Project Report Format

1.INTRODUCTION

1.1 *Project Overview*

Internet of Things (IOT) is the latest technology that connectsentire world. It establishes connectivity (through internet) among the various devices or services or systems in order to little by little make automation development in all areas.

Technology is the best way to solve this problem. That's thereason to develop this project that can act as a rescue device and protect at thetime of danger. The motivation behind this project is an attempt to focus on asecurity system that is designed merely to serve the purpose of providing security to child so that they never feel helpless while facing such social challenges.

An advanced system can be built that can detect the locationand health condition of child that will enable us to take action accordingly based on electronic gadgets like GPS receiver, GSM, pulse rate sensor, body temperature sensor. We can make use of number of sensors to precisely detectthe real time situation of the children in critical situations. The heartbeat of a child in such situations is normally higher which helps make decisions to detect the abnormal motion of the children while she is victimized. The device has IoT monitoring and a GSM module that allows the child to be monitored

at all times. It also has numerous sensors thatare connected to a CPU and are used to detect exact signals such as heart rate,temperature, and other dangers and alert the parents.

1.2 PURPOSE

*The major goal of this project is to use modern technology to create a gadget that provides **"Smart Child Safety"** to protect children, which will be far more effective than current methodsin assisting victims.*

2.LITERATURE SURVEY

2.1 Existing problem

***1.** No child should have to worry about his or her safety and welfare. Unfortunately, millions of children, around the world are at risk for violence, abuse, and exploitation. There are several threats to the safety of children, most of which are interconnected. Read on to learn about these specific issues, how they are related to one another, and how they might be alleviated.*

***2.** Parents cannot know the previous location history of their children to find any lost belongings of them.*

***3.** Parents can neither contact nor instruct their children when they are far away from the*m.

2.2 REFERENCES

Asia Pacific University of Technology and Innovation, Technology

Park, Bukit Jalil, Kuala Lumpur, Malaysia *Corresponding author.

Nowadays, crime rate associated with children keeps increasing due to which draws peoples' attention regarding child safety. This

research is conducted to propose a child security smart band utilizing IoT technology. Online questionnaire and semi-structured interview are methodologies used to collect data. The online questionnaire gains feedbacks by sending questions electronically, where answers need to be submitted online. In the semi structured interview, researcher meets and asks respondents some predetermined questions while other being asked are not planned in advanced. Through information obtained, a smart band have been proposed to monitor the safety of children. By this, parents know what is happening remotely and can take actions if something goes wrong. The future improvements of this device will be adding functions and software to make it works like a phone such as messaging, gallery, Google, YouTube, meanwhile, adding more child security features so that child safety is guaranteed.

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

Child safety and tracking is a major concern as the more number of crimes on children are reported nowadays. With this motivation, a smart IoT device for child safety and tracking is developed to help the parents to locate and monitor their children. The system is developed using LinkIt 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. The parameters such as touch, temperature &heartbeat of the child are used for parametric analysis and results are plotted for the same. The above system ensures the safety and tracking of children

- *Jonny Farringdon, Andrew J. Moore, Nancy Tilbury, James Church & Pieter Biemond .D (october1999) 'Wearable Sensor Badge & Sensor Jacket for Context Awareness', International*

symposium on Wearable computers, ISWC 99 proceedings of the 3rd IEEE pp107.

- *Healey J. and Picard, R. (October 1998) 'Startlecam A cybernetic wearable camera', Second International Symposium on Wearable Computers, Pittsburgh, PA, IEEE Computer Society, pp. 42-49.*
- *Braam, K., Huang, T. C., Chen, C. H., Montgomery, E., Vo, S., & Beausoleil, R. (2015, December). Wristband Vital: A wearable multi-sensor microsystem for real-time assistance via low-power Bluetooth link. In 2015 IEEE 2nd World Forum on Internet of Things (WF-IoT) (pp. 87-91). IEEE.*

2.3 PROBLEM STATEMENT DEFINATION

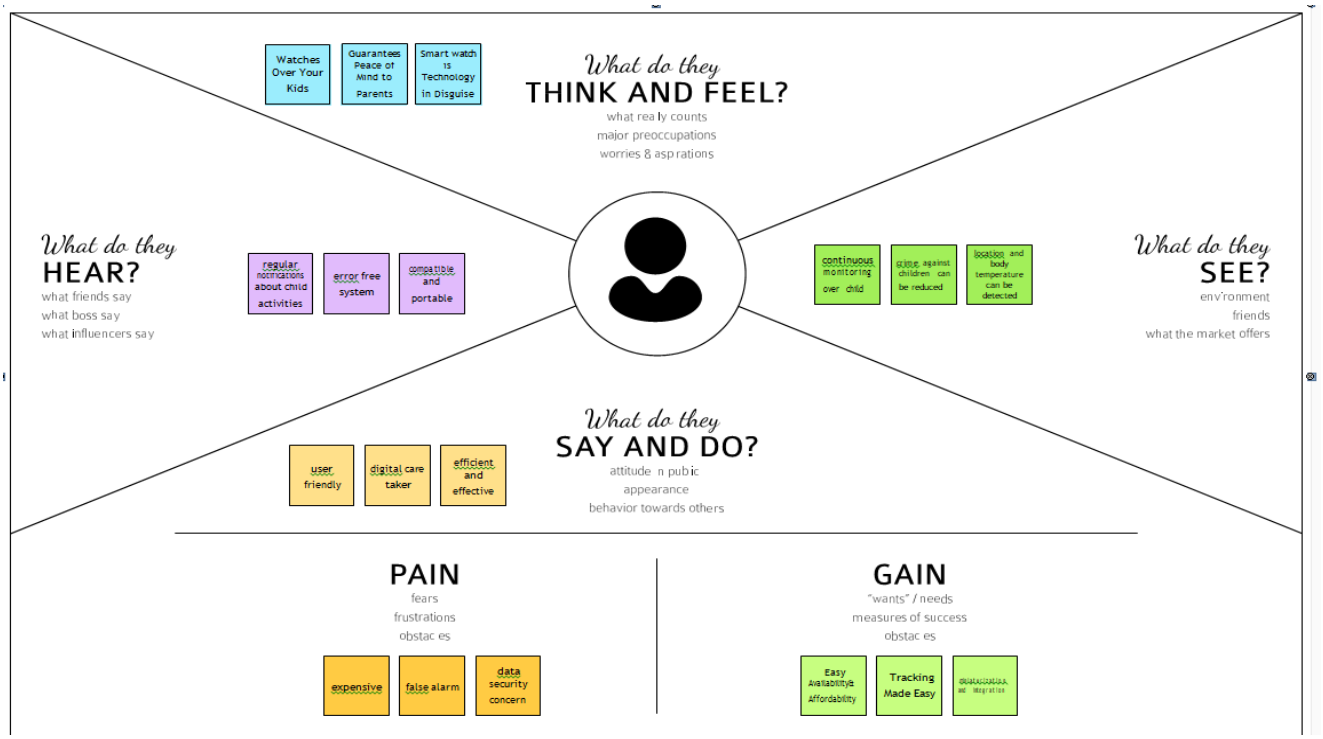
- *In today's world there are lots of ongoing crimes related to children like child trafficking and kidnapping.*
- *Statistics will show how large the numbers of these crimes are but there are bound to be more cases that go unreported and it's painful to know that many of those cases remain unsolved to this day.*
- *So, parents want a reliable way through which they can ensure their Child's safety when they are not under their supervision.*
- *Thus, our project aims to create a method through which the parents will be able to track the location of their child.*
- *How it works is that, after they leave their children in school or parks, they can create a geofence around that particular location.*
- *The child's location will be continuously monitored to check if the child is still inside the safe zone.*
- *Whenever the child will go out of that geofenced area i.e. the*

safe area, the parents or the caretaker will be notified through the app that the child is out ofthe safe zone.

