Anglia Ruskin University

Research Methods

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An android mobile application for women safety.

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1. OBJECTIVE AND AIMS

The aim is to develop an android mobile application for the safety of women. It is very important that women during any danger that can't be threatening to their life and if they have no help near them, they should still feel safe. By using this application women as a user should be able to send a danger alert along with their current location to the nearest police station and the police as a user should be able to receive this alert so that they can act as needed. Also, if a woman is pregnant and is alone using this application women should be able to send an alert message to the healthcare unit along with location so that they can arrange an ambulance.

Each three minutes, a woman is assaulted in India, according to the National Crime Records Bureau. Police find it difficult to tackle this issue by lending a helping hand due to the delay in getting this information. [Sampadha Zutshi, Shifa Khan, Tejal Mejari, Kiran Dange, 2022] So, using advantage of the technology in this modern era developing this application can help in reducing the number of women getting attacked. Just installing this application and giving all the access required for this application to work is enough and if the user thinks they are in danger just pressing a button in the app will send the notification to the nearest police station. So, this application should also be installed and configured in at least one police station within a preferred radius so as to select the nearest one from the available to send the danger alert.

Similarly in case of pregnant women there are chances that they might be alone during labour pain and no one to reach for a help so installing this application pregnant women will be just one button press away from help as on button press an alert will be send to ambulance drivers near the location of the pregnant women. This is required because being late to get help and reaching a hospital late may lead to complications.

2. LITERATURE REVIEW

Violence against women happens around the globe. Violence can be any form it can be physical and mental harassment. So, steps should be taken to reduce this as these event s can lead to trauma thus affecting the mental health of the victims. So, to tackle this problem in this technological world where most of them carries a cell phone developing a mobile application will be useful. [Sampadha Zutshi, Shifa Khan, Tejal Mejari, Kiran Dange, 2022].

An application was developed such that it gets activated when the phone will be shaken by the user. But this will lead to problems as the phone may be shaken by mistake thus activating the application and sending the alert message so this will lead to unwanted intervention of police force. Application developed in the paper sends the alert message to a registered user but this can be not useful as the there are chances this user is far from the location of the victim so to get over this problem the application to be developed is configured with police force as they are the primary help that the victim can get during any time. [Saranya K, Nandhini S, Adish C B, Manikandan A, 2021]

Android OS is the most popular for mobile applications as there more than two and half billion active users. Also developing in Android is cost effective as all the tools required for the development are easily accessible and after OS update completability issues are lesser. Since Android OS is open source, it allows large scope for customisation [Rishabh Software, 2023]. Keeping these points in mind the application to be developed was decided to be developed on Android platform.

3. METHODOLOGIES

A research methodology is a means to describe how a researcher plans to conduct their investigation. It is a rational, methodical approach to a study issue. The sort of research topic, the parameters of the study, and the kind of data that must be gathered all influence the technique that is employed, [Indeed Editorial Team, 2022].

The project follows a constructive approach. The constructive research method is a methodical approach that makes it possible to intentionally develop methodologies, modules, tools, and strategies that are applicable well beyond the case study that inspired their creation. It is a research methodology that is frequently utilized in the fields of clinical medicine, operations analysis, and computer science. [McGregor, C. (2018)].

To better comprehend ideas, views, or experiences, qualitative research entails gathering and evaluating non-numerical data (such as text, video, or audio). It may be utilized to uncover intricate details about a situation or to spark fresh study concepts. Quantitative research, which includes gathering and analysing numerical data for statistical analysis, is the antithesis of qualitative research.

4. DESIGN

This Android app is helpful if the user is having any problem or needs assistance. The proposed application is to be developed for three types of users. The design would be such that potential users can register giving their details like name age mobile number and contact number of first contact. Admin will add police and ambulance as a user.

- Women as a user.
- police/ambulance as user.
- Admin

4.1 USER INTERFACE DESIGN

Front-end technologies such as HTML, CSS, and JavaScript are used to create the user interface. User interface design focused on appearance or style.

4.2 DATABASE DESIGN

The data is organized according to a database model in database design. The system keeps a database for user validation and email storage. A well-designed database may decrease data redundancy, enhance data quality, and speed up data retrieval.

4.3 SYSTEM DESIGN

The process of establishing a system's architecture, parts, modules, interfaces, and data in order to meet predetermined criteria is known as system design. It entails a series of tasks that fill the gap between system installation and requirements analysis.

