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Civil Defence Emergency Geo Tagging Smart Mobile Apps

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Article Info
Volume 83
Page Number: 1426 - 1430
Publication Issue:
March - April 2020

Article History
Article Received*: 24 July 2019*
Revised*: 12 September 2019*
Accepted*: 15 February 2020*
Publication*: 14 March 2020*

Abstract

The civil defence emergency smart app had aim to help civilians and overcome all communication difficulties. The data was collected through interview and observations. The collected data was used in the design and implementation of CDE smart apps. There were two parties interacted with the system included the user (civilian) and admin (civil defence). Several website base requirement was considered such as dashboard with notification central, cloud base database to main the records of emergency and map integration on website to detect accident location. The relational database was designed first in order to design Android application and website. The conceptual design was divided into two parts such as data model and process model. The data model (database/GUI design) focused on the data storage in the database and process model (database/GUI implementation) deals on the data process. In future, the application is being developed will be implemented by using some programming languages such as HTML, CSS, JavaScript and SQL queries for database implementation. In additions, the system integration is being developed with civil defence system.

Keywords**:** *civil defense; emergency; smart apps; use case*

1. Introduction

There are thousand people killed and injured on the road every day [1]. Rod traffic accidents are serious public health problem in developed and developing countries [2,3]. In Saudi Arabia, road traffic injuries are increasing exponentially year by year despites advances in safety technology [4]. In additions, critical analysis revealed most unfortunate events had attributed to vehicles travelling with excess speed or disobeying traffic signals which are preventable in the nature [5].

Most of trauma admission in hospital which related to road traffic accidence are young adults especially males. Most frequently injured body regions were head, neck, upper and lower extremities [6]. Saudi Arabia was found to have higher mortality due to road traffic accidents among high income countries (accident to mortality ratio is 32:1 versus 28:1 in USA) [7]. There are 86,000 mortalities and 611,000 injuries recorded over last 2 decades and 7% of injuries contributed to permanent disabilities [8-10].

The civil defense emergency (CDE) is public service for public safety with purpose of helping and ensure the civilian safety by quick respond toward any natural calamity, disastrous situation or accidents caused by human mistakes. CDE requires robust communication infrastructure and responds through several centralized call centers. These call centers might overload with complaint or incident report calls from public and increase chances of call being held and delayed. Non-timely reported also resulted into more damage toward property, equipment and human lives.

The CDE was aimed for quicker and non-delayed, convenient access to civil defense emergency services. In this study, a geo tagging smart mobile application was developed for public to make easy and quick access toward civil defense emergency services. This application helped and ensure the civilian safety by assisting the public reporting an incident with accurate location for the incident.

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Furthermore, this application was covered basic idea, development cycles, flow-chart and diagrams, database development, database management, Graphical Human interface for client and server, activities identification and sequence, processes, procedures which involved in CDE application development.

2. Methodology

The data was collected through interview and observations. The collected data was used in the design and implementation of CDE smart apps. There were two parties interacted with the system included the user (civilian) and admin (civil defence).

Few website base requirement was considered such as dashboard with notification central, cloud base database to main the records of emergency and map integration on website to detect accident location.

The use-care diagram showed graphical overview of system function in term of actors and their functions as use cases. For this application, there were two main actors included the user and admin.

The data was important part of IS solution. There were two primary database were SQL lite and Microsoft Azure. SQL lite was lightweight version of RDBMS running within Android framework. This database was hold information of different locations of civil defence and their coordinates. In additions, SQL lite also hold personal information of user for transmission in emergency period. Meanwhile, Azure was cloud base of database was used to maintain the dashboard updated. There was no need for placed expensive servers on different sites of civil defence.

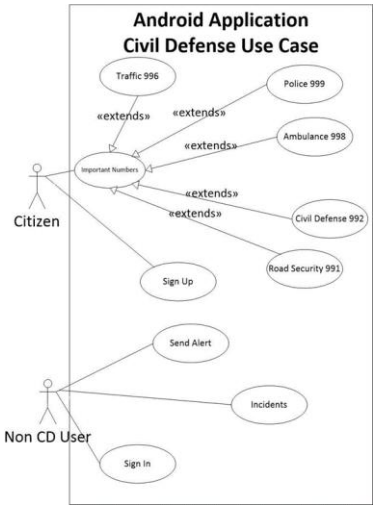

Figure 1: Use case for android.

