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A COVID-19 Hospital Navigation System Using Web Technology

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Abstract: Web applications are being used all around the world to create and establish different forms of platforms to both aid businesses as well as users. This paper is focused upon establishing and developing a web application which will help users fight COVID-19. Unlike other platforms which obtain information regarding COVID-19. This application will enable users to register themselves and look for COVID-19 facilities within their surroundings. Once the facilities have been located the user will be able to further book a bed within the hospital while viewing all of the details related to their requirements. This booking request will be further sent to the administrator of the web application who will manage the entire request and ensure that the users are provided the proper details regarding this to ensure that there are no issues in the future regarding their booking. They will also be told a list of preventive measures they must take along with what they may bring for their accommodation. Through this paper a multi-level web application implemented with different phases will be explained.

Key Words: - COVID-19, Optimization techniques, Google Application Program Interface, e-HealthCare, Web applications.

1. INTRODUCTION

With the access to internet by the majority of the population upon planet earth the ability for one to access a particular web application is rather simple [4]. Due to this many people have started to embrace the concept of web applications both comprehend as well as share information. There are millions of web applications online which can be reached with their respective URL's. Over recent times with the establishment of search engines everyone is able to widen their reach upon the millions of web applications online by simply searching for the key words which are required. This paper focus upon the concept of gathering as well as sharing the adequate information an individual may require [3]. Although there are already millions of web applications that are more than capable of performing such a simple task, they are all augmented towards their own individual goals and achievements. This paper relies on making a web application that is ready to assist the soul gain data as well as fight against the recent pandemic 'COVID-19'.

COVID-19 is a plague which has suddenly appeared in the modern world and taken the world down along with it. This plague itself has devastated the earth in such a large manner that

many people believe that it may take us even a few decades to rebuild what has been lost [5]. There were plagues that have taken the world into chaos in the past due to insufficient knowledge. However, with the technology and the knowledge which is being gained over the past few decades, it is astonishing to look at the amount of chaos this plague has been able to cause throughout the world. Although there are many speculations regarding the origin of this plague it is quite evident that it has been a catastrophe on a global scale. Due to this plague not only millions of lives being lost around the world, but also businesses have begun to collapse leading to the downfall of the economy in many nations. It is still not clear whether these countries may be able to recover from such a catastrophic, it will definitely take several years before being able to move forth from this plague. Even with the dramatic medical advancements that have been achieved and the many cures that have been created COVID-19 is still something which humans cannot fight with a cure or vaccine even after a complete year of its arrival. Although the plague has shown to have been controlled all around the world, there are still many medical researchers who claim that this is only the first wave of COVID-19 and everyone may have to fight an even more dangerous strain of this plague in the near future [4]. While most people have decided to fight this plague with medical research for the cure, one of the most crucial faults that is being overlooked by every country around the world during COVID-19 is to maintain and guide their citizens [7]. Due to the inability of countries to comprehend this plague and take proper actions to both help those affected and protect those who haven't been exposed to the plague, due to that now calamities are at such a scale.

2. LITERATURE SURVEY

Using a web application reduces communication delays and expenses, provides a worldwide 24-hours service, reduces transcription errors, supports better auditing due to comprehensive logging of each transaction, and saves time [1].

Web services are being positioned as the technological solution framework for achieving this aggregation in the context of medical aid applications through the Internet [2]. Finding ways to improve the efficiency of identifying and treatment results in medical domain always had a lot of attention [3]. A web application for people very far from the medical centre of the hospitals is very important to achieve a high quality of healthcare [5]. This paper relies on making a web application that is ready to assist the soul gain data as well a fight against the recent pandemic 'COVID-19'.

3. METHODOLOGY

Through the development of this web application, there were various different hurdles. However, this project is split into 4 major sections as these 4 phases of this project are the most crucial parts towards the establishment of this web application. In this section of paper, these 4 phases of this project are discussed in depth to further gain knowledge upon the development and the process upon establishing this web application.