Figure 1 shows the design of the basic working of the proposed application. User (women as a user) should register if not registered if registered should login using the credentials and allow location access permissions after which the user will have to buttons to press as a option. One is to be pressed when there is emergency during a chance of attack on them or if they feel unsafe. On pressing this button a alert along with location details is send to the nearest police station the other button is meant for pregnant women to be pressed during emergency and when the button is pressed an alert is send to the nearest ambulance drivers along with the users location.

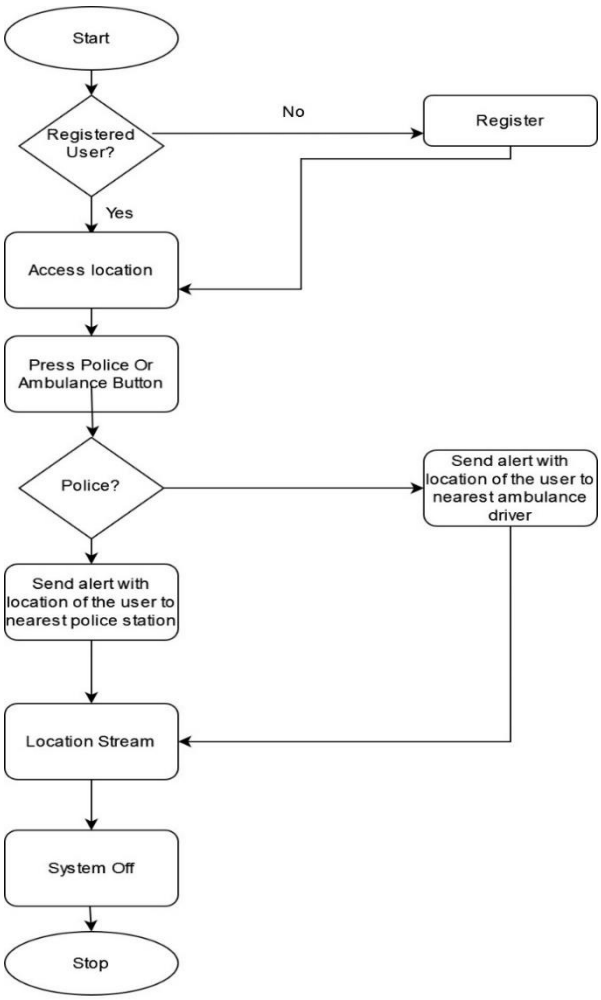

Figure 1: Flowchart showing basic working of the proposed application.

5. IMPLEMENTATION

When the user opens this application, the user can see two alert buttons. One button for the police and another button for ambulance. In above buttons their will see few icons, they are contact details, settings, self-defence, GPS. If the user presses the police button the alert sends to the nearest police location in the basis of user location. The use of GPS the police can easily find the user. If the user press ambulance button the alert sends to nearest ambulance driver. The ambulance drivers get the alert and can accept or decline. If they accepted the alert should be destroyed from other ambulance drivers. SO that only one ambulance driver is assigned to the user that needs the service.

The whole review may be divided into some primary phases, each of which is explained separately. The first major step is permission for the GPS location. Otherwise, the application cannot be completed. The second major step is adding details of the user and enter few contacts' numbers. It helps the user to call easily.

The modules to be developed in this application are:

5.1 REGISTRATION

If a new user wants to use this application first, they have to register with their email and password. Add some information's about the user, Such as name, address, date of birth, mobile number.

5.2 LOGIN

After successful registration the next step is login. The user can login with their valid user's name and password. If the user forgot their password there is an option for forget password and user can able to reset the password.

5.3 HOME PAGE

After login the user can see some icons and buttons. The user can easily access the icons without worries. The buttons are alert button, it uses only the user in the dangerous situations. The home page icons are:

- **Contact Details:** Add few contact details of the user. It helps the user send the live locations, or call.
- **Settings:** In settings the user can edit their details like they can change password, change phone number, change name, change address
- **Self Defence:** Here provide some basic step of the self defence with pictures and definitions. Also provide some videos for the women who want to practice.
- **GPS:** When the user is in difficulty or an emergency, the police or ambulance drivers can easily find their location.
- **Alert Button of Police/Ambulance:** The user can press the alert button in the basis of their situation. The alert message goes to the police/Ambulance. They can track the user location for helping.

Have to test after developing the application, because make sure that the application work properly and meet all requirements. Otherwise, testing is a process of identify the bugs, errors and other issues in the application. Testing are different types they are unit testing, integration testing, functional testing, security testing etc.

