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DEVELOPMENT OF AN ONLINE AND TRAIN BUS TICKET RESERVATION SYSTEM FOR A TRANSPORTATION SERVICE INMUMBAI (QUICK-BT)

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Abstract— **The use of bus traveling is a large growing business in India and other countries; the manual use of bus reservation is presently very strenuous and also consumes a lot of time by having to stay on a long queue. For this reason, an efficient system is to be proposed in this paper to ease the issue of bus reservation amongst indigenes within the country. The system is a web – based application that allows visitors to check bus availability, buy and pay bus ticket online. In order to achieve the design, Bombay Electric Supply & Transport (BEST) was chosen as a case study because of its strategic importance. Structured Systems Analysis and Design Methodology (SSADM) will be adopted. In this paper, the proposed bus reservation system was developed using Extensible Hypertext Markup Language (XHTML), PHP Hypertext Preprocessor (PHP), Structure Query Language (SQL), Ajax, Cascading Style Sheet (CSS), and JavaScript. This document gives formatting instructions for authors**

I. INTRODUCTION

The Online Bus and Train Ticket Reservation System is a web-based application that allows visitors check bus ticket availability, buy bus ticket and pay the bus ticket online. This system is established for all the home/office users after gaining access from the administrator. Online Bus Reservation System provides bus transportation system, a facility to take tickets, cancellation of tickets and different types of enquiry which need an instant. This system can be used by the users in performing online reservation via internet for their all business purposes. Users can use this program directly on their websites and no need to install it. The use of bus and train traveling is a large growing business in India and other countries; hence bus reservation system deals with maintenance of records of each passenger who had reserved a seat for a journey. It also includes maintenance of information like schedule and details of each bus and train along with traintiming.

Now to book local train or bus in Mumbai, we need to stand in queue and take long and then tsake ticket but it takes lot of time. The main purpose of this project is to automate the manual procedures of reserving a bus ticket for any journey made through Bombay Electric Supply & Transport (BEST) and for train booking we can book from indian railways. This system is said to be an automatic system and customers can select seats by themselves. Specifically, objectives of this project will consist of:

i) Providing a web-based bus and train ticket reservation function where a customer can buy bus and ticket through the online system without a need to queue up at the counter to purchase a bus ticket.
ii) Enabling customers to check the availability and types of busses online as well as train timing. Customer can check the time departure for every bus and train through the system.
iii) Easing ticket payment by obtaining a bank pin after payments is made to the various designated banks or also we have QR code through which customer can pay through UPI
iv) Ability of customers to cancel their reservation.
v) Admin user privileges in updating and cancelling payment, route and vehicle records.

II. METHODOLOGY

A. Description of Proposed System

The system is very simple in design and to implement. The system requires very low system resources and the system will work in almost all configurations. It has got following features:

- It will ensure data accuracy.
- Records will be efficiently maintained by DBMS.
- Availability of seats can be enquired easily.
- Passengers can also cancel their tickets easily.
- Minimum time needed for the various processing.
- It will provide better Service.

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B. Requirement Specification

Requirement Specification a complete description of the behavior of a system to be developed and may include a set of use cases that describe interactions the users will have with the software. In addition, it also contains non-functional requirements. Non-functional requirements impose constraints on the design or implementation (such as performance engineering requirements, quality standards, or design constraints)

C. Functional Requirements

Functional requirements define the specific functions that the system performs, along with the data operated on by the functions. The functional requirements are presented in scenarios that depict an operational system from the perspective of its end users. Included are one or more examples of all system features and an enumeration of all the specific requirements associated with these features.

