

TEAM ID: PNT2022TMID23918

Project Report

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1.INTRODUCTION

1.1 Project Overview

Child tracker helps the parents in continuously monitoring the child's location. They can simply leave their children in school or parks and create a geofence around the particular location. By continuously checking the child's location notifications will be generated if the child crosses the geofence. Notifications will be sent according to the child's location to their parents or caretakers. The entire location data will be stored in the database.

1.2 Purpose

It assists parents to monitor their children remotely. In case situations happen, notifications will be sent to parents so that actions can be taken. Through this, child safety can be ensured. By this, parents know what is happening remotely and can take actions if something goes wrong. It provides parents with the real-time location to monitor the child. It makes parents to make monitor their child from their workplace. Parents can be relax and calm by using this device.

2.LITERATURE SURVEY

2.1 Existing Problem

Parents need to ensure safety of their children but in realtime they need to get to work and need to worry about their child whether he/she is safe or not. So to ensure safety they need to monitor & to notify their child what he/she is doing and to know whether they are in safe atmosphere or not to ensure the safety of the child.

2.2 References

- A. Jatti, M. Kannan, R. M. Alisha, P. Vijayalakshmi and S. Sinha, "Design and 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), Bangalore, 2016, pp. 1108-1112.
- David Hanes, Gonzalo, Patrick Grosetete, Robert, Barton, Jerome Henry "IoT Fundamental and Networking Technologies, Protocols".

2.3 Problem Statement Definition

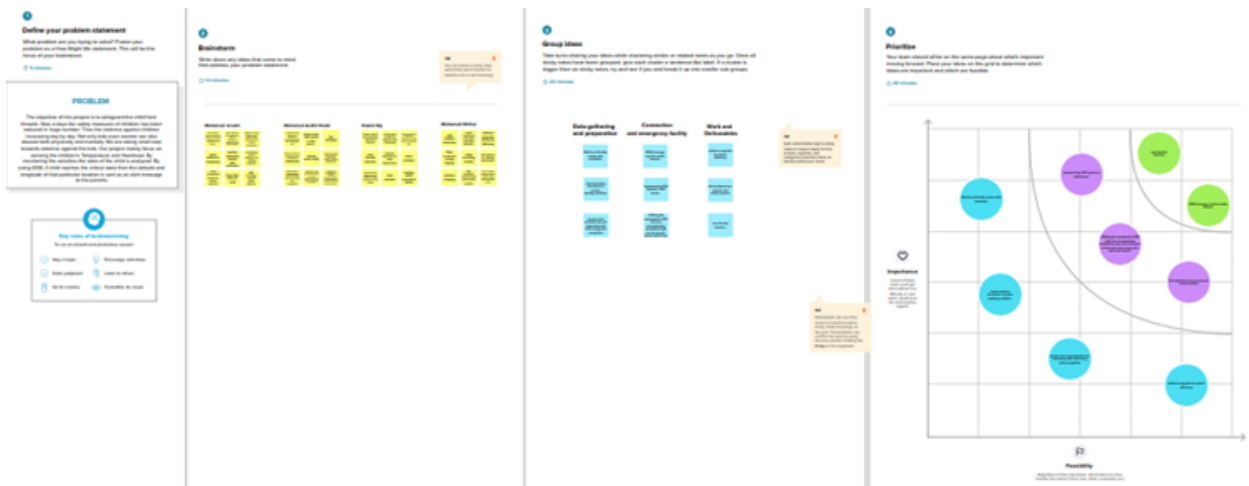
The objective of this project is to safeguard the child from threads. Now a days the safety measures of children has been reduced in huge number. Thus the violence against children increasing day by day. Our project mainly focus on sensing the children's Temperature and Heartbeat. By monitoring the activities the state of the child is analyzed. By using GSM, if child reaches the critical state then the latitude and longitude of that particular location is sent as an alert message to the parents.

3.IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas



3.2 Ideation & Brainstorming



3.3 Proposed Solution

S.No.	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)	lot 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.

