

An architecture of a web based application on emergency services

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Abstract

Emergency never happened by giving any hint. In reality, observing such emergencies and to resolve them is a tough challenge. Emergency services are government agencies whose job it is to respond quickly to emergencies when they arise, including fire-fighters, police, and ambulance service. We need these services which ensure urgent stabilization of the situation and transport to definitive care. In this project, we have introduced a web application which provides an overview of all emergency services and which can be accessible by everyone²⁴. Some of our new features are intelligent detection of heart rate, nearby blood bank and from the police station to the fire department all in one place.*

Keywords: Emergency services, Web application, Intelligent detection, Blood bank.

I. INTRODUCTION

Unwanted trouble and other misery emergencies can happen anywhere without being predicted. Health-related emergencies, accidents, crimes, and fires are that type of trouble where help is urgently needed. The role of emergency services in responding to emergencies is very important as they are responsible for saving the lives and property of victims. Government agencies and private organizations are participating in efforts to rescue those in need [1].

More than half of the world's population today lives in urban areas and in most countries people use smart phones. Smartphone plays the main victim roles as communication and computing media for people's daily tasks. With the use of social media, "netizens" are now able to update their current ongoing activities or social profiles with their sites [2]. This updated information refer signals which arises from the program named social micro blogging which have been proven much more useful in disaster relief and management.

Emergencies mean not only refer to disasters. Smaller disruptive events which can also be known as emergencies as well and require quick and coordinated responses [3]. Emergency response activities are carried out during the period that begins with the detection of an emergency event which leads to the ends with the stabilization of the situation [4]. Traditionally, there are codes that allow you to quickly report emergencies as they occur [5]. Different countries or states have different codes in order to improve communication with the answering service and enable an immediate answer. To use it, a user only needs a telephone line to call the emergency number of the location. However, the limitations of area codes are that they must use telephone lines that may not be available in places with poor network service. A common problem with using phone calls to get help is providing the accurate location of the caller. When an emergency occurs, the types of the emergency and its location are critical to any dispatcher. Unfortunately, getting the incorrect location information can become a hazard when the caller does not know their exact location or the dispatcher can't identify the exact location and information from the caller.

Therefore, the objective of this document is to design and develop a web application for emergency notification of developing countries. The rest of this article is structured as follows: Related work, design of the proposed system, implementation on the proposed system as a mobile application, results obtained and conclusion of this article represents by section 2 , 3 , 4, 5 and 6 respectively.

2. RELATED WORK

In paper [6] The authors provide a unique Smartphone app that attach with the inversion environment called HelpMe. It establishes a new approach to creating network using Wi-Fi to access smart phones to communicate during inversion time. It runs without help of any type of network, on a jump basis it forwards the message smartly and using algorithm of forwarding the message will be sent. Once service is restored, a central HelpMe server will be present which record each and every data around the emergency spot. This data from the cell phone targets to find out the required person.

GreatCall [7] provides us with user friendly wireless services. This system is very similar to a normal nowadays used mobile phone application, but it's just like a one click-button device. There's a service called Five stars which are the used frequently where if someone is any kind of emergency they can speak to the representative directly by pressing help button. The main motto is to get a fast response from a qualified executive over call. In US, it is mainly used as personal device because maximum citizens of US stays at home alone and being noticeable by others is much important.

In an article [8] authors present another application. From the Smartphone, FAD is spread to take in many instructions for primary care for victims / patients. To find proper direction to the next search in the document the Google Maps API with the function of navigation is carried out. So in an emergency this function is activated and the victims / patients are navigated to the nearest hospital using the shortest route.

In US there's a useful mobile application which is widely used. This application is available in both Web and app format. Using this app a person can take a photo of him with site of incident and can upload that to the website so that they can be aware of the situation and be ready for help. So by using this app one help other in need of emergency [9]. ELERTS include: Both-way communication: Once the user gets a notification message of alert on his / her phone. Rescue teams or any other executive and suggest other possible ways to get out of situation like that. Reports: Every user who has this app can send report while in emergency which can contain text and multimedia. Photos: Live photo sharing is a unique feature supported by this app. GPS & Mapping: By using Maps APIs and geolocation, this app relocates the location where the incident happened which leads them to reach the place on time.

