is done on MATLAB simultaneously. This device is programmed to continuously monitorthe subject's parameters and take action when any dangerous situation presents itself. It does so by detecting the change inthe monitored signals, following which appropriate action is taken by means of sending notifications/alerts to designated individuals.

Smart Intelligent System for Womenand Child Security

This paper surveys about the security system for women and children which allowsimmediate responses in any harassment in public places,societies etc. Women all over the world are facing unethical physicalharassment and Children cannot be left unattended at a social event or outside the home. Our project solves both the problems. A portable device which will have a pressure switch. As soon as an assailant is about to attack the women/child or when they sense any insecurity from a stranger, he/she can then put pressure on

the device by squeezingor compressing it. Instantly the pressure sensor senses this pressure and a conventional SMS, with the victim's locationwill be sent to their parents/guardian cell phone numbers stored in the device while purchasing it, followed by a call. If the call is unanswered for a prolonged time, a call will be redirected to the police and the same message will be sent. The main feature of oursystem is less response time will be required for helping the victim.

RFID-based System for School ChildrenTransportation Safety Enhancement

This paper presents a system to monitor pick-up/drop-off of school children to enhance the safety of children during daily transportation from and to school.The system consists of two main units, a bus unit, and a school unit. The bus unit the system is used to detect when a child boards or leaves the bus. This information is communicated to the school unit that identifies which of the children did not board or leave the bus and issues an alert message accordingly. The system has a developed web-based database- driven application that facilities its management and provides useful information about the childrento authorized personnel. A complete

prototype of the proposed system was implemented and tested to validate the system functionality. The results show that the system is promising for daily transportation safety.

a. **EXISTING SYSTEM**

Mobile wearable device communication creates new challenges and also covers the short-range. It gives peer-to-peer communication or client-server fashioncommunication with smartphones, tablets, and gatewaynodes. Women safety devices give protection and women themselves want to intimate their dangerous situation by pressing the buzzer in the device. In this, a person with a particular application will receive a woman's current status in a danger situation. The system provides an alert

message for the small range and it can be received only through mobile phones. The existingsystem uses a Wi-Fi module to intimate the parents about their child's condition. Parents can get the personal details of children by giving keywordslike Body temperature, location to the concern device.

b. **REFERENCE**

i. Kumar A, Shankar KM. “Employing an efficient Child Tracking System using the Internet of Things”.30Jun.2022 ;14(02):139-42. DOI: 10.18090/samriddhi.v14i02.2

ii. A. Jatti, M. Kannan, R. M. Alisha, P. Vijayalakshmi and S. Sinha, "Designand development of an IOT based wearable device for the safety and security of women and girl children," 2016 IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT), 2016, pp. 1108-1112, doi: 10.1109/RTEICT.2016.7808003.

iii. S. K. Punjabi, S. Chaure, U. Ravale and D. Reddy, "Smart Intelligent System for Women and Child Security," 2018 IEEE 9th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON), 2018, pp. 451-454, doi: 10.1109/IEMCON.2018.8614929.

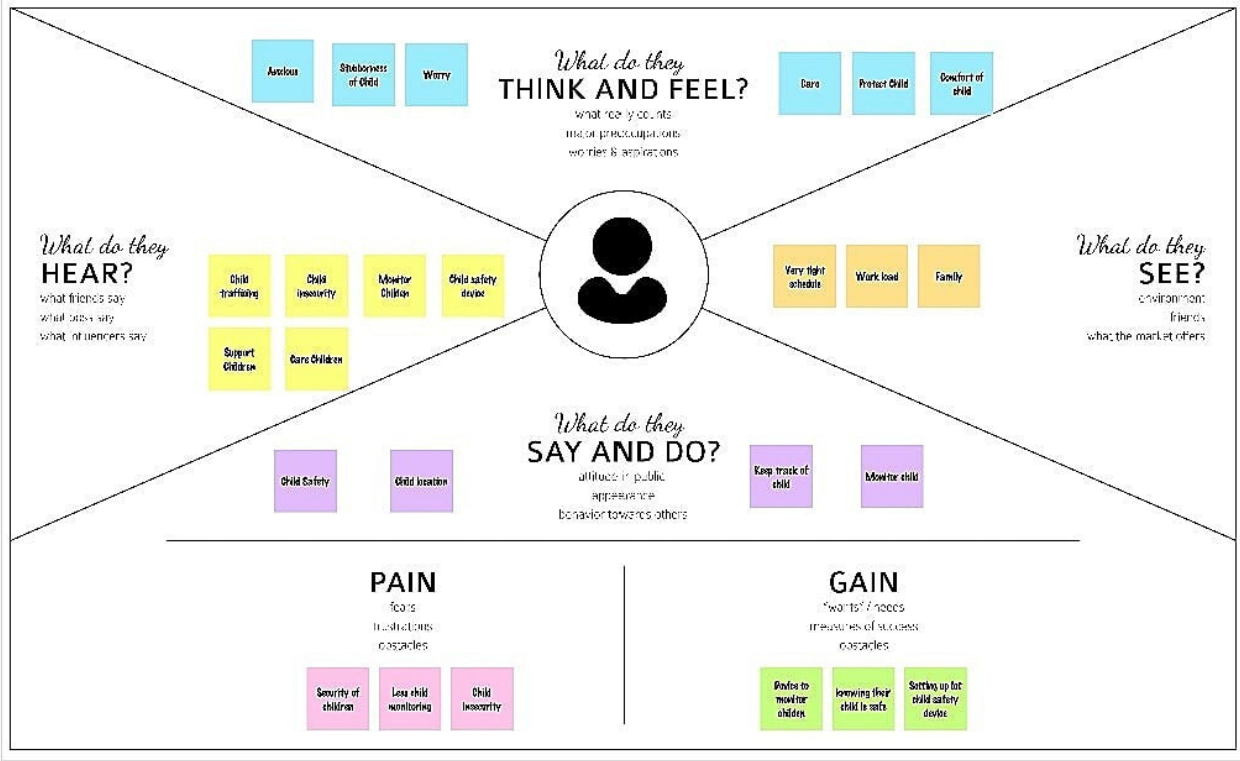
iv. RFID-based System for School Children Transportation Safety

Enhancement ", Proceedings of the 8th IEEE GCC

Conference andExhibition, Muscat,Oman, 1-4 February2015.