3.4 Problem Solution fit

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
	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, 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.	
Identify strong TR & EM	3. TRIGGERS T 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 E 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 waiting the best for your children is the ultimate parenting goal	10. YOUR SOLUTION S 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 piezo buzz and SMS and dialing function to parents will be done immediately.	8. CHANNELS of BEHAVIOUR C 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

4.REQUIREMENT ANALYSIS

4.1 Functional Requirements

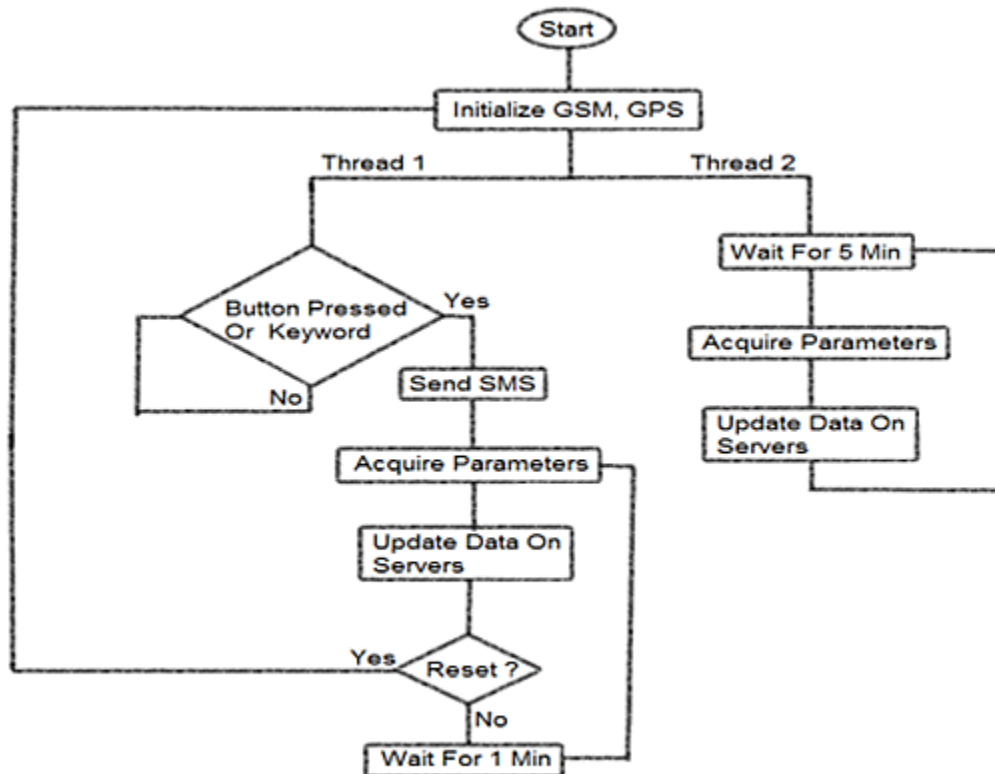
FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIN
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Notification	Notified via Mobile App
FR-4	User Interface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

4.2 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	Once logged in ,webpage is available until logging out
NFR-4	Performance	Each page must load within 2 seconds
NFR-5	Availability	Can be available at all time 24/7
NFR-6	Scalability	The process must finish within 3 hours so data is available by 8 a.m. local time after an overnight update

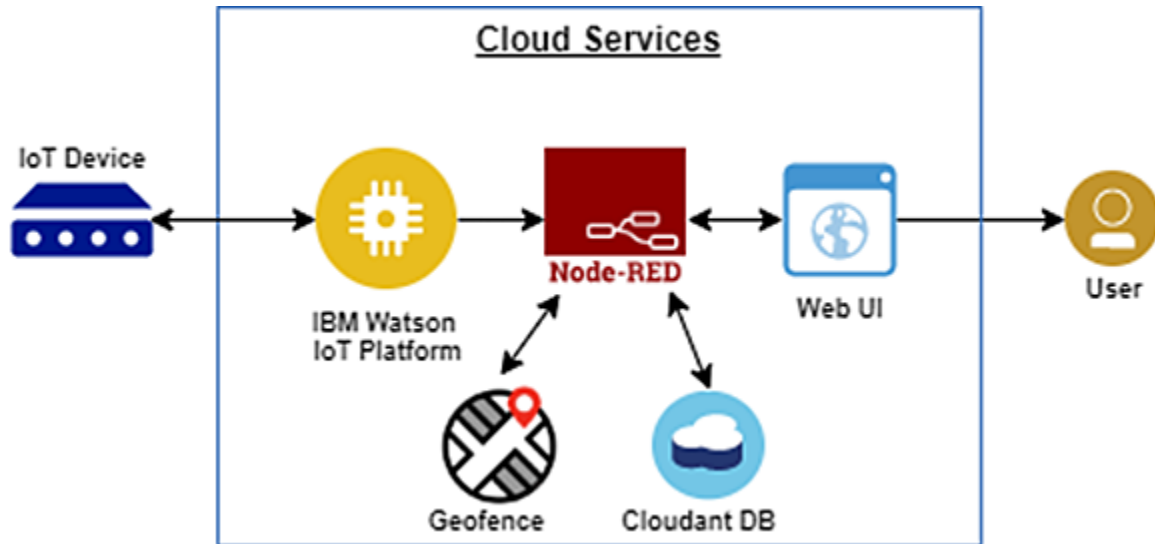
5.PROJECT DESIGN

5.1 Data Flow Diagrams



5.2 Solution & Technical Architecture

The device has IOT monitoring allows to monitor the child from anywhere with any portable devices. Ultrasonic sensor are used which sense when someone near child and alarm buzz will established SMS and dialing function is made to parent