- The system shall incorporate mechanism to authenticate its users
- The system shall verify and validate all user input and should notify in case of error detection and should help the user in error correction
- The system shall allow sharing of files in the system
- The system shall allow quick messages to be exchanged without face to face interaction

D. Non-Functional Requirement

Non-functional requirements address aspects of the system other than the specific functions it performs. These aspects include system performance, costs, and such general system characteristics as reliability, security, and portability. The non- functional requirements also address aspects of the system development process and operational personnel. It includes the following:

- The system shall be user friendly and consistent
- The system shall provide attractive graphical interface forthe user
- The system shall allow developer access to installed environment
- The system shall target customer base

E. Architecture of The Proposed System

This process supports existing infrastructure requirements and provides specific recommendations for hardware and network solutions based on existing and projected user needs. Application requirements, data resources, and people within an organization are all important in determining the optimum hardware solution. It is represented using a three tier architecture that comprises of user interface, process management and Database Management System (DBMS). It shows the components of the system, the services they provide and the way they communicate to bring about the system functionality.

F. User Activities

The most common activities carried out by user are illustrated bellow

- The user can search for the seat
- The user can sign up/do registration with the system
- The registered user can login to the proposed system
- The user can check for the available seat
- The user can also do payment for the seat on the proposedsystem
- The user can print receipt on the system as evidence ofpayment

G. Administrator Activities

- The administrator will verify all the registered user, andallow them to login to the system
- The administrator gives acknowledge to any payment usermade on the system
- The administrator can add vehicle, driver and generatereport as well

H. Data Flow Diagram

Data flow diagram is used to show the flow of data from external entities into the system. It is used to represent the physical and logical area of an information system. The data flow diagrams are pictorial or graphical representation of the Online Bus Ticket Reservation System. The data flow diagram covers all the processes and data storage area, which takes place during any transaction in the system.

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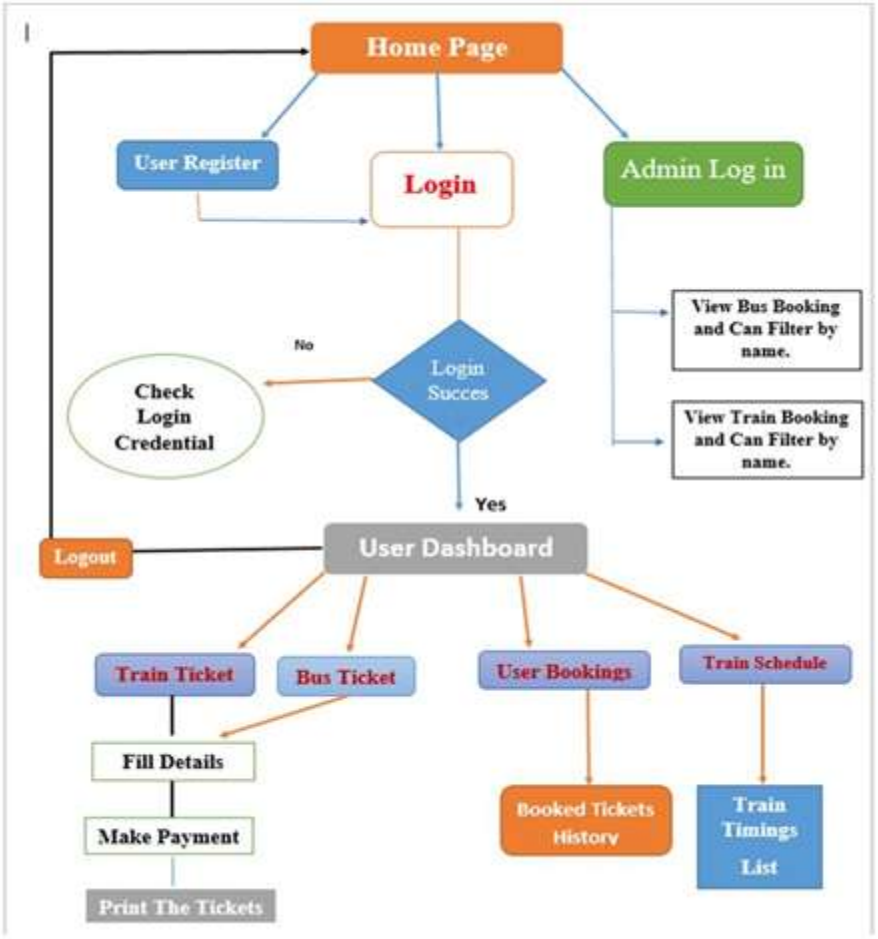