1. IDEATION & PROPOSED SOLUTION

a. Empathy Map Canvas



b. Ideation and Brainstorming

Idea 1:

A compact wearable gadget with a pressure switch. The user can apply pressure to the device by squeezing or compressing it as soon as an attacker is preparing to attack the person or as soon as the person perceives any insecurity from a stranger. Instantaneously the pressure sensor detects this pressure, and a call is placed to the victim's parents' or guardian's mobile phone numbers that were put in the device at purchase, along with a regular SMS that includes

the victim'slocation. The identical message will be delivered to the police if the call goes unanswered for an extended period of time. Further, a message with the person's current location is sent to the parent or guardian's phone by

standard SMS if the personenters an area that is typically offlimits

to them.**Idea 2:**

By creating a device that can be followed using GPS locations and has a panic button to inform the parent via a GSM module, this invention is primarily focused on improving child safety. An Android app for parents is created to control and monitor the device at any time. Smart gadget device is always connected to parents' phone, which can receive and make phone calls as well as SMS on gadget via GSM module.Additionally, wireless technology is implemented on the device, which is useful to bind the device within a region of monitoring range; if the device is moving out of monitoring range, an alert will be triggered on a binding gadget, helping you maintain a virtual watch over the child. An alert will be sent to a bound device if the device moves outside of the monitoring range, allowing you to keep a virtualcheck on the child. Devices come with a health monitoring system that checks for factors including heart rate, pulse, and temperature. The parental app allows for the monitoring of these indicators. Using a contact switch, the device also keeps track of whether or not it is pluggedin and notifies the parent the moment it is unplugged.

Idea 3:

According to the latest surveys, the number of cases of child abduction and missing children in India is steadily

rising. One of the primary worries for parents today is the safety of their children on school buses and outside of school premises, The suggested system makes an effort to give kids security features using new techniques that are introduced to the current safety system for better defense. A portable unit, a cloud platform, and an Android application make up the proposed system. A raspberry pi 2 model B, a GPS receiver with antenna, and a pulse rate sensor make up the portable device. Using a GPS receiver and a heartbeat sensor, this device will track the child's location in terms of latitude, longitude, and altitude. These data are transmitted

to a raspberry pi module, which uses internet connectivity to inject them into elastic search. The android program has a user interface that displays the child's location on a map, path they took, and their rate of movement. The child's heart rate is also continuously tracked by the application.

3.4 Problemsolution fit

Project Title: IoT Based smart gadgets For child's safety monitoring and notification

Project Design Phase-I - Solution Fit Template

Team ID: PNT2022TMID47401

Define CS, fit into CC

1. CUSTOMER SEGMENT(S)

Working parents of children

6. CUSTOMER CONSTRAINTS

Spending power, budget, no cash, network connection, available devices.

5. AVAILABLE SOLUTIONS

Sensors we used here make the parents feel easy about their child's protection .

Children activity while the parents are not around is sent as a message to their parent's mobile.

Explore AS, differentiate

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

2. JOBS-TO-BE-DONE / PROBLEMS

Jobs to be done – Taking care of child or protect the child while parents are not around.

9. PROBLEM ROOT CAUSE

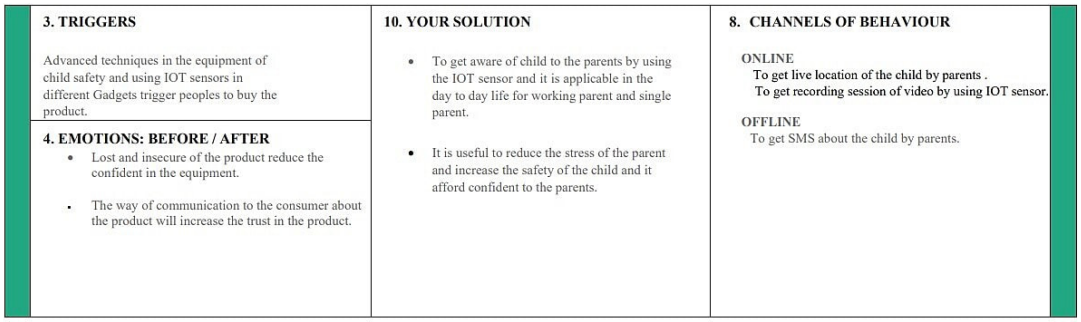
As a working parent it feel difficult to take care their children.

Also as a single parent it will be hard to manage their work children simultaneously.

7. BEHAVIOUR

Directly related: find the way to protect the child using IOT sensors. Indirectly associated with safety of the child without help of parents.