5.3 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	-----

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	User Registration	USN-1	Registration through app	2	High	Mohamed Arsath Mohamed Aadhi sath Esakki Raj Mohamed Ifthihar
Sprint-1	User Confirmation	USN-2	Confirmation via Email Confirmation via OTP	1	High	Mohamed Arsath Mohamed Aadhi sath Esakki Raj Mohamed Ifthihar
Sprint-2	User login	USN-3	Setting up User Id and password	2	Low	Mohamed Arsath Mohamed Aadhi sath Esakki Raj Mohamed Ifthihar

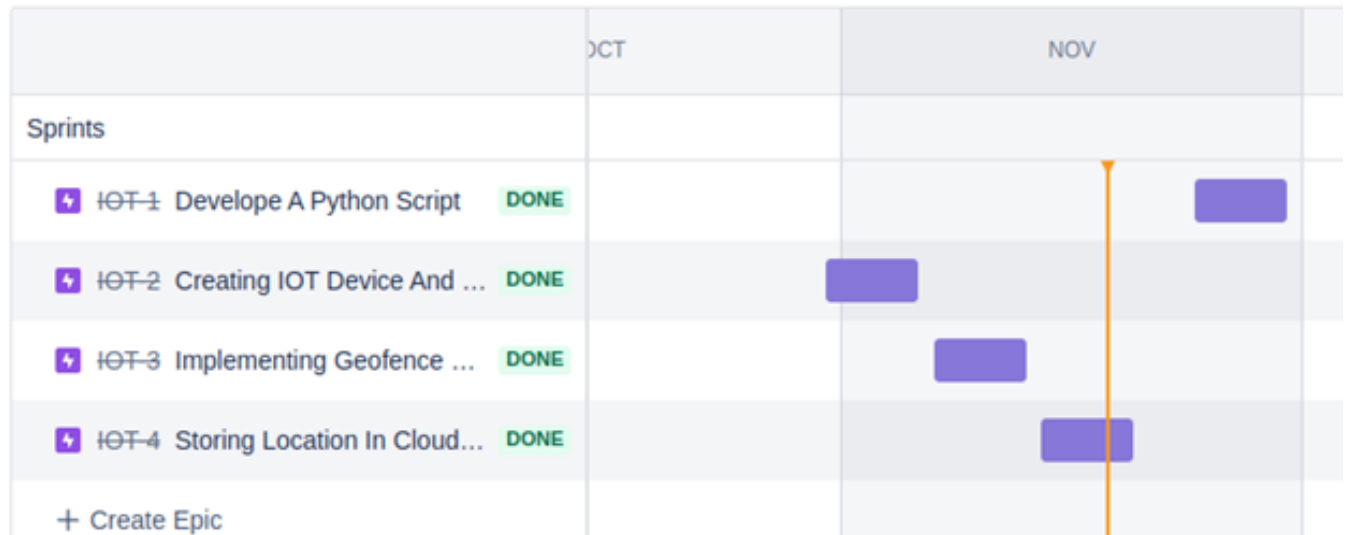
Sprint-1	App permission	USN-4	Grant the permission for the app to access location, contact etc..	2	Medium	Mohamed Arsath Mohamed Aadhi sath Esakki Raj Mohamed Ifthihar
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Sprint-1	Interface with the Device	USN-5	Connecting the device with the registered app with the device ID.	1	High	Mohamed Arsath Mohamed Aadhi sath Esakki Raj Mohamed Ifthihar
Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-2	Setting Geo-location	USN-6	Creating the Geo-location area in the map	2	Low	Mohamed Arsath Mohamed Aadhi sath Esakki Raj Mohamed Ifthihar
Sprint-3	Database	USN-7	Location history is stored in the cloud. Can be accessed from the dashboard.	2	High	Mohamed Arsath Mohamed Aadhi sath Esakki Raj Mohamed Ifthihar
Sprint-4	Tracking location	USN-8	Tracking the location through app. Tracking the location through website.	2	High	Mohamed Arsath Mohamed Aadhi sath Esakki Raj Mohamed Ifthihar

