W-Safe

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ABSTRACT:
The rising crimes in recent times have been against women. Day after day, many of them endure heinous activities which put them in such a spot where they would not be able to share any crime against them. In order to put an end to such deeds, many steps are being taken by the government and also the people around us. The government even launched many apps in order to ensure that women can reap the benefits of an independent India the same as every man in the country. Many budding programmers have tried to contribute their skills in order to eradicate the kind of actions which put women at risk. One such try is our app which ensures all of the necessary actions to be taken so that every woman feels safe in any part of any country. This app is designed in such a way that they can take quick inputs from the user and deploy the necessary services in order to ensure safety to the user. The specialty of this app is that it comes with a web dashboard whose access would be given to the police or a concerned third party. Both the user and the admin side would be covered with the help of this application. While the app consists of the necessary features such as sending of SOS, the usage of hardware buttons, etc., the website would take a different approach and would cover the admin side of the application. The web dashboard is useful to track a victim, the requests by a user and the necessary action to be taken by the admin to corroborate the safety of the user when they are in times of danger. Hence, the app would be a beacon of hope to every woman and protect them from any kind of danger at all costs.
KEYWORDS: App, Website, Women Safety, GPS, Contacts, Message

1. INTRODUCTION:

As an old saying goes "Mother is the first teacher", it is quite clear that women are to be respected and be taken care of in the worst of times. However, that is quite not the case in recent times. Everyday, a new crime against a woman shows up in our newspaper but we choose to ignore it. As stated in the news article [2], an average of 77 rape cases were registered daily in the year 2020 and according to article [1], more than 370,000 cases of crimes were reported against women in the same year. This goes to show that the situation in India is declining at a very risky state per year. In the year 2021, nearly 31,000 complaints of crimes against women were received as stated in [3] which shows that the basic mindset of every human needs to be changed and everyone needs to take a step forward to prove that they are in support of their mother, sister and every woman in their family. Small changes can make a big difference. So, everyone has to contribute to the society in their own possible manner due to which an idea was instilled in our minds.

The idea of creating an app such that women have no worries regarding their safety in any possible area. Instead of installing safety booths, it is our idea to make everyplace safe for women so that they can enjoy the perks of independent India the same as every man does. The thought of gender equality arises from within. If we are not able to provide a basic necessity as safety for the women in our family, then we have failed to fulfil our duties as the next bright generation. Only when every woman can walk on the footpath in a deserted and lonely area at night, when they can roam with their friends without any worry, stuck in an unknown location without any worry, then can we say that we have achieved the goal of gender equality in its truest sense. This is the basic idea behind our design of an application such that women can feel safe without any extra appliance but with a basic one, namely their smartphones. This app works both on the android and IOS platforms giving a true sense of uniformity to their safety.

The basic algorithm behind the working of our application is as given and explained below:

1) Every user needs to install the app on their respective smartphones.
2) For the first time setup, the user needs to login with their google account which is possible with the help of google authentication.
3) Upon setting up the device after providing the required permissions, the main interface of the app is made available to the user.
4) The user as a basic step needs to save some of their contacts as their emergency contacts so as to enable quick access.
5) After the completion of the above steps, the basic setup of the app is completed.
6) Whenever the user is distressed or feeling unsafe, they just need to open the app and click the SOS button to notify their contacts and the police about their whereabouts.

It also is filled with various other features so as to enrich the experience of the user and personalise the app for them. For instance, there is a hardware button option that helps the user when they need to take a quick action in terms of sending the SOS. They just need to follow the instructions present below the hardware option button in order to enable the SOS and notify the concerned people. In terms of personalisation, the app comes with the dark mode option which enable the user to experience an even more interactive app. It also consists of a feature whether or no to send the location coordinates along with the text message the contacts are going to receive. With regard to the level of risk, they are facing, they can either enable or disable the above option. The web dashboard, however, is another side of the story. It is created for the sole purpose of the usage of the admin. In this case, it is either the police or a concerned third party with connections to the police department. It tracks the statistics and the live alerts by the user that are sent with the help of the app on their smartphones. It helps the admin to track the user effectively with the help of geolocator dependencies and assign them the necessary help they require. Various statistics regarding the usage of the app, the users of the app and also a number of other details can be accessed with the help of the website. This app is the first step towards rescuing women from the evil clutches of perpetrators in a society where change is imminent.

