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Abstract: - Nowadays, women's safety is of foremost concern and to protect them is the responsibility of every individual. Development of a particular country cannot be accomplished until and unless the safety of women is being ensured. In the case of women, numerous unfortunate incidents have taken place. While going shopping in any distant place or, walking back home from work obstacles may come from any direction. Their relatives and friends always have a concern for their safety i.e reaching their destination safely. Physical or sexual violence are some of the mishappening faced by women in the estimation of 35% at some point in their lives. In this context, the proposed work is a mobile application known as the Suraksha women safety application. Our proposed application aims to ensure the safety of women through a GPS tracking technique for detecting the location of the victim thus emergency help will reach in time and can be rescued before any mishappening.

Keywords— Women Safety Application, Smartphone GPS, SOS, s afety, flutter.

### 1. Introduction

Everyone knew India as secularism and culture for several years. Females now as compared to earlier days are more self-independent and are very much appreciated on national as well as global stages. Due to the participation of women in every aspect and occupation of life, the amount of mishappening and sexual violence against women increases. Earlier times, women don't have their free will and independence to experience working outside, but the scenario changes after globalization and also due to an improvement in the mindset of society [1][2][3].

Compared to men, a woman is not much powerful physically in the situation of crisis and needs to assist them in any mishappening condition. Our first goal is to empower girls and women in every field possible so that they become more self-dependent as well as they can strongly oppose any eve-teasing. And the second thing is the mindset of society towards women without which such ridiculous incidents will happen. Adding further, the cases which are pending for a long time should be given in priority, and also the cases present filed should be taken in priority so that no such incident happens in the future. Cases pending for years and not proper law will only give courage to this type of criminal people. Household violence, rape, and any eve teaing against women is a human right violation. Women should bear this eve teasing against them and strongly raise their voice without fear [4][5].

We can take some divisible safety measures against any mishappening so that you can call for emergency help or the people around you will get alert that you are in some uncomfortable condition and need their support. Anyone closer to that person such as your friend or family members cannot be present physically guarding them.

Preventing harassment is one thing, but the point is no one will forever present, so she has to learn from other

incidents to stand if something happens to her colleague or himself [6][7].

For the motive of preventing women against such incidents or we can say minimizing them, some women safety applications and devices have been developed from time to time, and they work effectively as well. But there are pros and cons to everything. Thus, furthermore upgraded versions of these applications and devices are always in progress. One such application is described in this paper [8][9].

Almost everyone nowadays has at least a basic smartphone device with them. This application can simply download by Google Play Store for the android app and also for IOS devices. This application is developed such as to know the location of the victim and reach her as soon as possible. The special quality of this setup is the timer option in which it has a time limit of ten to fifteen minutes. When the user feels uncomfortable while going through the particular route, the user starts this timer or we can say stopwatch, and the timer continuously clocks till ten minutes and the timer will stop only when the STOP button is being ticked. If the user isn't able to press the 'stop' button due to any mishappening, then a message with an alert will automatically divert to the contacts we have saved during the registration process or police and help will be arrived as soon as possible preventing any mishappening. Also, there is an SOS option in which if data connection and GPS, both are turned on of the victim's Android phone then this application basically tracks the current location of the victim via GPS and automatically transmits a message containing an alert that she is in danger and the position, latitude, and longitude to registered contacts so as to tell them that the victim is in danger and needs immediate help [10][11].

## 2. EXISTING SYSTEM

There are many existing systems in which they use GPS tracking for detecting the route of the victim so that she can be saved before any mishappening. Also, there are alert systems in various applications that are distinct for every application. Some have SOS alert option for quick message option so that emergency help can reach in time, while some have various text and call alert options. One thing which is quite common in all of this application is that if she feels some mishappening is going to happen then what she will do if she can't be in reach of her phone. She isn't able to send any message alerts or her location. This is one of the major drawbacks of the majority of the existing application. This loophole needs to be resolved as in case of any mishappening, sometimes the victims can't get in range of her smartphone. The proposed system somewhat resolves this situation and many additional features for the benefit of the user [12][13][14].

### **3. PROPOSED SYSTEM**

The safety of women is much more important issues for taken care of these days. It's securing the all females and proving the special safety to them [15][16].

The application is divided into two sections, i.e user interface and the main API of the application. The user interface section is for the user login and registration. The already registered users can simply log in to their account with their id and password while the new person has to rolling herself in the application. By providing their email id and password their first step for registration is completed [17][18].

Now in the second step, we have to register the notify contact details of our family or friends which we can contact in case of any emergency. After the process of registration of all the contact details, the application is ready to use in case of any mishappening faced by women [19][20].

Now after the user interface i.e login details, the user can use the main API of the application. The main API interface is further divided into subsections. The first subsection is the SOS option. For this option, you should have an active internet connection. As soon as the user

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realizes something is wrong, the best option is the SOS button after which emergency help will arrive. This application due to its location tracking feature is quite effective. if data connection and GPS, both are turned on of the victim's Android phone then this application basically tracks the current location of the victim via GPS and automatically transmits a message containing an alert that she is in danger and the position, latitude, and longitude to registered contacts so as to tell them that the victim is in danger and needs immediate help and prevent any mishappening before it happens [21][22].