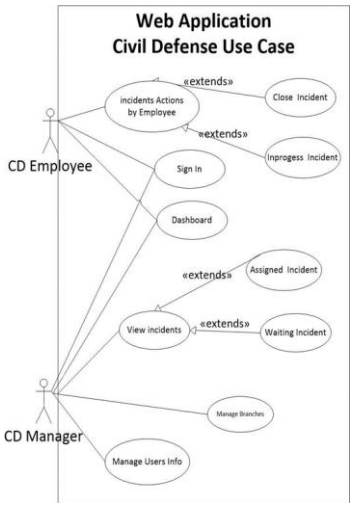

Figure 2: User use case for website.

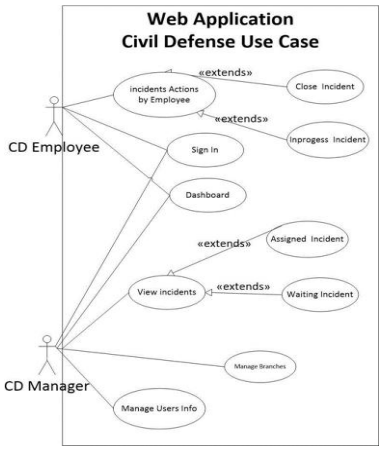

Figure 3: Administration use case.

The data flow diagrams demonstrated relationship between different processes in the system. This data flow diagram also demonstrate the data flows and transferred in certain system. In additions, the data flow diagram also showed input data was converted to an output result through different processes in the system.

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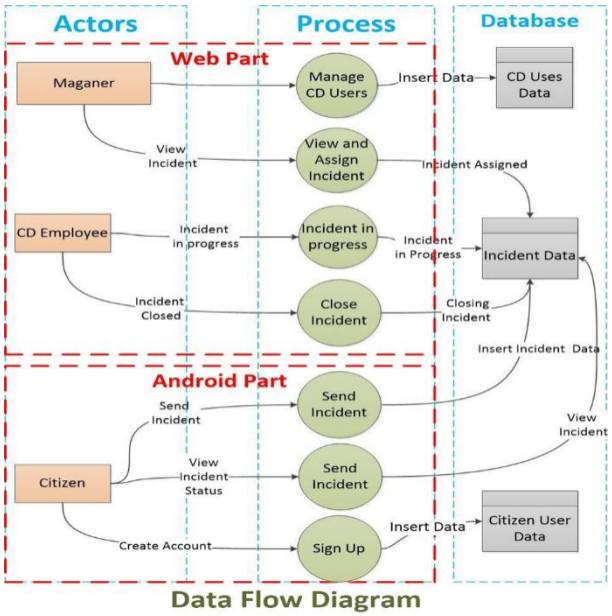

Figure 4: Data flow diagram.

Figure 5 showed overall system context of civil defence emergency smart application and its interaction with various backend systems.

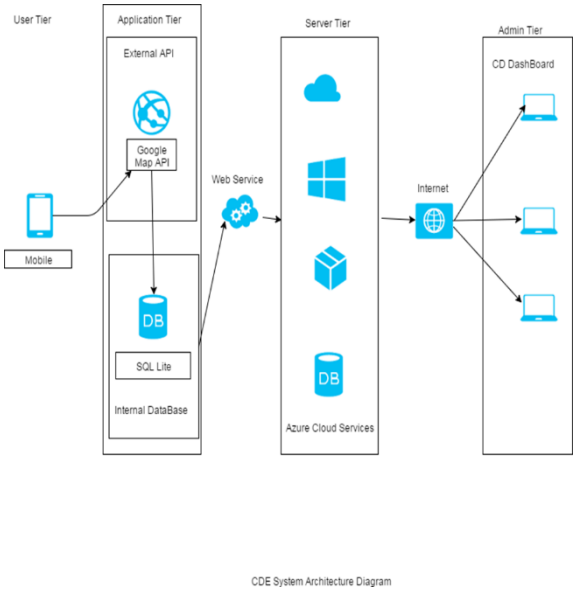

Figure 5: System architecture diagram.

3. Application Implementation

The relational database was designed first in order to design Android application and website. The conceptual design was divided into two parts such as data model and process model. The data model (database/GUI design) focused on the data storage in the database and process model (database/GUI implementation) deals on the data process.

The software development was depended on programming logic to build the system. The web application works on server side principle scripting, main server role was run the web application functionalities and update database dynamically.

Figure 6: Login page.

Figure 7: Incidents page.

