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IOT based Application for Human Safety and Security

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Abstract:- In our life, technology is very important. There are various technologies such as Artificial Intelligence, Machine Learning, Deep Learning, Cloud Computing, Internet of Things (IOT), Block Chain Technology, Natural Language Processing(NLP), Data Science, Image Processing etc. They are expected to become more widespread in their adoption and use, making them essential components of the future global Internet worldwide. Due to the lack of security in our society, a lot of crimes such as harassment, sexual abuse, kidnapping, unfair treatment, lack of justice due to corruption and harassment, etc. Occur here, one aspect of precautionary measuresis discussed on how to reduce crime and ensure better security and privacy of people. This case study discussed how these technologies can be integrated and used to develop an application that provide better features and helps to reduce crime in our society. Several existing and new application models were explained. With the help of this application updates of crime time will be sent to the family members of that person, and also to the police, which will help to protect person in time, and it is also a help for everyone to get justice and victim and proper punishment. This can be done to make android and smartwatch application which is cost-effective by networking sensors and existing system like smartwatch in which the application is to be installed. When a person in a problem and his mind was not getting any ideas for the application how to enable his phone or smartwatch for working all these functions. For solve these problem, we offer some functions, such as activation by voice command activation, via a button and the most the important for the smartwatch, which is to activate the application via heart rate measurement and step counting, etc.

***Keywords**:- IoT, Cloud computing, Smart watch application, Web application, android application.*

I. INTRODUCTION

This is a security-based application, whose main purpose is to provide security to the people in dangerous situations, such as harassment, sexual abuse, kidnapping, unfair treatment, lack of justice due to corruption and harassment etc[6]. To provide security. In this application, we use Artificial Intelligence, Machine Learning, Deep Learning, Cloud Computing, Internet of Things (IOT), Block Chain Technology, Image Processing etc[1,2,3]. IOT connects users through the Internet. In this application, we provide some better features, that make this application better than other applications. For activate the application, we use button pressing system, voice activation system and another feature is pulse rating[6,7]. To send a live location, we use a live location tracking system that uses a cell phone tower ,that generates a signal for the server through the call. To capture images for evidence purposes, we use an automatic camera access system[6]. The face recognition system recognizes the images of a person or object based on their face. Facial recognition is mainly used in security systems. When a user uses this application in a problem, the face recognition system recognizes the face of an unknown person and all the data is stored on a server. Face recognition helps in recognizing the image with government documents and automatic call generation to tracking a live location[6,9]. IOT provides an interface to connect people and things on an Internet server. IOT is a network of interconnected devices that can process data and communicate with each other without human intervention. Cloud Computing provides the ability to identify unknown risk profiles, data loss and leakage, and account or service hijacking. Cloud Computing maintains all user data of on a server that can be used as evidence[4]. It is a voice-based application where access is done by voice and the voice is recognized as evidence. If the user's device Internet is not active, then that time all the data in his device as a hidden file store and after connecting to the internet all the data backup on the server of application. Hidden data can not be deleted by the user or any other person. All these functions will be executed in background in this application[6].

A. Proposed work

It is an important application based on the purpose of security. It provides security when a person is in a critical situation. It has many function to prevent a person in critical situations when needs help of a person in problem. It is a security that includes measures to improve security practices in the software developments life cycle. Security is important for everyone to safeland securely. The security application helps people to avoid the treatments , extortion and harassment. It is a secure and trusted application that helps in critical situations. It is better than other applications that are currently running at this time.

B. Working principle

This developed system, Figure 1. is divided into some interconnected components. These components are indispensable to provide security in intelligent way. The users are easily able to handle these components in their regular purposes for security, especially the people in our society and country[6]. When people in critical situations, then only with a certain voice command, which is created by that person ,which is unique ,then application will start and all the functions such as live location tracking, automatic camera access, automatic call generation and face recognition of government documentary will run in

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background automatically and perform its specific work , camera access module takes environment images and backup to the server ,when user face internet problem then save all data in his device as a hidden file which is send to the server after connecting to the internet[6,7,8]. Live location tracking system is help to send the live location to specific number , automatic call generation is help to find the exact location. Face reorganization is help to detect the criminal image from government database. Live location is work with cell phone tower without internet only on mobile network[6,9].

