PROJECT REPORT

Date	18 October 2022
Team ID	PNT2022TMID38406
Project Name	Project – IOT Based Safety Gadget for Child Safety Monitoring and Notification

1. INTRODUCTION

1.1 Project Overview

The device can help parents to safeguard their children from potential dangers and to provide them with a sense of security. So that the child does not get into dangerous situations.

1.2 Purpose

The internet of things (IOT) has the potential to revolutionize child safety by providing a new level of understanding and visibility into their daily activities. By connecting various devices and sensors to the internet, it is possible to track a child's location and monitor them and even receive notifications if they are in danger. The gadget is connected with cloud using node red in the backend for interfacing and an application for parents to monitor their child. If a danger is detected the gadget can send an alert to the child's parents or guardians after signing up. A gadget equipped with GSM connectivity uses sensors to detect the child's location and send alerts to the parents if the child is in danger. This gadget monitors and when the child crosses a defined geo fence boundary it notifies the parents of their child's where considering it as a case of emergency.

2. LITERATURE SURVEY

2.1 EXISTING PROBLEM

Title : Smart Security solution for women and children safety based on GPS using IOT

Author : Asmita Pawar , Pratiksha Sagare ,Tejal Sasane and Kiran

Year : 2020

Description : This system that works on security solution using smart devices based on IOT. In this paper the system intends to a wireless technique in the form of embedded device namely Raspberry Pi for women that will serve the purpose of alerts and way of communicating with secure channels and it captures the image using R-pi camera. There are many android applications for women safety but theyas not as much as efficient. So, to solve this issue of women safety we developed a prototype which is easy to use and which is efficient to provide help to that victim. so, when the victim presses kits button, our application will capture the photo, collect user's information to send notification to registered phone numbers with link of captured image. This saves the time and that victim get help without loss of time. Also, in the case of Children security the system proposes a speed monitoring and location tracking facilities using GPS, GPRS, GSM . The system consists of bus unit. The bus unit which is used to detect the path of Bus by using GPS. Weather the bus is travelling on its day to day route and also it monitors the over speeding of bus. For the mechanism of vehicle tracking Haversine and Trilateration algorithm are used. According to that the by using GSM alert messages will be send to their parents and vehicle owner. The system has been developed on web-based data driven application and android application has provides the useful information.

Title: Parents Perception on Child Safety Wearable Device – A Survey in South Bangalore

Author: Priya Vaz, Dr.Arthy.C, Advithya.C

Year: 2019

Description: Smart watches can perform number of activities for an individual like Voice calling through Mobile application, tracking the location using GPS Technology, geo-fencing (alerts parents and guardians) and message. There are also devices that include cellular connectivity in which child can make an SOS (Save Our Souls) call to a designated number from their smart watch. This technology helps young parents to connect to their children and

capture those moments of togetherness, even when they are apart. This study was intended to find out the perception of parents on future wearable technology (Smart watch). The survey was conducted through closed end questionnaire on parents who purchased smart wearable device for child. Around 200 respondents were selected randomly, from south Bangalore and further filtered down to 110 sample sizes.Thisdevice provides users with internet capability, GPS technology and a silent alarm for emergencies. Men and women of any age can use it to exchange digital images and messages with other e-watch users and with other cellular and smart phone users, as well as to an associated website. He also stated that everyone could benefit from the e-watch device, whether to use it to ensure they do not miss an important business call, to check in with friends, or to browse the Internet.

Title: GPS Based safety wearable device

Author: Nazneen Khan, Sayali Martal, Tarun Israni,Yasser Kamran

Year: 2020

Description: There is always an urgent need to enhance the safety of peopleespecially elderly people, women and children. This is necessary for the old peoplewho live alone and people who travel alone at late hours like call centre employeesor other people in job. This project proposes a system of alerting people in case of emergencies by using most advanced technologies. The features included in the project are monitoring a fall whether it's a sudden fall or not with the help of sensors, tracking the location by using GPS, alert in case of emergencies, knowing the status of person by sending message with the help of GSM to the person whose number is registered. Thus, the user can be tracked in case of emergencies by the location received in the message and major disasters can be avoided.

Title: A Safety and Security in Cyber–Physical Systems and Internet-of-Things Systems Author: Marilyn Wolf

Year: 2019

Description: Safety and security have traditionally been distinct problems in engineering and computer science. The introduction of computing elements to create cyber-physical systems (CPSs) has opened up a vast new range of potential problems that do not always show up on the radar of traditional engineers. Security, in contrast, is traditionally viewed as a data or communications security problem to be handled by computer scientists and/or computer engineers. Advances in CPSs and the Internet-of-Things (IoT) requires us to take a unified view of safety and security. This paper defines a safety/security threat model for CPSs and

IoT systems and surveys emerging techniques which improve the safety and security of CPSs and IoT systems.

Title: Smart Security Solution for Women based on Internet of Things(IOT)

Author: G C Harikiran, Karthik Menasinkai, Suhas Shirol

Year: 2020

Description: Today in the current global scenario, the prime question in every girl's mind, considering the ever-rising increase of issues on women harassment in recent past is mostly about her safety and security. The only thought haunting every girl is when they will be able to move freely on the streets even in odd hours without worrying about their security. This paper suggests a new perspective to usetechnology for women safety. "848Indian Women Are Harassed, Raped, Killed Everyday!!" That's a way beyond HUGE number! We propose an idea which changes the way everyone thinks about women safety. A day when media broadcasts more of women's achievements rather than harassment, it's a featachieved! Since we (humans) can't respond aptly in critical situations, the need for a device which automatically senses and rescues the victim is the venture of our idea in this paper. We propose to have a device which is the integration of multiple devices, hardware comprises of a wearable "Smart band" which continuouslycommunicates with Smart phone that has access to the internet. The application is programmed and loaded with all the required data which includes Human behaviour and reactions to different situations like anger, fear and anxiety. This generates a signal which is transmitted to the smart phone. The software or application has access to GPS and Messaging services which is pre-programmed insuch a way that whenever it receives emergency signal, it can send help request along with the location co-ordinates to the nearest Police station, relatives and the people in the near radius who have application.

2.2 REFERENCES

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2. H. Moustafa, H. Kenn , K. Sayrafian, W. Scanlon and Y. Zhang, "Mobile wearable communications [Guest Editorial]," in IEEE Wireless Communications, vol. 22, no. 1, pp. lO-l1, February 2019.

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10 P. Bhagwat, "Bluetooth: technology for short-range wireless apps," in IEEE Internet Computing, vol. 5, no. 3, pp. 96-103, May/Jun 2019.

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2..3 PROBLEM STATEMENT DEFINITION

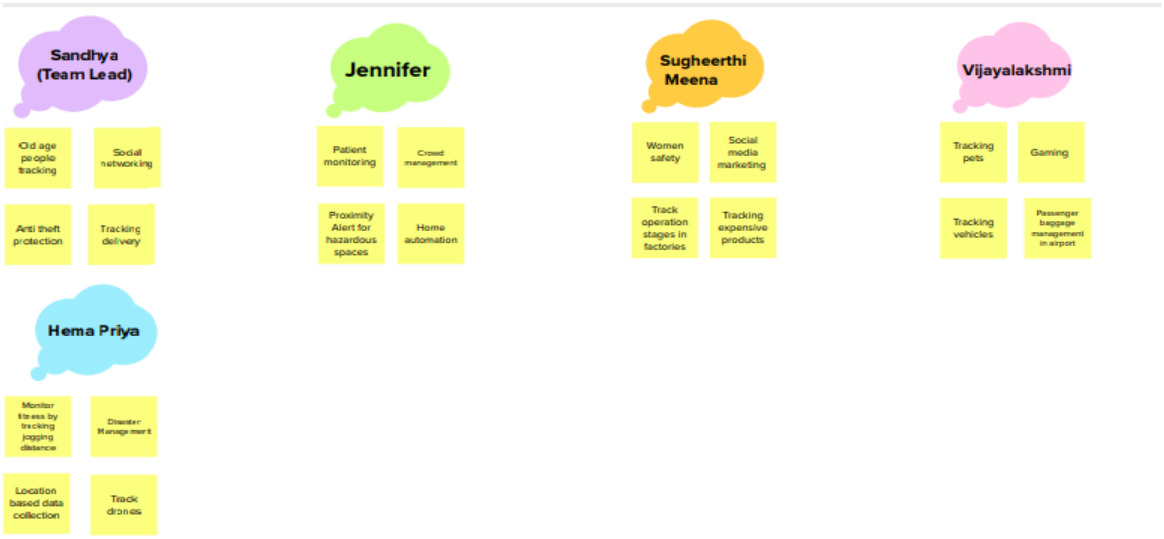
Child tracker helps the parents in continuously monitoring the child's location. They can simply leave their children in school or parks and create a geofence around the particular location. By continuously checking the child's location notifications will be generated if the child crosses the geofence.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

3. IDEATION & PROPOSED SYSTEM

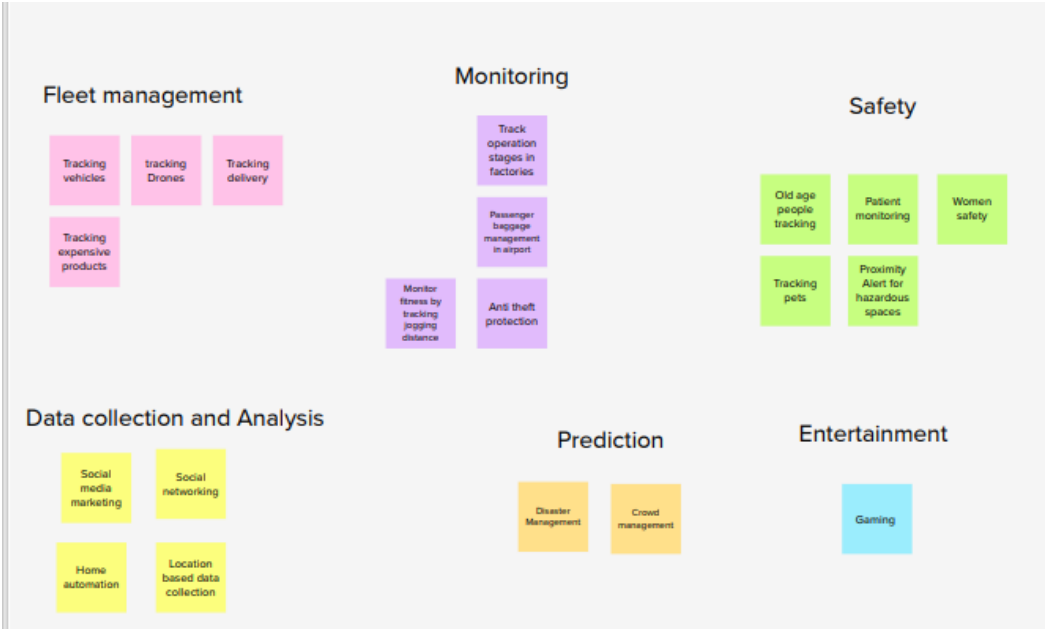
3.1 EMPATHY MAP CANVAS

3.2 IDEATION & BRAINSTROMING

BRAINSTROMING


Sandhya (Team Lead)
Old age people tracking
Social networking
Anti theft protection
Tracking delivery
Jennifer
Patient monitoring
Crowd management
Proximity Alert for hazardous spaces
Home automation
Sugheerthi Meena
Women safety
Social media marketing
Track operation stages in factories
Tracking expensive products
Vijayalakshmi
Tracking pets
Gaming
Tracking vehicles
Passenger baggage management in airport
Hema Priya
Monitor fitness by tracking jogging distance
Disaster Management
Location based data collection
Track drones