Fig. 1 A data flow diagram of our application

The above Fig. 1 is workflow diagram of website we have created separate panels for both the admin and user. Users can register by providing their details and, upon successful registration, they can log in using their specified user ID and password. Admins can also log in using their admin ID and password. Once logged in, users can book train and bus tickets.
Additionally, if users require any assistance regarding their bookings or any other related issues, they can interact with our chatbot, which is available on our website.

III. RESULT AND DISCUSSIONS

The proposed bus reservation system was developed using Extensible Hypertext Markup Language (XHTML), PHP Hypertext Preprocessor (PHP), Structure Query Language (SQL), Cascading Style Sheet (CSS), and JavaScript. The relational database was adopted because is made up of a group of logically connected tables (data that has a relationship to other data). Therefore, establishing a relational database management system is a great way to increase data integrity, efficiency, ask questions, sort and filter data, provide stronger security, and share information, ease of use, data independent among others. Some user and database table are shown in thissection.

A. Database Section

In this section we all will get database tables and in this application we have use 5 tables which are shown below.

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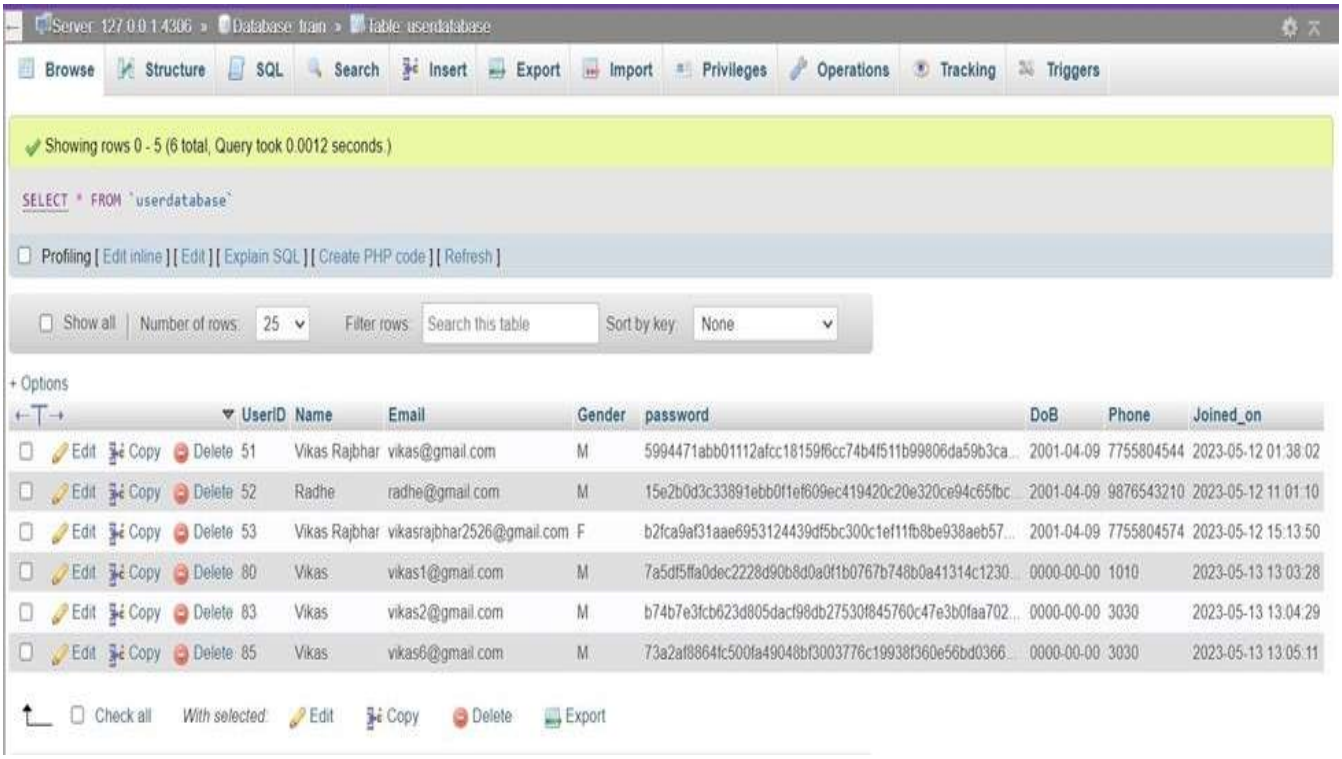