2. LITERATURE REVIEW:

Many people all around the world have come up with many creative and intelligent ideas to reduce the crimes against women and enable them to live in a truly secure world. Many of them were apps related to android and some were even advanced so as to advance the idea in the technology of IOT. Most of these ideas are solely prepared on the point of view of the victim/user but they choose to ignore to develop the technology on the side of the admin/police. As explained in [4], an android app equipped with features such as emergency call, recording and various other features were implemented. While this is a creative and a smart solution to the problem, the user may sometimes face issues in connecting to the admin side of the application. Various other countermeasures have been implemented in the face of technology such as [8] where the authors even implemented a safety measure for women using IOT devices such as a smart band where a device connected to a smartphone app named CWS is utilised in order to track the alerts of the user and notify the first responders and the concerned contacts or authorities.

Also, various other solutions in the same line of technology have been implemented and have proven to be effective on a higher level than the pre-existing models. As shown in [6], the authors created a one stop centre for all the measures to be taken when a woman senses danger or feels at risk. This includes features such as SOS, fake call option, an instruction manual to the users and many other interesting features. This instilled an idea into our minds to create an application such that all the important and interesting features to be covered by a basic woman safety app are to be covered and they are to be installed in our app. In many other works such as [5] and [9], the authors inspired to work with the application by bringing forth the idea of locations services enabled by google. This helps the admin/police to track and locate the user in an efficient manner. Other works also included various other features which enabled us to build an effective and a smart system which rises against the oppression done to the women in our society. As the authors have described in their works as shown in [7], it is important to consider the feature of selecting our contacts and be given the freedom to modify them at any given time. The authors have introduced a new feature with the name of temporary contacts where the user is free to choose their contacts for a desired period of time which enables them to get comfortable with the app and familiarize themselves with its features. All of the works of the above authors have inspired us to follow a similar path and achieve the humongous task of securing women all over the world with all the technical skills we possess.

3. EXISTING SYSTEM:

There are various systems that contribute to achieving the goal of women safety in terms of software systems many of which are created by passionate programmers. The government also has contributed their fair share in achieving the perpetual task of securing women from harmful acts. Even they have launched many apps, as an initiative to the task of securing women all around the country. As stated in the works of many papers which contribute towards women safety, it is important to create a fortress of safety to the women all around the world so that it inculcates change into every person around the world working towards its demolition. An android app with much necessary features towards women safety can be seen in [4] where the user needs to utilise a smartphone in order to run their app and get to safety. Otherwise, there are also systems as shown in [8], which utilise physical devices in order to achieve better results towards the cause. As explained in many papers, the authors have solely based their works on the view of the user but failed to achieve the same in terms of the administrator. Sometimes, there may come a time where the admin may not be working on the same level of technology as the user which may cause ripples in the safeguarding of women which is the most crucial purpose of these works. All the systems have their own drawbacks in today's world such as buggy interfaces, failing to function properly or be available on all platforms for the user. This can be eradicated with the help of a new system specifically designed for the utilisation of both the admin and the user so as to create a wall of defence to the women which would be practically impenetrable.

