A Novel Healthcare Application for Hospital Bed Booking System

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ABSTRACT- With the increasing need for more better way to consume a service during the Covid-19 pandemic, as well as the need of more flexible way to register for the beds in the hospitals, this paper introduces a Web Application which is shaped to provide easy access to book a bed in the hospital for the needy. This framework connects the consumer to an online interface to register themselves and book a bed on their name and hospitals to register themselves and provide their details providing a time efficient way to ease the efforts. It securely maintains the data of users in a database working behind.

KEYWORDS- Medical Tool, Hospital Bed Booking

I. INTRODUCTION

A. Overview

The Hospital Bed Booking system includes the registration of Hospital and Visitors on their respective portals and logging in with their credentials where hospitals can add up the number of beds available with them with the price and visitor can have the access to the details of beds available in hospitals of their own respective city. Both Hospital and visitor need to provide a username and password each time they log in. All the data entered by the hospital or the details of the visitor booking the bed stores into the database which is then used to display the essential details on portal. It's a user-friendly interface and is developed for making the process time efficient. Data is well protected and passwords are encoded into hash-codes for an additional security from security breaches. The Hospital Bed Booking system enables hospital to provide their service to a large number of people online and provides visitors an easy solution to their problem.

B. Motivation

The motivation arrived to make the access to the hospital beds easy in the Covid-19 pandemic situation where it's risky to move out and look for beds from here to there. It's often hard to find a bed in time when urgently needed due to increasing number of cases of Covid-19 and this resulted in the development of this web application to make the process easy and flexible.

C. Objectives

- To deploy an idea of an E-system for Hospital Beds Booking.
- To introduce a portal for the consumers to book a bed when in need through Internet.

II. RELATED WORKS

Table 1: Related Works

Author's Name	Aim	Key Features	Application Used
Herrera, Diego, Carlos Troya Altamirano, and David Gaus [1]	Challenges of healthcare system.	Descriptive Data	Understanding the cause and need.
Gershengorn, Hayley B. [2]	Challenges of healthcare system.	Descriptive Data	Understanding the need.
Ramdas, Kamalini, Faheem Ahmed, and Ara Darzi. [3]	Foresee for the updated	Application of virtual platform.	Future Scope
Professor David Heymann, Emma Ross, Jon Wallace [4]	Information about future possibilities of a pandemic.	Prediction of pandemic	Foresee the coming possibilities of a pandemic in future
Christi A. Grimm [5]	Results of a National Pulse Survey	Substantial challenges	Referring idea

III. METHODOLOGY

The study is qualitative and descriptive in nature and most of the data is based on secondary sources of survey data. Such an approach is adopted in the study as the area of research is very broad and sources of data are also spread across multiple locations. To arrive at a conclusive idea of the larger picture on E- Hospital Bed Booking and Information systems, analysing the existing survey data and specific successful case studies of HIS would give a better result in finding the answers to the research question framed.

IV. PROPOSED APPROACH

In the present scenario, due to pandemic it's an obvious danger out there to visit each hospital to look for a bed. It is mostly time consuming and risk involving, consumers may need to visit multiple hospitals in case beds are not available in places. And standing in a queue and making a rush and crowd is an obvious risk. To overcome such unwanted risks, we designed an E-Hospital Bed Booking System.