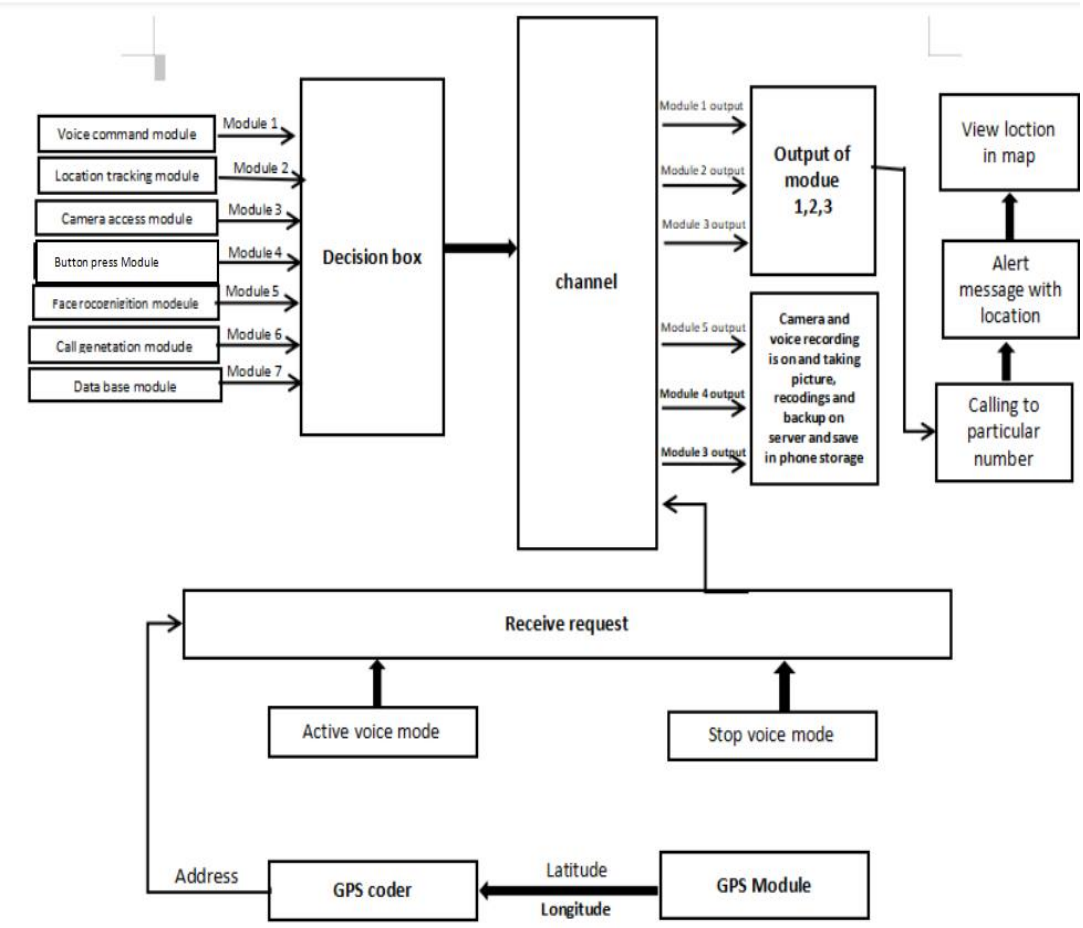

Fig. 1: Proposed system architecture diagram

II. FEATURES PROVIDE IN APPLICATION

All these technologies are used to connect all functions for better work . In this application, we include many features like voice command activation, live location tracking with cell phone tower, automatic camera access, voice recording, face recognition, automatic call generation which are help to operate the application properly . This application is useful when the problem occur, such as harassment, sexual abuse, kidnapping, unfair treatment, not getting justice due to corruption, harassment. People can activate this application by voice command. Several existing functions are explained below how to work in this application.

A. Button pressing for activation

If a person in a critical situation, then he will press key. It is an activating key, when a user presses the key, the application will be launched. All the functions of the application will be active in the background. When the application is in active mode, it will generate a call and share the live location for the server and trusted number[6].

