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Online Auditorium & Turf Booking System

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Abstract: *Ease of usage is the motive behind digitization in the 21st century. The basic human needs of food, shelter and clothing are now a click away and can be accessed with convenience through websites & apps like Zomato, Airbnb, Flipkart and Myntra to name a few. As of 2019, the world population is 7.6 billion people of which 4.66 billion are active internet users worldwide[1] and the number is increasing every day. As we have paved our way towards the digitisation of the country, we realised that everything starts small. So, we looked around in our college and found that there is one aspect that could be upgraded to an automated software system and that's how we came up with the idea of an Online Auditorium & Turf Booking System. Our website allows a user to book a turf or auditorium, multi-select the time slots, customize the bookings with addons, has a secure payment system with multiple payment options and a page to manage all the successful bookings. And all of this is available through simple user registration. Thus our framework increases the robustness of the booking procedure and at the same time simplifies the process, paving way for convenience, accessibility, reliability and feasibility.*

Keywords: *Online booking, Express, React, NoSQL, MongoDB, Stripe API.*

I. INTRODUCTION

The web applications in our daily life are growing and there is an increasing trend in the utilization of online booking apps which helps in reducing manual work and offer user comfort[2][3][4]. At the moment, our college auditorium and turf booking system are in such a way that the user has to be physically present to finalise the reservation and make payments. To simplify and speed up this process, we came up with an online system wherein the user can book the auditorium and turf along with some additional features like purchasing add-ons and completing the payment on the web app itself. This empowers self-reliance and increases efficiency. Currently, the traditional method of keeping records requires storing a hard copy of appointments. Retrieval of records in such cases and the need for large storage facilities are some serious limitations of manual record-keeping. BookIt is a website that will be used to make online booking of auditorium and turf present at K. J. Somaiya Institute of Engineering and Information Technology (KJSIEIT).

It uses the latest web technologies like React for frontend, Express server in the backend, NoSQL MongoDB database for storing data and stripe for secure payment gateway. It can be used by our college students and professors as well as outsiders to book the Auditorium and Turf. To conclude, BookIt will reduce the time spent for making a booking, the digital process will eliminate the need to physically check records, filtering and managing data will become easier and our project will increase the overall efficiency of the current system.

II. BASIC CONCEPT

BookIt allows users to book an auditorium or a turf. Let us now take a tour of the website and showcase the user experience behind it. When a user lands on the website for the first time, he/she will want to have a visual idea of the auditorium and turf. That is why we have a carousel which has few pleasant photos. Next, we present the extraordinary features of the venue and later on, we show the location of the college.

Once the user is convinced that this is what they are looking for, they can then proceed to Login/Sign Up. A simple process helps them to create an account after which, they can advance to book the required venue. On the booking page, first and foremost, the user has to select the date and type of venue (auditorium/turf).

They can then proceed to pick through the available time slots. Our system is designed in such a way that it only shows the available slots of the particular date which user had chosen initially. Next up, they can choose from the available addons like parking, catering, music system, etc. if they want[5].

Last but not the least, they will now get a summary of their preferences albeit auditorium or turf along with selected addons and once they verify it, they can advance to checkout. The checkout page uses a secure Stripe API and users can make payment using a credit or debit card. After a successful payment, the user is displayed a summary of their purchase and the same is visible on the Profile page.

III. FUNCTIONALITY

- 1) *UI*: First, we sketched the wireframe of the website after which the prototype and designing were done on Adobe XD[6].
- 2) *Frontend*: The frontend of this online booking system is made using the Reactjs UI library[7]. It helps in making a single-page application (SPA) that ensures fast rendering[8]. React-Bootstrap with Styled Components has been used for the styling of the web app. To give the user a feeling of content being loaded, we show a loader using react-loading-skeleton after which the backend sends the data using Axios. The state management of the cart has been done using use-shopping-cart and the checkout is managed by Stripe payment system.
- 3) *Backend*: The API system is made using Express, a lightweight Nodejs library[9]. The data is saved on a NoSQL MongoDB database. To welcome the user after signup, we send an email using the Sendgrid service. For the security and privacy of the user, we use bcrypt to hash the user's password in the database[10][11], and session authentication is done via JSON web tokens[12].