6.2 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	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	31 Oct 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	07 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	14 Nov 2022

6.3 Reports from JIRA



7.CODING

7.1 Coding

```
import json

import wiotp.sdk.device

import time

myConfig = {

    "identity": {

        "orgId": "rdegyk",

        "typeId": "safetygad",

        "deviceId": "gad1"

    },

    "auth": {

        "token": "gyg06jzil(!ITGsKxV"

    }

}

client = wiotp.sdk.device.DeviceClient(config=myConfig,

logHandlers=None)

client.connect()

while True:

    name="locater"
```

```
#in area location

#latitude=13.145997614532394

#longitude=80.0619303452179

#out area location

latitude=13.15412

longitude=80.05729

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(2)

client.disconnect()
```

7.2 Geo-fence

A geofence is a virtual perimeter for a real-world geographic area.[1] A geofence could be dynamically generated (as in a radius around a point location) or match a predefined set of boundaries (such as school zones or neighborhood boundaries).The use of a geofence is called geofencing, and one example of use involves a location-aware device of a location-based service (LBS) user entering or exiting a geofence. This activity could trigger an alert to the device's user as well as messaging to the geofence operator. This info, which could contain the location of the device, could be sent to a mobile telephone or an email account.

8.RESULTS

8.1 Performance Metrics

It is being used as it allows the correct sample of respondents to be selected due to which becomes convenient to obtain results. Besides, the results offered are affordable and usable. Since the respondents are properly chosen, the results tend to be more accurate, precise and reliable.

9.ADVANTAGES & DISADVANTAGES

9.1 Advantages

In our system, we provide an environment where this problem can be resolved in an efficient manner. It makes parents to easily monitor their children in real time just like staying beside them as well as focusing on their own career without any manual intervention.

9.2 Disadvantages

It can be easily removed or damaged while playing and by any intruders. This requires internet connectivity to get monitored and to notify alert messages to parents.

10.CONCLUSION

The word Future resembles the word Children. As Dr. A.P.J Abdul Kalam's words "Youngsters are the future pillars of one's nation", today's children are tomorrow's youngsters, preserving their dreams and life for a better future is necessary. Therefore, each and every parent should take care of their own children, without letting them to fall into the dark world of abuse, which entirely ruins them physically, mentally and emotionally, destroying our future. Hence, considering the importance of our future, our project makes it easy for parents to track their children and to visually monitor them on a regular basis, which makes them ensure the safety of their children and reduces the rate of incidents of child abuse.

11.FUTURE SCOPE

In our system, we automatically monitor the child in real time using Internet of Things, with the help of GPS, GSM, and Raspberry Pi. This system requires network connectivity, satellite communication, and high-speed data connection when we use web camera and GPS to lively monitor. It is difficult to monitor when there occurs any hindrance to satellite communication or any network issue. There also occurs time delay in video streaming through the server. Hence in the future, these issues can be overcome by using Zigbee concept or accessing the system without internet and using high-speed server transmission.

12.APPENDIX

Source Code

Code for IN Area Location:

```
import json

import wiotp.sdk.device

import time

myConfig = {

    "identity": {

        "orgId": "rdegkyk",

        "typeId": "safetygad",

        "deviceId": "gad1"
```



```

},
"auth":{
"token":"gyg06jzil(!ITGsKxV"
}
}

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

client.connect()

while True:

    name="locater"

    #in area location

    latitude=13.145997614532394

    longitude=80.0619303452179

    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(2)

    client.disconnect()

```

Code for OUT Area Location:

```
import json

import wiotp.sdk.device

import time

myConfig = {

    "identity": {

        "orgId": "rdegyk",

        "typeId": "safetygad",

        "deviceId": "gad1"

    },

    "auth": {

        "token": "gyg06jzil(!ITGsKxV"

    }

}

client = wiotp.sdk.device.DeviceClient(config=myConfig,

logHandlers=None)

client.connect()

while True:

    name="locater"
```

```
#out area location
```

```
latitude=13.15412
```

```
longitude=80.05729
```

```
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(2)
```

```
client.disconnect()
```

GitHub Link:

<https://github.com/IBM-EPBL/IBM-Project-16184-1659609202>

Project Demo:

https://drive.google.com/drive/folders/18P7kxrOHelE3ogZRn_sprCFZgwPZvSKZ?usp=sharing