In figure 2 is a use case diagram of the application, use case diagrams are a sort of diagram that are used to show how actors (users or external systems) interact with a system. Use case diagrams are frequently used in software engineering to illustrate the many ways in which a user may engage with a system and the various operations or tasks that the system is capable

of carrying out. This figure represent four users they are admin, police, ambulance driver and user/women. The figure clearly shows the activities of each user. Each users have their own login details; Each user can use GPS services. The user/women can call directly to the police or ambulance driver in the basis of location. They can receive the alert from the user/women.

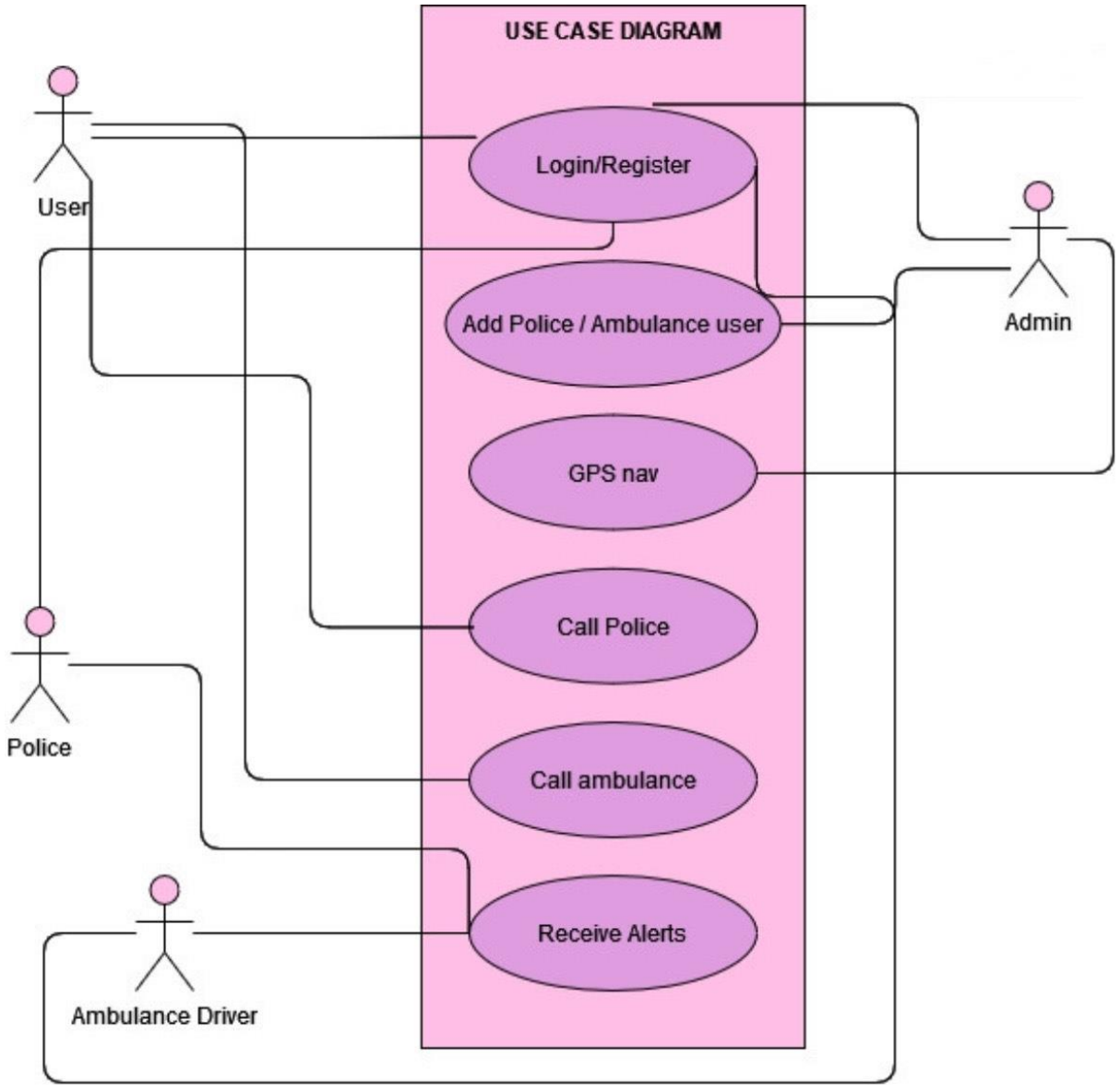

Figure 2: Use case diagram of the application

6. SYSTEM REQUIRMENTS

The configuration that a system must have in order for a piece of hardware or software to function properly is known as the system requirements. The physical computer resources, usually referred to as hardware, are the most typical set of specifications defined by any operating system or software program [Rouse M, 2015]. A hardware compatibility list frequently goes along with a list of hardware requirements. Software requirements are concerned with specifying the software resources and prerequisites that must be installed on a computer to provide the best possible performance of a program [Vskills Tutorial, 2019].

