EARTHQUAKE MANAGEMENT SYSTEM

Yusuf Mert Marşan
Engin Sacid PARTO
Denizhan Can KURTCAN
Oğuzhan İÇELLİLER
Taha Eren KELEŞ
Umut AYDIN
Yahya KOYUNCU
Begüm YILDIRIM
Burak Eymen ÇEVİK
İrem Tuğba SAĞSÖZ

Department of Industrial Engineering & Computer Engineering, Yeditepe University

ABSTRACT

The main objective of the proposed system is to provide authorized personnel with access to crucial information necessary for efficient emergency response. The proposed system aims to enhance disaster management practices and facilitate better coordination among stakeholders during times of crisis by leveraging the capabilities of this mobile application.

INTRODUCTION

The proposed system aims to address the existing shortcomings in emergency management by implementing various technological features. Firstly, it automates the determination and presentation of emergency material locations and quantities, ensuring timely availability of resources based on advanced algorithms and data analysis. Secondly, it allows users within the emergency zone to submit specific emergency equipment requests through a mobile app, enabling efficient allocation of resources to meet the area's needs. Additionally, the system provides access to information about emergency supplies, allowing users to view the locations and contents of storage units, promoting transparency and effective resource management. It also automates the identification and availability of search and rescue resources, providing relevant personnel with the necessary information to expedite search and rescue operations.

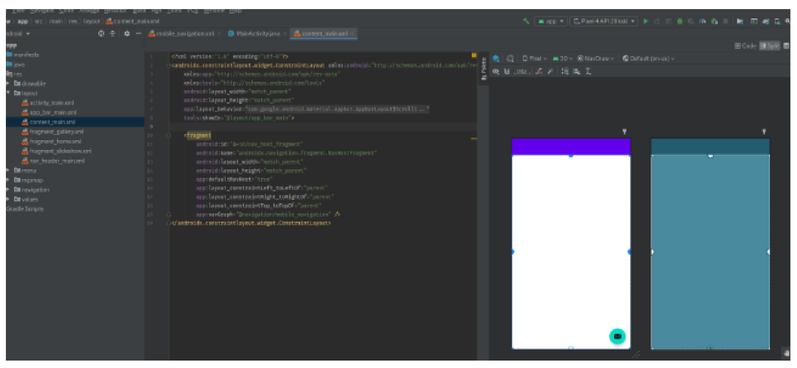
PROBLEM STATEMENT

AFAD manages emergency personnel, emergency materials, and emergency healthcare personnel at the scene without utilizing any technological system. This system is not accessible to everyone. The current system is as follows:

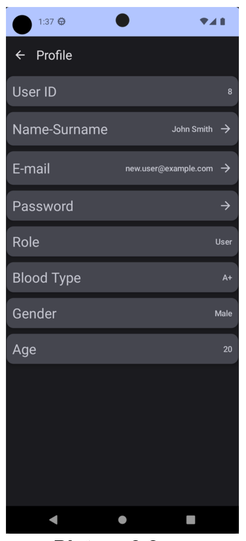
- Due to improper distribution of emergency materials, there is either an oversupply in certain areas or a lack of materials in the required places. It is difficult to determine the specific amount of materials needed in each region.
- Regarding personnel management, similar to the issues with material distribution, there can be a shortage of personnel available for deployment to the required regions or an excessive concentration of personnel in certain areas, which can hinder operations in those regions. Additionally, the inability to allocate personnel to areas where they may be needed negatively impacts the critical factor of "time" in this process.
- There are also difficulties in accessing healthcare personnel and equipment in regions due to injuries and illnesses. Preventable deaths and permanent damage to individuals occur when the necessary health units or medications do not arrive on time or fail to arrive at allt
- There is no section related to animals in the current system. Also,there is not enough work related to earthquake preparation in the current system

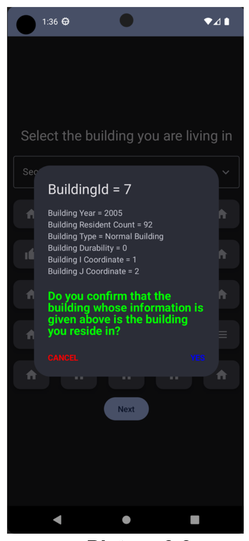
INTERFACE

Android Studio is an IDE (Integrated Development Environment) created by Google, which is specifically designed for building applications for the Android platform. As the official IDE for Android app development, it offers a wide range of tools and features to aid developers in the efficient design, development, testing, and debugging of Android applications. With its comprehensive capabilities, Android Studio serves as a powerful tool for creating high-quality Android apps. An example of the interface of Android Studio can be found in Picture 3.1. Pictures 3.2 and 3.3 display the outputs of Android Studio.