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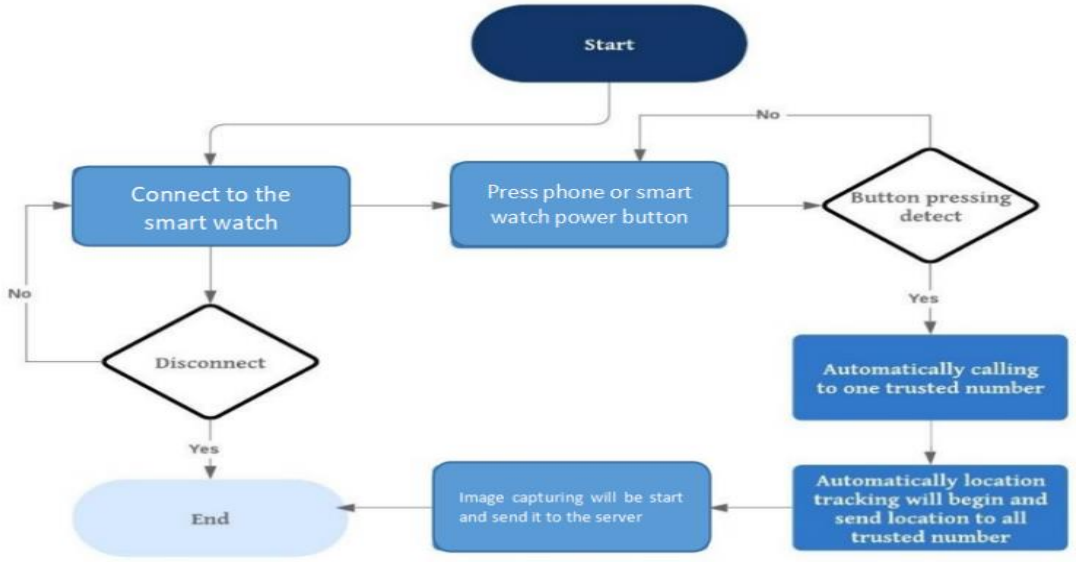

Fig. 2: Flowchart and work procedure of press button for activate application

B. Voice command activation

The voice command activation module can be performed by recognizing the user's voice. After the voice command is found, the application will be recognize voice and launched it. After launching, it will automatically perform the action shown in figure 3. in the activated mode, the application perform running all the functions automatically in the background . So, when the system finds the desired voice command, it will try to recognize the voice and perform the appropriate actions. When the system finds the option to terminate the command, it will terminate the entire system running in the background of the cell phone and smartwatch. To perform this operation, we use the Google speech recognition system [6].

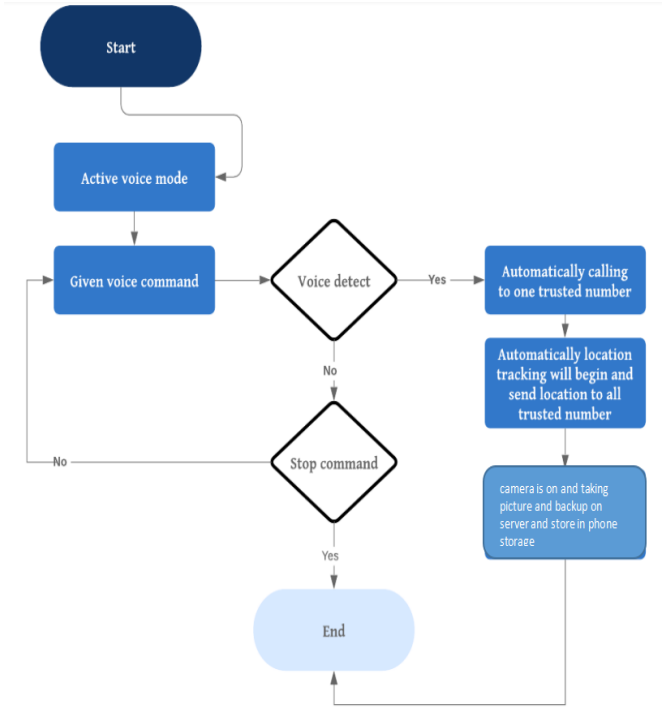

Fig. 3: Flowchart and work procedure of voice command activation

C. Live location tracing using cellphone tower

Live location tracking module can be performed by using cell phone tower . after searching for the voice command application will start and all the functions of the application will start working. After launching, the application is automatically perform the actions shown figure 4.The application will be activated, all functions will be automatically executed in background, and also the shared location tracking will start and send the live location to all trusted numbers through the cell tower. When the system finds the option of stop the command, it will be stopped. Cell phone tower tracking mode is very useful because it works on without internet. Cell phone tracking system works in any situation on network without internet[6,7].