6.1 SOFTWARE REQUIRMENT

Sl.no	Component	Minimum Requirement
1	RAM	4GB
2	Hard Disk Drive	250 GB
3	PROCESSOR	Any multi core processor
4	MOBILE PHONE	Android device

6.2 HARDWARE REQUIRMENT

Sl.no	Component	Minimum Requirement
1	OS	Windows, macOS, Linux
2	Application Development Kit	JDK, Android SDK
3	IDE	Android studio
4	Testing software	Emulator

7. GANTT CHART

A Gantt chart is a project management tool that helps with the planning and scheduling of projects of all sizes. They are especially helpful for project visualization. A Gantt chart is a graphical depiction of activities versus time that aids project managers in keeping track of development [APM, 2022]. Figure 3 demonstrates the project plan for the project proposed using Gantt chart.

- Project research and selection: Analyse some topics in the basis of real time for the project proposal. Search each topics details and find best one from the topic list.
- Background Research: Research some papers based on the topic. Analyse the advantages and disadvantages of the topic. It gives the basic awareness about the project proposal.
- Literature Review: It is the overall summery of the chosen project. Find some articles, points about the project proposal.
- Preparing for Project Proposal Presentation: Preparing some ideas/features of the project proposal using power point.
- Design and Implementation: Design is a creative process that involves identifying software components and their interactions based on the needs of the client. Implementation is the process of turning a program's design into reality.
- Testing: Test the project that meet the requirements and verify and evaluate the project. Testing helps to guarantee that the software program complies with the requirements and functional specifications, is dependable, and performs as intended, it is a vital step in the software development process.
- Report Writing: It clarify the project requirements, project goals, scope of the project. It provides the clear vision about the facilities and goals. The goal of report writing is

to deliver information to readers in a clear and succinct way, giving them a thorough comprehension of the subject matter.

- Proof read and check: Evaluating the document for identify and correct the grammar and spelling. And also check the document clarity. Verify and ensure that document contents are clear.
- Print and bind final copy of the project: Printing and binding is a final copy of the project. The document can print in colour or black and white, it depends on the project. This physical copy can be utilized for reference or archiving purposes and acts as a tangible record of the project.
- Project Submission Date: To make sure that the project is finished and delivered on time, it is crucial to thoroughly check the project criteria and submission rules.

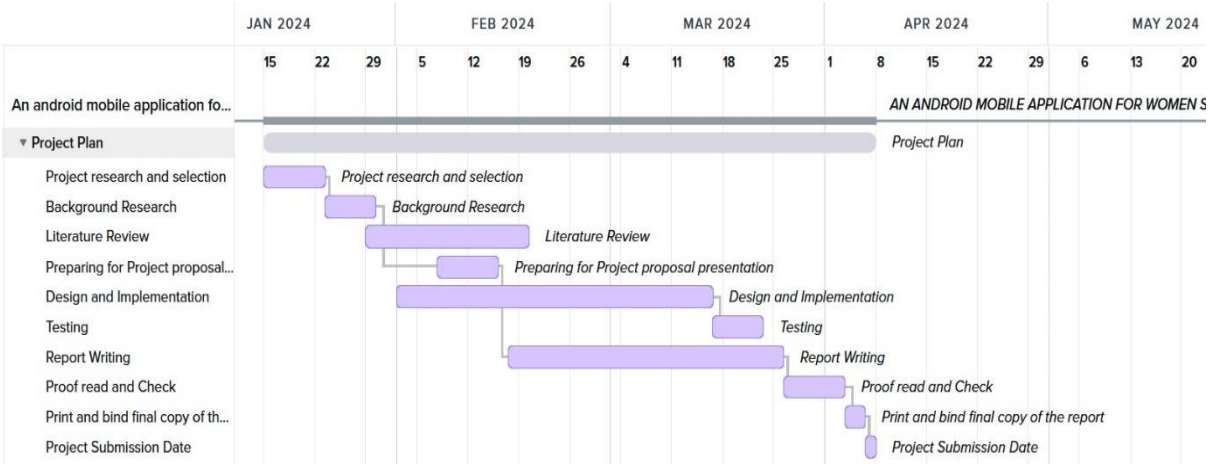

Figure 3: project plan demonstrated using Gantt chart

8. ETHICAL ASPECTS

Once the application is developed then human participants is needed for live testing of the application. Personal data shuch as name contact details are collected so there chances individuals can be identified so the application should be developed in very secure manner to protect the data safely.