A. Flow

The methodology of this project consists of two modules: Hospital module, Visitor Module. At one end, Hospital needs to register themselves with its credentials and a unique Username which has never chosen before and need to login with the same credentials to go up to the homepage where it can update the number of beds available and their price and hospital can look up in the Occupied section all the registrations of beds made in name of their hospital. On the other end, Visitors need to register themselves in their own portal with their credentials and a unique Username and need to login using same data to lookup to all the hospitals available in their city with the respective beds available. Visitor can book a single bed in any hospital by either making the payment online or by selecting to pay on visit. The model follows one bed with one ID approach. Visitors can see their booking receipt in Booking section which will be needed to confirm the bed at the hospital premises. Visitors has an option to delete their booking in Booking section. Fig. 1 shows the flow of the functioning of the web-application.
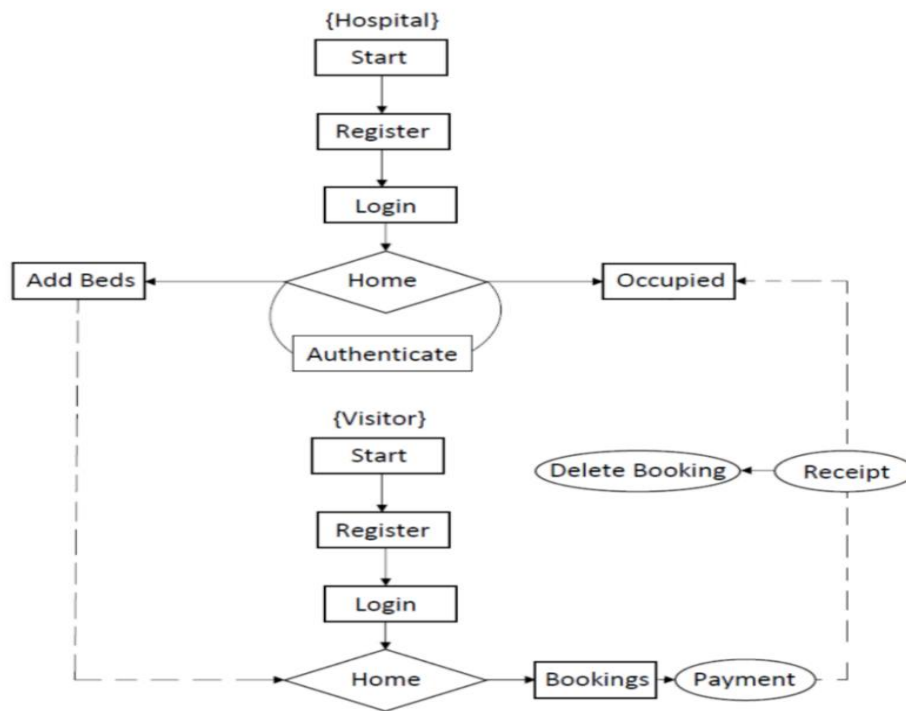

Figure 1: Flow Chart of the functioning of the web-application.

Description

Hospital
B. Step 1 – Start
C. Step 2 – Registration of Hospital
D. Step 3 - Login
E. Step 4 - Authentication
F. Step 5 – Add Beds, Price
G. Step 6 – Check on Occupied page if registrations are available.
H. Step 7 – Logout
Visitor
I. Step 1 – Start
J. Step 2 – Registration of Visitor
K. Step 3 - Login
L. Step 4 – Confirm booking and check on Booking page for the receipt.
M. Step 5 – Make payment(online/offline)
N. Step 6 – Delete booking if needed.
O. Step 7 – Show receipt in hospital campus
P. Step 8 – Logout

V. IMPLEMENTATION DETAILS

A. Technology used

Q. Database: PHP
R. Dynamic Environment: PHP
S. Structure and Design: HTML, CSS

B. Software Requirement

T. Browser: Chrome, Edge
U. Software: XAMPP

C. Hardware Requirement

V. Dual Core Processor
W. 1-GB RAM
X. LAN or WI-FI

VI. RESULT AND DISCUSSION

Struck by the covid-19 pandemic, many organisations foresee the possibilities of the outbreak of more pandemics in far future [4], making it more necessary to come up with a solution like online booking of beds in hospitals to prepare to avoid the chaos in advance. The study resulted in understanding the need of the implementation of an online bed booking system like this.