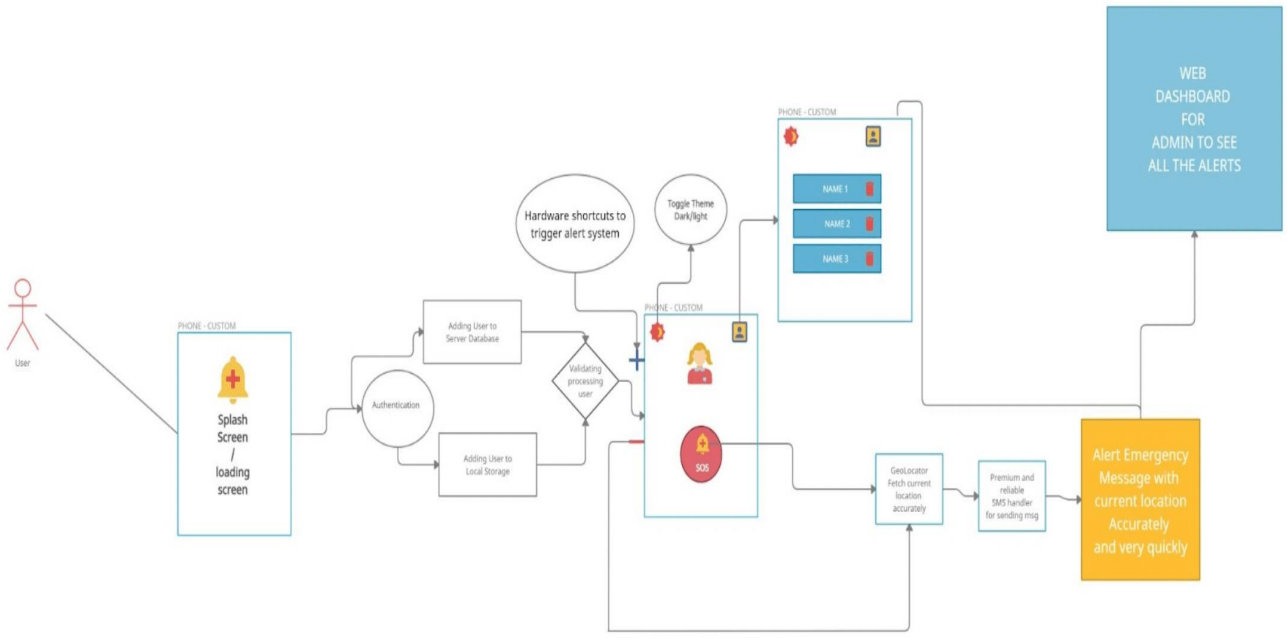
4. PROPOSED SYSTEM:

Unlike other systems in the past which have produced competent results, our system aims to provide the best of results when a user employs it. The proposed systems covers both sides of the coin namely the admin and the user by providing different interfaces to both the parties. The user is provided with a mobile application through which they can make requests to the admin/police and send a stress signal to their contacts and the police. The mobile application consists of features such as google authentication, SOS, helpline etc., to ensure the safety of its user. It also features the use of dark mode in it in order to enrich the experience of the user. A very crucial feature namely the hardware button access is available to the user. It is quite helpful to the women in extreme distress when they would not have the sufficient time to make use of their smartphones. So, the hardware button comes into use just by following the required instructions in order to activate the signal and notify the responders of the user's distress. Various features have been installed to the application in order to truly achieve the security of the users. The mobile application utilises DART for its backend while the interface is created with the help of Flutter.

The admin side of the application would be a web dashboard created specifically for the purpose of tracking the user and their alerts which they have sent with the help of the mobile application. The website access is given to the police or a concerned third party with ties to the police so that they can take necessary actions to track the user and send in the required help to put them out of risk. The website also consists of various statistical representations of the alerts that are sent by the user. It can be represented in a graphical format, a table format and can be tracked with respect to the user, their usage, number of alerts, etc. The website has been created with the help of technologies such as Nodejs for the backend and Reactjs to make the interface more user-friendly.

5.FLOWCHART:

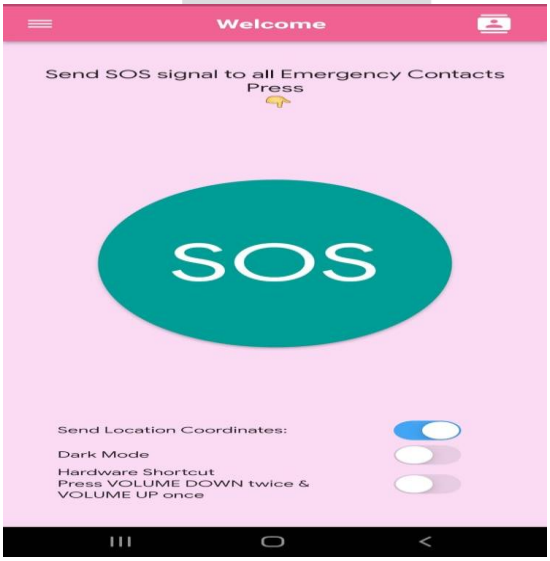
The flowchart marks the application and its flow that enables the user to equip themselves with an effective app which stems in eradicating the crimes against women in any possible manner. The flowchart is as shown below:



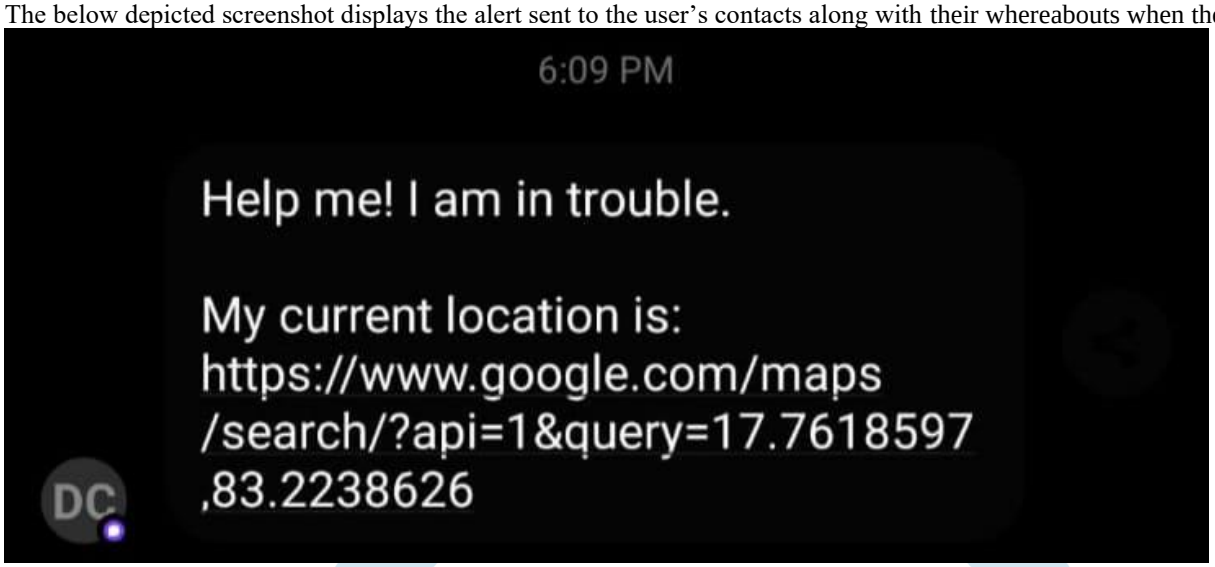
As shown in the above flowchart the user upon the opening of the app comes across a splash screen which marks the title of our app. Then, if they are a first-time user, they need to undergo the process of google authentication which could be only possible by the account of the user which enables them with more security. After their authentication, a background process runs where the user is stored into the application's database and also to the local storage. After this process occurs, the user is validated and they move onto the interface of the application. The interface of the mobile application consists of all the features it entails mainly the feature of the SOS. When a user clicks on the SOS button, it triggers the geolocators which fetch the location of the user and also the SMS handler is activated. All the contacts stored by the user as emergency are now sent an SMS stating that the user needs help along with the location coordinates which can be toggled on/off with the help of the location coordinates option. The alert emergency message along with the contacts could also be seen by the administrator who would send the required help to the user who is in distress. The admin side of the application tracks the alerts and notifies the concerned authorities to take immediate action.