Fig. 2 Users Table

In Fig. 2 we can see table, which is use to show all registered users in the database.

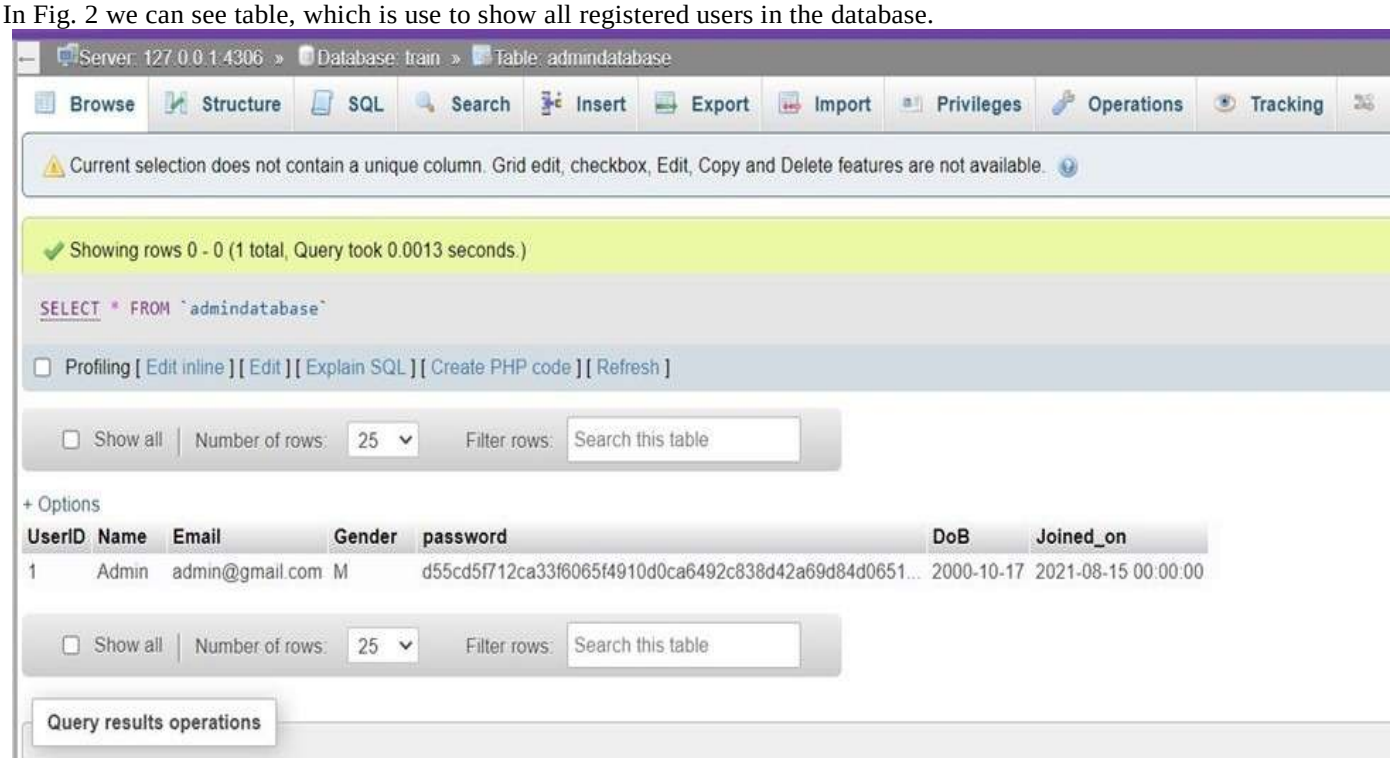