GROUP IDEAS


Fleet management
Tracking vehicles
tracking Drones
Tracking delivery
Tracking expensive products
Monitoring
Track operation stages in factories
Passenger baggage management in airport
Monitor fitness by tracking jogging distance
Anti theft protection
Safety
Old age people tracking
Patient monitoring
Women safety
Tracking pets
Proximity Alert for hazardous spaces
Data collection and Analysis
Social media marketing
Social networking
Home automation
Location based data collection
Prediction
Disaster Management
Crowd management
Entertainment
Gaming

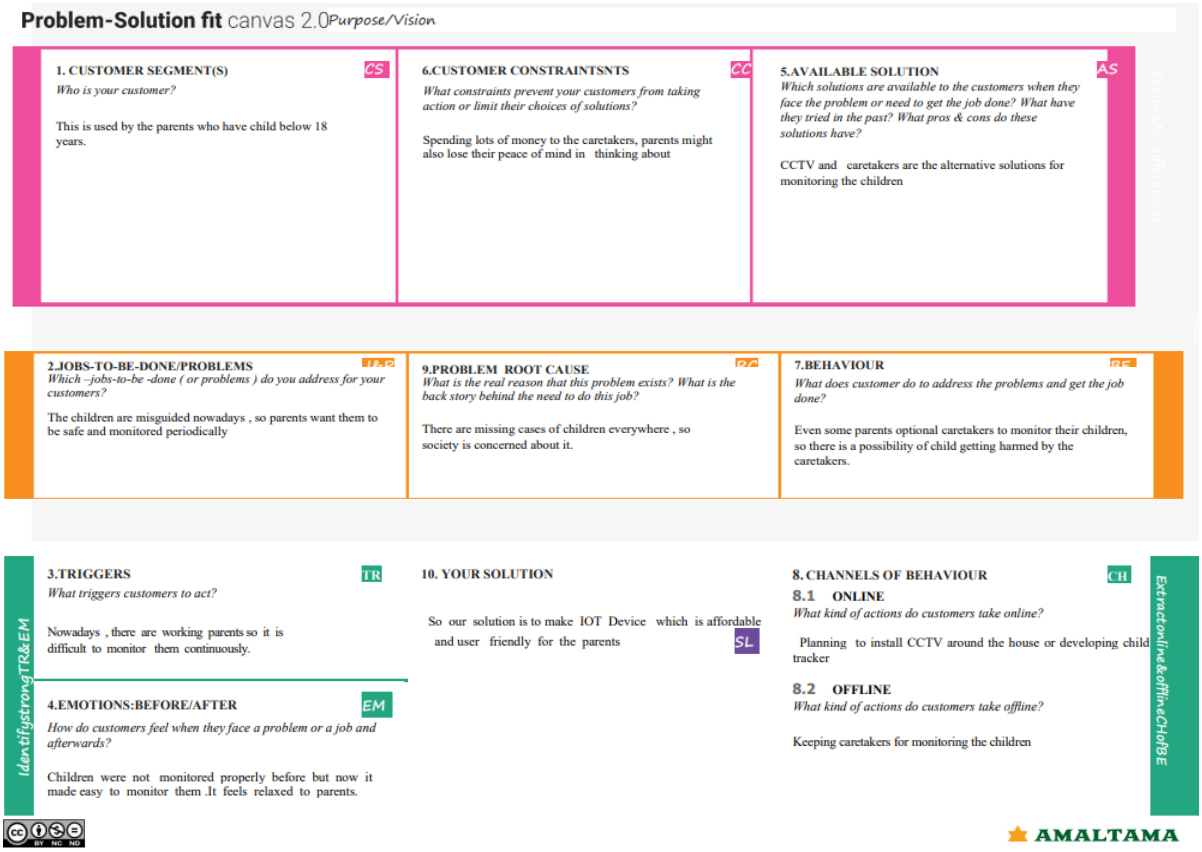
IDEATION PRIORITIZATION

3.3 PROPOSED SOLUTION

S.NO.	PARAMETER	DESCRIPTION
1.	PROBLEM STATEMENT (PROBLEM TO BE SOLVED)	Parents are often worried about their children when they are out of sight, The aim of this project is to help parents to monitor their children's location and to see whether their child is safe or not. This system provides a tracking solution for the parent to keep tracking their child's location outdoors by using GPS as it allows them to determine the exact location of the child.
2.	IDEA / SOLUTION DESCRIPTION	It has always been a troublesome process for the parents to look after their children with their busy schedules, so this system sends a notification message to parents and stores the data of the child's movement and geospace periodically. At times the notification may not hear or be received to the parents, We aim to develop and provide a good interface that would give a tremendous output. The technology used here is ARDUINO NANO and CLOUD for storing data.
3.	NOVELTY / UNIQUENESS	This project is basically for the parents who cannot balance their children and work at the same

		time and also for nonworking parents. The uniqueness of our project is about geofencing, temperature sensing, and location monitoring.
4.	SOCIAL IMPACT / CUSTOMER SATISFACTION	The parents will have the satisfaction that their child is safe and not involved in any critical situation even in their absence.
5.	BUSINESS MODEL (REVENUE MODEL)	The business model is in such a way that everyone can afford it. It is very cost-efficient. We are cutting the cost in external components. There is no need of buying any external components instead they can use their mobile phones to track.
6.	SCALABILITY OF THE SOLUTION	Child safety monitoring is a guardian angel for the parents who can have the exact location of their child which helps to protect the child from any critical situations. So we resolve the problems like high standard geofencing and since we store data in the cloud it can be retrieved when needed.

3.4 PROBLEM SOLUTION FIT



4. REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENT

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Login/Sing up	Through app using forms to input details
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Interfacing	Connecting all involved databases , scripts and device
FR-4	Setting Geo fence	Creating the geo fence in the map
FR-5	Database	Create and maintain a database containing user(child's) locations

FR-6	Tracking location	Update current location in cloud and store location history. Current location is viewable from the dashboard.
FR-7	User Location Check	Check for out of boundary location against established geo-fence by fetching live location from cloud database.
FR-8	User Notification	Notification to registered mobile number Notification via app

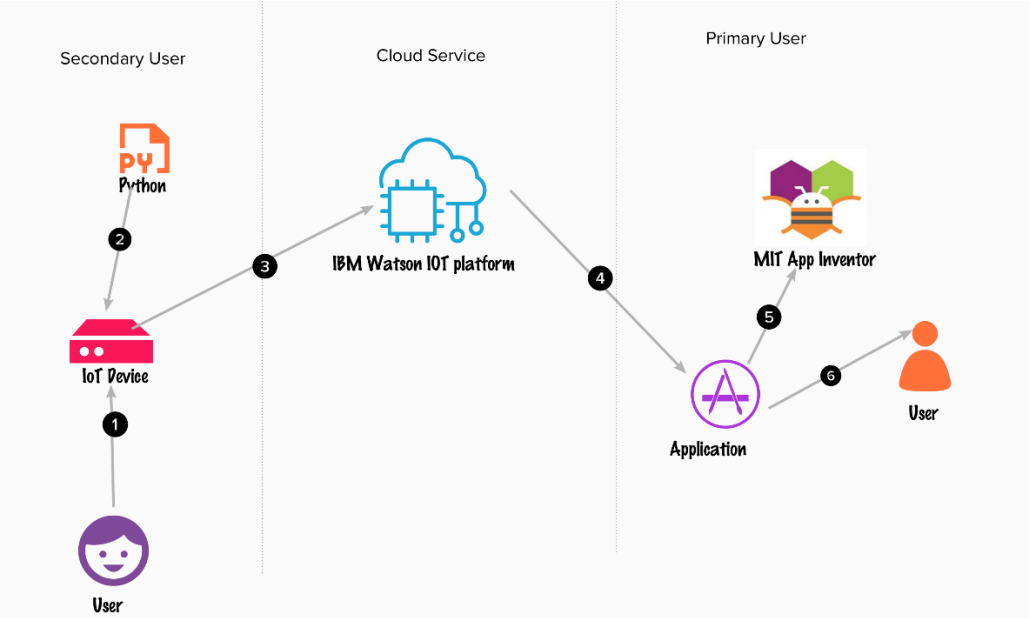
4.2 NON-FUNCTIONAL REQUIREMENT

Following are the non-functional requirements of the proposed solution

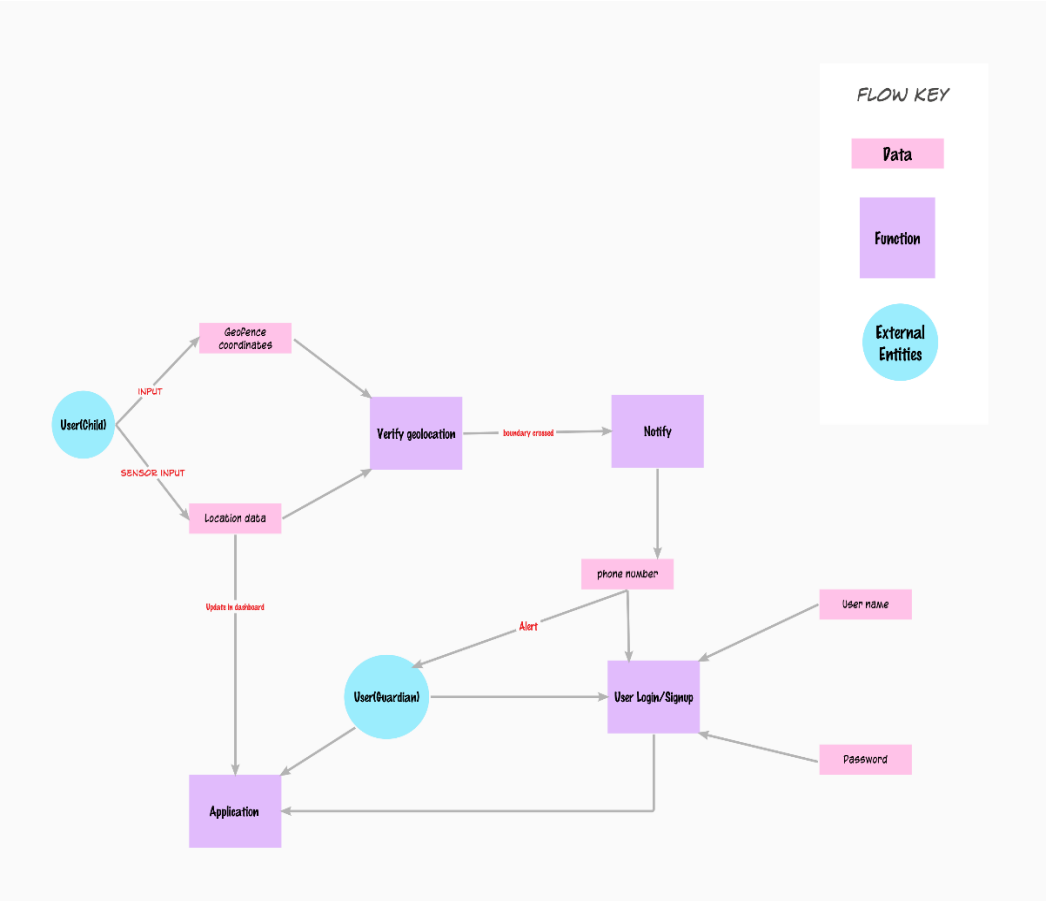
FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	The device and its applications are user-friendly. The device is portable and easy to use.
NFR-2	**Security**	Providing permission for some information can only be decided by the user. Location data can only be viewed by the user.
NFR-3	**Reliability**	Current location and history of previous ones too can be viewed so it provides enables guardians to continuously monitor child
NFR-4	**Performance**	Works well as long as there is internet connectivity to use the app
NFR-5	**Availability**	Can last as long as backup power supply is available.
NFR-6	**Scalability**	Very scalable as more sensors can be added easily according to need.