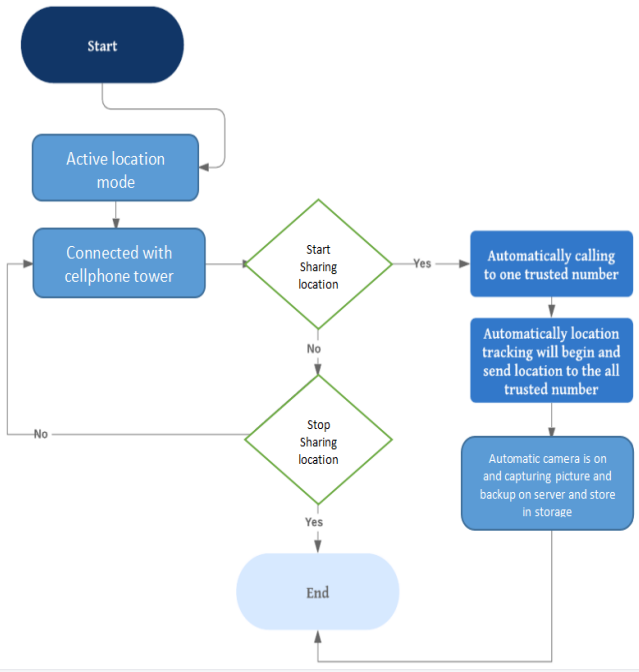

Fig. 4: Flowchart and work procedure of sharing live location

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D. Automatic camera access

Automatic camera access is based on security, it works when a person provide voice command then all functions with the camera is automatically active vision on human-computer interface in the application. . The main purpose of camera access is to capture an environment image on certain time, and all the images will get backup on server.If the user has no internet connection, then it saves all data in this device as a hidden file.After connecting to internet it sends all data to the server.The camera turns off when you close or exit the application. If you allow third-party applications or websites to store to any information, it provides security by the government through their terms and privacy policies. It recommends you, to learn about the privacy practices of these parties and all data is secured.The automatic camera access is completely based on safety and security for people.The camera of smartphones and smartwatch helps to take pictures and save them on the server. People use this application to monitor and restrict their family members for live location to minimize the risks. It is connected to an internet-enabled mobile device[8].

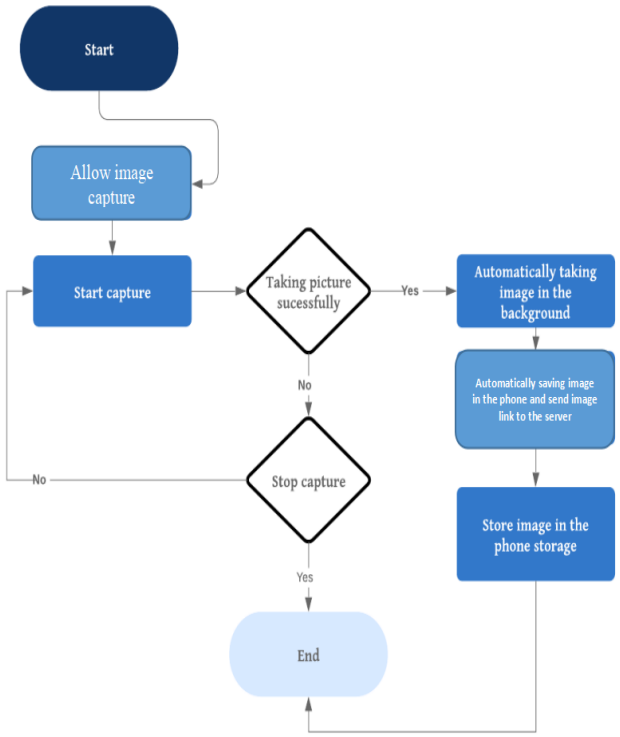

Fig. 5: Flowchart and work procedure of automatic camera access.

E. Face recognition with government documentary

The goal of facial recognition technology(FRT) is to efficiently recognize and capture a person's image. Although this technology have many practical security-related purposes, where it can recognize the face, then it will recognize all the images in the Government Documentary. The primary datasets include of 26.6 million reasonably well controlled live photos of 12.3 million people. Three smaller datasets with more unrestricted photos are used. The report will be useful for comparing algorithms, and for accessing absolute capability of facial recognition with portrait images, which are like protection provided by the Privacy Act 1988, are subject to exceptions. This has led to a significant governance gap. Facial recognition module can be performed by user facial recognition. After the voice command is found, the application will launched. It automatically performs the action shown in figure 6. The application will run in enabled mode, with all functions running in the background. And the facial recognition module is also turned on, to recognize a person's face. After all the details are taken from the government document. It will try to recognize the person and perform the appropriate action. When the system finds the option to stop the command, it will be stopped[9].