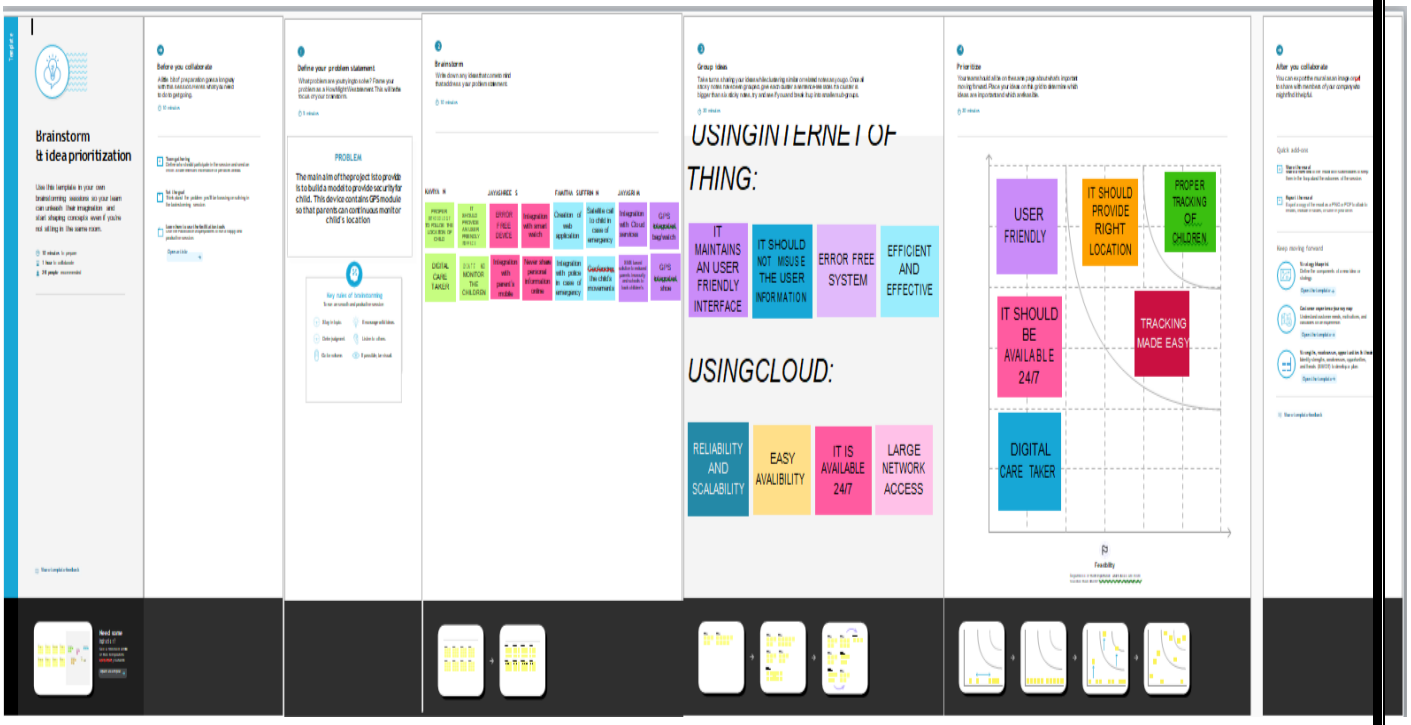
- *The parent or the caretaker can then act to ensure the child's safety.*
- *The entire location data will be stored in the database.*

3.IDEATION & PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS



3.2 IDEATION & BRAINSTROMING

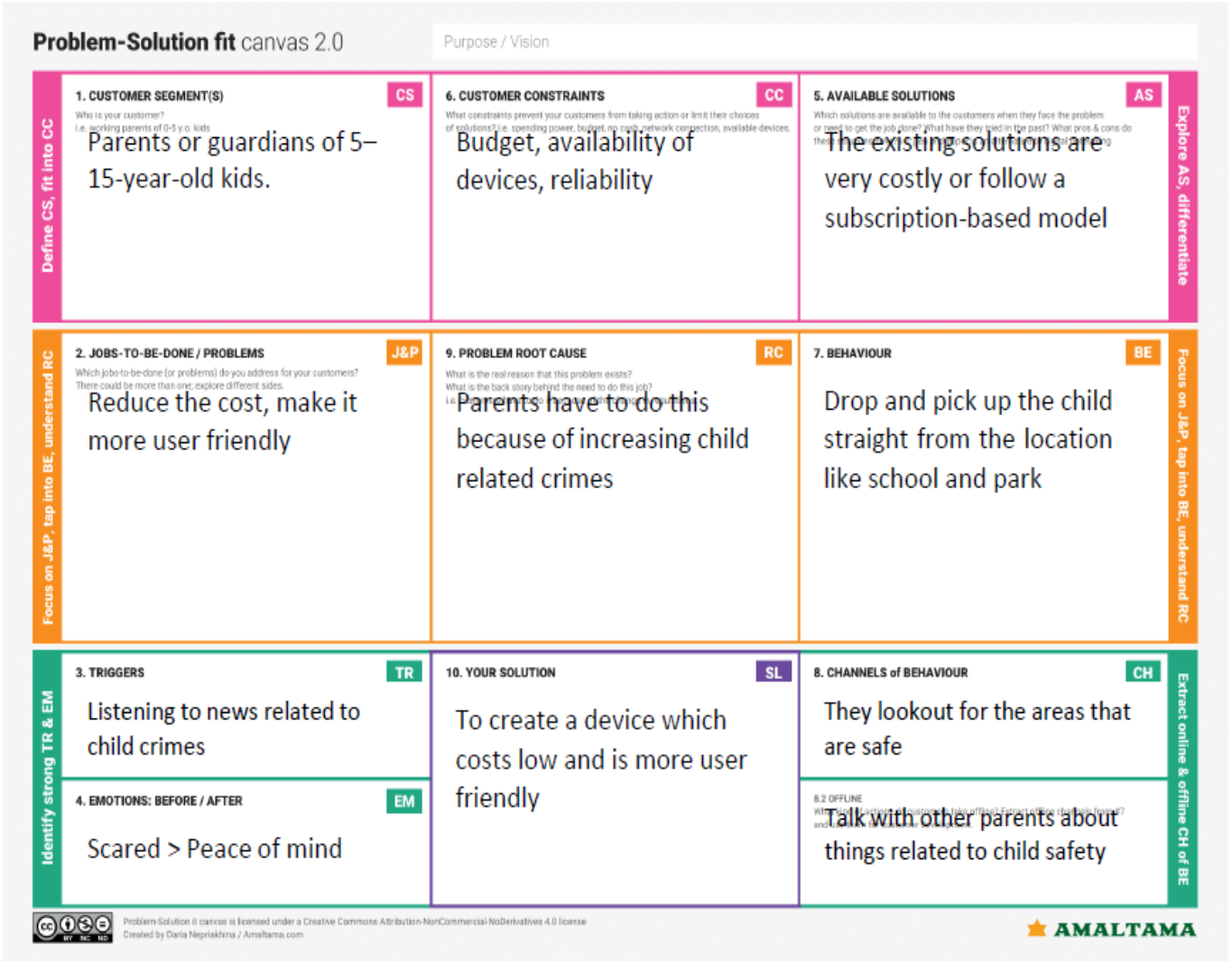


3.3 PROPOSED SOLUTION

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	➢ No child should have to worry about his or her safety and welfare. Unfortunately, millions of children around the world are at risk for violence, abuse, and exploitation. There are several threats to the safety of children, most of which are interconnected. Read on to learn about these specific issues, how they are related to one another, and how they might be alleviated. ➢ Parents cannot know the previous location history of their children to find any lost belongings of them. ➢ Parents can neither contact nor instruct their children when they are far away from them.