1) Gathering the Project Requirements:

The initial phase of this project focused upon obtaining all the requirements which are required in order to establish this web application. The requirements for this project can

be split into two different categories. The first category will be focused upon gaining a proper understanding upon the type of web application that will be developed. This category will be focused upon ideating the structure of this web application and the various web pages which are used to ensure that all the functionalities are met. One also needs to understand how these functionalities will be included within these web applications linking the various software's that are available in the market. On gaining complete knowledge upon the structure and how this application will be maintained one can now begin to gather those in the second category which consist of the various software's and packages. On establishing an understanding upon the structure of the application, focus should be upon developing and gathering all the software's as well as packages required in the further phases of this project.

2) Establishment of Web Application:

Now on obtaining all the requirements as well as an idea upon this web application, the focus will be upon developing this application from the bottom up. In this phase of this project, HTML along with CSS is used to create the various web pages within this project. One must ensure that each webpage has been neatly established to look outwardly pleasing to both its user as well as administrator. One must also ensure that the traversal between the various web pages is both efficient as well as simple to use, the users should not find any process complicated to use or understand. Furthermore, care must be taken to ensure that all the required images and files used within this application are stored within the same repositories so they can be recalled within the files whenever adequate.

3) Integration with Google Maps:

One of the important functionalities within this project is the ability for the user to use their current location to find nearby COVID-19 facilities. To establish this type of functionality within this application one must ensure that the Google maps API is integrated within the source code so that it can both retrieve as well as display the data. Once the API has been successfully integrated into the source code, the location should be accurately traced and also should be able to add additional hospital to the map by taking access to the applications system.

4) Establishing Connection with our Database with Authentication Levels:

The final phase of this project focuses upon establishing the connection between the web application and with the database. Now that the structure has been created, next step is to create the various tables within the database which will store the entire user's information. This is crucial as this connectivity will play a major role in the authentication levels in order to establish. Once all the tables are created within the data base, one must begin to work upon integrating it with this web application. There are two major functionalities within this website which will focus mainly upon the data within the database. The first function is the user registration as well as login. Once the user is registered, all the details in the form should be successfully established within their respective tables and can be retrieved whenever necessary. The database will also play a major role in the login of the user and establish their level of authentication. The database must be created to understand the levels of this web

application and only show the required information for the secondary user while giving additional functionalities such as the input of new COVID-19 facilities to the primary user.