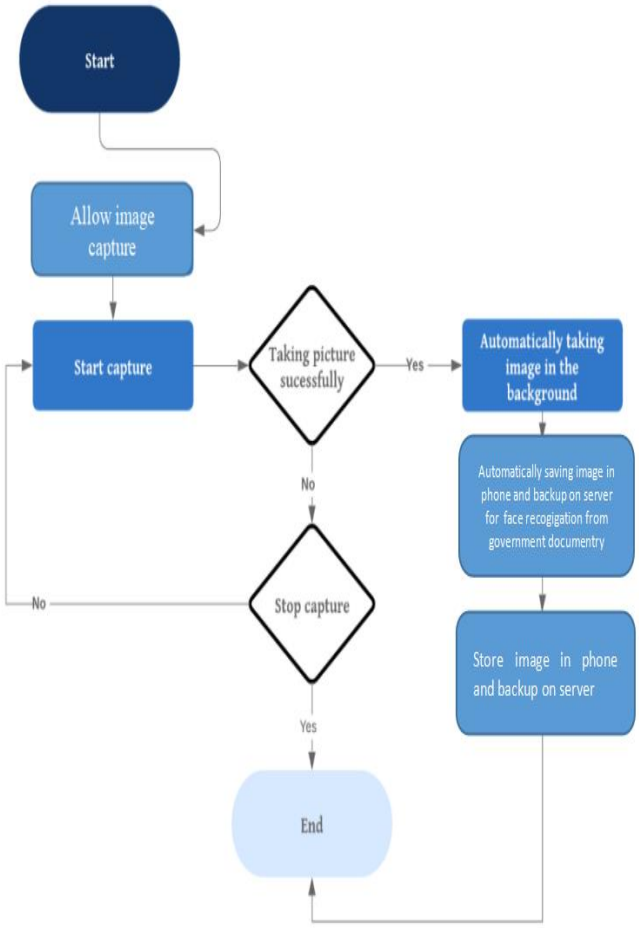

Fig. 6: Flowchart and working procedure of face recognition

F. Automatic call generation

The automatic call generation module can be run when the application is launched. After searching for the voice command, the application recognizes the voice and becomes active. After the application is in active mode, it automatically performs the action shown in Figure 7. When the application is in the active mode, all the functions run in the background. Then an automatic call is generated to call a specific number to track a device and find its location. When the system finds the "Stop" option, all the functions running in the background are stopped[10].

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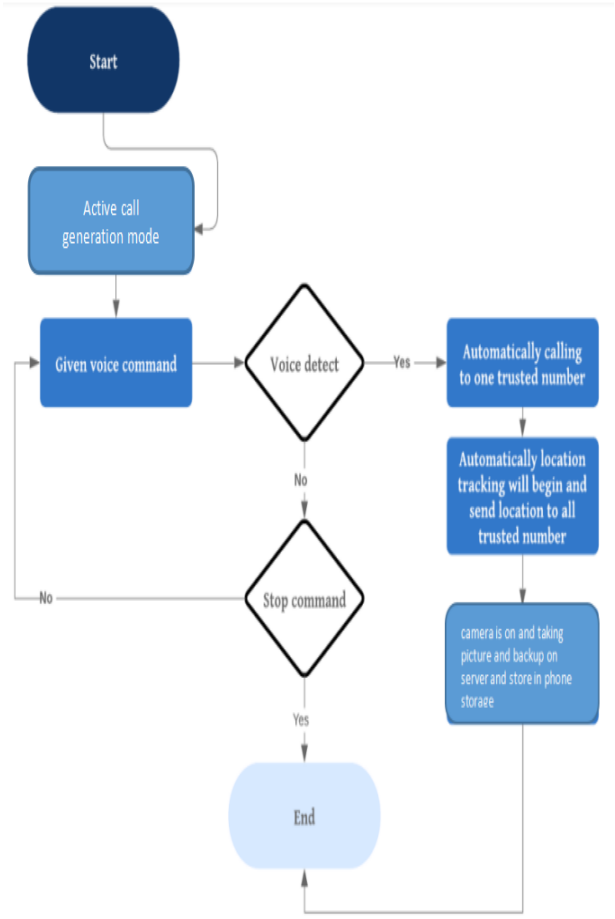