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



2 .**Requirement analysis**

c. **Functional requirements**

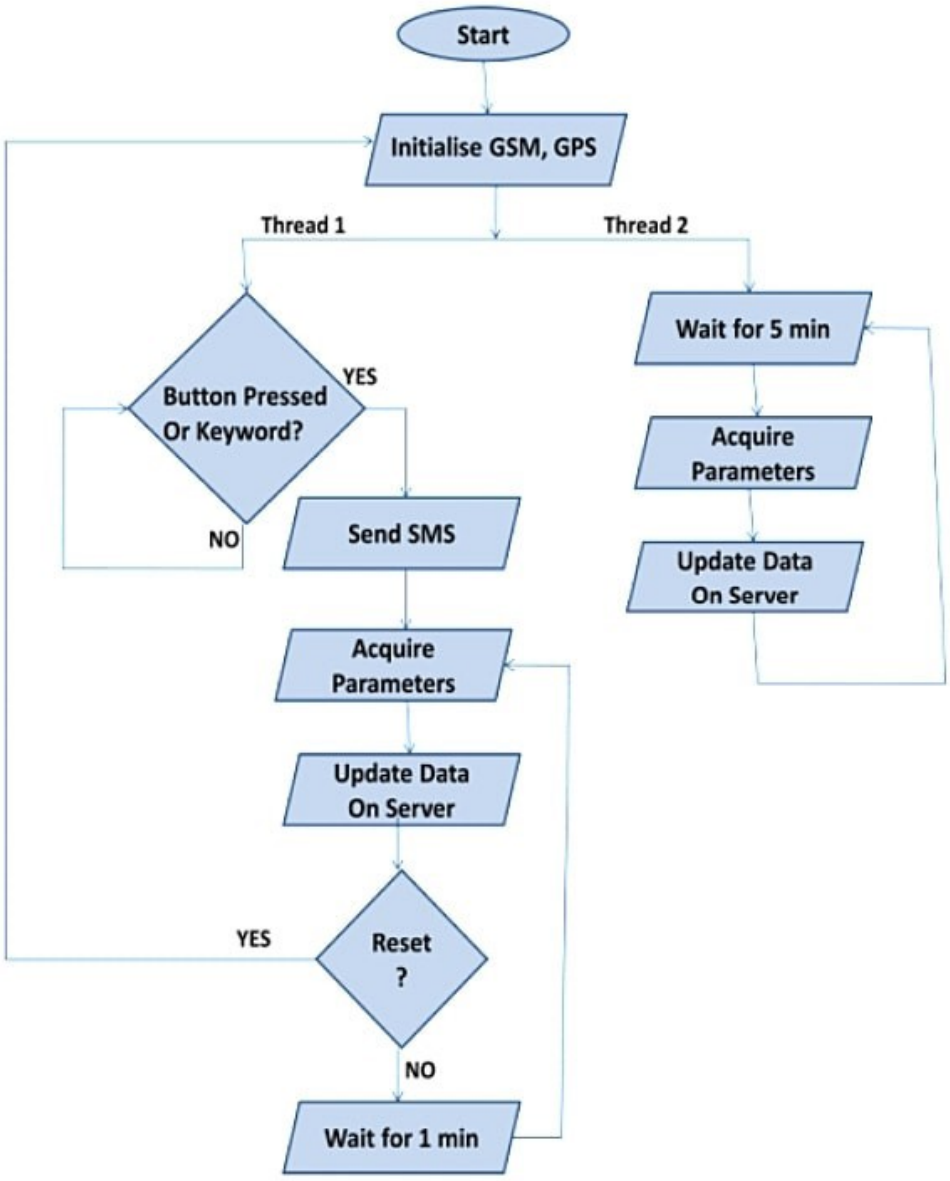
FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Notification	Notified via Mobile App
FR-4	User Interface	Mobile App- MIT App Inventor Able to see location of children when they are out of geofence

d. **Non-Functional requirements:**

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Accessed through Mobile App Showing location (latitude and longitude) of child
NFR-2	**Security**	Database security must meet HIPAA requirements
NFR-3	**Reliability and Availability**	Once logged in ,webpage is available until logging out of the app
NFR-4	**Performance**	Each page must load within 2 seconds
NFR-6	**Scalability**	The process must finish within 3 hours so data is available by 8 a.m. local time after an overnight update

5.PROJECT DESIGN

a. **Data Flow Diagrams**



Solution Architecture

Solution architecture is a complexprocess – with many sub-processes –

That bridges the gap betweenbusiness problems and technology solutions. Itsgoals Are to:

- Find the fastesttech solution to solve existingbusiness problems.

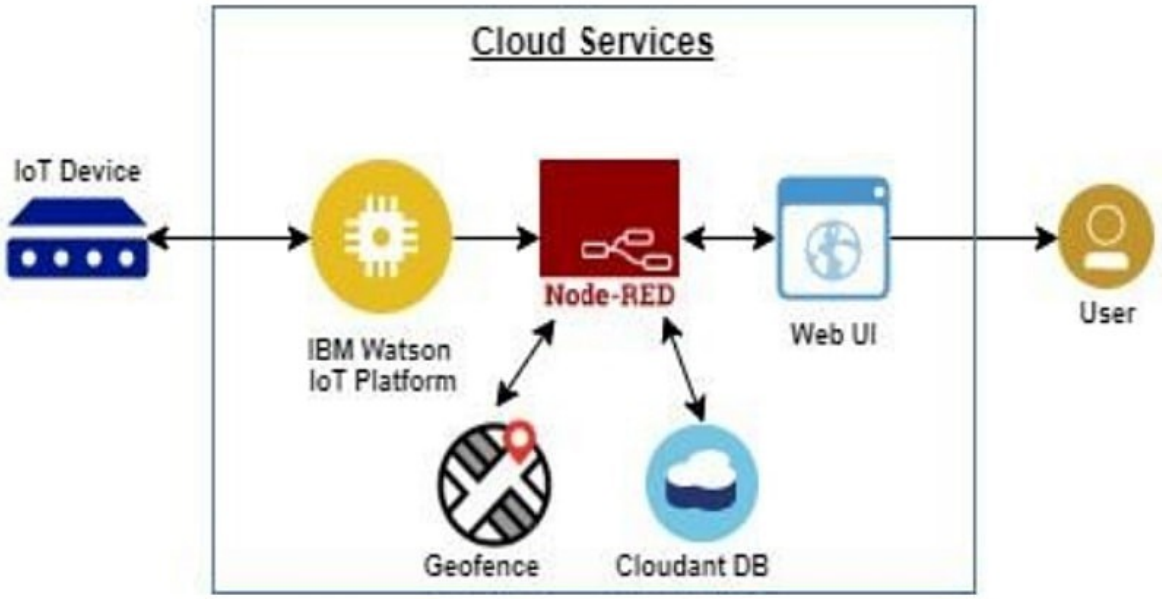
- Describe the structure, characteristics,

  behavior, and other aspects of theSoftware to

  project stakeholders.
- Define features,development phases, and solution requirements.

Provide specifications according to which the solu on is defined, managed,andDelivered.