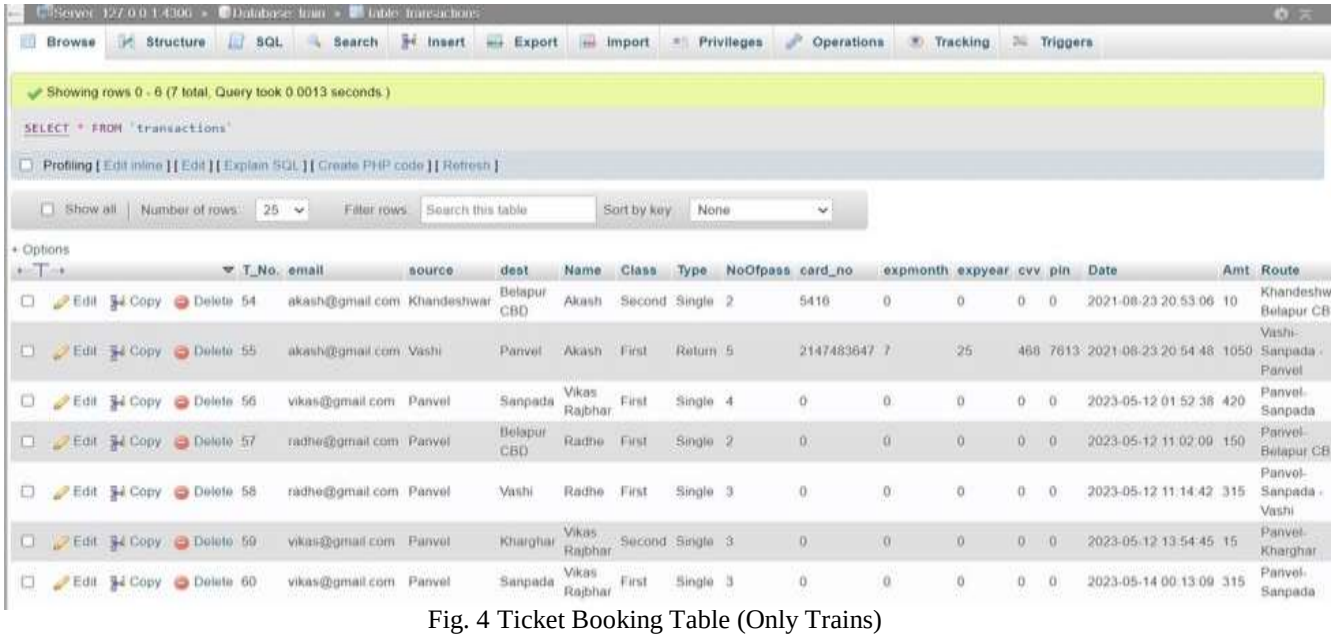


Fig. 3 Admin Table

In Fig. 3 we can see table, which is use to show all registered admins in the database.