Fig. 7: Flowchart and working procedure of face recognition

III. APPLICATION USE IN REAL WORLD

In our society, security is very important. because most crimes occur in society. to reduce crime and corruption. this application useful. It saves people's lives. All peoples can be able to install this application in phone and also in smart watch. In this application we have a lot of features which provide the best security than other application. For activating this application uses a unique voice command. It also has a function for activating an application which is pulse rating system. Through this function application will read pulse rating and detect the current situation. Pulse rating will be helpful for the patient. If any patient has a high pulse rating then it will inform to their family members in a message notification. When the application will be in active mode, it generates a call and share the location to trusted number. Camera will open and take the pictures and checks the picture to the governments documentary. If a user have no internet connection, then all the data will be stored in this device as a hidden file. When he person reconnect via internet, then it will save the all data on the server. This application will be fully backed up. There is no more chances of data leakage and it very safe and useful for people.

IV. SYSTEM REQUIREMENTS

The development of the proposed application model can be done using both the software and the hardware of the user's smartphone and smartwatch. The software domain can be classified according to the programming language required, the development platform, IDE and OS (operating system). The application was developed using android studio and Python programming language. The database of this application is a real-time database which is Firebase.

Figure 6 shows the database system of the developed application. The user also needs to add a trusted number, the trusted contact number is stored in the database module. All the information is stored in the database. We use a real-time database to shop data online on the server. The hardware section is divided into two interconnected parts. These two parts act as the heart of wireless communication as well as location sharing for security related issues. First, users must use a smartphone to establish a reliable connection through the GSM and GPRS module. Second, the user's cell phone and smartwatch must be equipped with the GPS module to track location. GPS is a navigation and positioning tool that tracks location based on longitude and latitude[6].

The GPS coding module searches for a current address. This can be street names, nearby places, schools, colleges, etc. When the GPS system is not in operation or GPS is disabled, the location is automatically sent through the cell tower using only the latitude and longitude coordinate value. The network in the device is very important for this application to work[6].

Location sharing algorithm using the GPS module To effectively use a GSM/GPRS module, a SIM card is required for mobile communication. The SIM card is located in the GSM/GPRS module and enables wireless communication around the world.

The SIM card or Subscriber Identity Module is responsible for sending SMS to all trusted numbers stored in the application database[6].

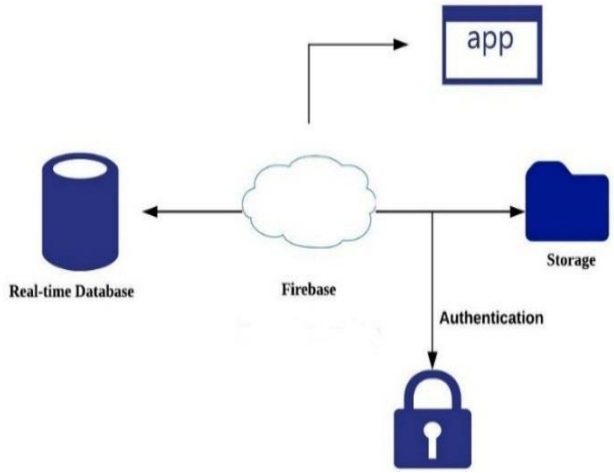

Fig. 8: System diagram of database system of developed application

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V. FUTURE SCOPE

- people would use this application for their protection and prevent anti-social activities.
- make this application is platform independent. People can easily use.
- add many functionalities according to the objective of the functionalities.
- reduce the memory consumption in the device and also ensure the small storage space. Because all data is stored on a server in a cloud.
- include Geo-fencing, which can be used to identify safe and unsafe areas.
- connect via Bluetooth with a smart device such as a smart watch or smart phone.
- develop a way for a user to track their location in real time.
  In this application, we use a cell phone tower system concept to generate calls and live location information.

VI. CONCLUSION

With the help of our application, we will be able to reduce the crime rate and provide safety to men, women and children. Everyone will get justice and victims will get the right punishment. It will collect the right evidence from the victims. It will also help in reducing corruption.

This system will play an effective role for the safety of the people. It would be possible to identify the criminals through this system. In some incidents our proposed system provides some useful features. In some cases this system also provides useful evidence. This application automatically detects the voice of the user.

We have worked very hard to ensure human security for our society and country. We have chosen Android technology to establish this application.

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