**PROJECT 2 T1**

**Supervisor: NW Wessels**

**Group 2**

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| **Name** | **Student no.** |
| Collins Shibambo | 230093183 |
| Samukelisiwe Maphumulo | 219344639 |
| Samkelo Mahlangu | 230064019 |
| Avuyile Twesha | 240763394 |
| Litha Owethu Mazibuko | 240143485 |
| Ntombozuko Palisa Mchophele | 240455789 |

1. **COMMUNICATION**

**1.1 Method used in the group**

* **Blackboard Messaging:** Initially, we used Blackboard to communicate since we were randomly enrolled and didn't know each other. It helped us connect, share project-related updates and make WhatsApp group.
* **WhatsApp Group & Calls:** As the project progressed, we created a WhatsApp group for faster communication through text and group calls, ensuring efficient collaboration and decision-making.

**1.2 What worked well**

**WhatsApp Video Call:**

* Allowed for direct and immediate interaction among team members.
* Facilitated real-time problem-solving and quick decision-making.

**Blackboard Communication:**

* Provided a structured platform for information sharing and discussions.
* Enabled easy access to course materials and project-related announcements.

**1.4 What did not work**

* **Direct Calls:** Some members faced connectivity issues due to different network providers.
* **SMS Communication:** It was ineffective as it lacked immediacy and group interaction.

**1.4 Members that Communicate Well:**

**Samukelisiwe Maphumulo:** Communicates clearly and responds quickly to emails and messages.

**Avuyile Twesha:** Actively participates in team chats and reliably attends meetings.

**Ntombozuko Palisa Mchophele:** Keeps everyone informed and responds fast to emails and messages.

**Collins Shibambo:** Participates well in team discussions and responds quickly to messages.

**Litha Owethu Mazibuko:** Shares updates on time and contributes well in meetings

**Samkelo Mahlangu:** Always keeps the team updated and responds promptly to messages and emails.

1. **TASK ALLOCATION**

***1. Samkelo Mahlangu (230064019) – Secretary***

**Tasks (Timeframe: 8 – 9 Months)**

* Keep detailed records of meetings, decisions, and project status updates.
* Document all discussions and ensure proper organization of project files.

**Skills Brought to the Project:**

* Strong organizational and communication skills.
* Experience in documentation and task coordination.

**New Skills to Learn (Timeframe: 2 – 3 months)**

* Basic SQL knowledge to understand database interactions.
* Improving documentation techniques for technical reports.

***2. Collins Shibambo (230093183) – Frontend Developer***

**Tasks (Timeframe: 4 – 5 months)**

* Design and implement the user interface (UI) using Java Swing.
* Ensure responsiveness and ease of navigation.

**Skills Brought to the Project:**

* Basic knowledge of Java for UI development.
* Problem-solving skills and attention to detail in UI design.

**New Skills to Learn (Timeframe: 2 – 4 months)**

* Improving Java UI development using Java Swing.
* Enhancing code structuring and debugging techniques.

***3. Ntombozuko Palisa Mchophele (240455789) — Back-End Developer***

**Tasks (Timeframes 4 – 5 months)**

* Develop and maintain server-side logic using Java.
* Ensure proper integration between the frontend and database.

**Skills Brought to the Project:**

* Understanding of Java backend development.
* Logical thinking and problem-solving abilities.

**New Skills to Learn (Timeframe: 3 – 5 months)**

* Enhancing backend performance optimization techniques.
* Understanding secure authentication methods in Java.

***4. Samkelisiwe Maphumulo (219344639) – Team Leader***

**Tasks (Timeframes 8 – 9 months)**

* Oversee the project’s progress and ensure deadlines are met.
* Facilitate communication and problem-solving among team members.

**Skills Brought to the Project:**

* Leadership and team coordination skills.
* Strong decision-making abilities and communication skills.

**New Skills to Learn (Timeframe: 2 – 3 months)**

* Understanding Java and SQL basics for better project oversight.
* Learning basic debugging to assist where needed.

**5. *Litha Owethu Mazibuko (240143485) – Tester***

**Tasks (Timeframe 4 – 5 months)**

* Test the application for bugs, usability issues, and performance problems.
* Ensure the final product meets project requirements.

**Skills Brought to the Project:**

* Attention to detail and logical thinking.
* Basic experience in testing and reporting software bugs.

**New Skills to Learn (Timeframe: 3 – 5 months)**

* Understanding Java debugging tools.
* Learning basic SQL to verify data accuracy during testing.

***6. Avuyile Twesha (240763394) – Database Manager***

**Tasks (Timefram 3 -5 months)**

* Design and manage the project’s database using SQL.
* Ensure data consistency, security, and performance optimization.