2.	Idea / Solution description	➢ 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 location. ➢ By continuously checking the child's location notifications will be provided 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.
3.	Social Impact / Customer Satisfaction	➢ Brief and correct information about child.
4.	Business Model (Revenue Model)	➢ Selling the product to child care organizations or centers. ➢ Selling the product via e-commerce.
5.	Scalability of the Solution	➢ Reliable and cost effective.

3.4 PROBLEM SOLUTION FIT



4. REQUIREMENT ANALYSIS

4.1 Functional requirement

FR No.	Functional Requirement (Epic)	Sub Requirement (Story /Sub-Task)
FR-1	User Registration	Registration through Form Registrationthrough Gmail Registration through LinkedIN
FR-2	User Confirmation	Confirmation via Email Confirmationvia OTP
FR-3	App installation	Installation through link Installationthrough play store

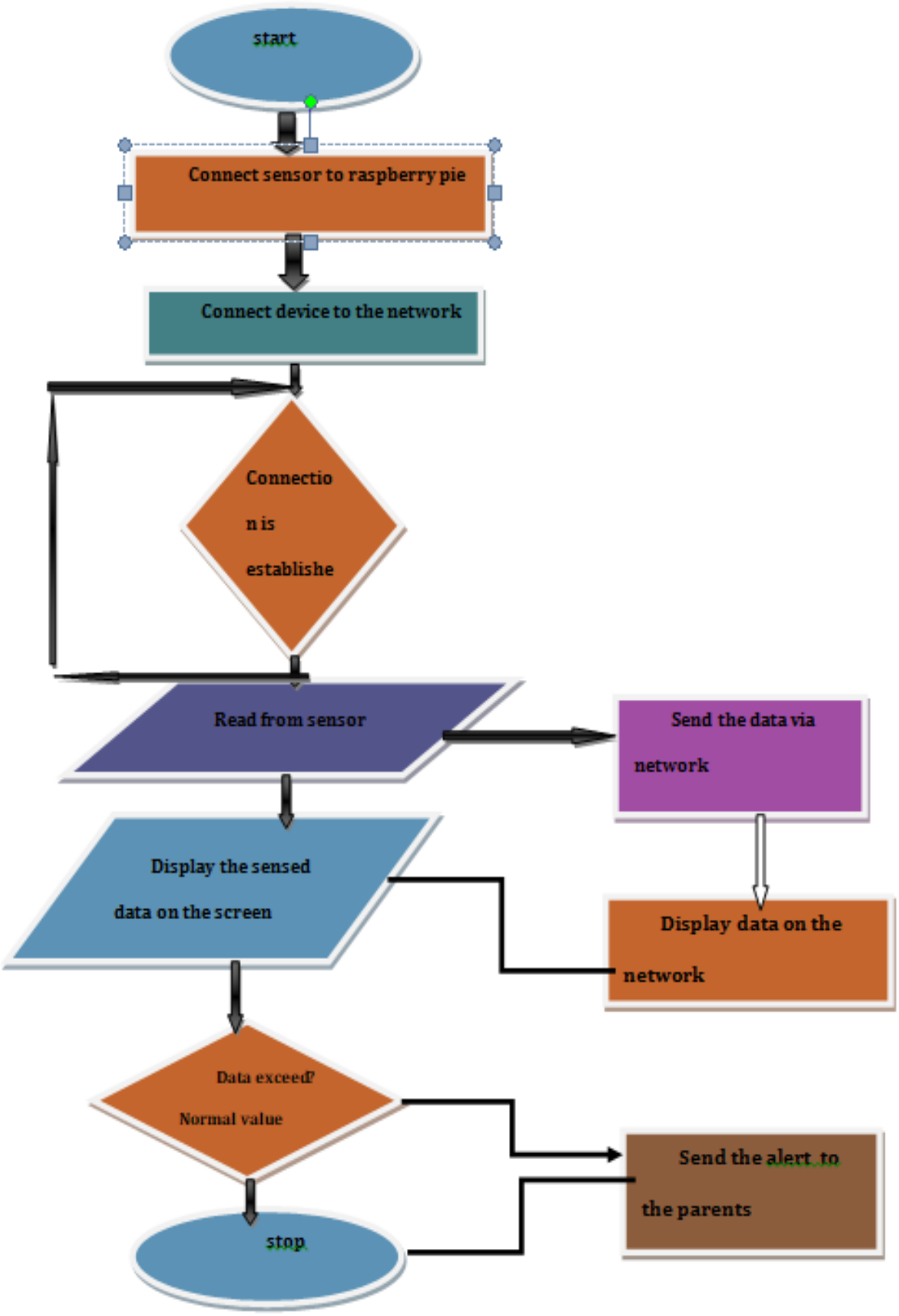
FR-4	Location History	Used to detect the location precisely Point –to-point location can be seen in the app

4.2 Non-Functional requirements

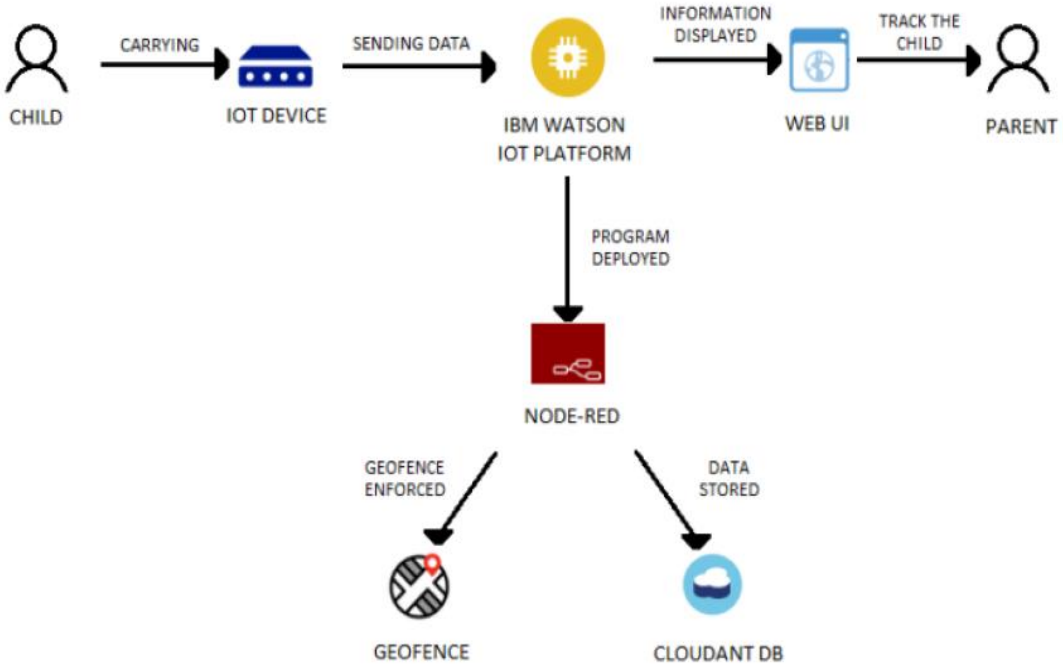
NFR No.	Non-Functional Requirement	Description
NFR-1	Usability	Since it uses GSM, which helps to inform the current situation and danger accurately and immediately to parents.
NFR-2	Security	Provides assurance to parents(speciallyworking parents)about the security of their child Develop the parents to monitor and locatethe location of the child
NFR-3	Reliability	Easy to access and to use Easy tohandle Portable