Fig. 2 shows the initial web page displaying the options to enter in as Hospital or Visitor, and consists Feedback and About Us and Admin directions in the navigation bar.
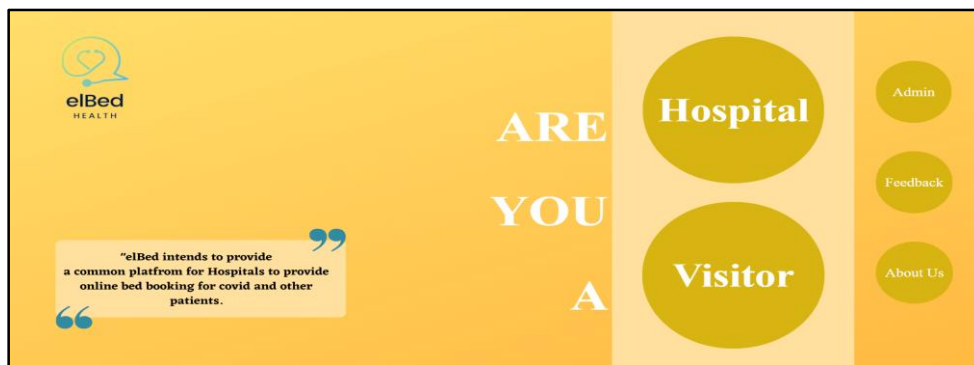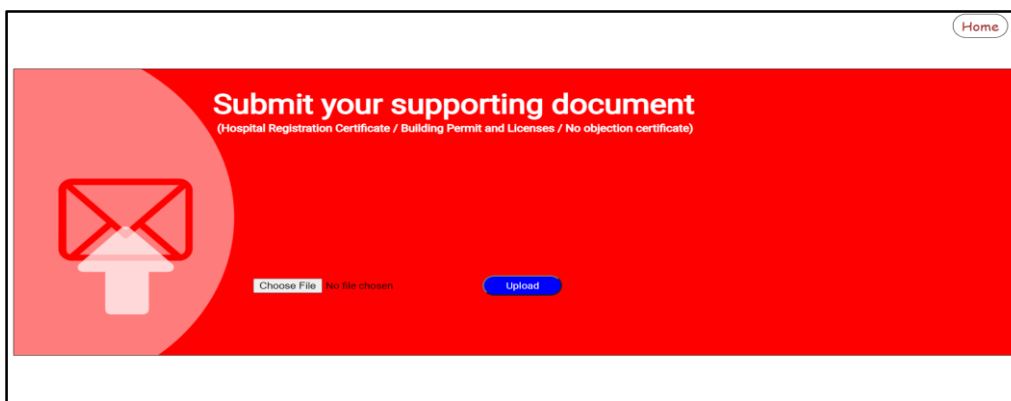