Another subsection of this application involves timerhelp. When the user feels uncomfortable while going through the particular route, the user starts this timer or we can say stopwatch, and the timer continuously clocks ten minutes until the " stop " button in the application is clicked.

If the user isn't able to press the "stop" button due to any mishappening, then an emergency message will automatically divert to the registered contacts or police and help will be arrived as soon as possible for preventing any mishappening.

Furthermore, there are two more subsections provided in this application. One is the emergency contact list of some of the important services, such as police force, ambulance, etc. The user will be directly diverted to her dial-pad and thus emergency help will reach her quickly. And the second one is the self-defense learning section in which women can learn techniques of self-defense so that it will help her in case of mishappening [23].

## 4. DESIGN AND IMPLEMENTATION OF PROPOSED METHODOLOGY

Representing women safety architecture application in the Figure.1. This Architecture shown its workflow of application:



Figure 1. Design Of the Proposed Methodology

For the proposed system, the entire application is developed on flutter as a platform for both android

and IOS. Flutter permit you to generate a domestic cell application associate only single codebase. So that you could used any single programming language and also single codebase design the same app for two different operating systems (for iOS and Android).Hence it is easy for the developers to create an application that can run on both the operating system and also for the users. Furthermore, the location of the user can be tracked through GPS which via an inbuilt feature in the application redirects to google maps and thus tracing makes quicker.

# A. Android Studio

integrated software It's the origination environment for developing Android app that is depend upon the Intel IDEA, those are incorporates for tools and syntax editing. Every project application within android studio has 1 or more than 1 procedure with the resource files and developing source code. These methods are comparing with library modules, Google app engine component and mobile related android app components. A developer get support from code to code completion, refraction and writing code. Apps that are design in android studio are run into APK for publishing them on the Play Store.

# B. Real-time GPS Tracking through Google Maps

Google Map-Servers access can be handled automatically through google maps API and hence allows map data to be added to the application . It can be used to add route designs, custom icons and markers to a basic map and change the perspective of a particular map area. Flutter has an inbuilt plugin that directly redirects the location of the user to the google map interface and thus help reach in time.

# C. Firebase

Firebase is a platform for developing web and other mobile applications. It provides a precise real-time database. The Firebase API allows storing the data in the Firebase cloud and provides backend services. It features a NoSQL format, that indicates it does not require tables or queries and therefore provides an additional advantage over any other traditional relational database. All clients connected with the real-time database will be immediately updated.

# ALGORITHM :

- 1. Procedure for login for existing and registration for new users.
- 2. Contacts details of family and friends saved in the database.
- 3. The SOS option on clicked once sends the location of the victim to registered contacts.
- 4. It is necessary that GPS and data connection both are enabled.
- 5. Timer help sets the timer till the user presses the stop button, if fails then automatically the emergency message is sent to the police control room.
- 6. Other additional features including fight back, helpline, report complaint etc.
- 7. Safe Zone directs the user which route is safe to take along the journey.
- 8. All the information is saved by the developer in the firebase database.

# **5.RESULT ANALYSIS**

Figure 2(i) shows the SOS option of this application in which by pressing on the SOS option, the location of the victim, sends to the registered contacts details of family and friends. It gets redirected to the main messaging option of the user's smartphone.

In the second part of the figure(ii) shows what the victim's friend and family will get when you press the SOS option. The message comprises the text 'I am in danger' and adding the latitudinal and longitudinal location of the victim.

Figure 2 .(i) SOS Feature Of The Application (ii) Message Comprise Of Location



This is one of the most common alert options in any android application but is effective in many aspects as to correctly detect the location of the victim for safer and quick recovery.

The unique feature of this application is the timer help option as shown in figure 3. (i). As the victim clicks on the timer help option, the timer starts till ten minutes, or the time set accordingly.



Figure 3.(i) Timer help Feature Of The Application (ii) Timer with message alert

## 6. CONCLUSION

Within the proposed work, we have developed an application based upon android for the purpose of protecting women. This application basically tracks the current location of the victim via GPS and automatically transmits a message containing the position, latitude, and longitude to registered contacts so as to tell them that the victim is in danger and needs immediate help. Moreover, flutter has been used to develop this application hence it can run on both IOS and windows operating systems easily. Thus, in case of any unsafe condition, this application minimizes the chances of any mishappening.

Talking about any further additional features of this application in the future perhaps combining with the database of all the regional cops police centres. Also, further up-gradation such as the rescue of the victim when the alert is sent and the phone switch off. But the thing is besides all these types of applications or any other women safety devices, the mindset and social values of the society need to change drastically. These applications can act as a defence against any mishappening but the fact is it can not stop those criminals until we don't take any serious step towards this important issue. So, this is the sole responsibility of each and every citizen of our nation to spread massive awareness towards this issue.

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