5.PROJECT DESIGN

5.1 Data Flow Diagrams


start
Connect sensor to raspberry pie
Connect device to the network
Connectio
n is
establishe
Read from sensor
Send the data via
network
Display the sensed
data on the screen
Display data on the
network
Data exceed?
Normal value
Send the alert to
the parents
stop

5.2 SOLUTION & TECHINCAL ARCHITECTURE



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	As a parent/guardian, I can register for the application by entering my email, and password, and confirming my password.	2	High	Jayashree.S
Sprint-1	User confirmation	USN-2	As a parent/guardian, I will receive a confirmation email once I have registered for the application	1	High	Jayasri.M
Sprint-2	Login	USN-3	As a parent, I will receive the connection, and location in SMS/mail once I have entered the application.	1	High	Kaviya.N
Sprint-1	Registration	USN-4	As a parent/guardian, I can register for the application through Gmail	2	Medium	Famitha suffrin.N

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	5 Days	28 Oct 2022	01 Nov 2022	20	03 Nov 2022
Sprint-2	20	5 Days	02 Nov 2022	06 Nov 2022	20	08 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	14 Nov 2022
Sprint-4	20	7s Days	12 Nov 2022	18 Nov 2022	20	19 Nov 2022

7 CODING & SOLUTIONING

```
import time

import sys

import ibmiotf.application

import ibmiotf.device



#Provide your IBM Watson Device Credentials

organization = "1tjvme" # repalce it with organization ID
```

```
deviceType ="abcd" #replace it with device type

deviceId = "1002" #repalce with device id

authMethod = "token"

authToken = "1234567890"#repalce with token



def myCommandCallback(cmd):

    print("Command received: %s" % cmd.data)

    if cmd.data['command']=='lighton':

        print("LIGHT ON")

    elif cmd.data['command'] == 'lightoff':

       print("LIGHT OFF")



try:

     deviceOptions = {"org": organization, "type": deviceType, "id":

deviceId, "auth-method": authMethod, "auth-token": authToken}
```

```
        deviceCli = ibmiotf.device.Client(deviceOptions)

        #.....................................


except Exception as e:

        print("Caught exception connecting device: %s" % str(e))

        sys.exit()

deviceCli.connect()

while True:

        L1=19.1712;

        L2=83.4163;

        #Send Latitude & Longitude to IBM Watson

        data = {'d':{ 'lat' : L1, 'lon': L2}}

        #print data

        def myOnPublishCallback():
```

```
        print ("Published Latitude = %s C" % L1, "Longitude = %s %%"
% L2, "to IBM Watson")

        success = deviceCli.publishEvent("event", "json", data, qos=0,
on_publish=myOnPublishCallback)

        if not success:

            print("Not connected to IoTF")

        time.sleep(1)

        deviceCli.commandCallback = myCommandCallbacK

# Disconnect the device and application from the cloud

deviceCli.disconnect()
```

8 TESTING

8.1 Test Case

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal

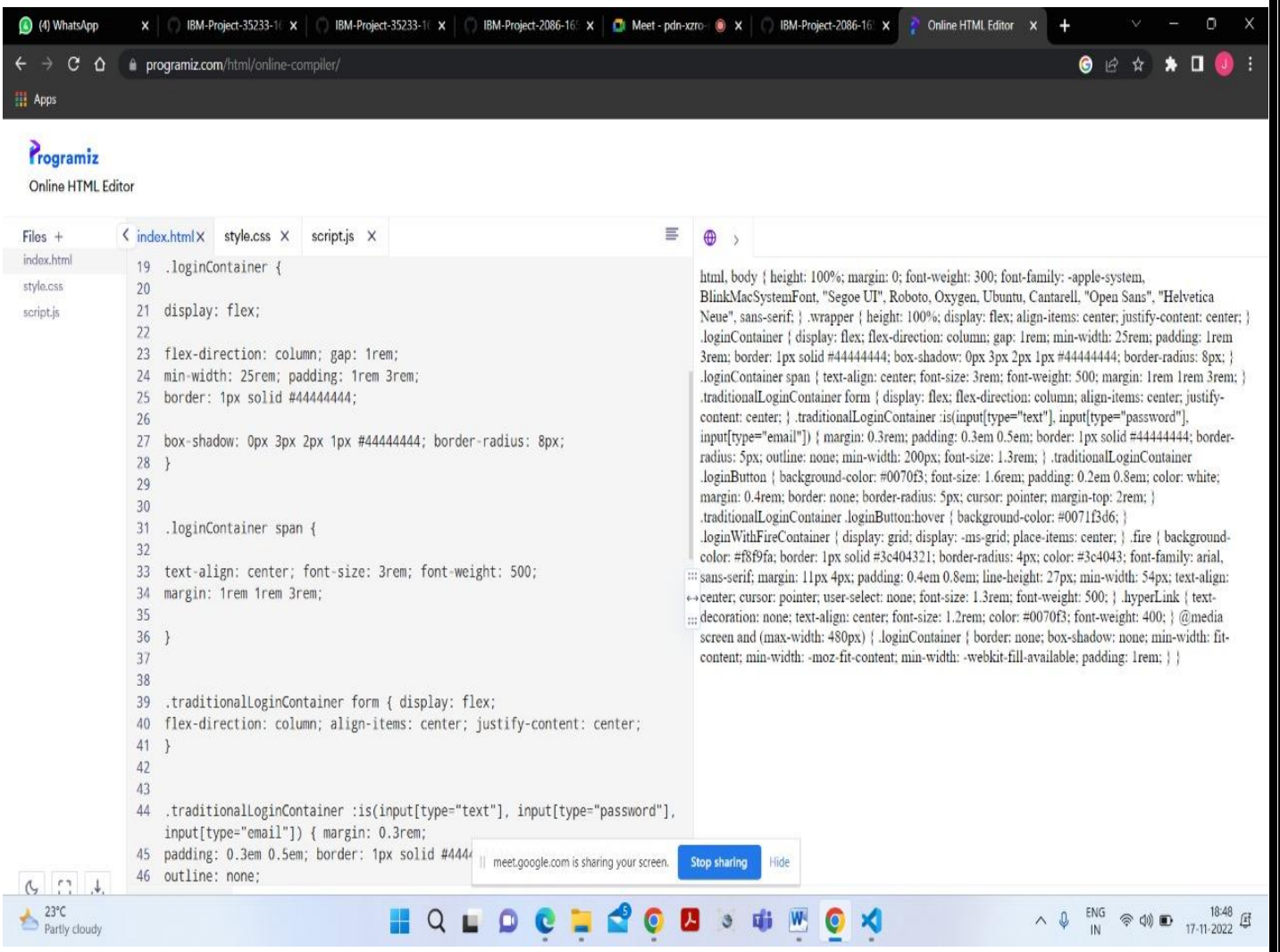
By Design	5	4	3	3	15
Duplicate	1	0	3	0	4
External	2	3	0	1	6
Fixed	9	2	4	15	30
Not Reproduced	0	0	2	0	2
Skipped	0	0	2	1	3
Won't Fix	0	5	3	1	9
Totals	17	14	17	21	69