Picture 3.1:The Interface of Android Studio

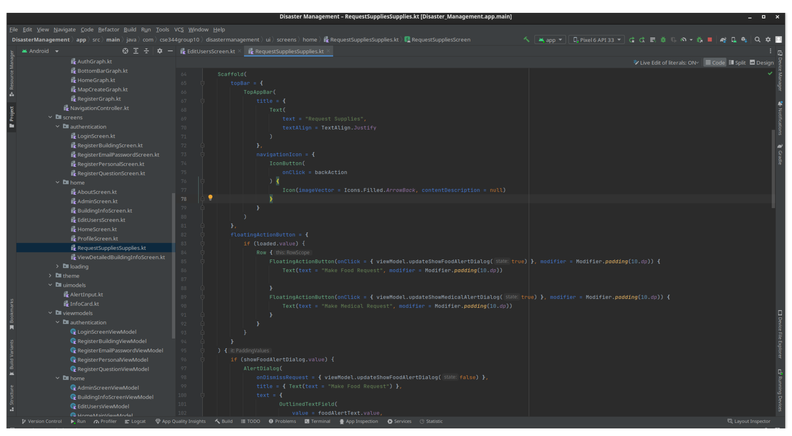




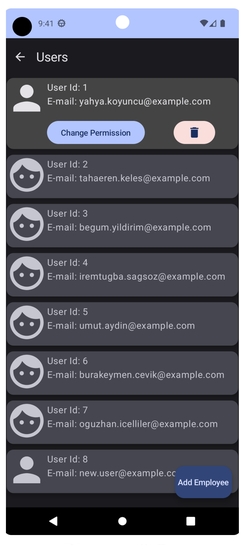
Picture 3.2 The Outputs of Android Studio

Picture 3.3

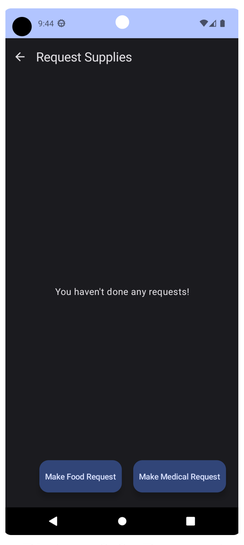
During the devolopment of the mobile app we have used Jetpack compose to build the user interface (UI). Jetpack compose is a declarative UI toolkit where we define the UI layout in Kotlin files unlike traditional android UI devolopment where you define the UI in XML files outside the code. Usage of the jetpack compose toolkit made connecting our business logic with the UI easier.