Figure 2: Initial web page

Fig. 3 shows a registration page for hospital. All the credentials are stored in database in backend with password encoded in hash codes.
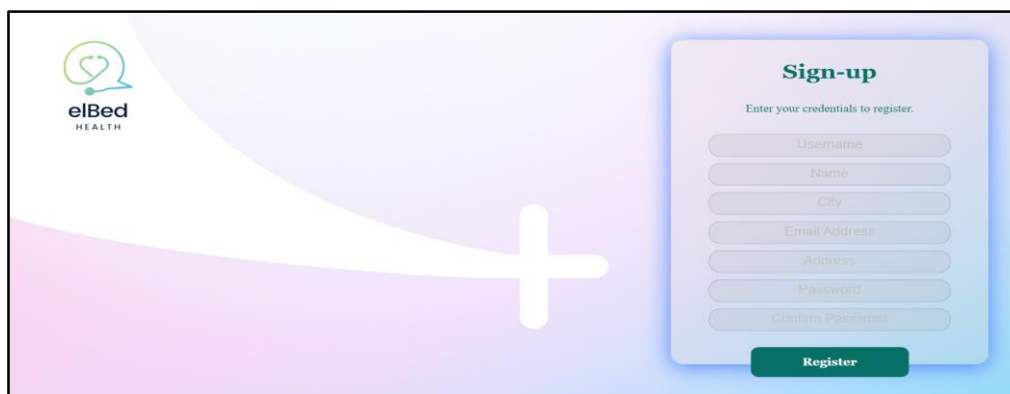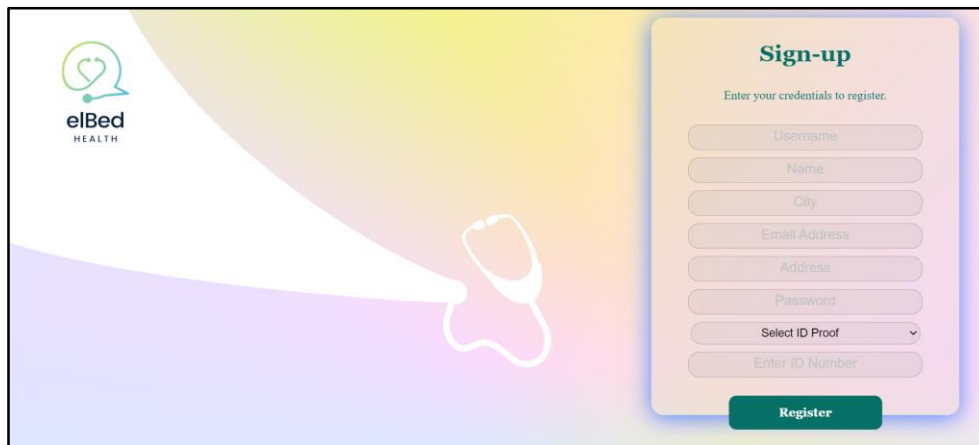

Figure 3: Registration page

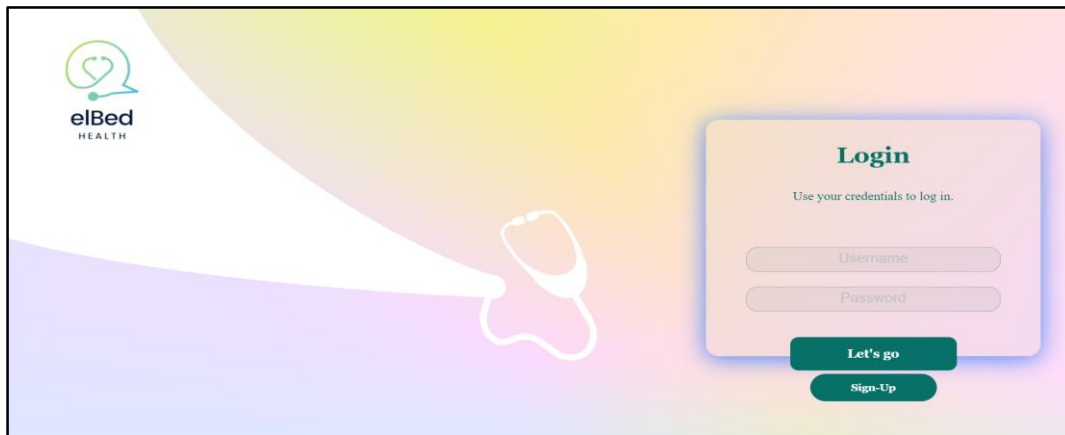Fig. 4 shows a login page where hospitals can use the credentials provided to log in to their respective portal.
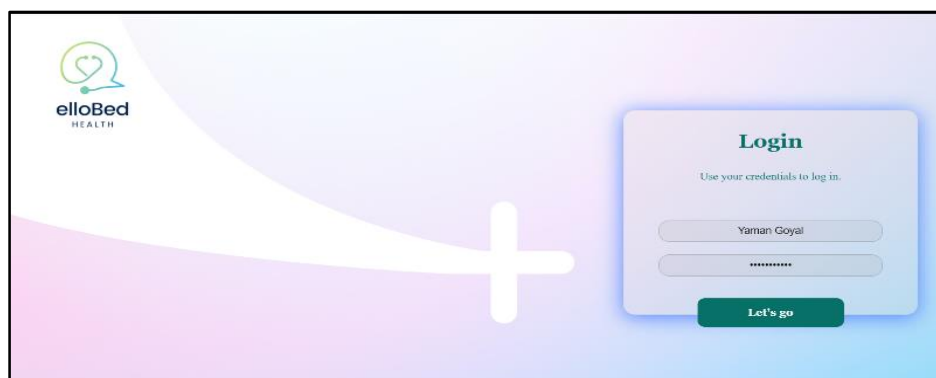
Figure 4: Login page