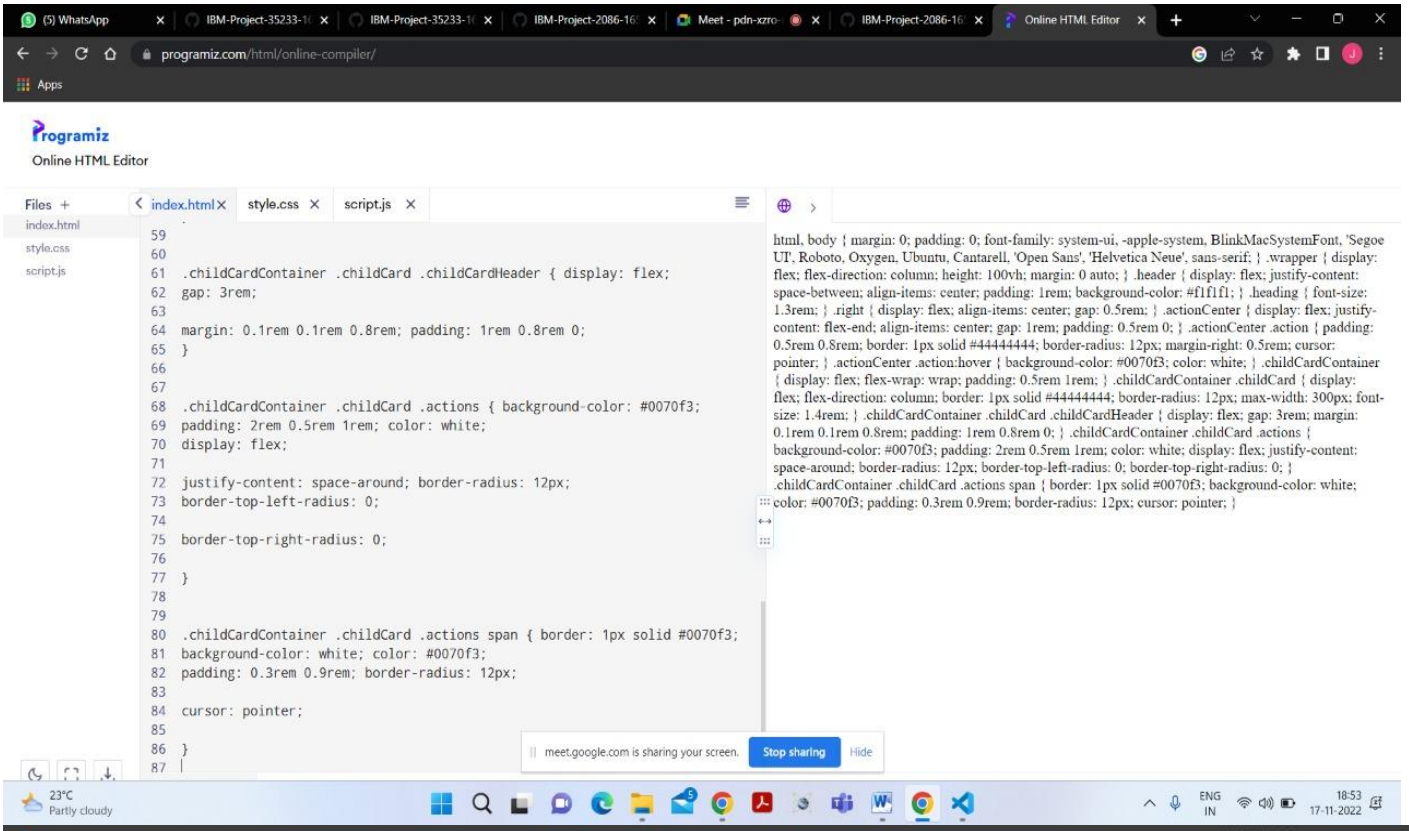
8.2 User Acceptance Testing

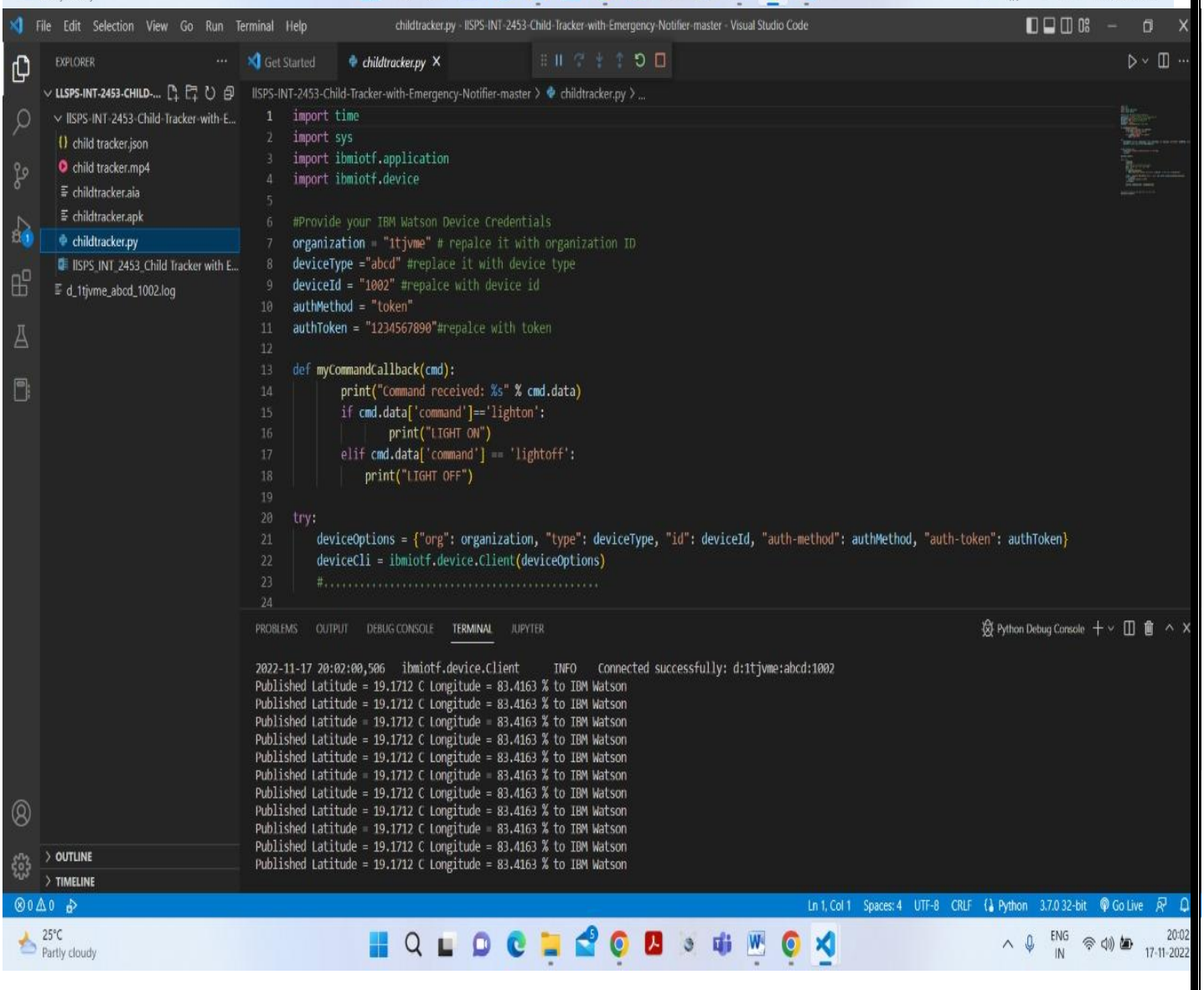
Section	Total Cases	Not Tested	Fail	Pass
Print Engine	5	0	0	5
Client Application	32	0	0	32
Security	2	0	0	2
Outsource Shipping	5	0	0	5
Exception Reporting	10	0	0	10
Final Report Output	6	0	0	6
Version Control	2	0	0	2