6. RESULTS:

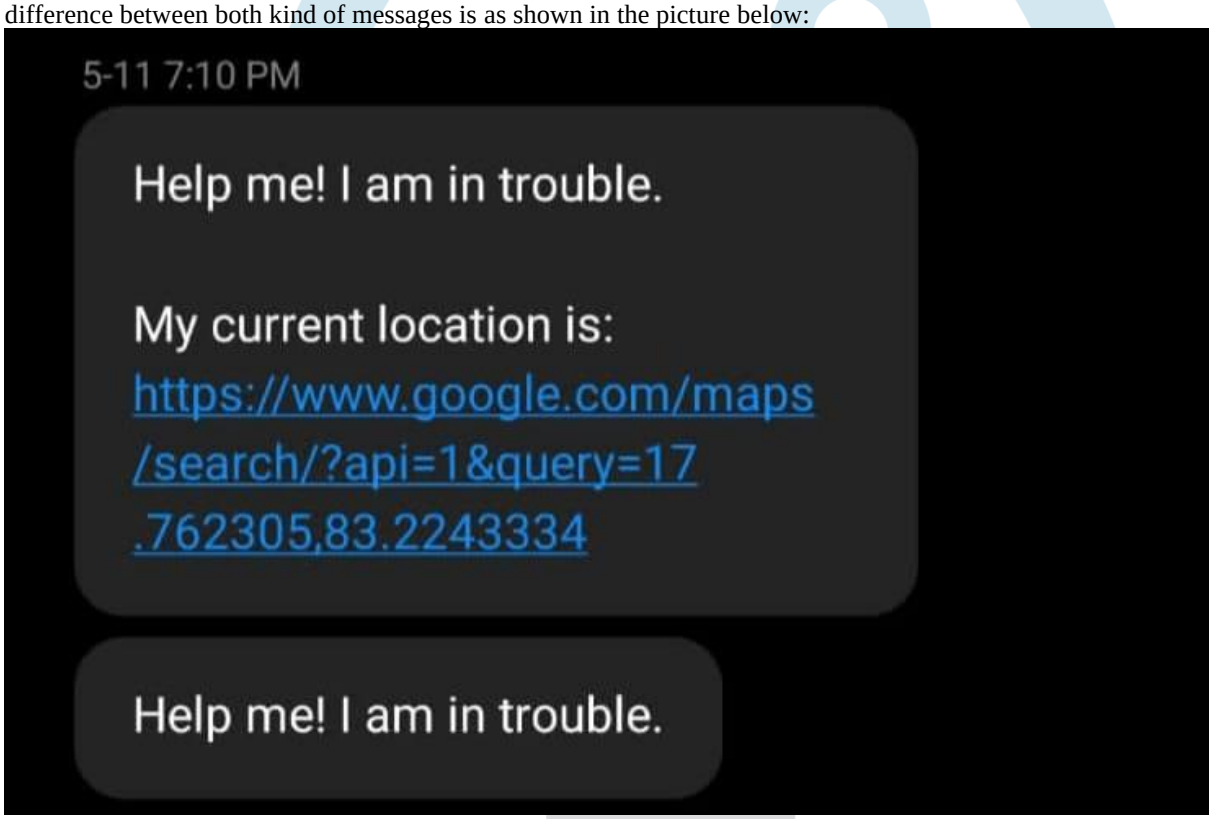
The below screenshot denotes the interface of the mobile application which is available to a user:



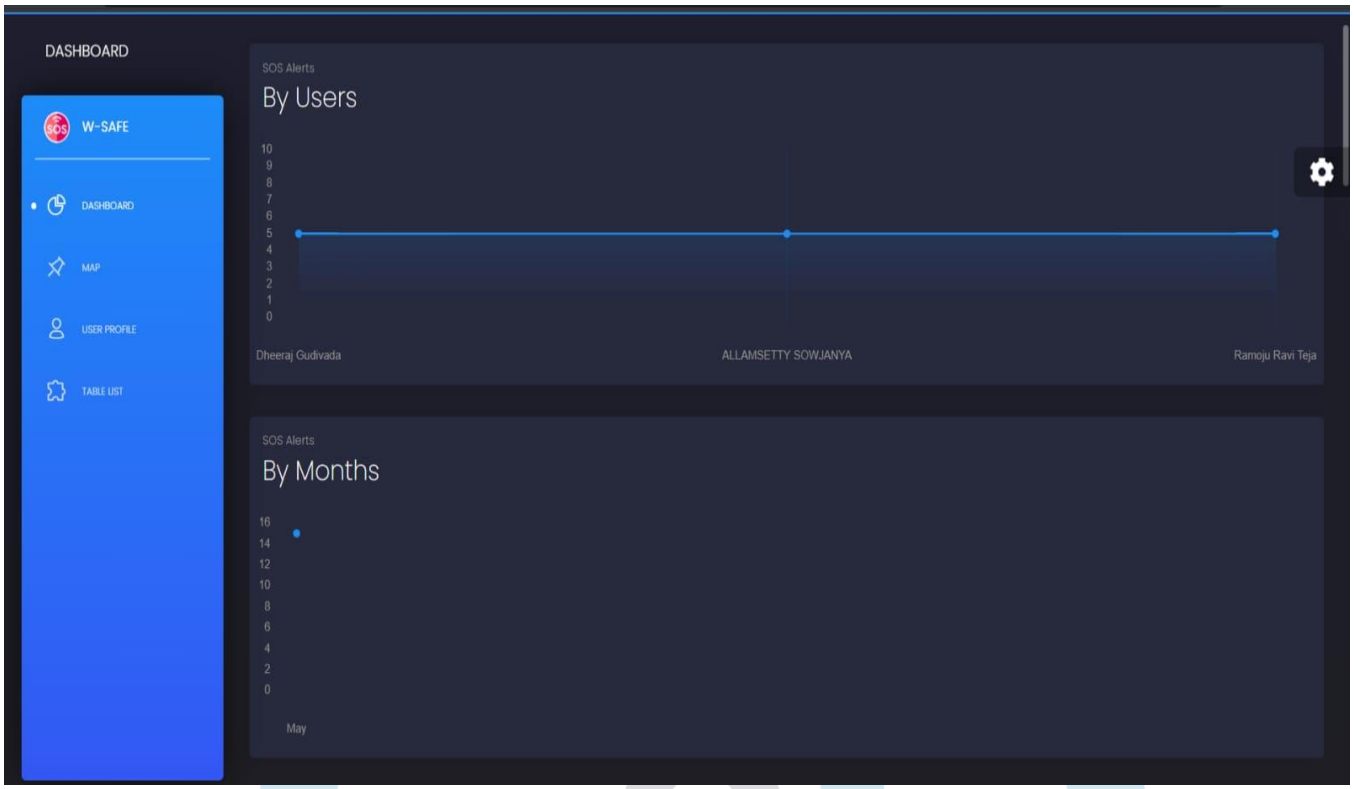
The below depicted screenshot displays the alert sent to the user's contacts along with their whereabouts when they are at risk:



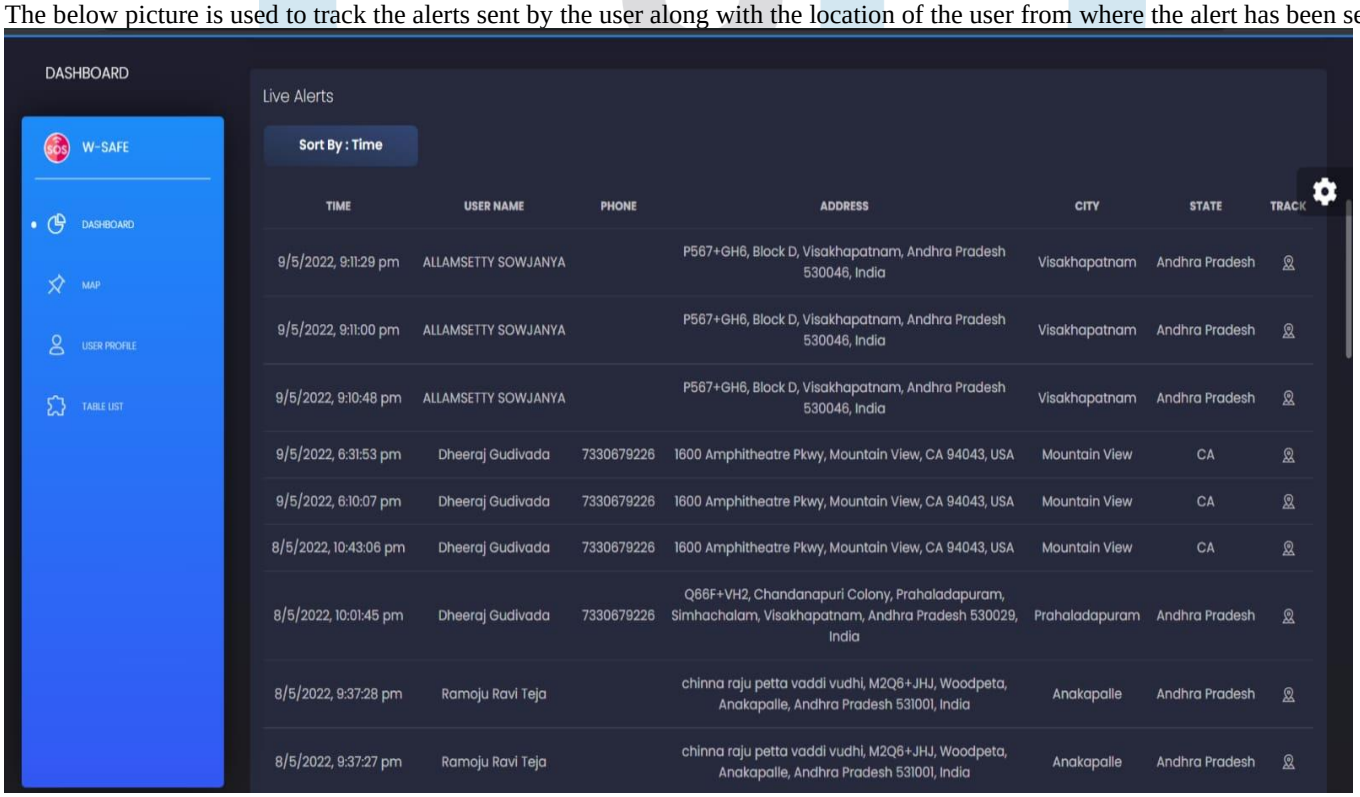
The same message can be modified in order to send only the message/alert barring the location coordinates of the user. The difference between both kind of messages is as shown in the picture below:



The below picture depicts the web dashboard of the administrator that is used to track the usage of the app:



The below picture is used to track the alerts sent by the user along with the location of the user from where the alert has been sent:



7. CONCLUSION:

The chief idea behind this paper is to provide an interface to all the women out there through which they feel secure and safe at every nook and corner in the country. While it is the duty of every skilled person to put their skills to good use, we choose to embark on a new idea that is as useful to everyone who possess a basic electronic such as a smartphone. Through the utilisation of basic technologies available with everyone for free, we designed to create an application that inspires at least a small portion of people to come up with such ideas where they can motivate a huge group of people to achieve the incessant and a strenuous task of fortifying the women in our country with ease. Only with a simple idea can we begin to make a change in the society we live to see. We choose to believe that the idea of our application W-Safe hope to bring in a lot of change around the world and inspire new minds to come up with creative solutions of their own to contribute to the society they live in using their own skills.

This system can be further modified to install various other features which further help in improving the state of the system. It can be also utilised in different areas other than women safety such as in the area of child protection, elderly guidance and many other. The geolocator dependencies if improved in the future and equipped with the latest of features can be introduced into this system to be made more effective. Further, it can be modified to work on various other platforms such as Windows and also utilise the help of sensors so that immediate responses by the user can be noted and taken care of without any hassle. These are some of the very few ideas that could be installed into the system along with the pre-existing ones so that an advanced and an efficient system could be designed in such a way that fear be instilled in the very minds of the people who think to commit a crime against a woman. The scientific technology is one such tool where there is small room for errors and which covers a wide range of people.

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