Fig. 5 shows the homepage for the hospitals where they can add more bed, delete bed, fix a price and go up to the Occupied page or Authentication page by clicking in navigation bar.
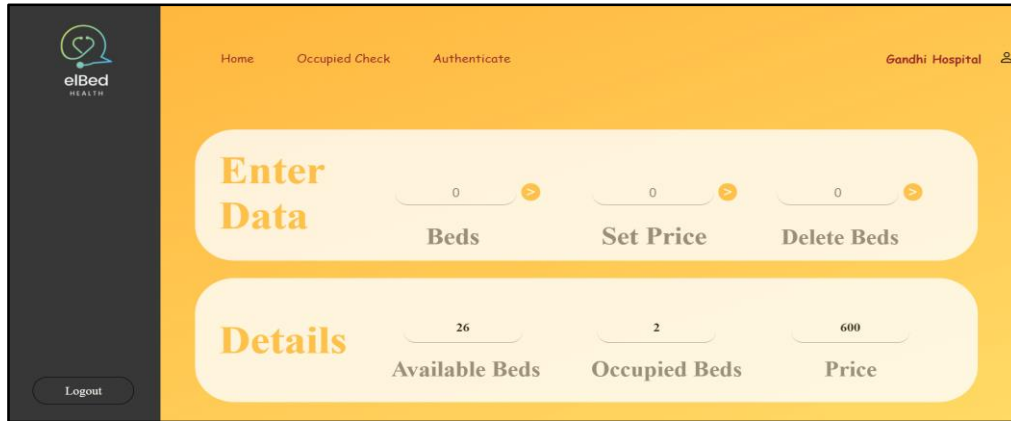
Figure 5: Home page

Fig 6 shows the Occupied page which consists all the bed registrations made in their respective name, and hospital can free up any occupied bed if needed.

Figure 6: Occupied page

Fig. 7 shows the Authenticate page where hospital needs to upload a supporting document to get themselves authenticate.

Figure 7: Authenticate page

Fig. 8 shows the registration page for visitors. All the credentials are stored in database in backend with password encoded in hash codes.

Figure 8: Registration page for visitors

Fig. 9 shows a login page where visitors can use the credentials provided to log in to their respective portal.

Figure 9: Login page where visitors can use the credentials provided to log

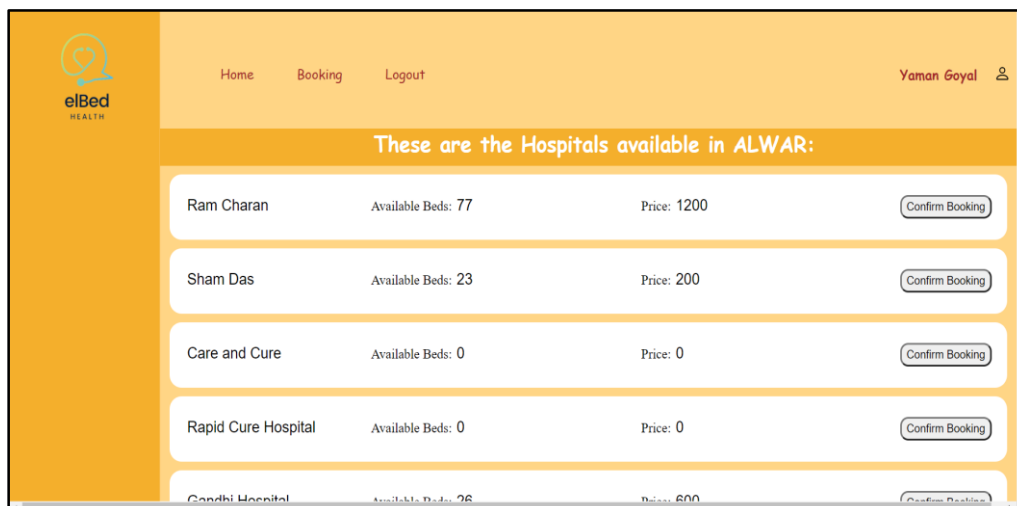Fig. 10 shows the homepage for the visitors where they can find all the hospitals available with beds in their respective city.