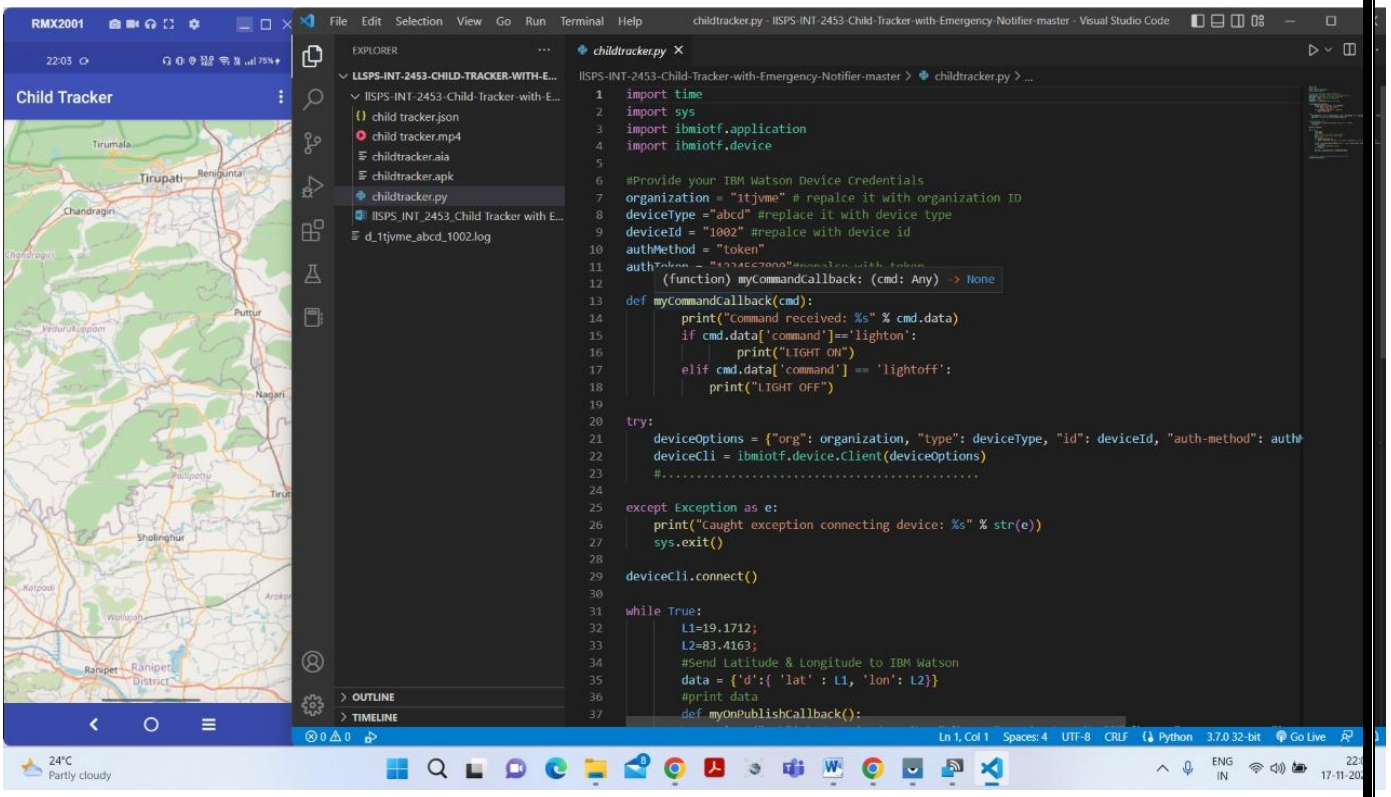
9 RESULTS

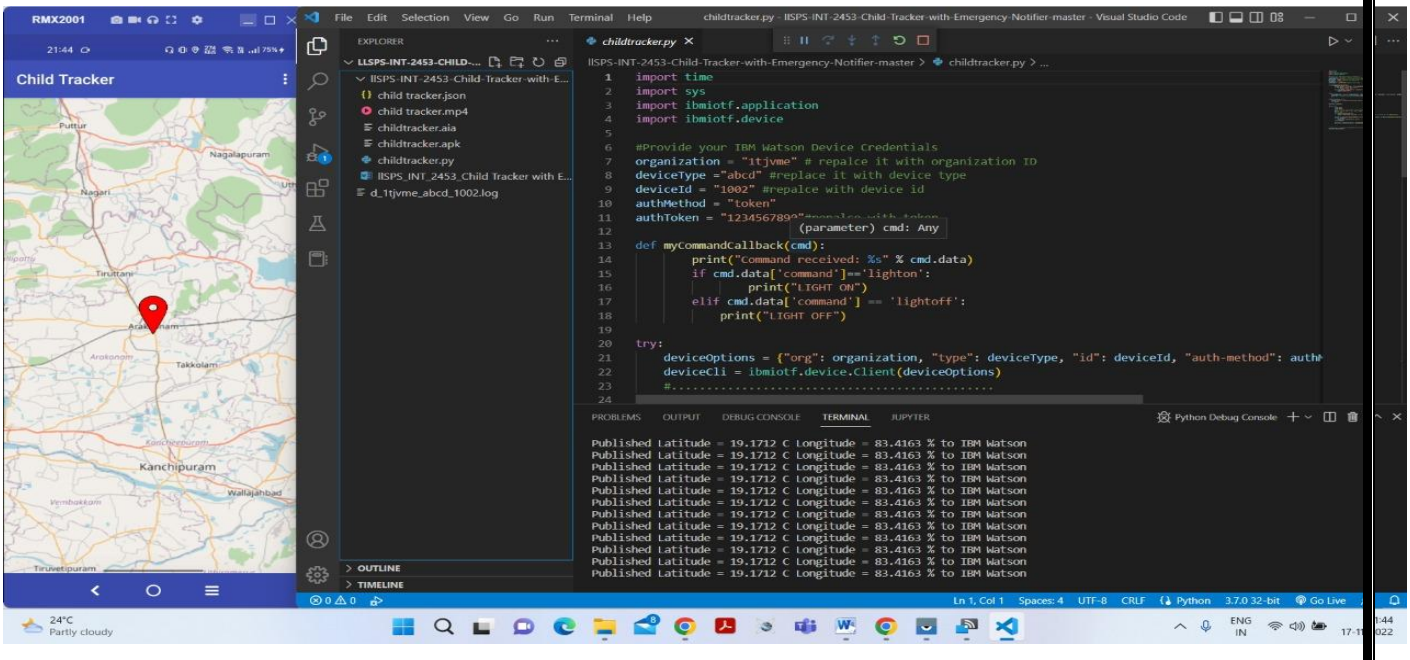
9.1 Performance Metrics


(4) WhatsApp
IBM-Project-35233-1
IBM-Project-35233-1
IBM-Project-2086-16
Meet - pdn-xzro-
IBM-Project-2086-16
Online HTML Editor
programiz.com/html/online-compiler/
Apps
Programiz
Online HTML Editor
Files +
index.html
style.css
script.js
index.html
style.css
script.js
19 .loginContainer {
20
21 display: flex;
22
23 flex-direction: column; gap: 1rem;
24 min-width: 25rem; padding: 1rem 3rem;
25 border: 1px solid #44444444;
26
27 box-shadow: 0px 3px 2px 1px #44444444; border-radius: 8px;
28 }
29
30
31 .loginContainer span {
32
33 text-align: center; font-size: 3rem; font-weight: 500;
34 margin: 1rem 1rem 3rem;
35
36 }
37
38
39 .traditionalLoginContainer form { display: flex;
40 flex-direction: column; align-items: center; justify-content: center;
41 }
42
43
44 .traditionalLoginContainer :is(input[type="text"], input[type="password"],
input[type="email"]) { margin: 0.3rem;
45 padding: 0.3em 0.5em; border: 1px solid #444
46 outline: none;
html, body { height: 100%; margin: 0; font-weight: 300; font-family: -apple-system, BlinkMacSystemFont, "Segoe UI", Roboto, Oxygen, Ubuntu, Cantarell, "Open Sans", "Helvetica Neue", sans-serif; } .wrapper { height: 100%; display: flex; align-items: center; justify-content: center; } .loginContainer { display: flex; flex-direction: column; gap: 1rem; min-width: 25rem; padding: 1rem 3rem; border: 1px solid #44444444; box-shadow: 0px 3px 2px 1px #44444444; border-radius: 8px; } .loginContainer span { text-align: center; font-size: 3rem; font-weight: 500; margin: 1rem 1rem 3rem; } .traditionalLoginContainer form { display: flex; flex-direction: column; align-items: center; justify-content: center; } .traditionalLoginContainer :is(input[type="text"], input[type="password"], input[type="email"]) { margin: 0.3rem; padding: 0.3em 0.5em; border: 1px solid #44444444; border-radius: 5px; outline: none; min-width: 200px; font-size: 1.3rem; } .traditionalLoginContainer .loginButton { background-color: #0070f3; font-size: 1.6rem; padding: 0.2em 0.8em; color: white; margin: 0.4rem; border: none; border-radius: 5px; cursor: pointer; margin-top: 2rem; } .traditionalLoginContainer .loginButton:hover { background-color: #0071f3d6; } .loginWithFireContainer { display: grid; display: -ms-grid; place-items: center; } .fire { background-color: #f8f9fa; border: 1px solid #3c404321; border-radius: 4px; color: #3c4043; font-family: arial, sans-serif; margin: 11px 4px; padding: 0.4em 0.8em; line-height: 27px; min-width: 54px; text-align: center; cursor: pointer; user-select: none; font-size: 1.3rem; font-weight: 500; } .hyperLink { text-decoration: none; text-align: center; font-size: 1.2rem; color: #0070f3; font-weight: 400; } @media screen and (max-width: 480px) { .loginContainer { border: none; box-shadow: none; min-width: fit-content; min-width: -moz-fit-content; min-width: -webkit-fill-available; padding: 1rem; } }
meet.google.com is sharing your screen.
Stop sharing
Hide
23°C
Partly cloudy
ENG
IN
18:48
17-11-2022


Programiz
Online HTML Editor
Files
index.html
style.css
script.js
.childCardContainer .childCard .childCardHeader { display: flex;
gap: 3rem;
margin: 0.1rem 0.1rem 0.8rem; padding: 1rem 0.8rem 0;
}
.childCardContainer .childCard .actions { background-color: #0070f3;
padding: 2rem 0.5rem 1rem; color: white;
display: flex;
justify-content: space-around; border-radius: 12px;
border-top-left-radius: 0;
border-top-right-radius: 0;
}
.childCardContainer .childCard .actions span { border: 1px solid #0070f3;
background-color: white; color: #0070f3;
padding: 0.3rem 0.9rem; border-radius: 12px;
cursor: pointer;
}
meet.google.com is sharing your screen.
Stop sharing
Hide


childtracker.py - IISPS-INT-2453-Child-Tracker-with-Emergency-Notifier-master - Visual Studio Code
EXPLORER
Get Started
childtracker.py
IISPS-INT-2453-Child-Tracker-with-Emergency-Notifier-master > childtracker.py > ...
child tracker.json
child tracker.mp4
childtracker.aia
childtracker.apk
childtracker.py
IISPS_INT_2453_Child Tracker with E...
d_1tjvme_abcd_1002.log
import time
import sys
import ibmiotf.application
import ibmiotf.device
#Provide your IBM Watson Device Credentials
organization = "1tjvme" # repalce it with organization ID
deviceType ="abcd" #replace it with device type