5. PROJECT DESIGN

5.1 DATA FLOW DIAGRAM

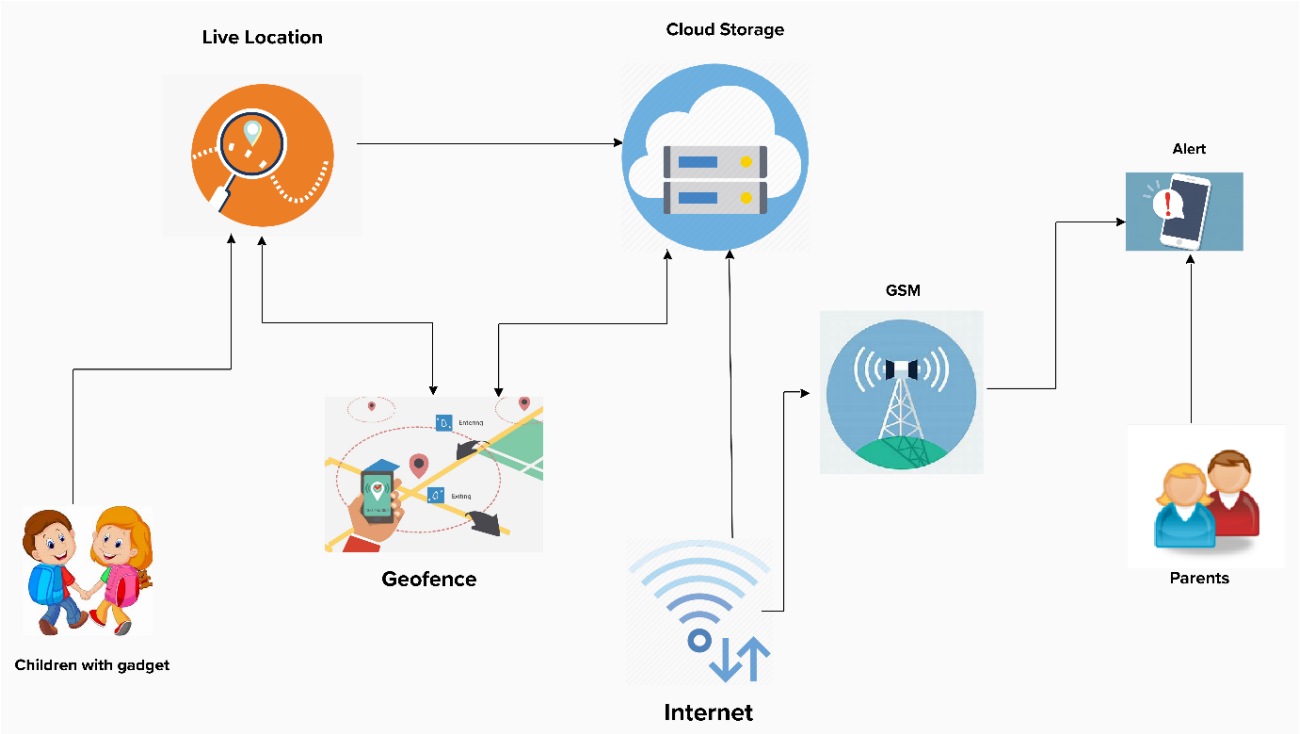


1. User (Child) location input is read continuously by IOT devie.
2.Python script for IOT device is developed .
3.IOT device sends data for processing to IBM Watson IOT platform
4.Application shows location history.
5.Application is developed with MIT app inventor.
6.User(Guardian) gets notification when geofence is crossed.

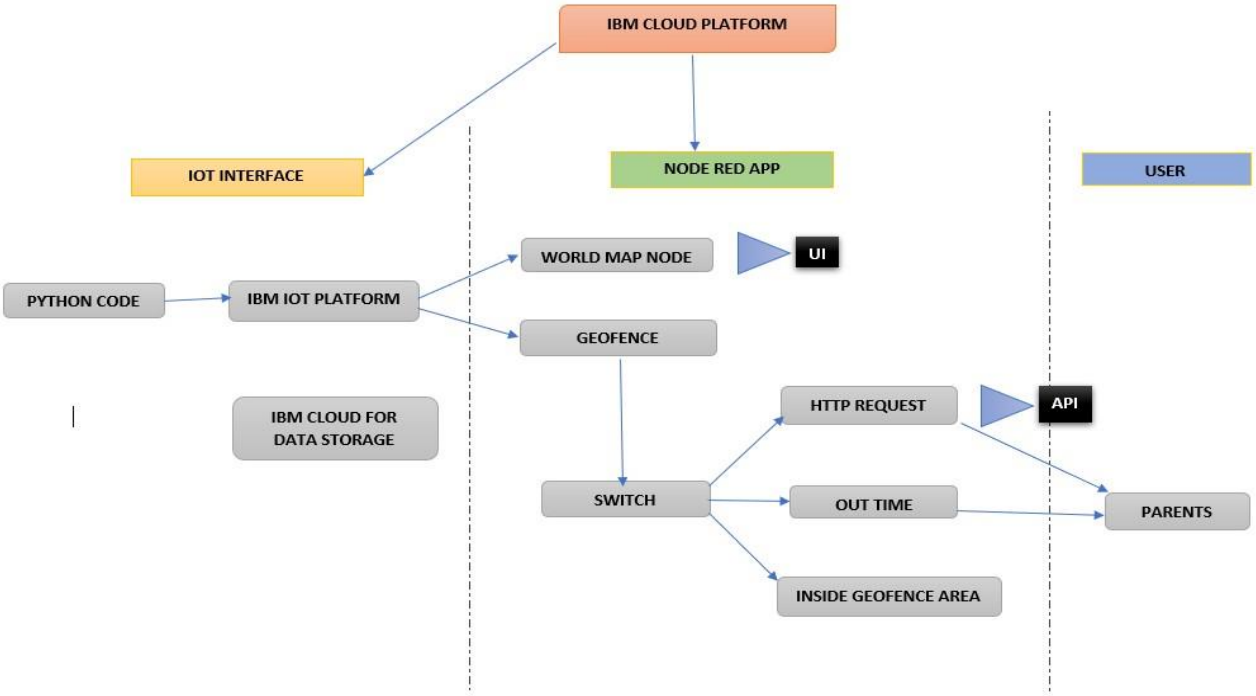


5.2 SOLUTION & TECHNICAL ARCHITECTURE

SOLUTION ARCHITECTURE



TECHNICAL ARCHITECTURE



5.3 USER STORIES

User Stories

Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Guardian(Mobile user)	User signup/login	USN-1	As a user, I can sign up for the application by entering my phone number ,user name, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
	User confirmation	USN-2	As a user, I can login with my username and password once signed up	I can log in by entering only valid user name and password	High	Sprint-1
		USN-3	As a user, I will receive confirmation email once I have signed up for the application	I can receive confirmation email & click confirm	Medium	Sprint-1
		USN-4	As a user, I will receive confirmation OTP once I have signed up for the application	I can receive confirmation message(OTP) for verification	High	Sprint-1
Developer	Interfacing	USN-5	I need to connect all involved scripts, database and devices	I integrate the whole system and make it work	High	Sprint-4
	Setting geo fence	USN-6	I specify the geo location coordinates for geo fence based on user given input	Geo location input must be valid	High	Sprint-2
	User notification	USN-7	I develop a module to notify user via app in case of possible emergency	User receives the notification via app	High	Sprint-4
		USN-8	I develop a module to notify user via mobile number in case of possible emergency	User receives notification to mobile number.	High	Sprint-4
	Tracking location	USN-9	I input live location from sensor	I get location updated every 5 minutes	High	Sprint-2

6. PROJECT PLANNING AND SCHEDULING

6.1 SPRINT PLANNING AND ESTIMATION

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	User signup/login	USN-1	As a user, I can sign up for the application by entering my phone number , user name, password, and confirming my password.	2	High	Jennifer, Sandhya
Sprint-1	User confirmation	USN-2	As a user, I can login with my username and password once signed up	2	High	Hemapriya , Vijayalakshmi
Sprint-1		USN-3	As a user, I will receive confirmation emailonce I have signed up for the application	1	Medium	Sugheerthi Meena,Jennifer
Sprint-1		USN-4	As a user, I will receive confirmation OTPonce I have signed up for the application	2	High	Sandhya,Hemapriya
Sprint-4	Interfacing	USN-5	I need to connect all involved scripts, database and	2	High	Sugheerthi Meena,Vijayalakshmi

			devices			
Sprint-2	Setting geo fence	USN-6	I specify the geo location coordinates for geofence based on user given input	1	Medium	Hema priya , Jennifer
Sprint-4	User notification	USN-7	I develop a module to notify user via app in case of possible emergency	2	High	Vijayalakshmi, Sugheerthi Meena
Sprint-4	Emergency usage	USN-8	I develop a module to notify user via mobile number in case of possible emergency	2	High	Sandhya , Vijayalakshmi
Sprint-2	Tracking location	USN-9	I input live location from sensor	1	High	Hema priya, Sugheerthi Meena
Sprint-3		USN-10	I develop a module to make current location viewable from dashboard	2	Medium	Jennifer, Sandhya
Sprint-3	User location check	USN-11	I check for out of boundary location against established geo-fence by fetching live location from cloud database	2	High	Hema priya, Sandhya
Sprint-2	Database	USN-12	I create a database	2	High	Vijayalakshmi, Sugheerthi Meena