Figure 10: Homepage for the visitors

Fig. 11 shows the Booking page which consists the receipt of the registration with hospital name, address and ID, visitor can delete the booking if needed or can proceed to pay online.
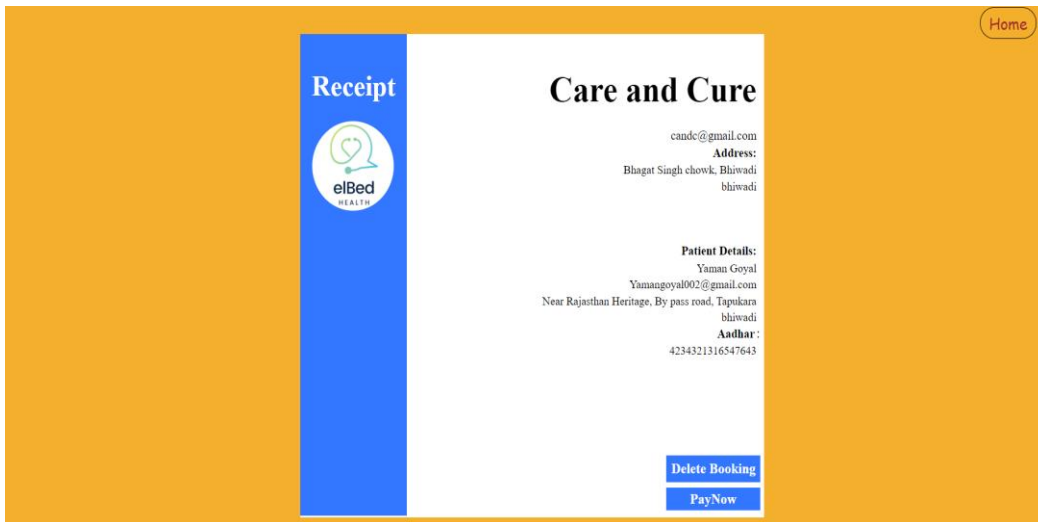
Figure 11: Booking page