4. RESULTS

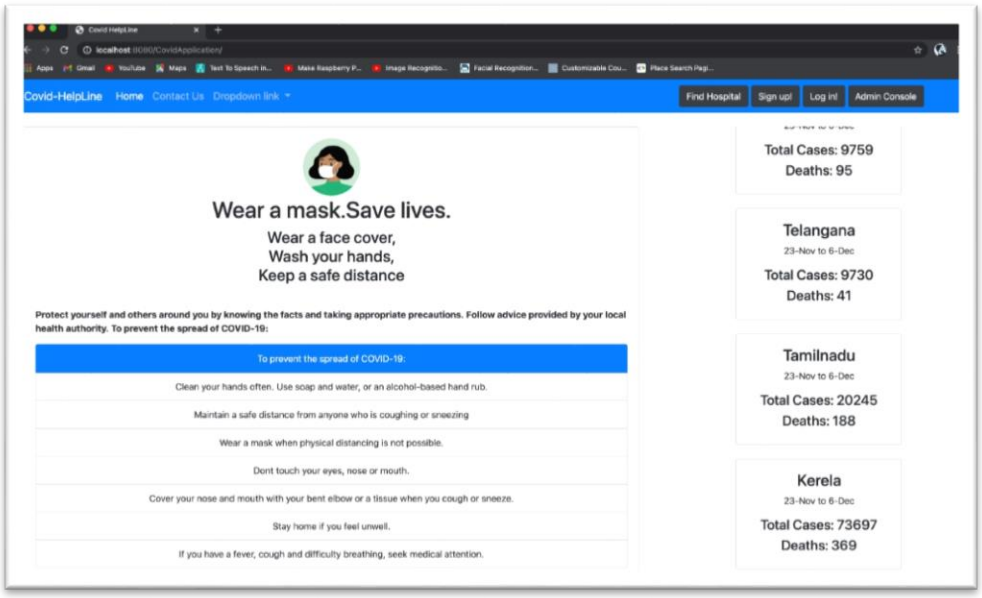

Fig 1: Home-Page of Web Application

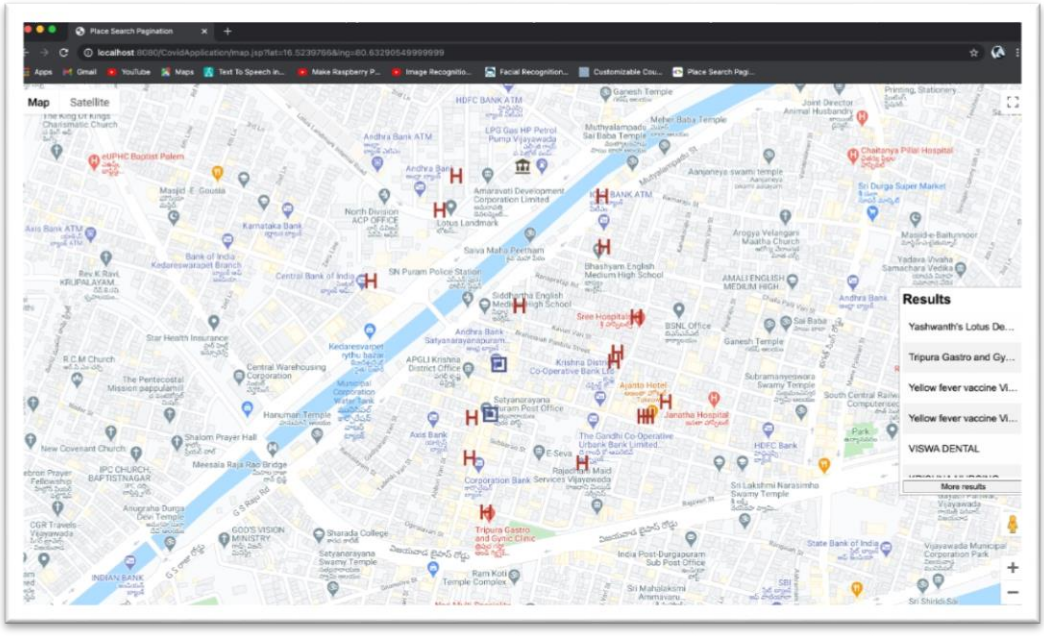

Fig 3: Google Map Integration for Local COVID-19 Centres

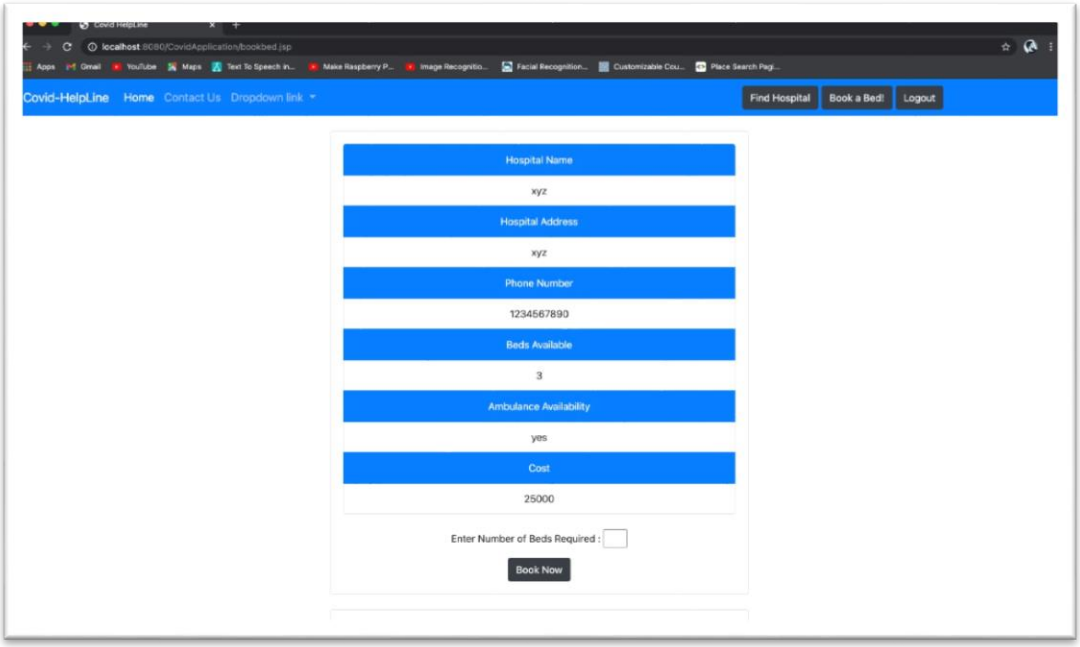

Fig 4: Details Provided for User for Booking a Bed

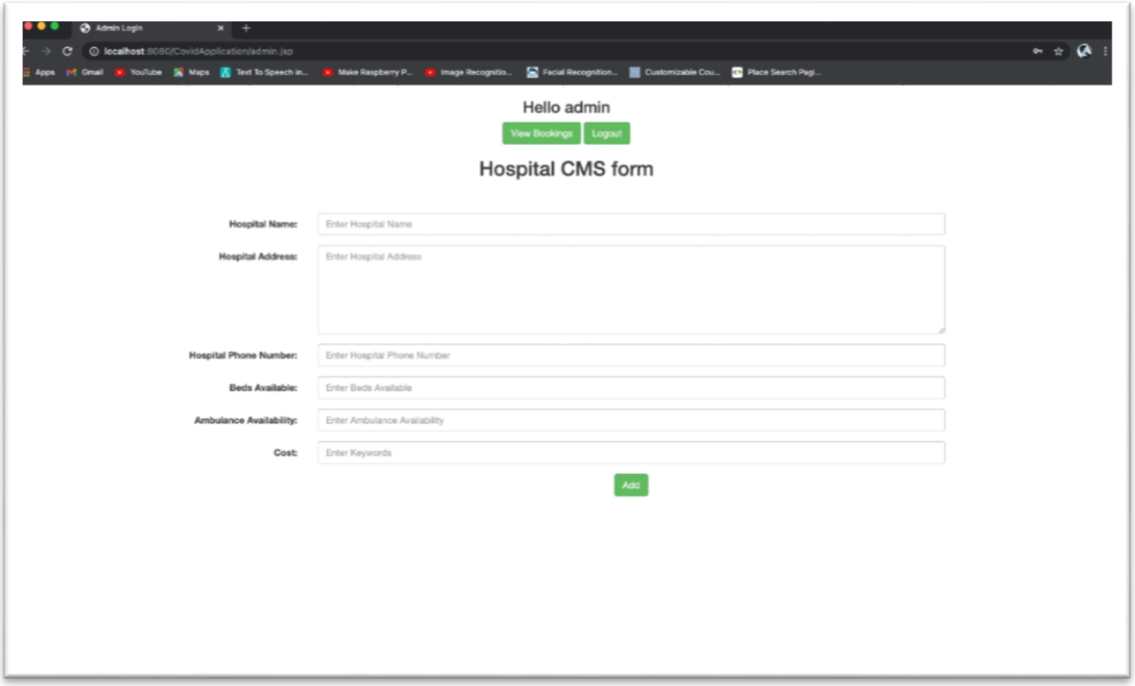

Fig 5: Administrators Form for New COVID-19 Centres

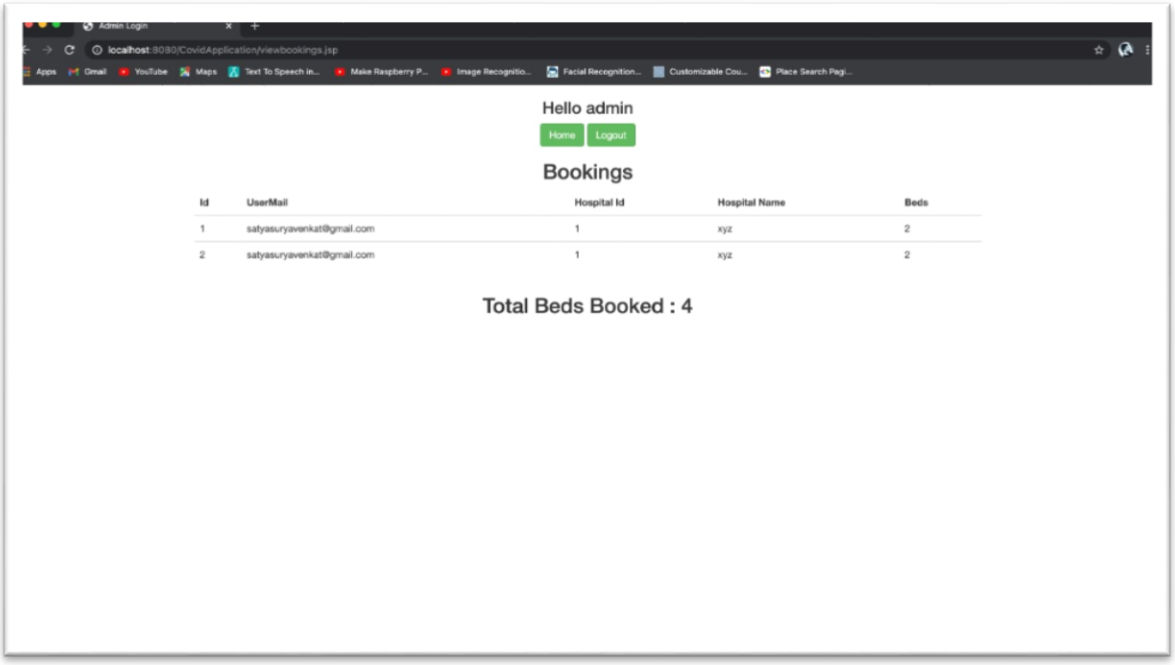

Fig 6: Administrator Overview

5. ANALYSIS

This paper focuses upon establishing and developing a web application which is capable of helping users understand the severity of COVID-19 along with the types of precautions one must take in order to protect themselves from this plague. Various details upon the effects of COVID-19 on a human being and the symptoms one must be ready to face if affected by it will be included in this web application. If one is able to properly comprehend the information which will be shared with them, they will be able to further comprehend whether they are affected or safe from the plague in their current state. Another functionality of this web-application is its ability to guide and assist the user to find the proper COVID-19 centre in their area. This will be accomplished with the user's location being tracked and using this as the source to identify all the registered COVID-19 facilities within its facilities. This web application will be further split into two different levels of authentications with their own unique features.

The two levels of authentication which are established within this web application are the primary administrator level and secondary user level. In order for one to access these levels they must first log into their respective accounts in order to establish the functionalities of their authentication level. Those in the primary level will be able to add COVID-19 centres as well as access all the requests which will be sent form the secondary levels regarding their needs and requirements. Those in the secondary level will be able to book a bed within a local COVID-19 facility. During the booking process they will be given all the information regarding the COVID-19 centre along with the various facilities that have been established within them. These details will include the cost of the facility for their treatment duration along with the availabilities they have such as ambulance as well as daily requirements. Once the user has booked a bed the request will be directed towards the administrator who will take proper care of the user and make all of their requirements possible. The admin will also

immediately get in contact with the user and give them proper guidance on what to do along with what they may bring along with them to the facility. In the following sections of this paper there will be explanation on how a web application is successfully developed along with the outputs that have been obtained successfully.