Technical Architecture



User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer(Parents Mobile user)	Registration	USN-1 (FATHER)	I can access the location of my children using the credentials provided as a Father.	I can access my account / dashboard and receive confirmation email & click confirm	High	Sprint-1
		USN-2 (MOTHER)	I can access the location of my children using the credentials provided as a Mother.	I can access my account / dashboard and receive confirmation email & click confirm	High	Sprint-1
		USN-3 (GUARDIAN)	I too can monitor the children's activities using safety gadget monitoring system.	I can access my account / dashboard and receive confirmation email & click confirm	Medium	Sprint-2
	Login	USN-4 (if required)	Same function to be performed as in previous cases.	Same function to be performed as in previous cases.	Not Yet Determined	----
	Dashboard	USN-5 (if required)	Same function to be performed as in previous cases.	Same function to be performed as in previous cases.	Not Yet Determined	----

PROJECT PLANNING& SCHEDULING

Sprint Planning and estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Login	USN-5	As a user, I can log into the application by entering my email & password	4	High	Karthik Kumar S
Sprint-2	Dashboard	USN-6	As a User, I can Navigate to the Dashboard after successfully Login to the Application.	10	High	Muthuvignesh E
Sprint-1	Notification	USN-7	As a user when there is an anomalous situation with the child, a notification will be received through the fencing application.	4	High	Durairasu S
Sprint - 3	Support	USN-8	As a User, I can connect with experts to clear Queries, they assist to overcome challenges by scanning for any glitches and monitoring the operation and by checking if all the users are authorized.	10	Medium	Suraj P
Sprint - 3	Login	USN-9	As an Administrator, I can set the Geofence Location Limit and make sure the database encompassing the locations is secure, factual and updated constantly.	10	High	Karthik Kumar S

Sprint delivery schedule

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	4 Days	24 Oct 2022	27 Oct 2022	20	29 Oct 2022
Sprint-2	20	5 Days	28 Oct 2022	01 Nov 2022	20	04 Nov 2022
Sprint-3	20	8 Days	02 Nov 2022	09 Nov 2022	20	11 Nov 2022
Sprint-4	20	9 Days	10 Nov 2022	18 Nov 2022	20	19 Nov 2022

7. CODING & SOLUTIONING (Explainthe features Addedin theprojectalongwith code)

7.1 Feature 1 :(AddingGeofence)

- Geofence is like a round wall covering the given location. So parents can useThem to mark the locationwhere their childrenare going .
- Multiple Geofencecan be added.

CODING:

Package

com.example.g

eofence;

import

android.app.Pendin

gIntent; import

android.content.Co

ntext; import

android.content.Co

ntextWrapper;

import

android.content.Inte

nt; import

android.widget.Toas

t; import

com.google.android.gms.common.api.Api

Exception; import

com.google.android.gms.location.Geofenc

e; import

com.google.android.gms.location.Geofenc

eStatusCodes;

import

com.google.android.gms.location.Geofenc

ingRequest; import

com.google.android.gms.maps.model.Lat

Lng; public class GeofenceHelper

extendsContextWrapper {private static

final String TAG = “GeofenceHelper”;

```
pendingIntent pendingIntent;

public GeofenceHelper(Context base) {

   super(base);

}

public GeofencingRequest getGeofencingRequest(Geofence
geofence){ returnnew 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; } publicString 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_TOO_MANY_GEOFENCES: return "GEOFENCE_TOO_MANY_GEOFENCES"; case GeofenceStatusCodes .GEOFENCE_TOO_MANY_PENDING_INTENTS: return "GEOFENCE_TOO_MANY_PENDING_INTENTS"; } } return e.getLocalizedMessage();

a. **Feature 2 (AlertNotification)**

1. Once geofenceis added , when the child entersthe geofence a notification willbe sent.
1. When the child leavesthe geofence a notification will be sent .

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 extendsBroadcastReceiver { 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 =
newNotificationHelper(context);
notificationHelper.sendHighPriorityNotification("GEOFENC
E_TRANSITION_ENT ER", "", MapsActivity.class);
GeofencingEvent geofencingEvent =
GeofencingEvent.fromIntent(intent); if
(geofencingEvent.hasError()) Log.d(TAG, "onReceive: Error
receiving geofence event..."); return; } List 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("Entered the
Location", "",MapsActivity.class); break; case
Geofence.GEOFENCE_TRANSITION_EXIT:
notificationHelper.sendHighPriorityNotification("Exited the Location ",
"",MapsActivity.class); break;
```

```
  }
   }
}
```

TESTING

Test Cases

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	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 2.Verify login/Singup popup displayed or not		Login/Signup popup should display	Working as expected	Pass		Y		SnehaSkri , 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: ruc19uc020@ursamtsp.edu.in password: Testing12367856786876876	Application should show "the Password is invalid"	Working as expected	Pass		Y		Shwetha D, SnehaSkri
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: Testing12367856786876876	Application should show "Login error. There is no user record corresponding to the identifier"	Working as expected	Pass		Y		Swetha
Dashboard	Fuacational	Dashboard	Adding geofence in the location aced		1.Enter App 2.Enter the valid usrername and password		Application show small circle around the location	Working as expected	Pass		Y		Sneha Skri
Alert Notification	Functional	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 notification " Entered the location"	Working as expected	Pass		Y		Shanmugapriya , Shwetha
Alert Notification	Functional	Notification	Notification when the user exited the geofence		1.Enter App 2.Enter the valid username and password		Application sent the notification " Exited the location"	Working as expected	Pass		Y		Shakthi , Swetha

User Acceptance Testing
Defect Analysis

Resolu on	Severity 1	Severit y2	Severit y3	Severit y4	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 Reproduc ed	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