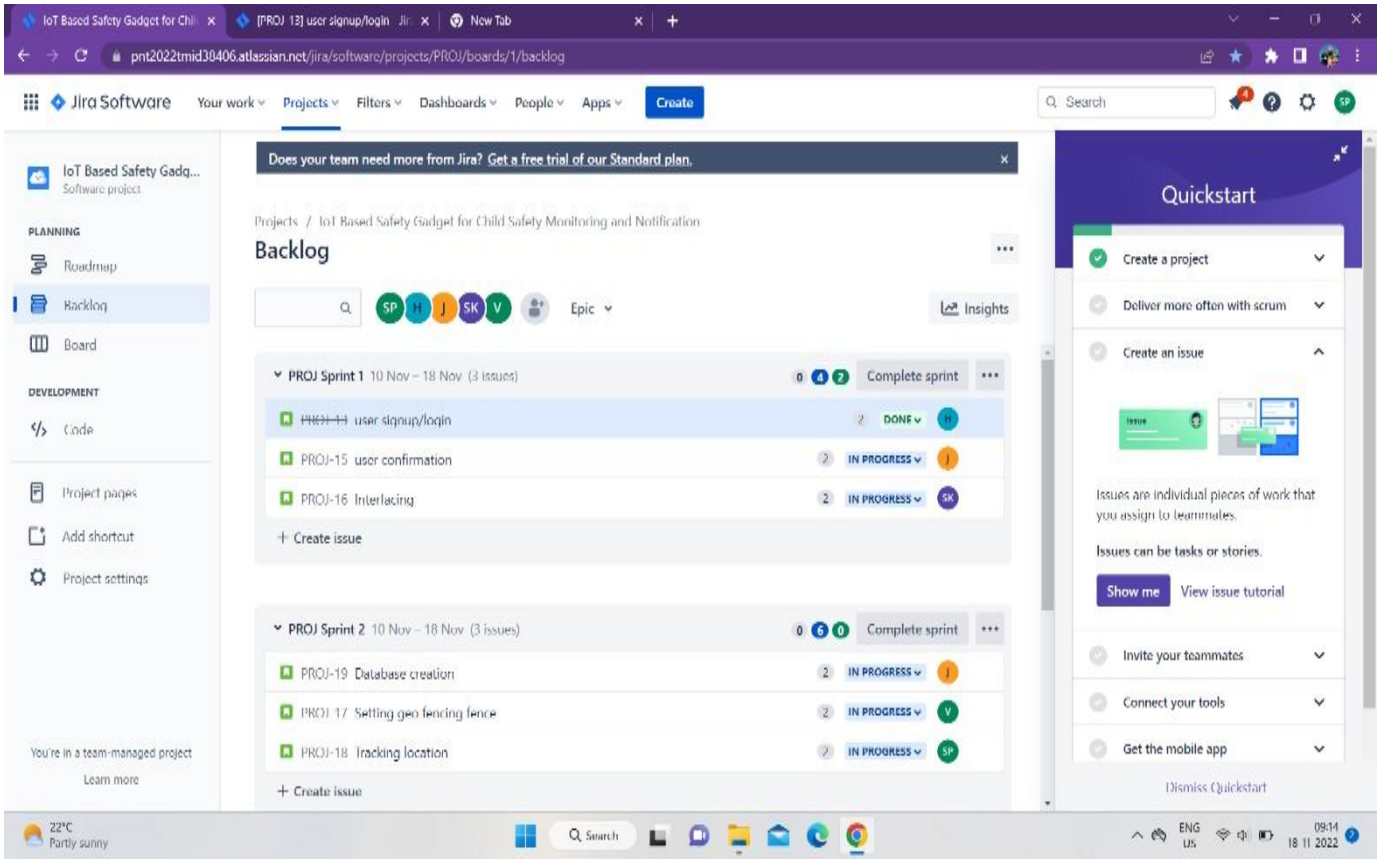
Sprint-4		USN-13	I maintain a database	2	Medium	Jennifer, Hema priya

6.2 SPRINT DELIVERY SCHEDULE

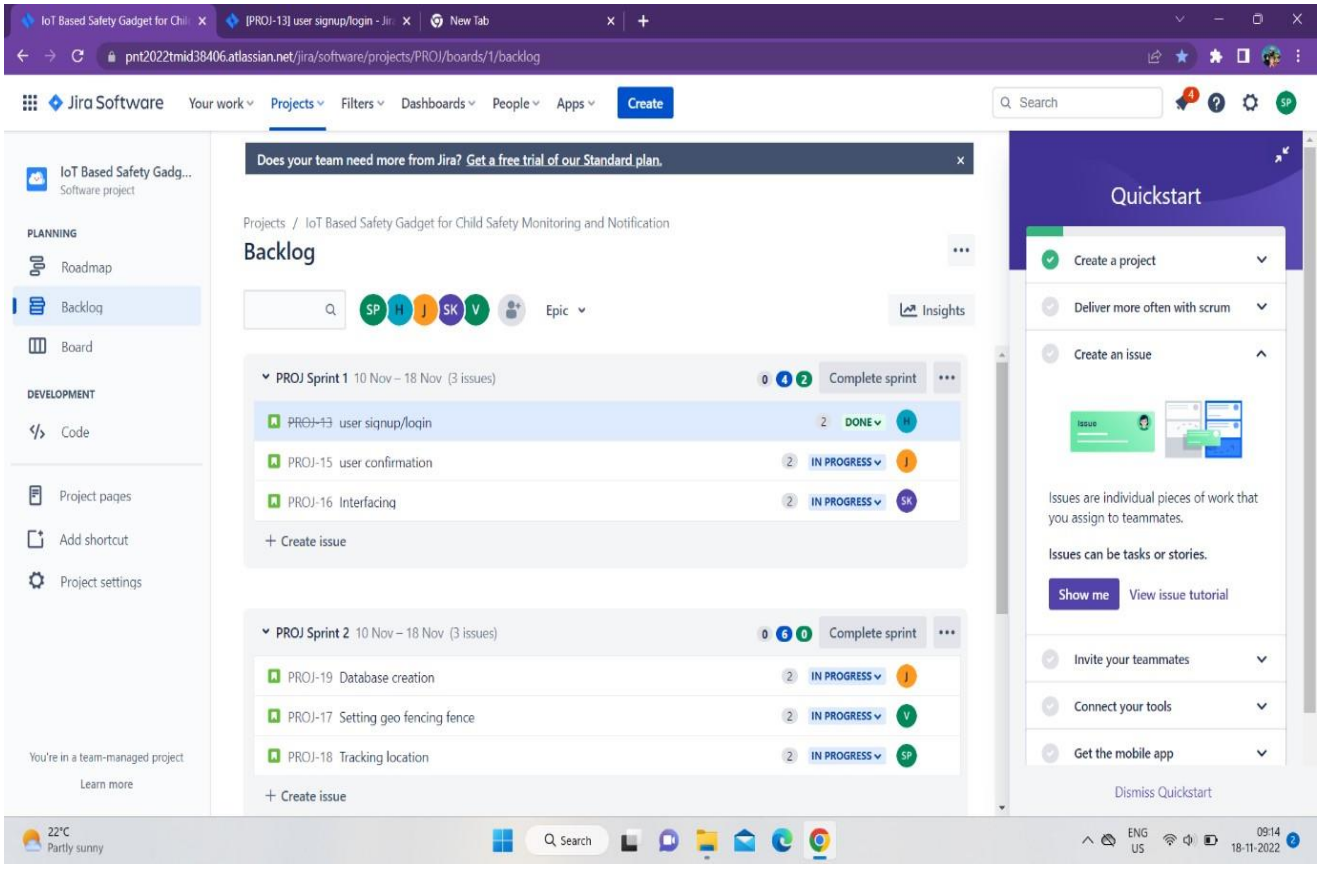
Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	04 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	11 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