Fajardo, et.al (2010) developed "A Mobile Disaster Management System Using the Android Technology" or simply called MyDisasterDroid to ensure the optimized path along with different geo-locations that is used by volunteers and rescuers to serve the people the best possible service while in maximum coverage of area in the minimal of time.[10]

"A Web-Based Incident Reporting System and Multidisciplinary Collaborative Projects for Patient Safety in a Japanese Hospital" developed by K Nakajima, et. al (2016) which is currently used as a necessary tool for patient's safety in every medications or hospitals. By Using a computerized mechanism in small amount such as different healthcare machine was successful in including physicians more in the reports, where some of them involved in more than 20% of reports. The complained incidents results in involvement of professional groups who takes strong action on restrictions of high-risk drug storage areas and the establishment of the Clinical Engineering

Department of the Central Administration of Medical Devices; Apart from this reporting different incidents and having an quick response to resolve the issues reviled as a result we have encounter many barrier in delivering safety protocol or programs for patients, which can be resolved through a web based system that simplifies the procedure for reporting and sharing the information [11].

3. PROPOSED WORK:

In our proposed work, we offer a web application that can be accessed from anywhere at any time. Our work presents the remote HelpX server which can guide and inform the actual authority according to the needs of the users that they mentioned in the HelpX server, then this message is passed on to the authority and forced them to take the action immediately necessary for users in difficulty. When we are faced with such problem, we just click on our apps and type in the important field and then save it to HelpX. Now HelpX reads the problem and analyses it, then passes this message on to the appropriate authority for them to take the necessary action. Mainly help a collection of all emergency services. Single server that can serves and resolves all emergency issues on time.

To get emergency services, the person must select the available emergency type they want to use. we consider the person in emergency selected emergency services, in our proposed application the user need to fill up the information to get the list of local hospitals from the accident site (current location of the person) once enter the needed data, which will be saved to the HelpX website and in a short time the emergency will be provided to the person, from the list of hospitals which are available nearby the user will get displayed. This will also be useful for the new person in town and in trouble but does not know the closest and most helpful hospitals, can also get help with information.

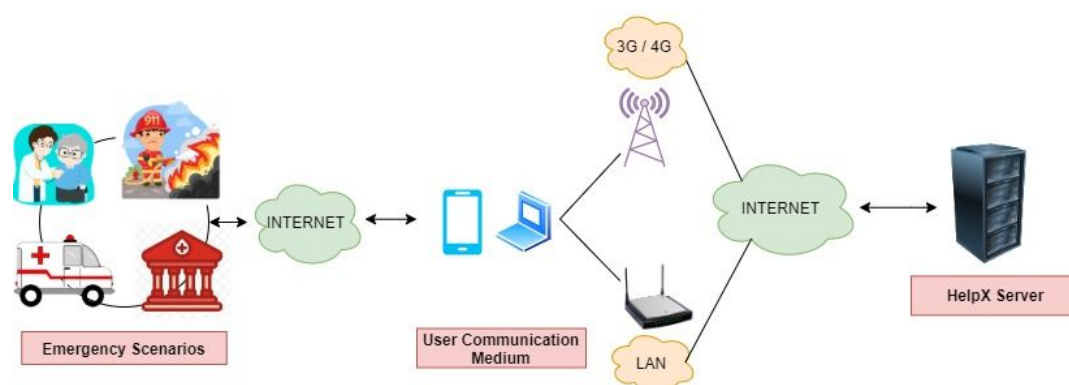


Figure 1: Proposed system Architecture Diagram

In our proposed architecture Figure1, we learn that if someone is in any emergency they can use our proposed web application services to save them and keep the situation under control. Depending on the situation, it is possible to select a service from the menu provided through the Internet using any device such as mobile or laptop that will communicate through local towers or LANs to establish a connection to our server. The token with the details of the user raising a request for the provision of the emergency service has been sent to the main service provider for immediate action.