Test Case Analysis

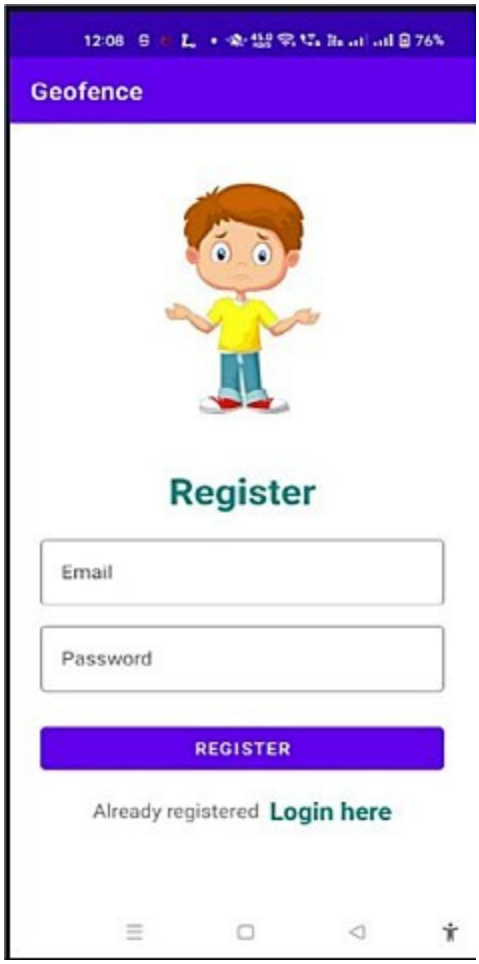
Sec on	Total Cases	Not Tested	Fail	Pass
Print Engine	5	0	1	4
Client Applica on	47	0	2	45
Security	3	0	0	3
Outsource Shipping	2	0	0	2
Excep on Repor ng	11	0	2	9
Final Report Output	5	0	0	5
Version Control	3	0	1	2

RESULTS

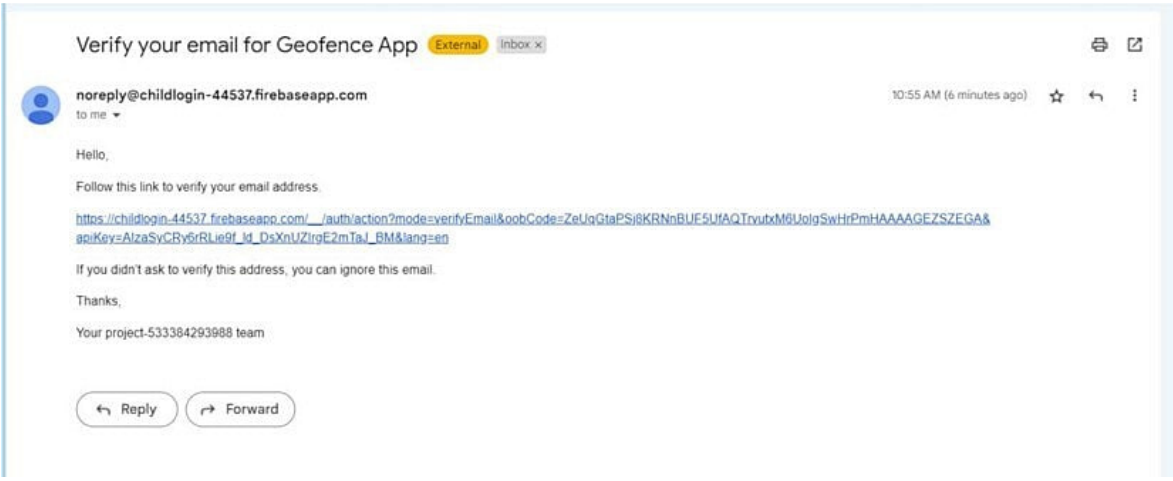
1. **User Registration :**

Users get 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 detailsare stored in the firebase and verification mail is sent by firebase authentication .

Registration Page :



Verification mail:



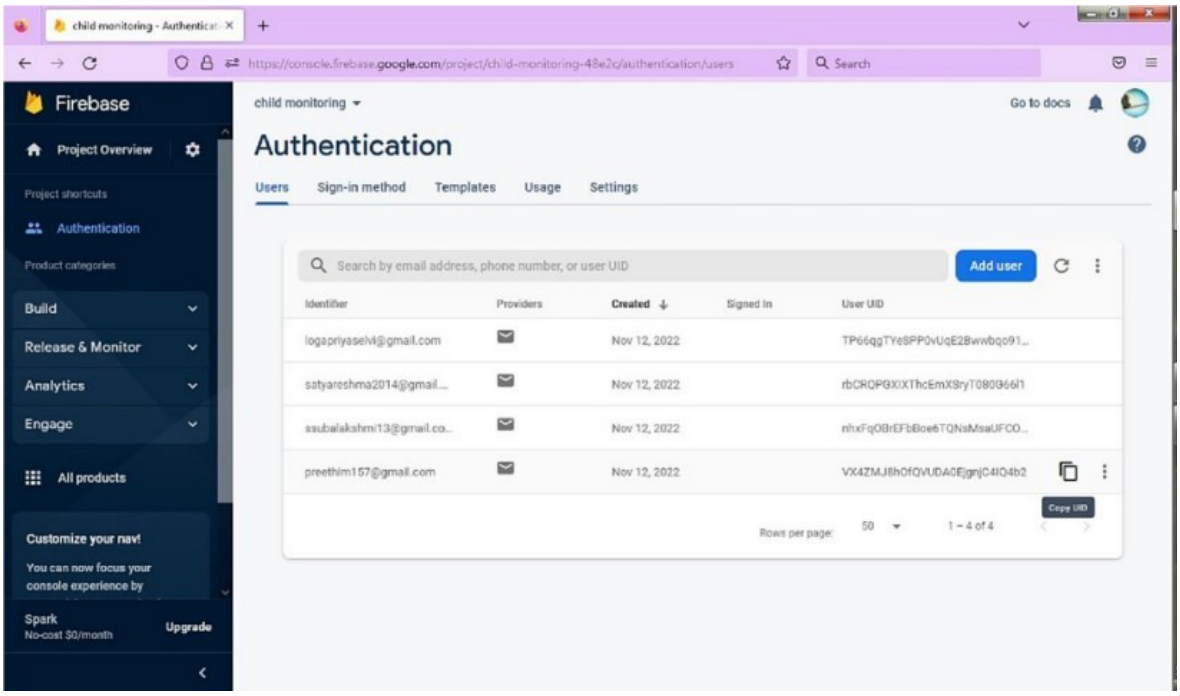
1. **User Login:**

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

Login page :