6.3 REPORT FROM JIRA

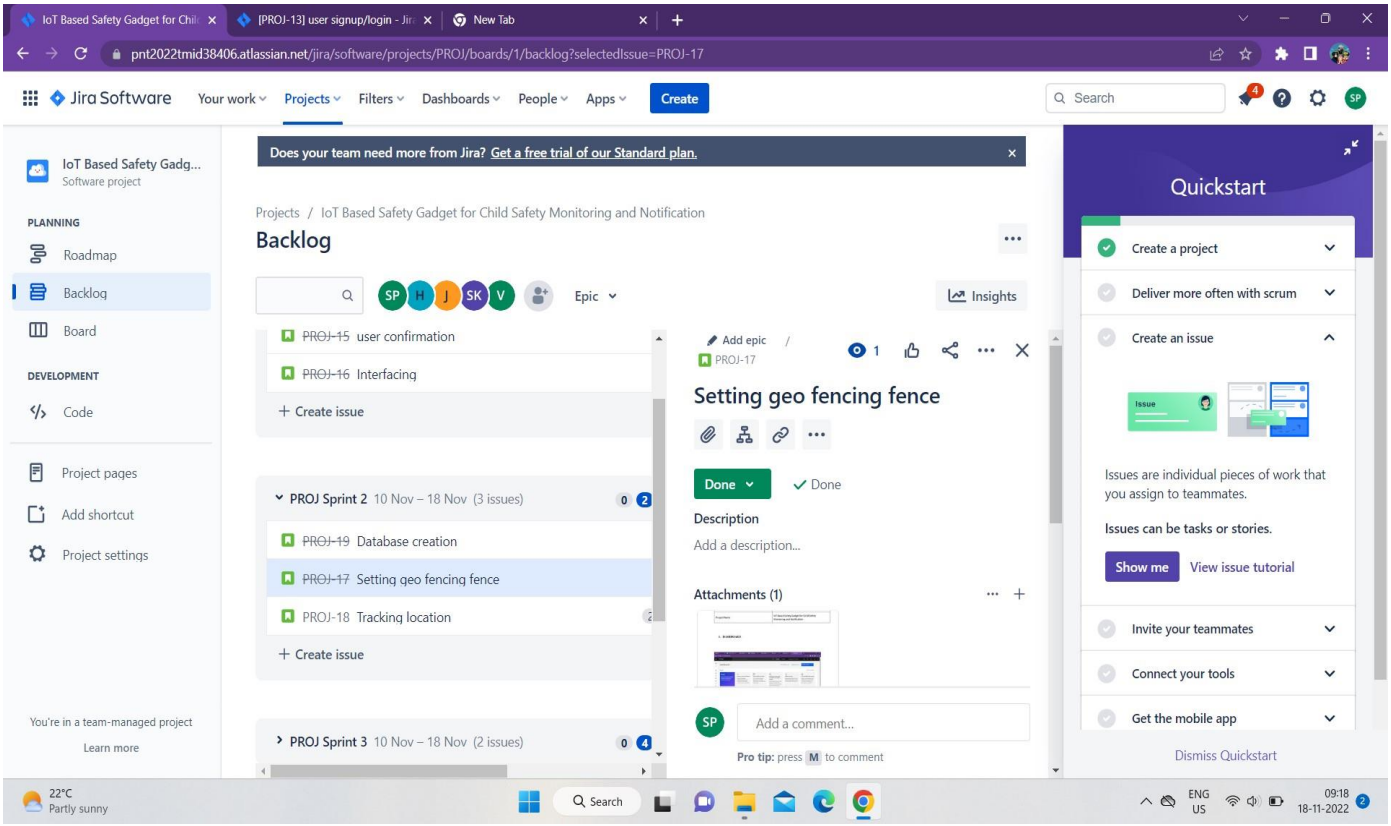
1. CREATE SPRINT IN BACKLOG

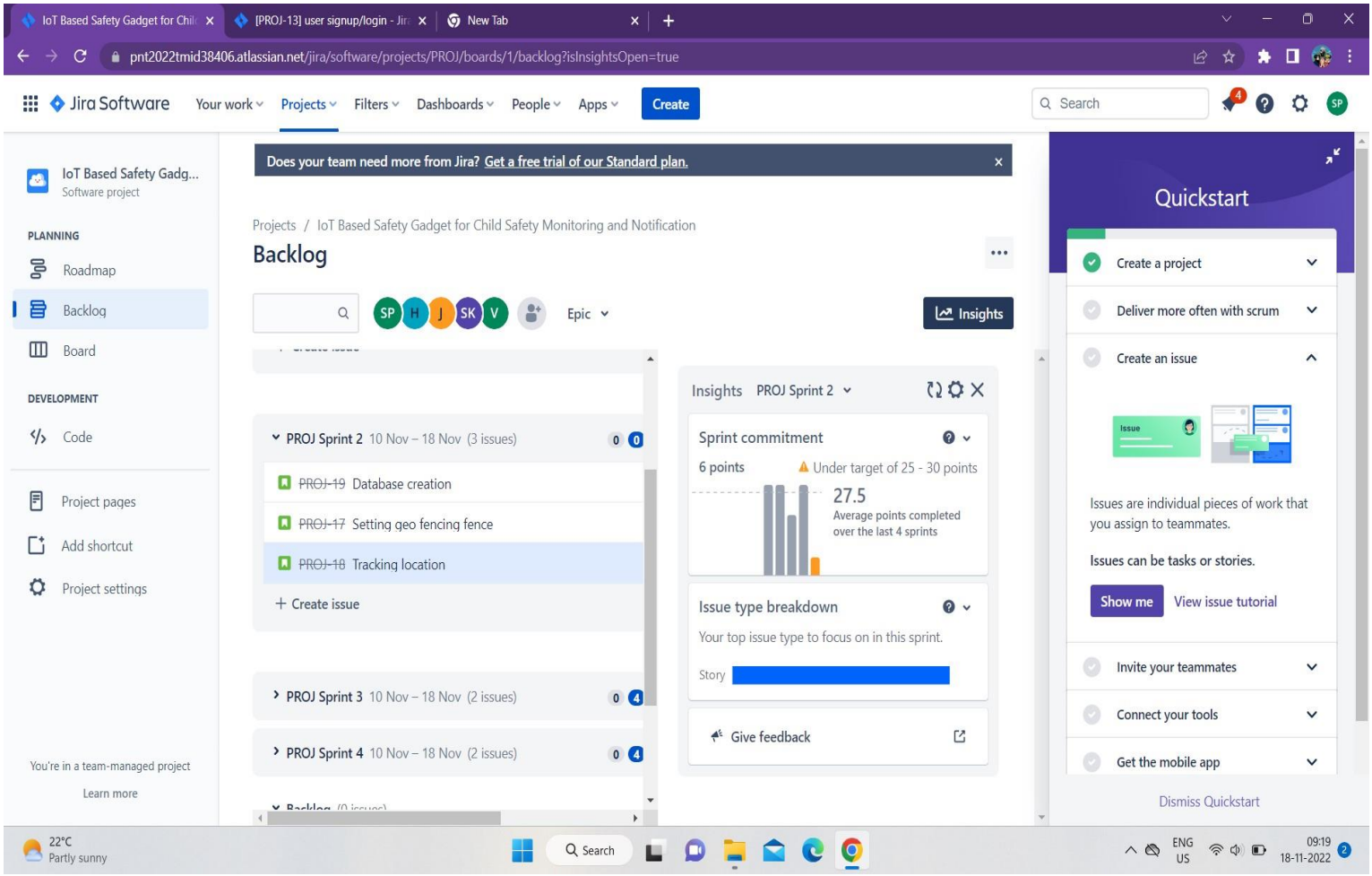


2. CREATE ISSUE



3. UPLOAD SPRINT DOCUMENT FILE, ASSIGN EACH MEMBER TO DO TASK




IoT Based Safety Gadget for Chil
[PROJ-13] user signup/login - Jir
New Tab
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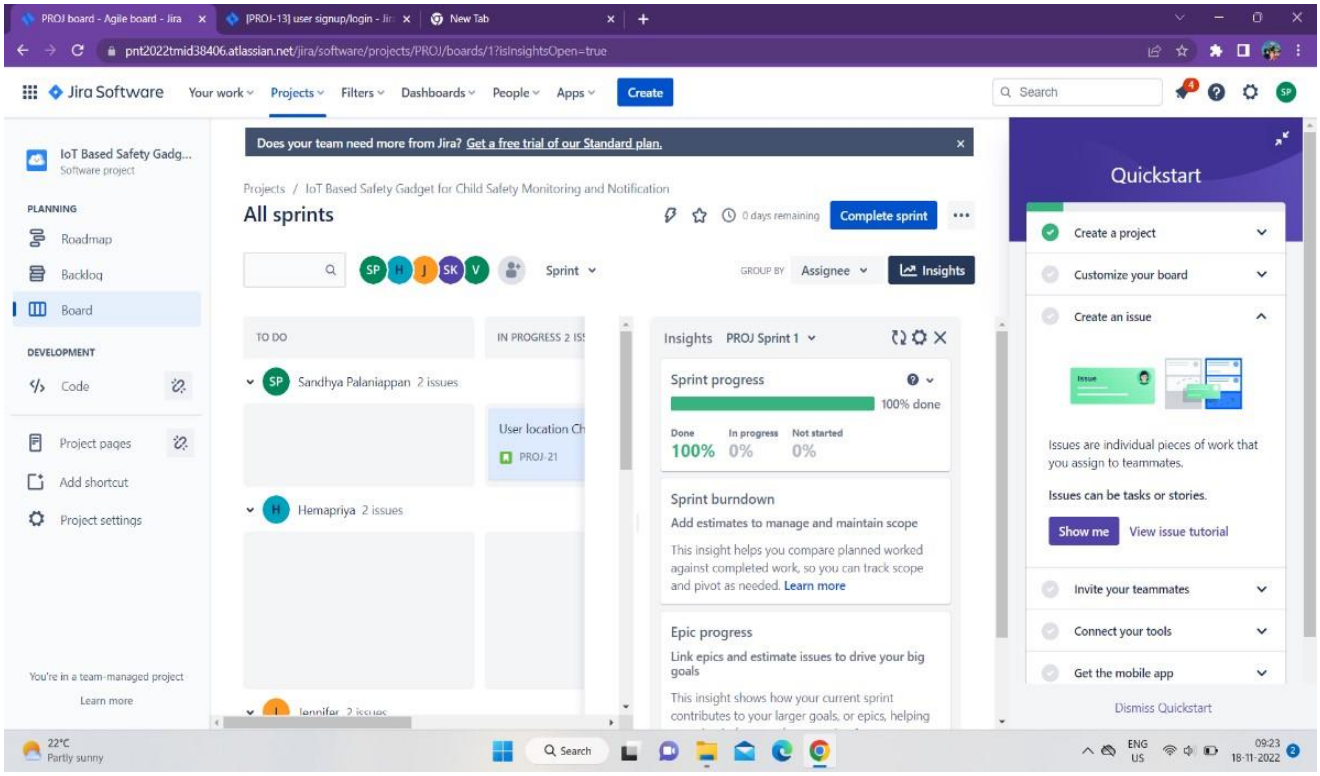
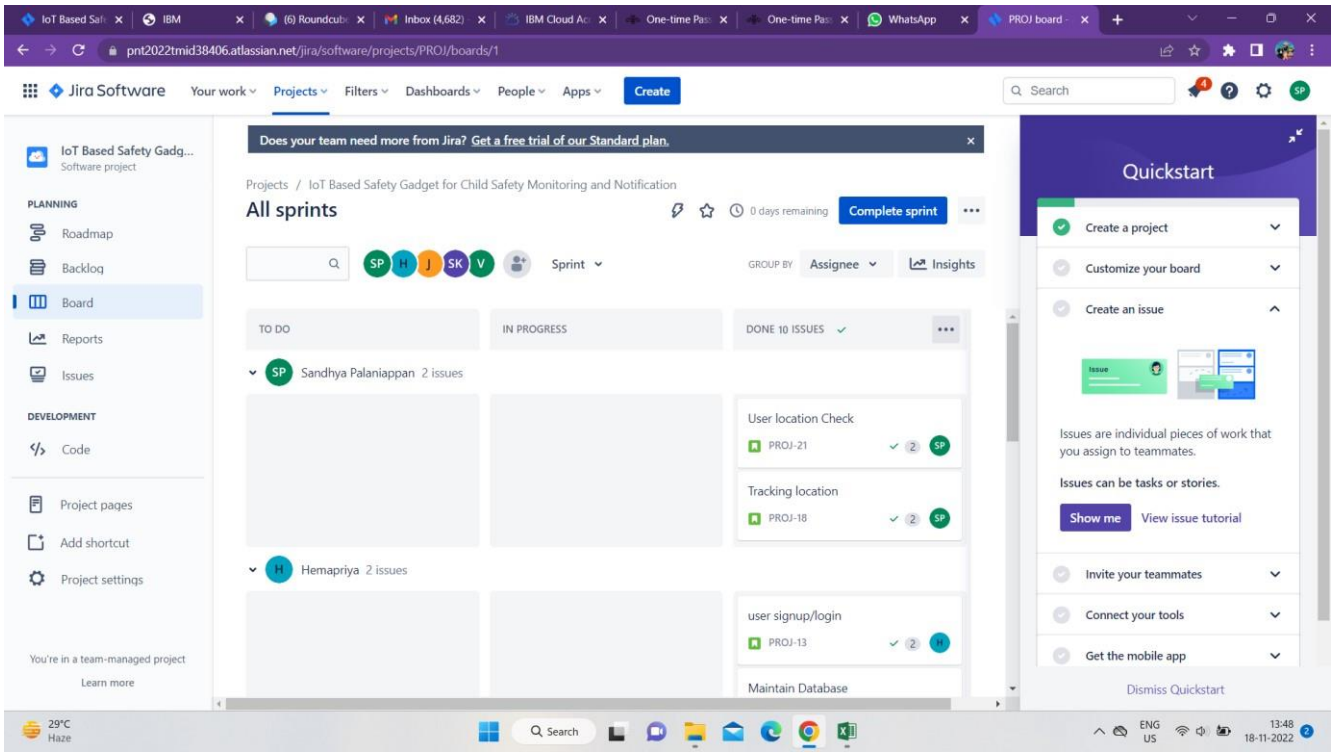
Jira Software
Your work
Projects
Filters
Dashboards
People
Apps
Create
Search
IoT Based Safety Gadg...
Software project
PLANNING
Roadmap
Backlog
Board
DEVELOPMENT
Code
Project pages
Add shortcut
Project settings
You're in a team-managed project
Learn more
Does your team need more from Jira? Get a free trial of our Standard plan.
Projects / IoT Based Safety Gadget for Child Safety Monitoring and Notification
Backlog
Epic
Insights
PROJ Sprint 2 10 Nov – 18 Nov (3 issues)
PROJ-19 Database creation
PROJ-17 Setting geo fencing fence
PROJ-18 Tracking location
Create issue
PROJ Sprint 3 10 Nov – 18 Nov (2 issues)
PROJ Sprint 4 10 Nov – 18 Nov (2 issues)
Insights
PROJ Sprint 2
Sprint commitment
6 points
Under target of 25 - 30 points
27.5
Average points completed over the last 4 sprints
Issue type breakdown
Your top issue type to focus on in this sprint.
Story
Give feedback
Quickstart
Create a project
Deliver more often with scrum
Create an issue
Issues are individual pieces of work that you assign to teammates.
Issues can be tasks or stories.
Show me
View issue tutorial
Invite your teammates
Connect your tools
Get the mobile app
Dismiss Quickstart
22°C
Partly sunny
Search
ENG
US
09:19
18-11-2022