6. CONCLUSION

Through this paper using different types of software's a functioning web application is created which is capable of helping individuals face to COVID-19. Information is the best weapon to prevent or fight the virus. This web application includes all the information one may require upon the plague along with what they should expect if one is infected along with the types of precautions one must take. This application also has been able to come up with a solution which if used properly within the various countries around the world can drastically change the way to fight COVID-19. Unlike the previous events in which many people were in the blank and unaware of what facilities to go to or begin prevented from approaching a facility due to the fact that they do not treat COVID-19 or lack of medical equipment one will undoubtedly approach the proper facility with this web application. Using this web application, people from the local authorities can also reach out to those which have applied for beds within COVID-19 facilities to constantly stay in touch with them and help them understand how to face the current situations. Although this is just a stepping stone to the large force which has already started to fight COVID-19, with the proper implementation of this web application there will be a reduction in the toll that this plague may have in the future.

7. REFERENCES

[1] Holzinger, Andreas & Errath, Maximilian. (2007). Mobile computer Web-application design in medicine: some research-based guidelines. Universal Access in the Information Society. 6. 3141.10.1007/s10209-007- 0074-z.

[2] L. Kuang, Y. Zhang and X. Han, "Access Control Policies for Web Services in Medical Aid System," 2009 International Conference on Information Management, Innovation Management and Industrial Engineering, Xi'an, 2009, pp. 167-170, doi: 10.1109/ICIII.2009.199.

[3] M. Mazorchuck, V. Dobriak and D. Chumachenko, "Web-Application Development for Tasks of Prediction in Medical Domain," 2018 IEEE 13th International Scientific and Technical Conference on Computer Sciences and Information Technologies (CSIT), Lviv, 2018, pp. 5-8, doi: 10.1109/STC-CSIT.2018.8526684.

[4] C. Mwesigwa, "An e-Health tele-media application for patient management," 2013 IST-Africa Conference & Exhibition, Nairobi, 2013, pp. 1-7.

[5] M. Gangwar, R. S. Yadav and R. B. Mishra, "Semantic Web Services for medical health planning," 2012 1st International Conference on Recent Advances in Information Technology (RAIT), Dhanbad, 2012, pp. 614- 618, doi: 10.1109/RAIT.2012.6194599.

[6] A. S.Billis,A.Batziakas and P. D. Bamidis, "Towards a Quantified-Self web application for seniors' selftracking,"2015 International Conference on Interactive Mobile Communication Technologies and Learning (IMCL), Thessaloniki, 2015, pp. 315-317, doi: 10.1109/IMCTL.2015.7359610.

ISSN 2515-8260 Volume 07, Issue 10, 2020

[7] C. Perva I. Perva, D. D. Rusu, N. Andreescu and M. Puiu, "Web based application for improving the education quality of young medical genetics healthcare professionals," 2017 E-Health and Bioengineering Conference (EHB), Sinaia, 2017, pp. 161-164, doi: 10.1109/EHB.2017.7995386.

[8] S. Tsumoto, "Web based medical decision support system: application of Internet to telemedicine," 2003 Symposium on Applications and the Internet Workshops, 2003. Proceedings., Orlando, FL, USA, 2003, pp. 288-293, doi: 10.1109/SAINTW.2003.1210174.

[9] M. Hayashi, H. Horii, I. Kweon and T. Yoshida, "A Medical Information Management System Using the Semantic Web Technology," 2008 Fourth International Conference on Networked Computing and Advanced Information Management, Gyeongju, 2008, pp. 75-80, doi: 10.1109/NCM.2008.43