12:26
75%
Geofence
Login
Email
Password
LOGIN
Not registered yet
Register here

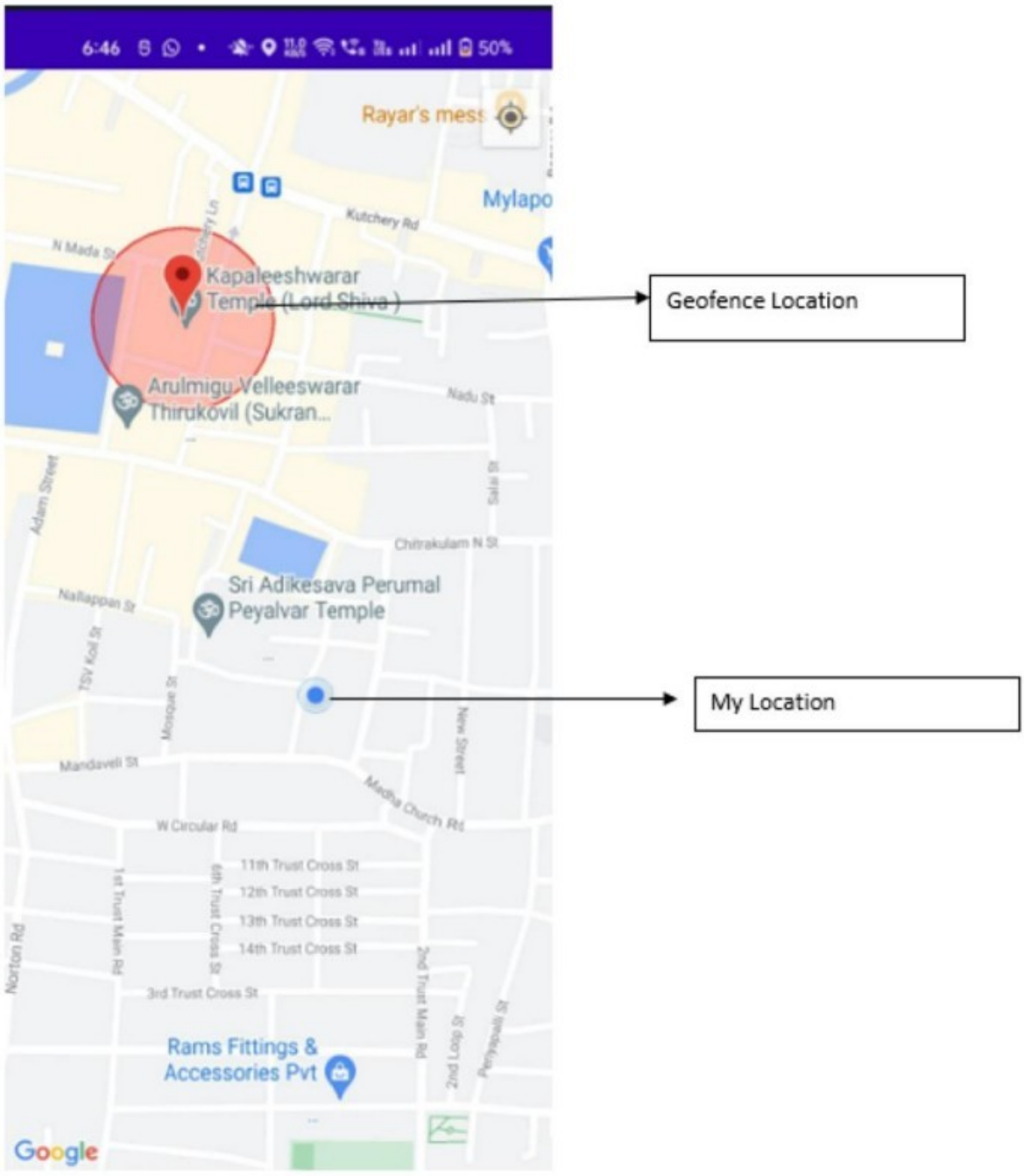
User Details:



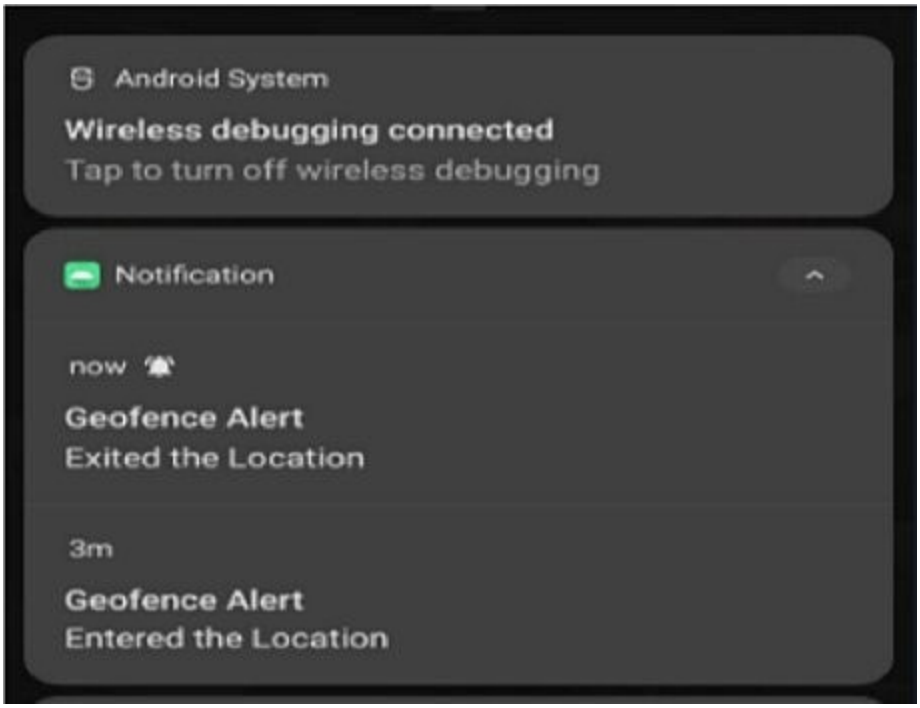
1. **Adding Geofence and Alert Notification:**

Users can add geofence in the location where they want to add or where their child is going to 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 geofencealert notification says exited the location will be displayed.