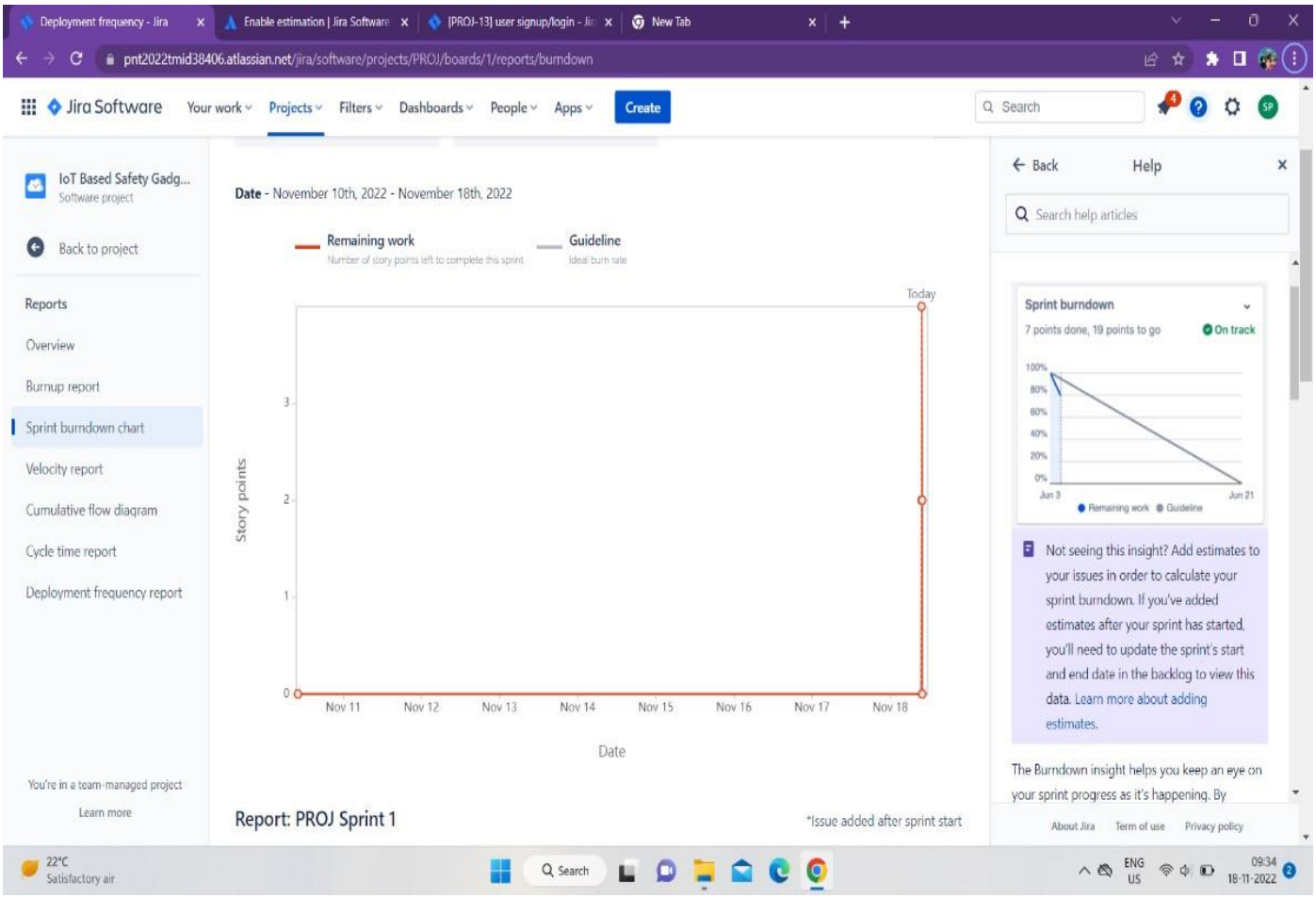
4. IN BOARD MOVE THE SPRTINT ISSUE BY PROGRESS





5. REPORT

- **BURNDOWN REPORT**



- **VELOCITY REPORT**

IoT Based Safety Gadget for Chil | Enable estimation | Jira Software | [PROJ-13] user signup/login - Jir | New Tab

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Jira Software | Your work | Projects | Filters | Dashboards | People | Apps | Create | Search

IoT Based Safety Gadg...
Software project

Back to project

Reports

- Overview
- Burnup report
- Sprint burndown chart
- Velocity report
- Cumulative flow diagram
- Cycle time report
- Deployment frequency report

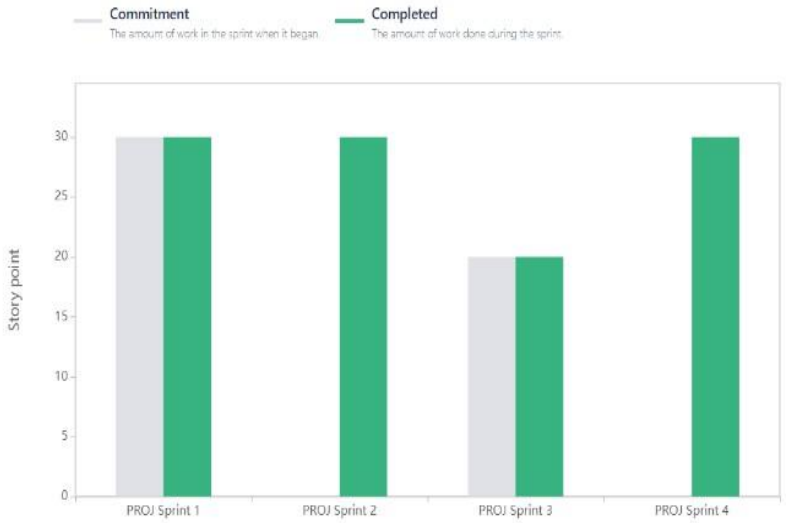
You're in a team-managed project

Learn more

Projects / IoT Based Safety Gadget for Child Safety Monitoring and Notification / Reports

Velocity report

How to read this report



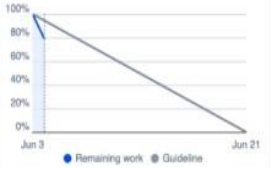
Sprint	Commitment	Completed
PROJ Sprint 1	30	30

Back | Help

Search help articles

Sprint burndown

7 points done, 19 points to go — On track



Not seeing this insight? Add estimates to your issues in order to calculate your sprint burndown. If you've added estimates after your sprint has started, you'll need to update the sprint's start and end date in the backlog to view this data. Learn more about adding estimates.

The Burndown insight helps you keep an eye on your sprint progress as it's happening. By

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22°C Partly sunny

Search

ENG US

09:27 18-11-2022

7. CODING AND SOLUTIONING

loc.py - C:\Users\MALA\Desktop\loc.py (3.8.7)

File Edit Format Run Options Window Help

```
import time
import wiotp.sdk.application
from shapely.geometry import Polygon, Point


home_coordinates = [
    (12.509764, 80.189529),
    (12.512819, 80.159570),
    (12.504451, 80.152143),
    (12.502639, 80.187329),
    (12.509764, 80.189529),
]
home= Polygon(home_coordinates)

myConfig = {
    "identity" : {
        "orgId" : "60jcjt",
        "typeId": "Wokwi",
        "deviceId":"012345",
    },
    "auth": {
        "token": "Sandhya_09"
    }
}
client = wiotp.sdk.device.DeviceClient(config = myConfig, logHandlers = None)
client.connect()

while True:
    name = "Child"
    #in area location
    latitude = [12.9589532,12.345334,12.055556,13.2229]
    longitude = [80.1319989,80.87997,81.00997,81.70979]
    #out area location
    #latitude = 17.4219272
    #longitude = 78.5488783
    for i in range(len(latitude)):

        myData = {"name":name, "lat":latitude[i], "lon": longitude[i]}
        client.publishEvent(eventId = "status", msgFormat = "json", data = myData, qos = 0, onPublish =None)
        print("Data published to IBM IoT Platform: ", myData)
        loc = Point(latitude[i],longitude[i])
        home.contains(loc)
        time.sleep(1)
client.disconnect()
```


Node-RED
Deploy
debug
all nodes
all
{ name: "Child", lat: 12.9089532, lon: 80.1819989, bcheck: true }
17/11/2022, 9:10:44 pm node: debug 1
msg.payload : string[26]
"Child safe inside geofence"
17/11/2022, 9:10:45 pm node: msg payload
iot-2/type/Wokwi/id/012345/evt/status/fmt/json : msg.payload : Object
{ name: "Child", lat: 12.90432, lon: 80.18149, bcheck: true }
17/11/2022, 9:10:45 pm node: debug 1
msg.payload : string[26]
"Child safe inside geofence"
17/11/2022, 9:10:46 pm node: msg payload
iot-2/type/Wokwi/id/012345/evt/status/fmt/json : msg.payload : Object
{ name: "Child", lat: 12.90435, lon: 80.182345, bcheck: true }
17/11/2022, 9:10:46 pm node: debug 1
msg.payload : string[26]
"Child safe inside geofence"
17/11/2022, 9:10:47 pm node: msg payload
iot-2/type/Wokwi/id/012345/evt/status/fmt/json : msg.payload : Object
{ name: "Child", lat: 12.9043576, lon: 80.185586, bcheck: true }
17/11/2022, 9:10:47 pm node: debug 1
msg.payload : string[26]
"Child safe inside geofence"
ENG
IN
21:10
17-11-2022