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Server: 127.0.0.1:4306 » Database: train » Table: transactions

Browse | Structure | SQL | Search | Insert | Export | Import | Privileges | Operations | Tracking | Triggers

Showing rows 0 - 6 (7 total, Query took 0.0013 seconds.)

```
SELECT * FROM `transactions`
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

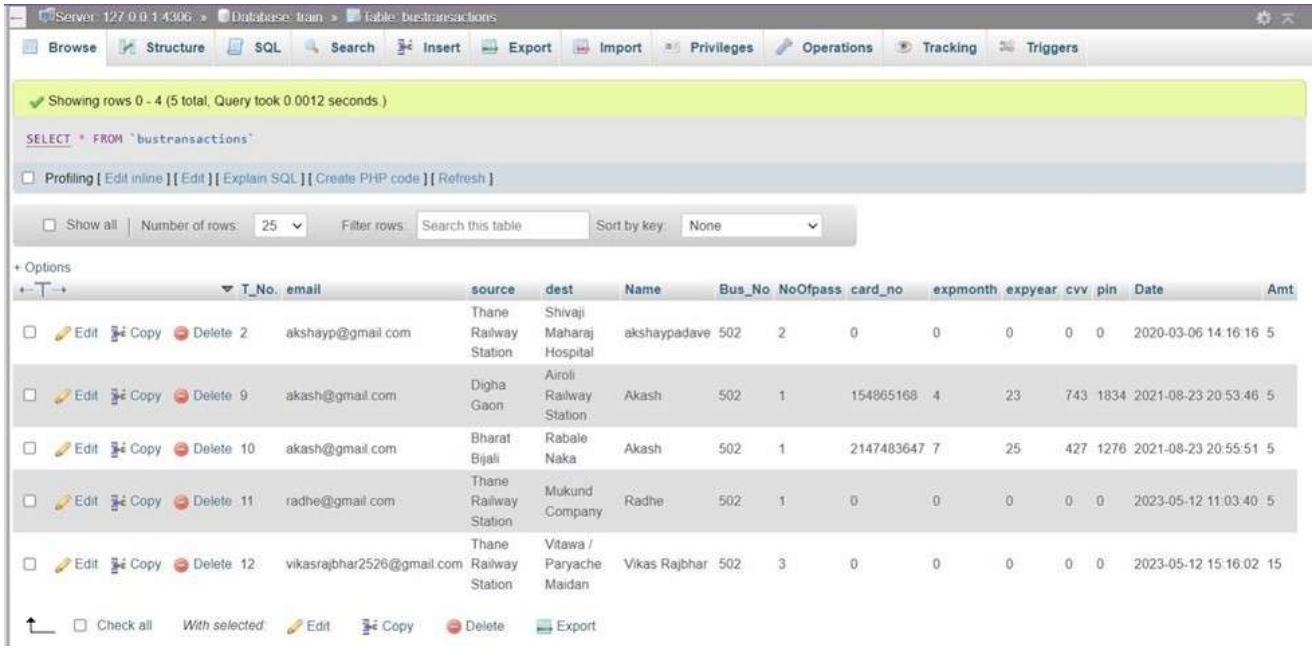
Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

+ Options

	T_No.	email	source	dest	Name	Class	Type	NoOfpass	card_no	expmonth	expyear	cvv	pin	Date	Amt	Route
Edit Copy Delete	54	akash@gmail.com	Khandeshwar	Belapur CBD	Akash	Second	Single	2	5416	0	0	0	0	2021-08-23 20:53:06	10	Khandeshw Belapur CB
Edit Copy Delete	55	akash@gmail.com	Vashi	Panvel	Akash	First	Return	5	2147483647	7	25	468	7613	2021-08-23 20:54:48	1050	Vashi-Sanpada - Panvel
Edit Copy Delete	56	vikas@gmail.com	Panvel	Sanpada	Vikas Rajbhar	First	Single	4	0	0	0	0	0	2023-05-12 01:52:38	420	Panvel-Sanpada
Edit Copy Delete	57	radhe@gmail.com	Panvel	Belapur CBD	Radhe	First	Single	2	0	0	0	0	0	2023-05-12 11:02:09	150	Panvel-Belapur CB
Edit Copy Delete	58	radhe@gmail.com	Panvel	Vashi	Radhe	First	Single	3	0	0	0	0	0	2023-05-12 11:14:42	315	Panvel-Sanpada - Vashi
Edit Copy Delete	59	vikas@gmail.com	Panvel	Kharghar	Vikas Rajbhar	Second	Single	3	0	0	0	0	0	2023-05-12 13:54:45	15	Panvel-Kharghar
Edit Copy Delete	60	vikas@gmail.com	Panvel	Sanpada	Vikas Rajbhar	First	Single	3	0	0	0	0	0	2023-05-14 00:13:09	315	Panvel-Sanpada

Fig. 4 Ticket Booking Table (Only Trains)

In Fig. 4 we can see table, which is use to show table storesall ticket booking details of only trains in the database.



Server: 127.0.0.1:4306 » Database: train » Table: bustransactions

Browse | Structure | SQL | Search | Insert | Export | Import | Privileges | Operations | Tracking | Triggers

Showing rows 0 - 4 (5 total, Query took 0.0012 seconds.)