Ethics checklist and Quiz score is attached in Appendix section in this report Appendix A1 and Appendix A2.

REFERENCES

Zutshi, Sampada & Khan, Shifa & Mejari, Tejal & Dange, Kiran. (2022). Application for Women Safety: Spark Women. International Journal for Research in Applied Science and Engineering Technology. 10. 1931-1935. 10.22214/ijraset.2022.41479.

K, Saranya, Nandhini S, Adish C B, Manikandan A (2021). E-DEFENCE WOMEN SAFETY APPLICATION. International Journal on Advanced Science Engineering and Information Technology. 4. 2349-3216.

Advantages of developing Android app to Futureproof Your Business (2023) *Rishabh Software*. Available at: https://www.rishabhsoft.com/blog/top-advantages-of-developing-android-app-for-your-business#benefits (Accessed: March 18, 2023).

Indeed Editorial Team (2022) *What is research methodology? (why it's important and types)*. Available at: https://www.indeed.com/career-advice/career-development/research-methodology (Accessed: March 12, 2023).

McGregor, C. (2018) "Using constructive research to structure the path to transdisciplinary innovation and its application for Precision Public Health with Big Data Analytics," *Technology Innovation Management Review*, 8(8), pp. 7–15. Available at: https://doi.org/10.22215/timreview/1174.

APM (2022) What is a Gantt chart?, APM. Available at: https://www.apm.org.uk/resources/find-a-resource/gantt-chart/

APPENDIX

Appendix A1: Research Ethics Checklist

Section 2: Research Ethics Checklist

	Will your research (delete as appropriate):			
1	Involve human participants?		YES	
2	Utilise data that is not publically available?		YES	
3	Create a risk that individuals and/or organisations could be identified in the outputs?		YES	
4	Involve participants whose responses could be influenced by your relationship with them or by any perceived, or real, conflicts of interest?		YES	
5	Involve the co-operation of a 'gatekeeper' to gain access to participants?			NO
6	Offer financial or other forms of incentives to participants?			NO
7	Involve the possibility that any incidental health issues relating to participants be identified?			NO
8	Involve the discussion of topics that participants may find distressing?			NO
9	Take place outside of the country where you work and/or are enrolled to study?			NO
10	Cause a negative impact on the environment (over and above that of normal daily activity)?			NO
11	Involve genetic modification of human tissue, or use of genetically modified organisms classified as Class One activities?[1].			NO
12	Involve genetic modification of human tissue, or use of genetically modified organisms above Class One activities?[2].			NO
13	Collect, use or store any human tissue or DNA (including but not limited to, serum, plasma, organs, saliva, urine, hairs and nails)?[3]			NO
14	Involve medical research with humans, including clinical trials or medical devices?			NO
15	Involve the administration of drugs, placebos or other substances (e.g. food, vitamins) to humans?			NO

16	Cause (or have the potential to cause) pain, physical or psychological harm or negative consequences to humans?	🔴		NO
17	Involve the collection of data without the consent of participants, or other forms of deception?	🔴		NO
18	Involve interventions with people aged 16 years of age and under?	🔴		NO
19	Relate to military sites, personnel, equipment, or the defence industry?	🔴		NO
20	Risk damage/disturbance to culturally, spiritually or historically significant artefacts/places, or human remains?	🔴		NO
21	Contain research methodologies you, or members of your team, require training to carry out?	🔴		NO
22	Involve access to, or use (including internet use) of, material covered by the Counter Terrorism and Security Act (2015), or the Terrorism Act (2006), or which could be classified as security sensitive?[4]	🔴		NO
23	Involve you or participants in a) activities which may be illegal and/or b) the observation, handling or storage (including export) of information or material which may be regarded as illegal?	🔴		NO
24	Does your research involve the NHS (require Health Research Authority and/or NHS REC and NHS R&D Office cost and capacity checks)?	🟣		NO
25	Require ethical approval from any recognised external agencies (Social Care, Ministry of Justice, Ministry of Defence)?	🟣		NO
26	Involve individuals aged 16 years of age and over who lack 'capacity to consent' and therefore fall under the Mental Capacity Act (2005)?	🟣		NO
27	Pose any ethical issue not covered elsewhere in this checklist (excluding issues relating to animals and significant habitats which are dealt with in a separate form)?	🟠		NO

Appendix A2: Research Ethics Quiz Marks.