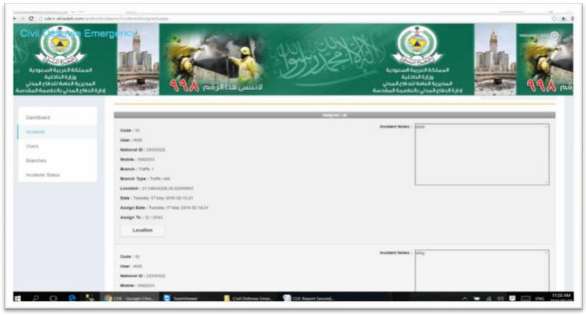

Figure 8: Assigned list page.

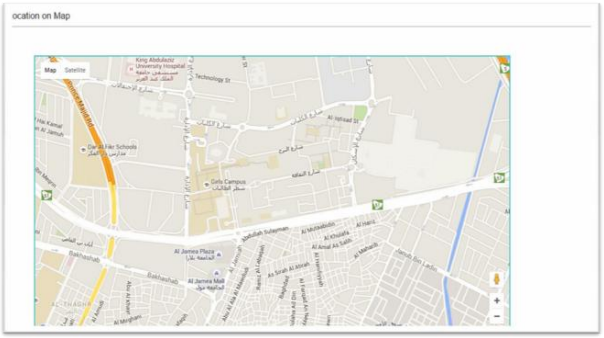

Figure 9: Location page.

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The splash page purpose to display the important numbers and internal links.

Figure 10: Splash page.

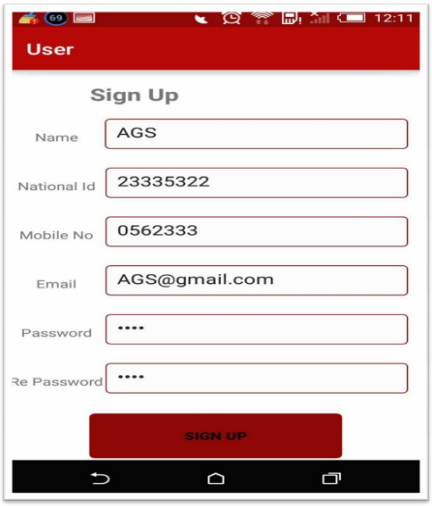

Figure 11: Sign up page.

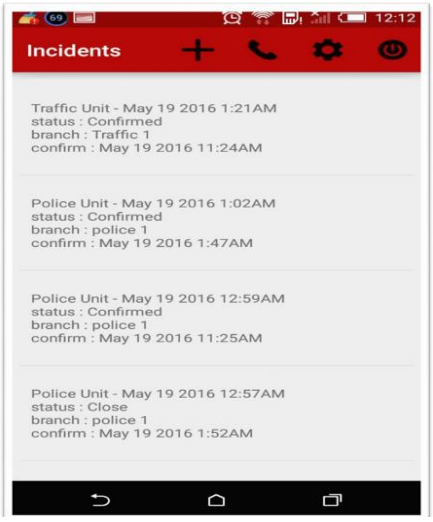

Figure 12: Incident list page.

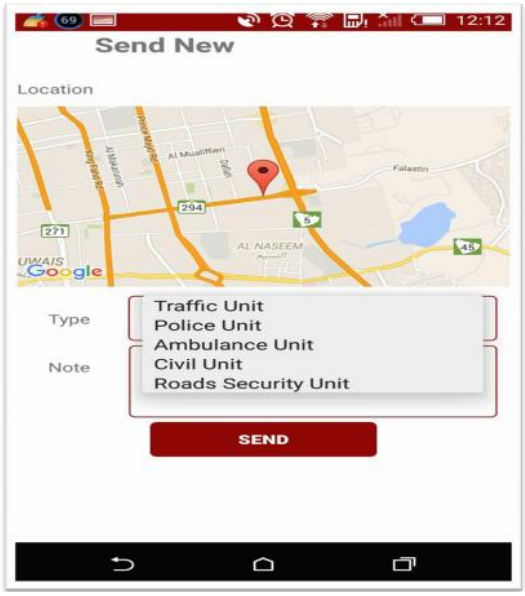

Figure 13: Send incident page.

4. Conclusion

In conclusion, the application was aimed to help people feel secure by ensured better communication infrastructure between civil defence and public. The app features were specifically designed to help affected person to send emergency call to nearest centre with shortest possible procedure. Besides, the application also helps civil defence in located affected location through GPS. In future, the application is being developed will be implemented by using some programming languages such as HTML, CSS, JavaScript and SQL queries for database implementation. In additions, the system integration is being developed with civil defence system.

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