**Skills Brought to the Project:**

* Basic SQL knowledge for database creation and management.
* Strong analytical skills in data organization.

**New Skills to Learn (Timeframe: 2 – 4 months)**

* Advanced SQL queries for better data management.
* Understanding database indexing and optimization techniques.

1. **GROUP ORGANISATION**

**3.1 Group Roles**

1. **Samkelo Mahlangu (Secretary)** – Responsible for documentation and record-keeping due to strong organizational skills.
2. **Collins Shibambo (Frontend Developer)** – Handles UI development using Java Swing, leveraging problem-solving skills.
3. **Ntombozuko Palisa Mchophele (Backend Developer)** – Develops server-side logic, ensuring seamless integration.
4. **Samkelisiwe Maphumulo (Team Leader)** – Oversees the project, ensuring deadlines are met and communication is maintained.
5. **Litha Owethu Mazibuko (Tester)** – Tests the system for bugs and usability issues due to strong attention to detail.
6. **Avuyile Twesha (Database Manager)** – Manages SQL database, ensuring data consistency and security.

**3.2 Role Swapping Plan**

The group does plan to provide help towards other roles within the group, provided that a group member encounters a problem where another can help or pitch in.

**4 PROBLEM DEFINITION**

**4.1 Problem Description**

The Safety Alert Application addresses the challenge of delayed response times, ineffective reporting, and lack of real-time communication between users and law enforcement. Users, especially students, truck drivers, Uber drivers, and courier drivers, often face safety risks but lack an efficient way to report incidents and receive assistance. The current methods of emergency communication are either slow, ineffective, or do not guarantee a quick response.

**4. 2 Functional Requirements**

1. **Incident Reporting** – Users should be able to report safety threats quickly.
2. **Real-Time Alerts** – Users must receive safety alerts about nearby incidents.
3. **Law Enforcement Interaction** – The system should notify law enforcement immediately when an incident occurs.
4. **Emergency Button** – A quick-access emergency button to send distress signals.
5. **User Location Sharing** – The app should allow real-time location tracking during emergencies.
6. **Incident Status Updates** – Users should receive updates on their reported incidents.
7. **Secure Authentication** – Users must log in securely to access the system.
8. **GPS Tracking** - User allows user to share their location with law enforcement to speed up the response time.
9. **Real- time chat** – Users can chat directly with emergency

**4.3 Users & Their Roles**

1. **Students, Truck/Uber/Courier Drivers** – Report incidents, receive alerts, and request assistance.
2. **Law Enforcement Officers** – Monitor reports and respond to emergencies.
3. **Administrators** – Manage system security, user authentication, and app performance.

**5 TECHNOLOGY AND SCOPE**

**5.1 Technologies will be used**

**1. Java (JDK 17**) - It will allows us to develop application that run on different operating systems, including Windows, macOS, and Linux. Since Java supports object-oriented programming (OOP), it enables better code organization and reusability, making development more efficient.

**2. Java Swing** – Swing is a GUI it will allows us to create interactive and visually appealing desktop applications. Swing is a suitable choice because it integrates well with Java and beginner friendly.

**3. NetBeans IDE** – We have chosen NetBeans IDE because it is beginner-friendly and provides built-in tools for Java development, including code completion, debugging tools, and an integrated GUI builder for Java Swing. This makes it easier for our team to develop and test the application efficiently.

**4. SQL –** Our application needs to store user data, incident reports, and law enforcement responses, which requires a reliable database system. It provides structured query language (SQL) capabilities, allowing us to efficiently retrieve and manage stored data.

**5. JDBC (Java Database Connectivity) –** It allows us to perform secure and efficient data transactions such as inserting, updating, deleting, and retrieving records. Using JDBC ensures real-time storage and retrieval of incident reports, making the application more responsive.

**5.2 What is Included**

* **Incident Reporting** – Users can report safety incidents via the app.
* **Real-Time Alerts** – Users receive notifications about nearby threats.
* **Emergency Button** – A quick-access button for emergency situations.
* **Basic User Authentication** – Users log in securely to access features.
* **Database Management** – Stores user data, incident reports, and law enforcement responses.

**5.3 What is Excluded**

* **Payment Integration** – No financial transactions are involved in the system.
* **AI-Powered Predictions** – No machine learning or AI-based risk analysis will be implemented.
* **Offline Mode** – Real-time reporting requires internet connectivity, so offline functionality is not included.

**5.4 Reasons for Exclusions**

* **Time Constraints:** AI and advanced features require more time than available in our project timeline.
* **Resource Limitations:** We are to SQL and networking, so we will prioritise building a functional, secure, and user-friendly system before adding complex features.