A sequence diagram is used to show how operations interconnect and operate with one another and the order in which operations occur in Fig. 2.

In Figure 2, we represent the sequence of usage of the web application. At first, the user needs to login for using the emergency services. As soon as the user enters his/her specific credentials into the system and the system confirms if the user exists in the database. When the credentials are confirmed,

the user now can choose which emergency service to use. After selecting the service in the system, the web application responds with the service details and a form is to submit. Once the user submits the form and reports the emergency the system will generate a unique report ID and give it to the user for future references. Then the system will contact the nearest service centre and will proceed to provide the user the specific emergency service. Also the user can change settings in his/her profile while they are logged in to the system.

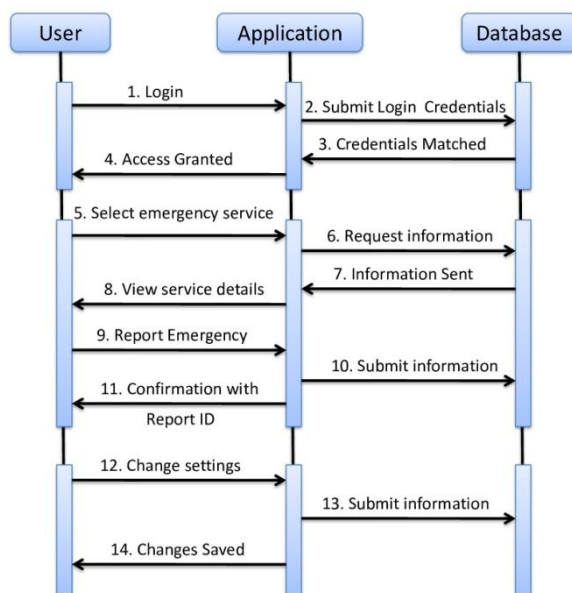


Figure 2: Proposed sequence of diagram for web application

4. EXPERIMENTAL WORK

4.1 Technologies Used:

- PHP – We have used PHP as a backend scripting language as we wanted to make our system fast, robust and easily accessible through web.
- MySQL – In our architecture we have used MySQL as our database as it can handle more data requests at a time than most of the databases.
- HTML5 – HTML is a basic requirement for any web applications. We are using HTML5 as the mark-up language for our web service.
- CSS3 – Every website looks great with a good designing. We have implemented CSS for our web app to look attractive to our client.
- Bootstrap – We have used this library to make our website responsive. It made our frontend tasks really easy and minimized our lines of code.
- JQuery – This JavaScript library is basically used in our project for frontend validation. It will validate the data submitted by the users of our website.

4.2 HelpX development

The HelpX system has a list of emergency services to offer to its users in urgency. Users can easily browse the website to know more about the services. They will need to be registered with us to use it.

It is very short and easy procedure to do the registration. After that one can report there emergency to us (HelpX Server). The report will be consist of the information like user's latitude and longitude, type of emergency etc. As soon as the report reaches the server, the system automatically find out fastest way possible to serve the client using his/her location. After the confirmation of the report, the server will generate a unique report ID to differentiate it from others and will send it to the user for future references. After a service completion, user will get a feedback form, So that we can improve our services in future as per client requirement. As we said earlier, our server will be robust as well as secure, it will make our service faster and reliable and it will be capable of handling a huge number of requests at a time. Also we will keep our website in high maintenance as our first concern will be our clients getting their job done in time of emergency.

5. IMPLEMENTATION OF THE PROPOSED SYSTEM

In our proposed HelpX architecture, which can be seen in Figure 3, we have shown here our HOME page that contains of four different types of emergency services we are providing. Below the carousel we have added buttons to see details of our services and the way we work. There will be options to register and login. New users will need to register first and existing users must log in to use the services.