deviceId = "1002" #repalce with device id
authMethod = "token"
authToken = "1234567890"#repalce with token
def myCommandCallback(cmd):
print("Command received: %s" % cmd.data)
if cmd.data['command']=='lighton':
print("LIGHT ON")
elif cmd.data['command'] == 'lightoff':
print("LIGHT OFF")
try:
deviceOptions = {"org": organization, "type": deviceType, "id": deviceId, "auth-method": authMethod, "auth-token": authToken}
deviceCli = ibmiotf.device.Client(deviceOptions)
#.....
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
JUPYTER
2022-11-17 20:02:00,506 ibmiotf.device.Client INFO Connected successfully: d:1tjvme:abcd:1002
Published Latitude = 19.1712 C Longitude = 83.4163 % to IBM Watson
OUTLINE
TIMELINE
Ln 1, Col 1
Spaces: 4
UTF-8
CRLF
Python
3.7.0 32-bit
Go Live





10 ADVANTAGES & DISADVANTAGES

10.1 Advantages

1. Compatible and portable

2. User friendly
3. Easy availability and affordability
4. Error free system
5. crime against children can be reduced
6. Continuous monitoring over child

10.2 DISADVANTAGES

1. This device cannot be used in rural areas

11 CONCLUSION

This wearable device has a superior mode for viewing and locating the children\'swhereabouts with correct latitude and longitude, which is especially useful when using Google maps. This could assist to reduce the number of attacks on children while also making them feel protected and secure. The major goal of this project is to create a device that protects youngsters from risky circumstances while also assisting them in combating them.

12 FUTURE SCOPE

A camera module for surveillance of the child's surrounds can be added to improve the system's performance. It's also possible to do it with a Raspberry Piand Lilypad. It is possible to develop a more energy-efficient type that can keepthe battery for a longer period of time

13 APPENDIX

13.1 Source Code

Html

HTML:

```
<!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>



<div class="wrapper">

<div class="loginContainer">



<span>Login to Continue</span>



<div class="traditionalLoginContainer">

<form class="signupForm" action="/" method="post">

<input type="text" name="firstName" placeholder="First Name" id="firstName">



<input type="text" name="lastName" placeholder="Last Name" id="lastName">

<input type="text" name="username" placeholder="User Name" id="username">
```

```
        <input type="email" name="email" placeholder="Email" id="email">


        <input type="password" name="password" placeholder="Password" id="password">
        <input class="loginButton" type="submit" value="Sign Up">
        </form>


        </div>
        <div class="loginWithFireContainer">


        <button type="button" class="fire" title="Login with SAFETY" id="fire">Login with SAFETY</button>
        </div>
        <a class="hyperLink" href="/login">Already have an Account? Login ↗</a>
        </div>


        </div>
        <script>
        // Necessary for Fire OAuth to Function


        const fireBroadcastingChannel = new BroadcastChannel('fireOAuthChannel');
    fireBroadcastingChannel.addEventListener('message', async event => {


        let data = event.data
```

```
/**
@typedef {Object<string, any>} Data

@property {boolean} success - Whether the login was successful
@property {string} token - The data returned from the login i.e. Fire Token
*/

// data.token is the message sent from the fireOAuthChannel after verification
// data.success is a boolean that indicates whether the verification was successful
// data.token is the fire token

// What to do with the Fire Token?
// * Fire Token is an unique token which uniquely identifies the user who authorized your login attempt with Fire
// * You can use this token ONLY ONCE as it will be destroyed after the first use
// 1. Send the fire token to the Fire Server to verify the user
// - You can do that client sided or server sided
// - You need to send a POST Request to the Fire Server with the fire token
//   at the URL: http://localhost:3003/api/tokens/verify
// - The Fire Server will verify the fire token and return a response

//   - If the verification was successful - CODE (200), the Fire Server will return a response with the user's data
```

// - If the verification was unsuccessful - CODE (400) or CODE (401), the Fire Server will return a response with an error 'message'