IV. BOOKING FLOW

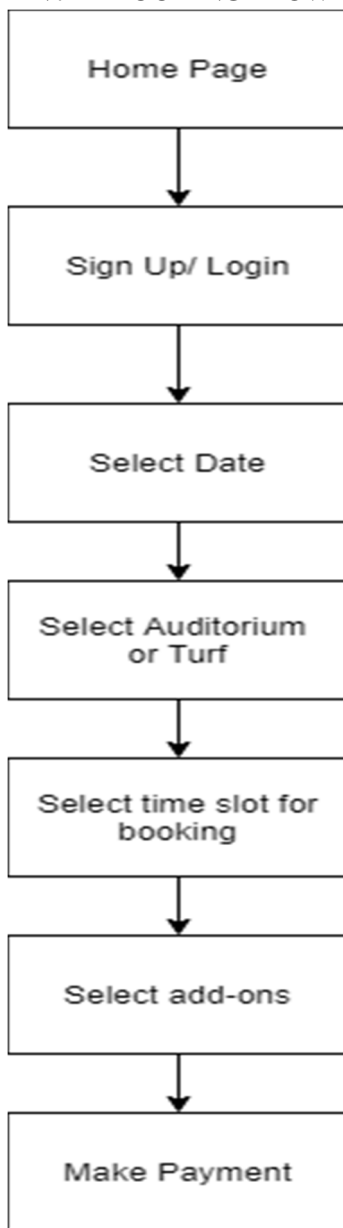


Fig. 1: Booking Flow

V. RESULTS & ANALYSIS

- 1) **Home Page:** This is the home page. Users will land on this page first for making any bookings. This page has a SignUp and Login button. No booking will be allowed without a login hence making sure that there is no unauthorized or unnamed booking made. This page will also have an Alert bar which will give any important alert or any important notice. The home page also contains images of the turf and auditorium from different angles for the user to see how the turf and auditorium look. It also contains details about the turf and auditorium and other required details about the college, turf, and auditorium.

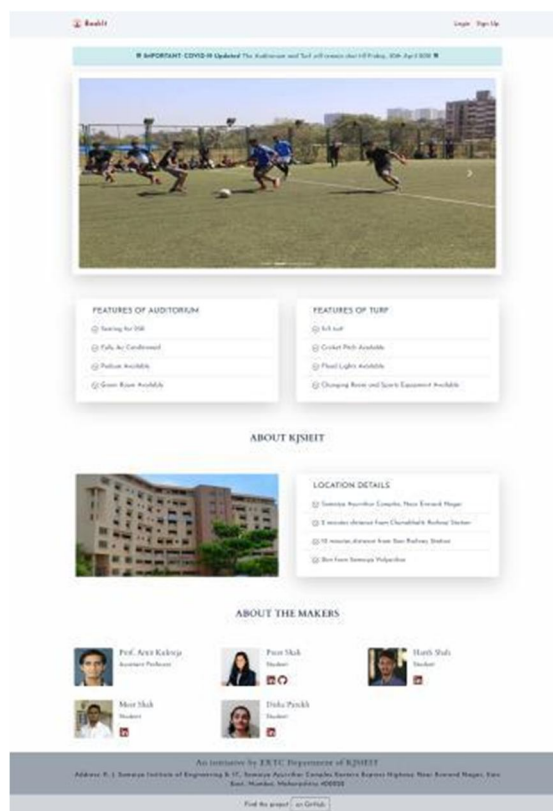


Fig. 2: Home Page

- 2) **Sign up Page:** This is the page where a new user will register themselves. Users will have to enter certain details like email ID, full name, age. Users will create a password also which will be used to login next time they visit the website. Once a user registers themselves, he/she will receive a welcome mail from BookIt.



Fig. 3: Sign Up Page

- 3) *Login Page*: This page will be used for the users to login into BookIt. Users will log in using the email ID and Password they used while signing up at BookIt sign-up page.

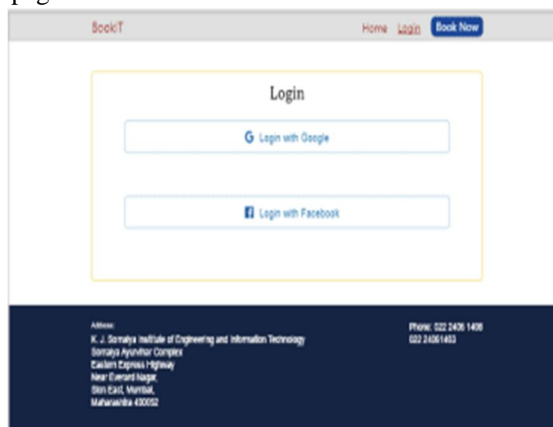


Fig. 4: Login Page

- 4) *Book now Page*: This page will be available only when a user has successfully logged in. This is the first step for booking an auditorium or turf. Users need to select the date for which they want to make a booking and then select if they want to book the auditorium or turf.



Fig. 5: Book Now Page

- 5) *Time Selection Page*: Once a user has selected the date and Auditorium/Turf, he/she will reach this page. Here the user will select the timing for their booking. The slots are 1 hour each. If a slot is already booked it will not be visible on the page. Hence for the user, all the slots on the page will be available for booking. The user can select one or more slots.