Figure 3: Proposed Architecture of Home Page

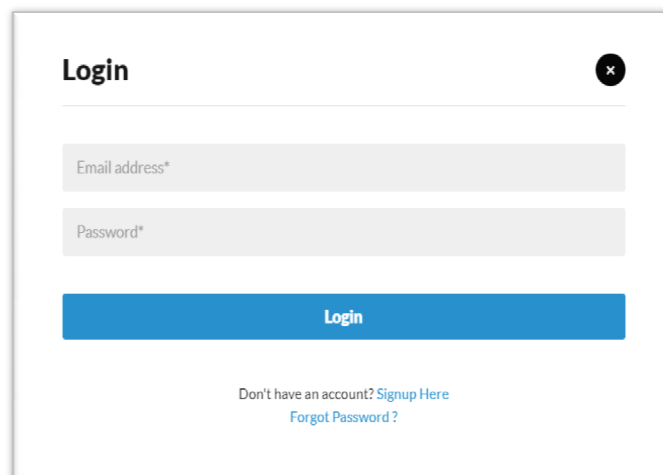


Figure 4: Proposed Architecture of Login Page

In this proposed architecture this is our LOG-IN page where a user can log-in with their credentials which they have signed-up and stored in the database. After log-in they will access their account and get all services. We have also introduced forgotten password option here so that somebody can easily recover it by using Mailing protocol and Mail protocol will be attached with this application. All are directly linked with MySQL Database.

The image shows a 'Sign Up' form with the following fields: Full Name, Mobile Number, Email Address, Password, and Confirm Password. Below the fields is a checkbox labeled 'I Agree with Terms and Conditions'. A blue 'Sign Up' button is positioned below the checkbox. At the bottom of the form, there is a link that says 'Already got an account? Login Here'.

Figure 5: Proposed Architecture of Sign-up Page

In our proposed architecture model we are introduced a sign up page which is generally needed in any application. Here a user need to enter their data to create their personal ID for entering the main page of this application. After signing up user respectively going to their login page and login with their name and password which will directly help them to go to my account page from where they can get their desire help services.

The image is a screenshot of the 'Tata Winger' website. It features a header with the brand name 'Tata Winger' and a price tag of ₹ 10,000 Per Day. Below the header are three icons representing '3453 Reg/year', 'Petrol Fuel Type', and '7 Seats'. A 'Share' button with social media icons is also present. The main content area is divided into 'Vehicle Overview' and 'Accessories'. The 'Accessories' section contains a table with the following data:

ACCESSORIES	
Air Conditioner	✓
AntiLock Braking System	✓
Power Steering	✓

To the right of the accessories table is a 'Book Now' section with fields for 'From Date(dd/mm/yyyy)', 'To Date(dd/mm/yyyy)', and a 'Message' field. A green 'BOOK NOW' button is located at the bottom of this section.

Figure 6: Proposed Architecture of Ambulance Service Page

In this proposed build, this is our ambulance booking or one of the service page where the user can book an ambulance on emergency with the details required. The user can also see some details like the type of fuel needed, the number of seats available and many other details. He can also check details by accessing his account. Apart from that, when booking an ambulance, the name and price for each day are also given.

6. CONCLUSION

So from this Web Application, it's manifest that this application can be saved many lives and might be face problems for inadequate facilities and lack of time. It would be used as a replacement of some rules such as messaging, emailing etc. In future, some types of updates would be added such as Blood bank, ambulance, etc. to make the app more useful. This web application works perfectly in most instances, all the major bugs have been removed before submission. Some situations do exist where the web app fails to work, for example – when we try to recover the password, a connection error will show up as the mailer service is not established. We will try to fix this problem in the upcoming updates. The Web application works properly and ready to use. We will be trying our best for adding new features to keep it updated. This paper provides some useful information that will help the people in any critical situation using their android smartphones or pc by giving any help from the rescue team. As a future scope we have planned to implement emergency IoT devices in our HelpX web application.

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