```
SELECT * FROM `bustransactions`
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

+ Options

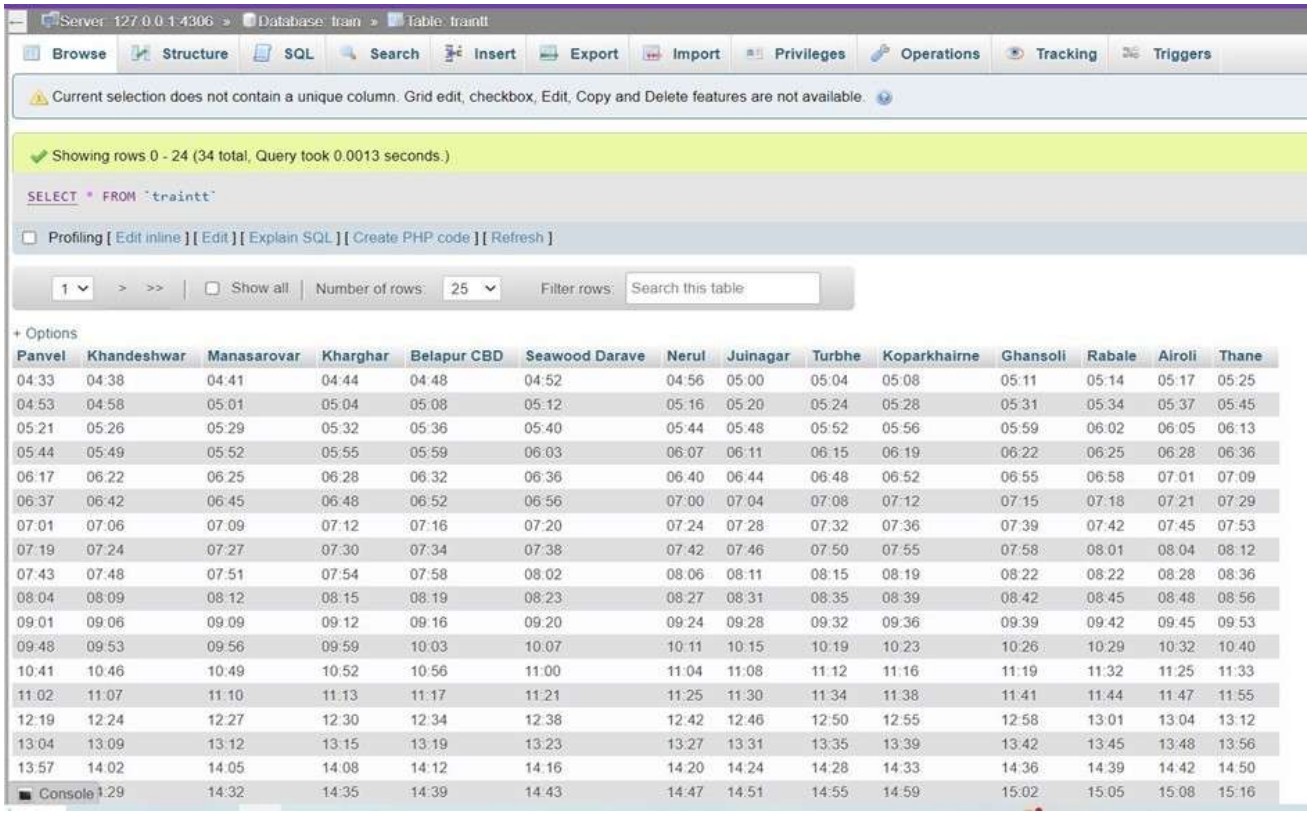
	T_No.	email	source	dest	Name	Bus_No	NoOfpass	card_no	expmonth	expyear	cvv	pin	Date	Amt
Edit Copy Delete	2	akshayp@gmail.com	Thane Railway Station	Shivaji Maharaj Hospital	akshaypadave	502	2	0	0	0	0	0	2020-03-06 14:16:16	5
Edit Copy Delete	9	akash@gmail.com	Digha Gaon	Airoli Railway Station	Akash	502	1	154865168	4	23	743	1834	2021-08-23 20:53:46	5
Edit Copy Delete	10	akash@gmail.com	Bharat Bijali	Rabale Naka	Akash	502	1	2147483647	7	25	427	1276	2021-08-23 20:55:51	5
Edit Copy Delete	11	radhe@gmail.com	Thane Railway Station	Mukund Company	Radhe	502	1	0	0	0	0	0	2023-05-12 11:03:40	5
Edit Copy Delete	12	vikasrajbhar2526@gmail.com	Thane Railway Station	Vitawa / Paryache Maidan	Vikas Rajbhar	502	3	0	0	0	0	0	2023-05-12 15:16:02	15