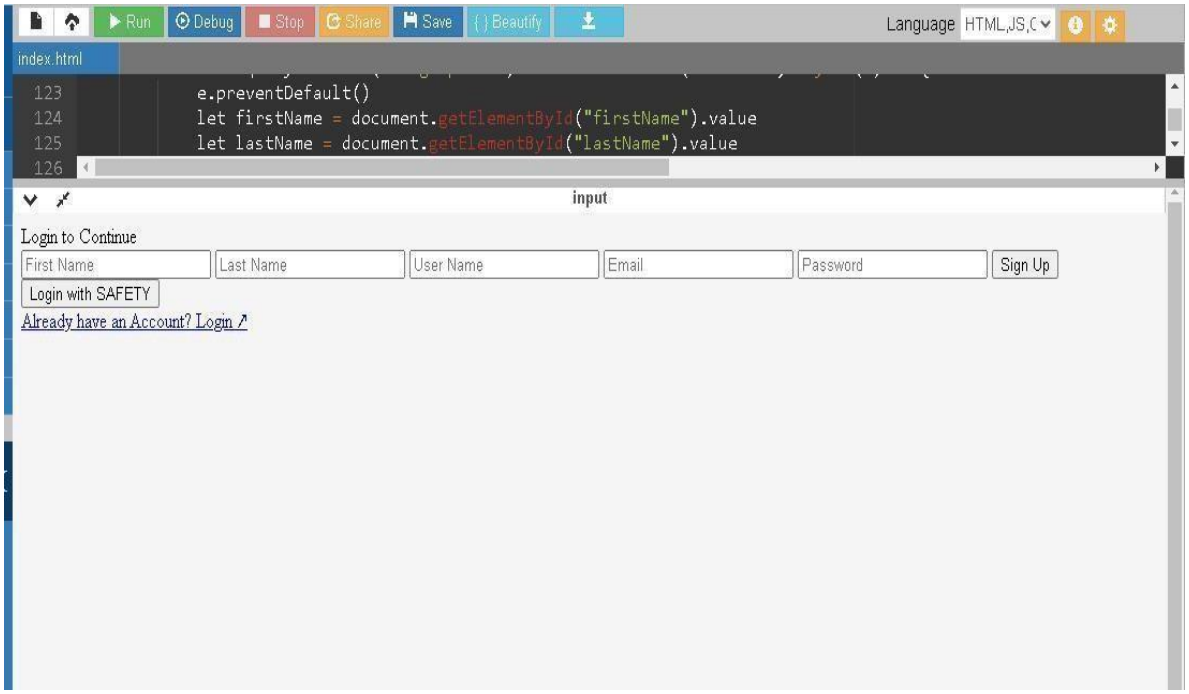
// - You can use the data returned from the Fire Server to create a new user in your database

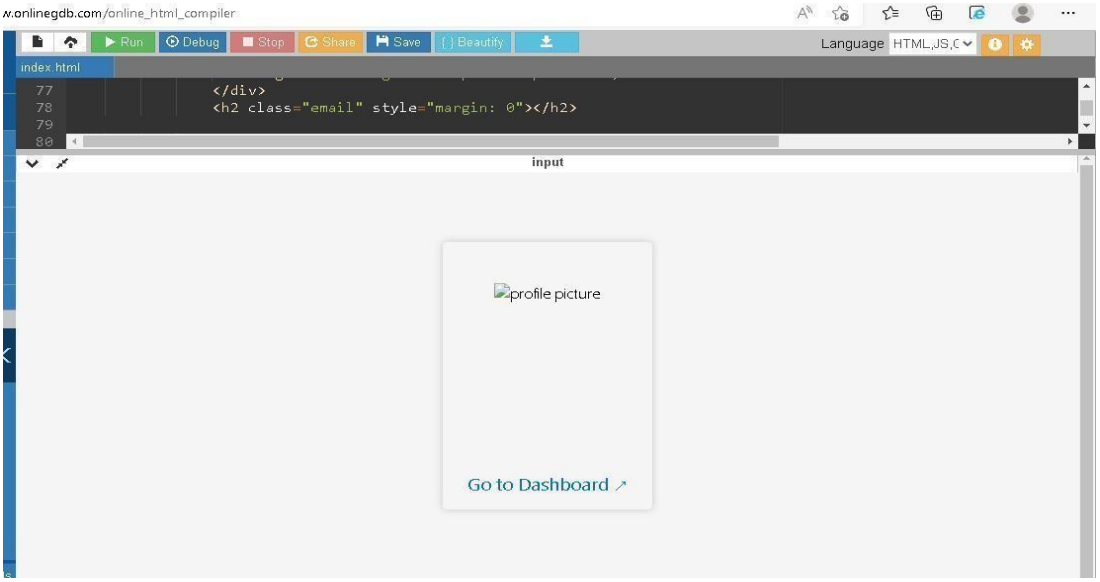
// This example will send the token to Fire Servers and console.log the response console.log("%c" + `Fire Token: ${data.token}`, `color: #f1c40f; font-weight: bold;`)

```
const response = await fetch('https://fire.adaptable.app/api/tokens/verify', { method: 'POST',

headers: {

'Content-Type': 'application/json'

},


body: JSON.stringify({ token: data.token

})

})


// get the response

const responseData = await response.json()


// console.log the response console.log(responseData)

await localforage.setItem('userData', {...responseData, isFire: true})

// Adding the user data to the user Database


let database = await localforage.getItem("userDatabase") if (database == null) {

database = []

}

database.push(responseData)

await localforage.setItem("userDatabase", database)
```

```
// redirect to the home page window.location.href = '/'

})

function popupwindow(url, title, w, h) { var left = (screen.width/2)-(w/2);

var top = (screen.height/2)-(h/2);

return window.open(url, title, 'toolbar=no, location=no, directories=no, status=no, menubar=no, scrollbars=no, resizable=no, copyhistory=no, width='+w+', height='+h+', top='+top+', left='+left);

}

document.getElementById("fire").addEventListener("click", function() { popupwindow("/fireoauth.html" "Fire OAuth", 450, 600)

})

</script>

<script>

// this.Website's Scripts / App Logic document.querySelector(".signupForm").addEventListener("submit" , async (e) => {

e.preventDefault()

let firstName = document.getElementById("firstName").value let lastName = document.getElementById("lastName").value let username = document.getElementById("username").value
```

```
let email = document.getElementById("email").value

let password =document.getElementById("password").value let profilePic =
`https://avatars.dicebear.com/api/adventurer-

neutral/${firstName}${lastName}.svg?backgroundColor=variant03`

let data = { firstName, lastName, username, email, password, profilePic } await
localforage.setItem("userData", data)

let database = await localforage.getItem("userDatabase") if (database == null) {

database = []

}

database.push(data)

await localforage.setItem("userDatabase", database) window.location.href = "/"

})

</script>

</body>

</html>
```


Run
Debug
Stop
Share
Save
{ } Beautify
Language HTML,JS,C
index.html
123 e.preventDefault()
124 let firstName = document.getElementById("firstName").value
125 let lastName = document.getElementById("lastName").value
126
input
Login to Continue
First Name
Last Name
User Name
Email
Password
Sign Up
Login with SAFETY
Already have an Account? Login ↗


w.onlinegdb.com/online_html_compiler
Run
Debug
Stop
Share
Save
{ } Beautify
Language HTML,JS,C
index.html
77
78 <h2 class="email" style="margin: 0"></h2>
79
80
input
profile picture
Go to Dashboard ↗

GitHub: https://github.com/IBM-EPBL/IBM-Project-3224-1658506213

Project Demo Link:
https://drive.google.com/file/d/1cz7VLqEAM86v3lCygJPXU8uYra_9Ec5y/view?usp=drivesdk