Geofence


6:46
50%
Rayar's mess
Mylapo
Kutchery Rd
N Mada St
Kapaleeshwarar Temple (Lord Shiva)
Geofence Location
Arulmigu Velleeswarar Thirukovil (Sukran...
Nadu St
Adam Street
Chitrakulam N St
Sri Adikesava Perumal Peyalvar Temple
Nallappan St
TSV Koil St
Mosque St
My Location
New Street
Mandaveli St
Medha Church Rd
W Circular Rd
11th Trust Cross St
12th Trust Cross St
13th Trust Cross St
14th Trust Cross St
1st Trust Main Rd
6th Trust Cross St
Norton Rd
3rd Trust Cross St
2nd Trust Main Rd
Rams Fittings & Accessories Pvt
Google

Notification



1. **Advantages and Disadvantages**

The parent can monitor their child from anywhere at any time, and also get a notification when the child goes away from the permitted radius. It also allows the parent to know if their child is in any dangerous situation. The disadvantages of this system are that the child could not produce the exact alert command during a panic condition. The command produced may not match the previously stored command. This project requiresmanual intervention.

2. **Future Scope**

In our system, we use the Internet of Things, GPS, GSM, and Raspberry Pi to automatically monitor the youngster in real time. When we utilize a web camera and GPS to actively monitor, this system needs network connections, satellite communication, and a

high-speed data connection. It is challenging to keep an eyeout for any network problems or satellite connection problems. Additionally, there is a lag when streaming videos through the server. The Zigbee concept or accessing the system without the internetand employing high-speedserver transmission can

therefore be used in the future to solve these problems.

3. **Conclusion**

Future is similar to the word children. Young people are the future pillars of one's nation, as Dr. A.P.J. Abdul Kalam once said, thus it is important to protect today's children's dreams and lives in order to give them a better future. Therefore, every parent should take good care of their own children to prevent them from being victimsof abuse that will completely harm them on a physical,mental, and emotional level, wrecking our future. Due to the significance of our future, our product makes it simple for parentsto track their kids and regularly visually monitor them, enabling them to assure their safety and lowering the incidence of child abuse.

1. **Appendix**

    a. **Source code**

dashboard - Notepad

File Edit View

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <link rel="stylesheet" href="./css/dashboard.css">
    <title>Dashboard</title>
    <script src="./localforage.js"></script>
</head>
<body>
    <div class="wrapper">
        <div class="header">
            <span class="heading">Dashboard</span>
            <span class="right">
                <span class="username">Hello User</span>
                <span>
                    <img class="profilePic" src="https://avatars.dicebear.com/api/avataaars/asdfasdfds.svg" alt="User Profile" height="30" width="30">
                </span>
            </span>
        </div>

        <div class="actionCenter">
            <div class="action">
                <span>Create Child Card</span>
            </div>
            <div class="action">
                <span class="logout">Log out</span>
            </div>
        </div>

        <div class="childCardContainer">
            <div class="childCard">
                <div class="childCardHeader">
                    <span>Child Name</span>
                    <span>Age 12</span>
                </div>
                <div class="actions">
                    <span>View</span>
                    <span>GeoFence</span>
```

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index - Notepad

File Edit View

```
<!DOCTYPE html>
<html lang="en" style="height: 100%; margin: 0;">
    <head>
        <meta charset="UTF-8" />
        <meta name="description" content="The Home Page after Logged In" />
        <meta name="viewport" content="width=device-width, initial-scale=1.0" />
        <title>IOT Based Safety Gadget for Child Safety Monitoring and Notification</title>
      <script src="./localforage.js"></script>
        <script>
            if (window.location.hostname !== "localhost") {
                if (location.protocol !== "https:") {
                    location.replace(
                        `https:${location.href.substring(
                            location.protocol.length
                        )}`
                    )
                }
            }