8. TESTING

8.1 TEST CASES

				Date	18-Nov-22							
				Team ID	PNT2022TMID38406							
				Project Name	IOT Based Safety Gadget for Child Safety Monitoring and Notification							
				Maximum Marks	4 marks							
Test case ID	**Feature Type**	**Component**	**Test Scenario**	**Pre-Requisite**	**Steps To Execute**	**Test Data**	**Expected Result**	**Actual Result**	**Status**	**Comments**	**TC for Automation(Y/N)**	**BUG ID**	**Executed By**
LoginPage_TC_OO 1	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		Jennifer,Sandhya
LoginPage_TC_OO 2	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		Hema Priya,Vijayalakshmi
LoginPage_TC_OO 3	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		Sugheerthi Meena,Jennifer
LoginPage_TC_OO 4	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		Sandhya,Hema Priya
LoginPage_TC_OO 4	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 buttons	Username: sdipvj password: P@55	Application should show "the Password is invalid "	Working as expected	Pass		Y		Jennifer,Vijayalakshmi
LoginPage_TC_OO 5	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 buttons	Username: abcd@123 password: jvpbss	Application should show "Login error. There is no user record corresponding to the identifier"	Working as expected	Pass		Y		Sugheerthi Meena,Sandhya
Backend_TC_OO6	Funcational	Backend	Setting Geofence and user location update, user location check		1.Import shapely.wktp libraries 2.Use shapely library and define geofence coordinates 3.Get user input and save it as lat and long 4.With module "contains" check if child location out of geofence 5.Send data to watson iot with functions from wiotp library	Geo-fence coordinate= [(12.5097,80.1895),(12.5128, 80.1595),(12.5044,80.1521),(12.5097,80.1895),(12.5026,80.1873)] lat= 12.9589 long=80.1319	boundary value = false Location data must be sent continuously	Working as expected	Pass		Y		Hema Priya,Vijayalakshmi
Interfacing_TC_OO7	Funcational	Interfacing	Use node red		1.Run node red server 2.Install required nodes 3.Connect nodes to input,send and process location data	Deploy flow	Connected must be shown in IBM Watson nodes and location data is shown in debug	Working as expected	Pass		Y		Jennifer,Sandhya
Alert Notification	Funcational	Notification	Notification when the user exited the geofence		1.Enter App 2.Enter the valid username and password 3.See child status	lat = 13.8097,long = 81.9807	Application sent the notification " Child in danger"	Working as expected	Pass		Y		Vijayalakshmi,Sugheerthi Meena

8.2 USER ACCEPTANCE TESTING

1. Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the IOT Based Safety Gadget for Child Safety Monitoring and Notification project at the time of the release to User Acceptance Testing (UAT).

2. Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and how they were resolved

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	11	3	2	2	18
Duplicate	1	0	2	2	5
External	1	2	0	3	6
Fixed	10	3	2	20	35
Not Reproduced	0	0	2	0	2

Skipped	0	0	3	1	4
Won't Fix	0	5	2	0	7
Totals	23	13	13	28	77

3. Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested

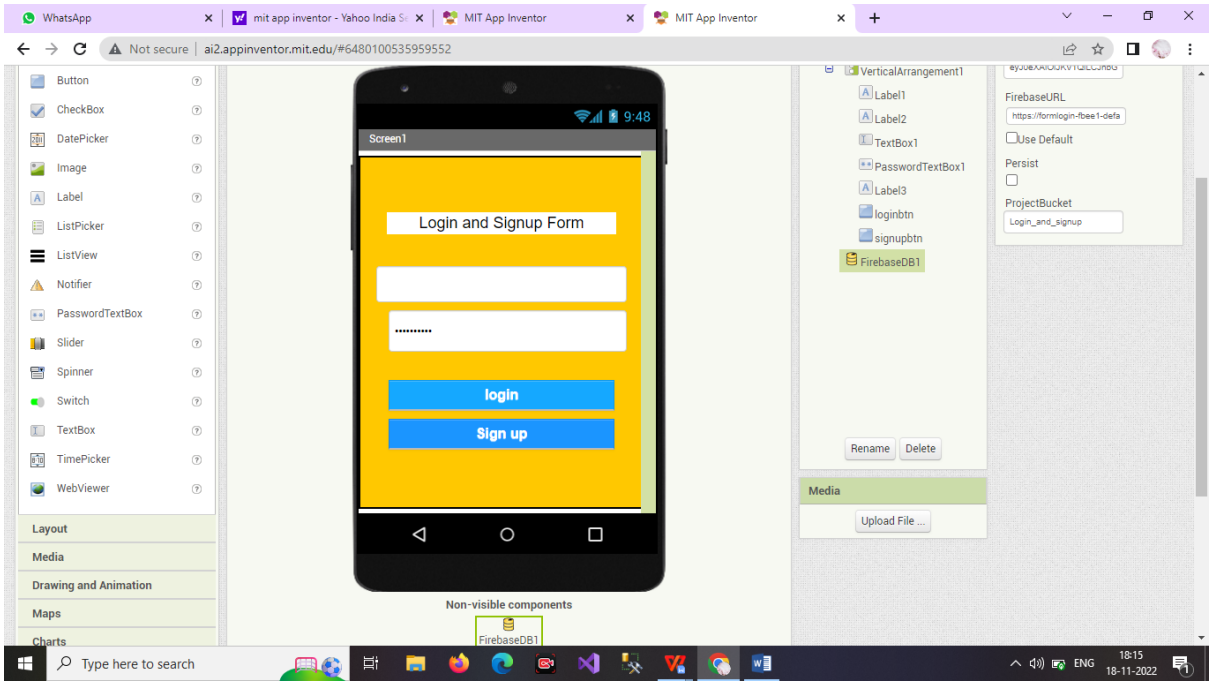
Section	Total Cases	Not Tested	Fail	Pass
Print Engine	6	0	1	45
Client Application	43	0	0	43
Security	2	0	0	2
Outsource Shipping	1	0	0	1
Exception Reporting	12	0	3	9
Final Report Output	4	0	0	4
Version Control	2	0	1	1

9. RESULTS

9.1 PERFORMANCE METRICS

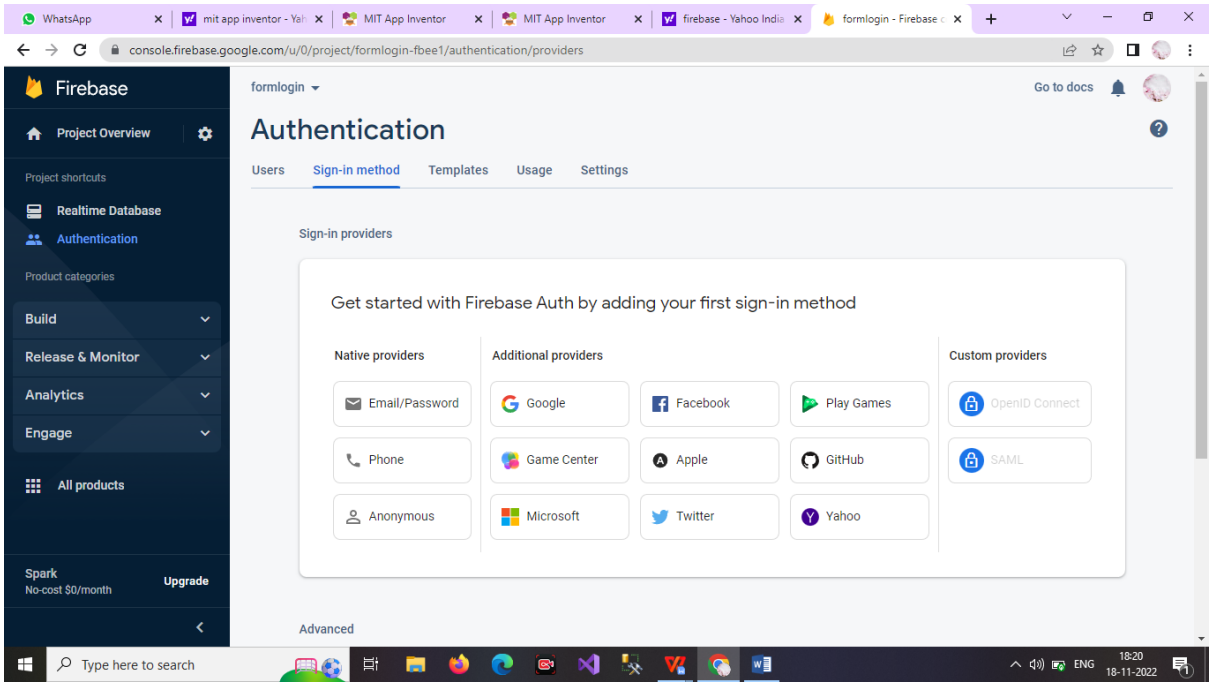
1. USER REGISTRATION:

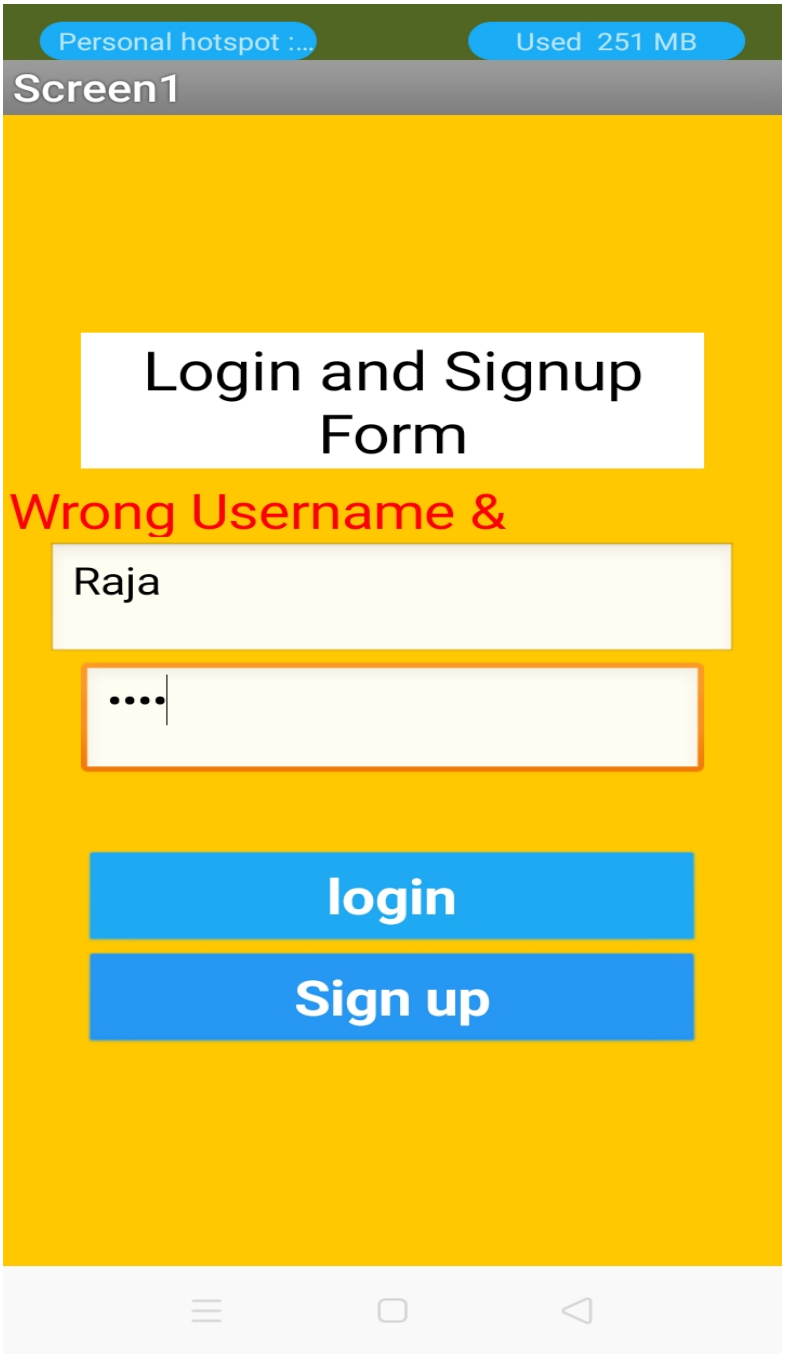
A registered user is a user of a website, program ,or other systems who has previously registered. Registered users normally provide some sort of credentials such as a username and e-mail address, password to the system in order to prove their identity ,this is known as logging in.