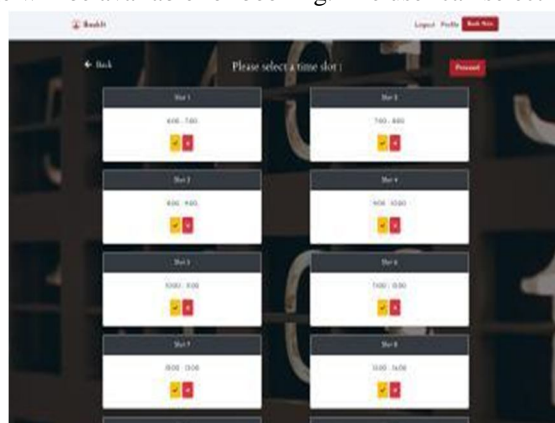


Fig. 6: Time Selection Page

- 6) *Add Ons Page*: After selecting the time slot for their booking, a user will reach this page. Here BookIt offers different types of add ons to their booking. The user may or may not use these add ons. The add ons include parking space, green rooms, catering services, etc.

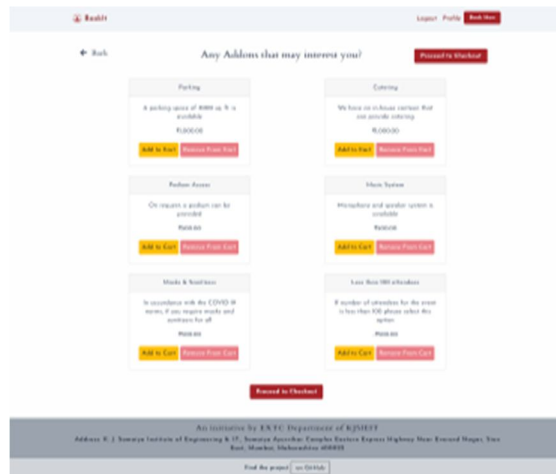


Fig. 7: Add Ons Page

- 7) *Checkout Page*: This is the last page before the user makes the payment. Here the summary of the booking is given. Users can remove add-ons they have selected over here or can also clear the full cart.

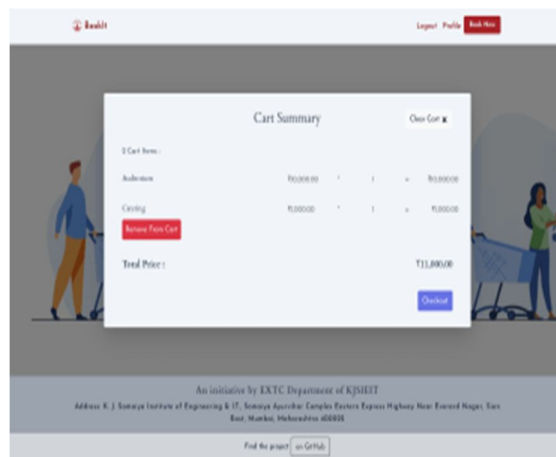


Fig. 8: Checkout Page

- 8) *Payment Page*: The user makes the payment for their booking over here. Stripe payment system is used. Users can make payments using Credit Card or Debit Card.

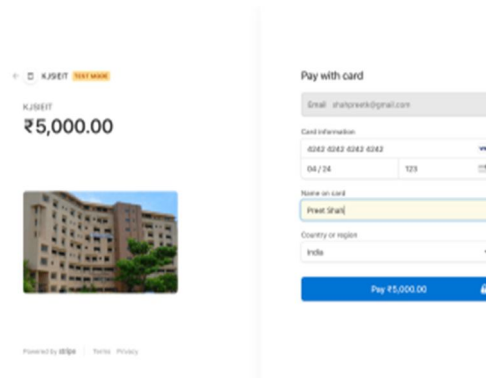


Fig. 9: Payment Page

- 9) **Profile Page:** This page will give the booking history of the user. The booking history will be categorized on the basis of Auditorium or Turf. History will be divided into past bookings and scheduled bookings.

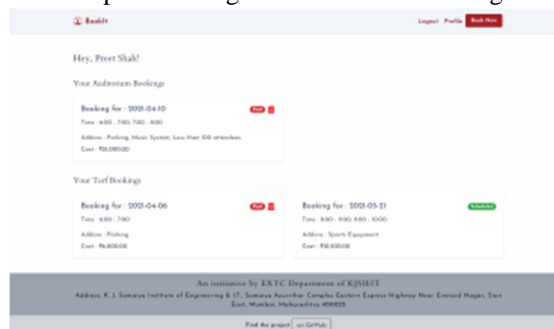


Fig. 10: Profile Page

VI. CONCLUSION

This paper introduces a new online booking system for the users to book the Auditorium as well as Turf according to their requirements. Our website will help the users to check the availability and also book the auditorium or turf facility provided by our college. So it would be very helpful for everyone and make the process easier[13].

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