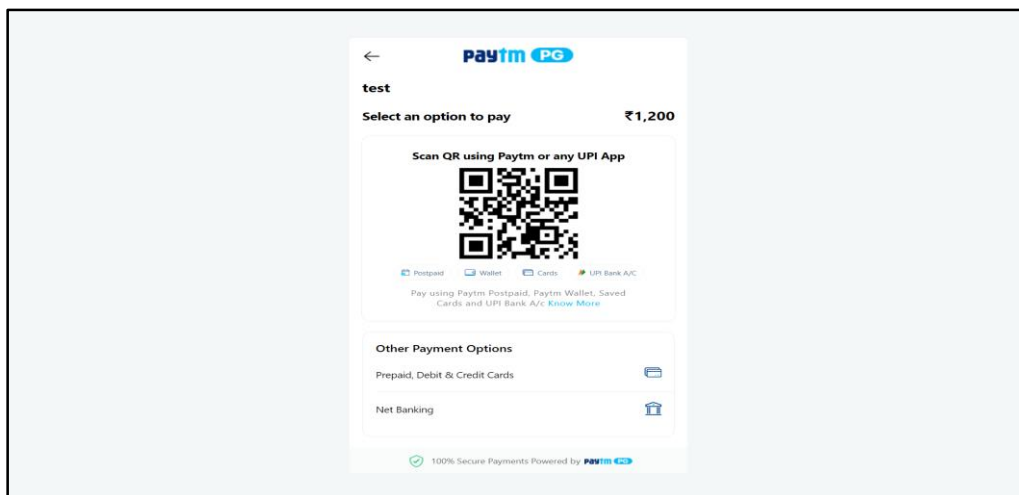Fig. 12 shows the payment portal for the visitor to pay for their booking.
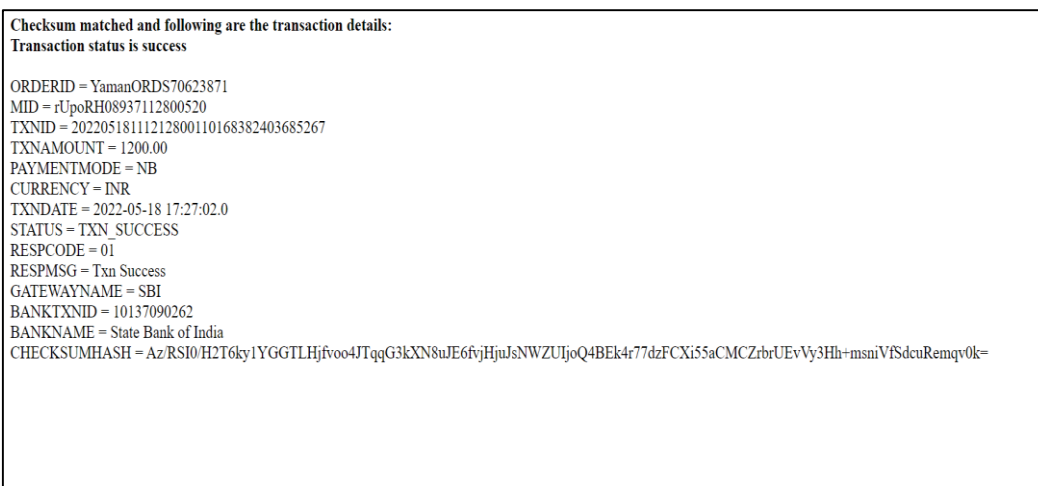

Figure 12: Payment portal

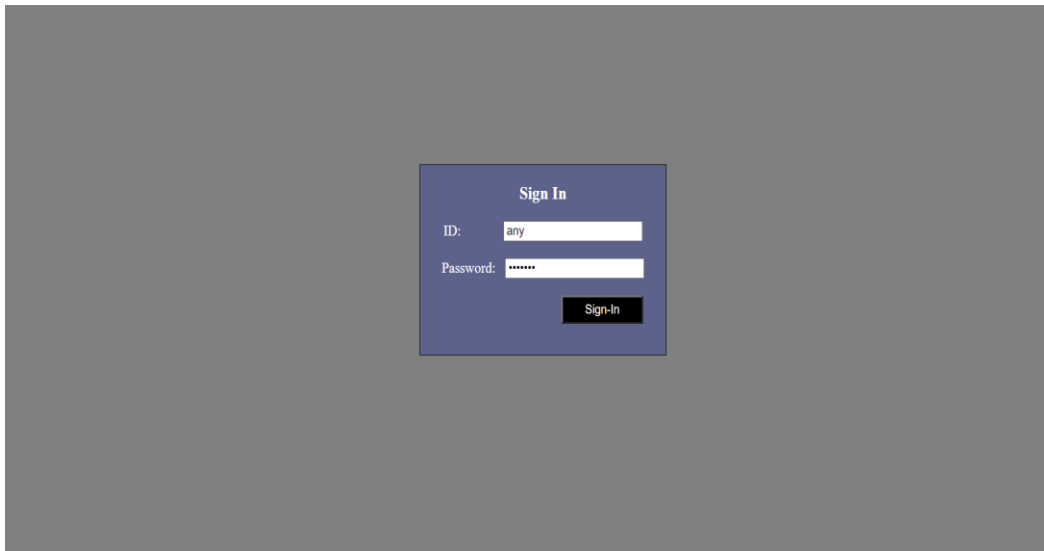Figure 13: Shows a successful transaction consisting of all the details.