USER DETAILS

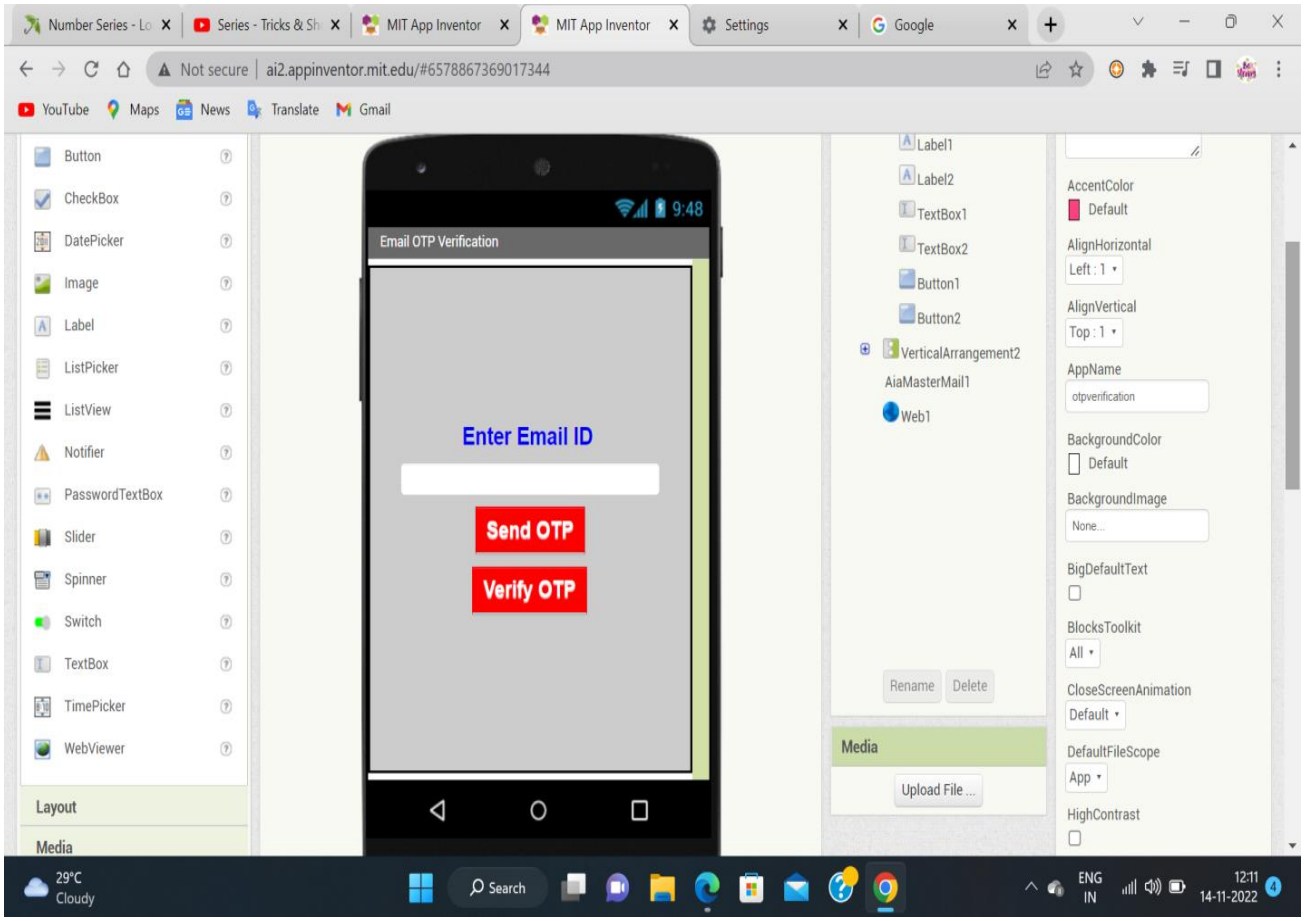
All user details are stored in the firebase and Verification mail is sent by firebase authentication and the user needs to verify the account.





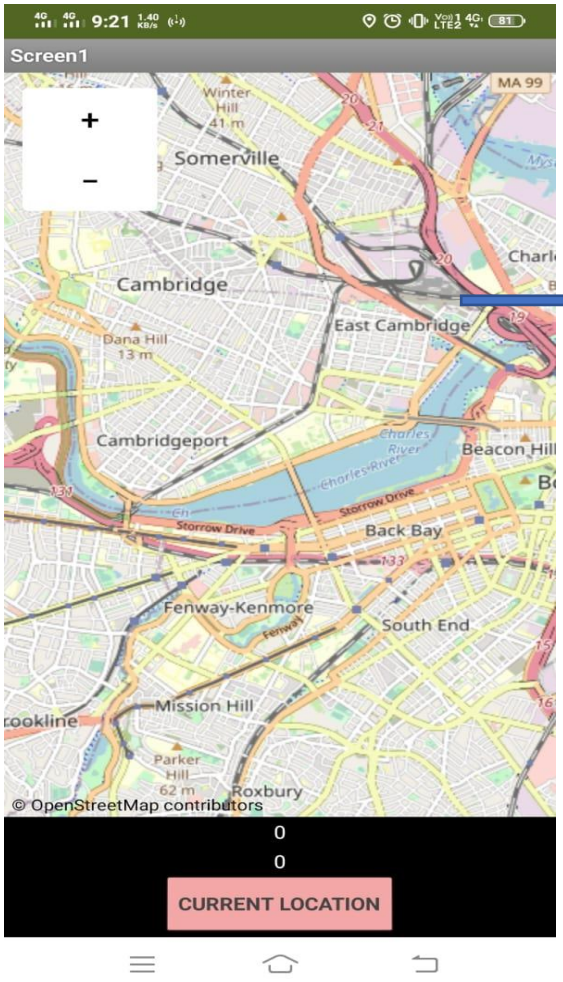
2.VERIFICATION MAIL

A Verification email should inform a user that they need to confirm their action.It is a type of email sent to a user or a client after they have taken a certain action.

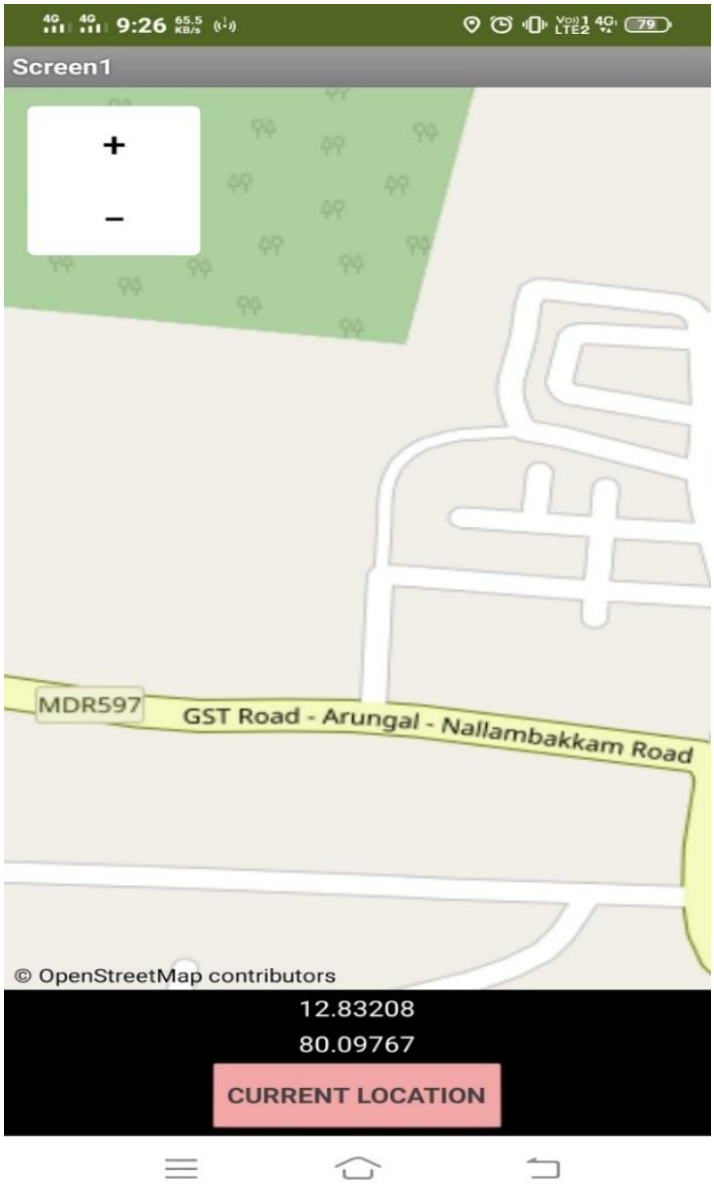


3. ADDING GEOFENCE AND ALERT NOTIFICATION

Once the children ,Entering in the Geofence Boundary the alert notification says “Child is within the location and Safety” will be displayed. When the children out of the Geofence Boundary location the alert notification says “Child is exited the location and Danger” will be displayed.



Geofence Location



10. ADVANTAGES AND DISADVANTAGES

ADVANTAGES:

- ✓ Simple and easy to use
- ✓ Parents can feel secure because if the child leave the desired location and immediately a notification will be sent ✓ Geofence can be added easily

DISADVANTAGES:

- ✓ Multiple geofence can be a problem

11.CONCLUSION

This research demonstrates Smart IoT device for child safety and tracking, to help the parents to locate and monitor their children. Through this device, the parent can track and monitor their child with just a simple app. It is not possible to always stay beside

children as most of the parents need to go for work. With this project, parents can track the location of their children and get alerts whenever the child out of the geofence. It becomes easy for parents to look after their child while working. This device is efficient to use. Thus, by keeping in mind the advantages and applications we are developing a child monitoring device. In order to avoid kidnapping cases, the child monitoring system is needed.

12. FUTURE SCOPE

The future work would be to further develop and implement the safety wearable device so that it could be watch or sown into a fabric that could be worn, using synthetic fibers.

13. APPENDIX

Source Code

https://github.com/Sandhya0906

GitHub Link

https://github.com/IBM-EPBL/IBM-Project-43920-1660720655

Project Demo Link

https://www.youtube.com/embed/Ae9F68-Lvhs