Picture 3.4:The Interface of Android Studio



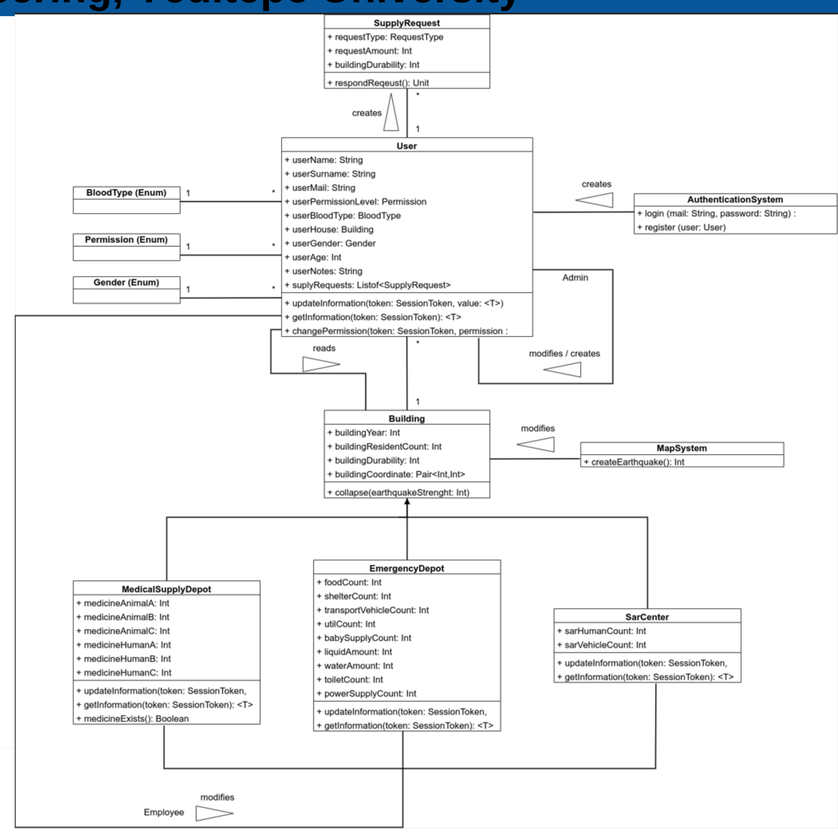
Picture 3.5: Demonstration of users



Picture 3.6: Request Supplies

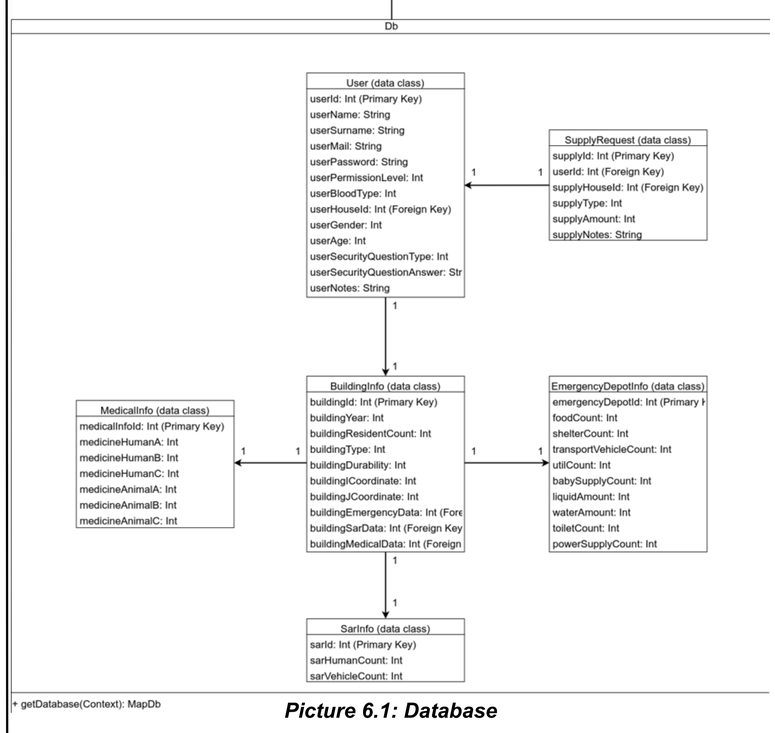
ARCHITECTURES

Picture 5.1 represents the SupplyRequest,User,Building, MedicalSupplyDepot, EmgergencyDepot, SarCenter, classes' structure that we used while making the app.



Picture 5.1: Class Model

DATASET

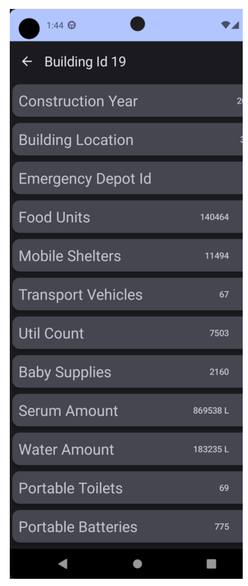


Picture 6.1: Database

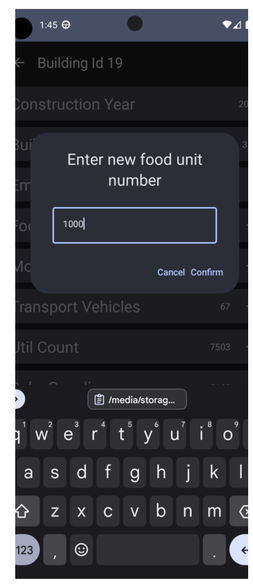
Picture 6.1 represents the data base structure that we store user and the app on the disk. In Picture 6.1 User, SupplyRequest, Sarinfo, BuildingInfo, EmergencyDepotInfo, MedicalInfo entities and their relationships can be seen.

TRAINING, TEST & VALIDATION

Controlled access to search and rescue unit contents ensures security and accountability while allowing public access to unit locations. Furthermore, the system identifies and communicates the locations and quantities of medical personnel required in emergencies, facilitating efficient distribution and management of healthcare resources.Lastly, the system offers access to gathering areas and a building information query service, assisting users in locating nearby gathering spaces and providing basic information about surrounding buildings.The personnel with authority can change what is displayed in the interface, as shown in Picture 4.1. also an example of the interface encountered during the changes can be seen in Picture 4.2.



Picture 4.1:Admin authority



Picture 4.2:Changing the Stock

CONCLUSION

In conclusion, this project is designed to reduce the damage caused during and after earthquakes and to protect people's and animals' lives. The earthquake management system offers a comprehensive approach covering preparation, intervention, and recovery stages for earthquake events before, during, and after.This system is developed to increase the safety of people living in areas with high earthquake risk, minimize damage, and facilitate faster recovery of communities.

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