Figure 14: Shows the login page for Administrators.

Figure 15: Shows a successful transaction consisting of all the details.

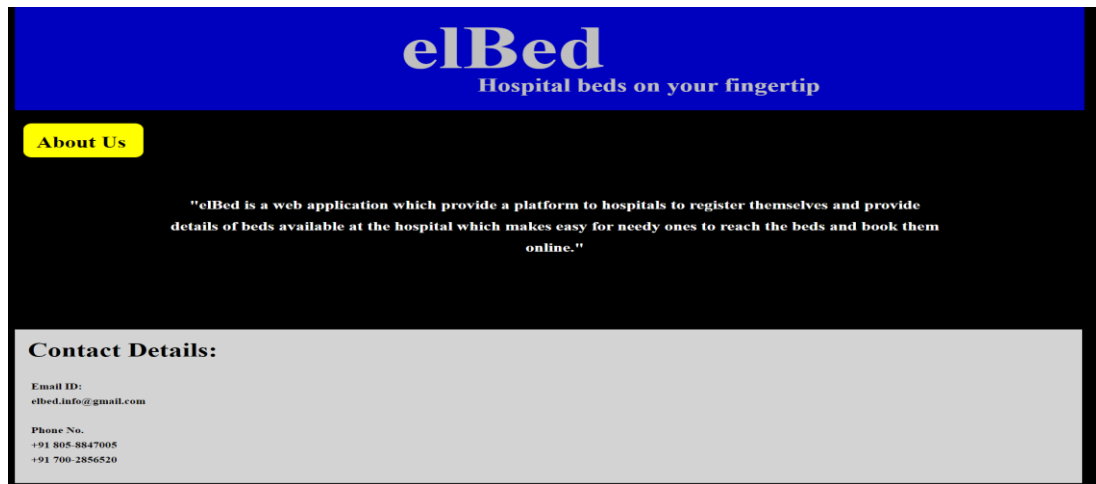Figure 16: Shows a feedback form for users to provide their feedbacks

Figure 17: Shows the about us page containing the site intro and contact details.

VII. CONCLUSION

By implementing this web-based application, a visitor will be able to book bed in a particular hospital in a very easy and efficient manner. This system will be very effective in reducing the chaos outside the hospitals for booking a bed for the incoming visitors. It will also provide a slight benefit for the visitors in terms of cost as the hospitals won't be able to charge more for a bed. The hospitals can check for their current bookings in their hospital. It will help to reduce many manual efforts, time and cost.

REFERENCES

[1] Herrera, D., Altamirano, C. T., & Gaus, D. (2021). COVID-19in Ecuador: imported control strategies without context in a challenged healthcare system. The American Journal of Tropical Medicine and Hygiene, 104(2), 414.

[2] Gershengorn, Hayley B., et al. "The impact of high-flow nasal cannula use on patient mortality and the availability of mechanical ventilators in COVID-19." Annals of the American Thoracic Society 18.4 (2021): 623-631.

[3] Ramdas, Kamalini, Faheem Ahmed, and Ara Darzi. "Remote shared care delivery: a virtual response to COVID-19." Lancet Digital Health 2.6 (2020): e288-e289.

[4] https://www.chathamhouse.org/2022/02/next-pandemic-when-could-it-be

[5] https://oig.hhs.gov/oei/reports/oei-06-20-00300.pdf