            async function check() {
            let data = localforage.getItem("userData")
            if (data == null) {
                window.location.href = "/login"
            }
        }
        check()
        </script>
    </head>
    <body
        style="
            height: 100%;
            margin: 0;
            font-weight: 300;
            font-family: -apple-system, BlinkMacSystemFont, 'Segoe UI', Roboto,
                Oxygen, Ubuntu, Cantarell, 'Open Sans', 'Helvetica Neue',
                sans-serif;
        "
    >
        <div
            class="wrapper"
```

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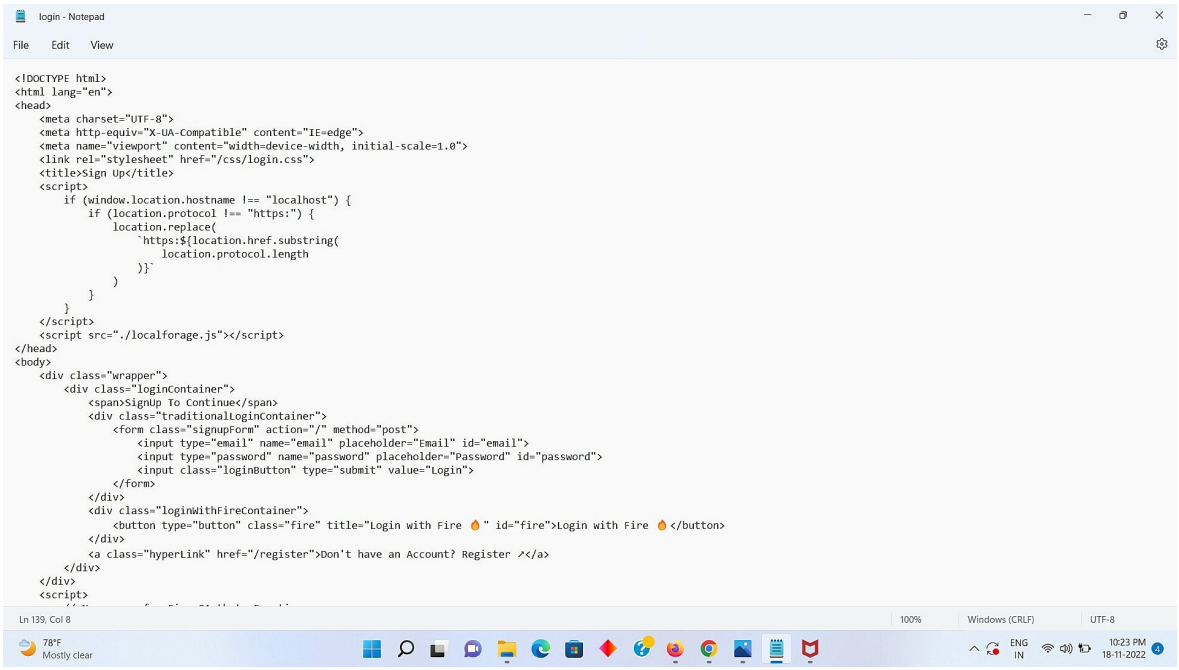
login - Notepad
File Edit View
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
<link rel="stylesheet" href="/css/login.css">
<title>Sign Up</title>
<script>
if (window.location.hostname !== "localhost") {
if (location.protocol !== "https:") {
location.replace(
`https:${location.href.substring(
location.protocol.length
)}`
)
}
}
</script>
<script src="./localforage.js"></script>
</head>
<body>

SignUp To Continue

<form class="signupForm" action="/" method="post">
<input type="email" name="email" placeholder="Email" id="email">
<input type="password" name="password" placeholder="Password" id="password">
<input class="loginButton" type="submit" value="Login">
</form>

<button type="button" class="fire" title="Login with Fire " id="fire">Login with Fire </button>

Don't have an Account? Register ↗

<script>
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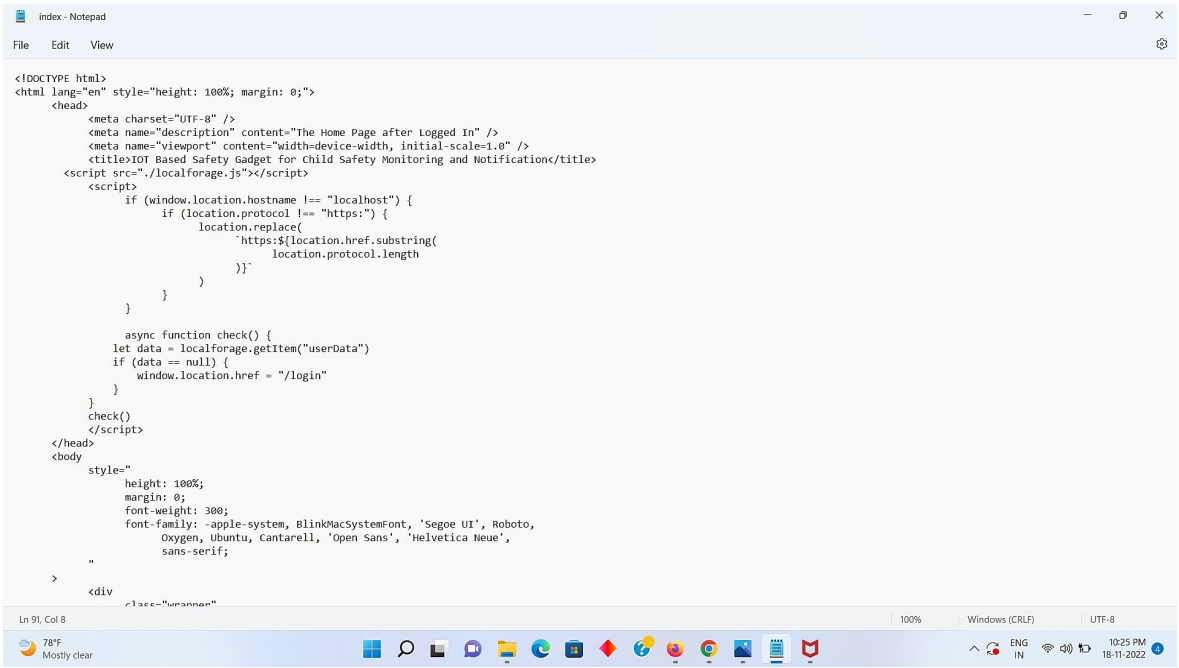
index - Notepad
File Edit View
<!DOCTYPE html>
<html lang="en" style="height: 100%; margin: 0;">
<head>
<meta charset="UTF-8" />
<meta name="description" content="The Home Page after Logged In" />
<meta name="viewport" content="width=device-width, initial-scale=1.0" />
<title>IOT Based Safety Gadget for Child Safety Monitoring and Notification</title>
<script src="./localforage.js"></script>
<script>
if (window.location.hostname !== "localhost") {
if (location.protocol !== "https:") {
location.replace(
`https:${location.href.substring(
location.protocol.length
)}`
)
}
}
async function check() {
let data = localforage.getItem("userData")
if (data == null) {
window.location.href = "/login"
}
}
check()
</script>
</head>
<body
style="
height: 100%;
margin: 0;
font-weight: 300;
font-family: -apple-system, BlinkMacSystemFont, 'Segoe UI', Roboto,
Oxygen, Ubuntu, Cantarell, 'Open Sans', 'Helvetica Neue',
sans-serif;
"
>
<div
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Windows (CRLF)
UTF-8
78°F
Mostly clear
ENG
IN
10:25 PM
18-11-2022

OUTPUT


12:26
75%
Geofence
Login
Email
Password
LOGIN
Not registered yet
Register here

GitHub Link

https://github.com/IBM-EPBL/IBM-Project-44328-1660724209

Demo Link: https://youtu.be/5q8E5N-YYP8