Check all | With selected: Edit | Copy | Delete | Export

Fig. 5 Ticket Booking Table (Only Buses)

In Fig. 5 we can see table, which is use to show table storesall ticket booking details of only buses in the database.

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Server: 127.0.0.1:4306 » Database: train » Table: traintt

Browse | Structure | SQL | Search | Insert | Export | Import | Privileges | Operations | Tracking | Triggers

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 24 (34 total, Query took 0.0013 seconds.)

```
SELECT * FROM `traintt`
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

1 > >> | Show all | Number of rows: 25 | Filter rows: Search this table

+ Options

Panvel	Khandeshwar	Manasarovar	Kharghar	Belapur CBD	Seawood Darave	Nerul	Juinagar	Turbhe	Koparkhairne	Ghansoli	Rabale	Airoli	Thane
04:33	04:38	04:41	04:44	04:48	04:52	04:56	05:00	05:04	05:08	05:11	05:14	05:17	05:25
04:53	04:58	05:01	05:04	05:08	05:12	05:16	05:20	05:24	05:28	05:31	05:34	05:37	05:45
05:21	05:26	05:29	05:32	05:36	05:40	05:44	05:48	05:52	05:56	05:59	06:02	06:05	06:13
05:44	05:49	05:52	05:55	05:59	06:03	06:07	06:11	06:15	06:19	06:22	06:25	06:28	06:36
06:17	06:22	06:25	06:28	06:32	06:36	06:40	06:44	06:48	06:52	06:55	06:58	07:01	07:09
06:37	06:42	06:45	06:48	06:52	06:56	07:00	07:04	07:08	07:12	07:15	07:18	07:21	07:29
07:01	07:06	07:09	07:12	07:16	07:20	07:24	07:28	07:32	07:36	07:39	07:42	07:45	07:53
07:19	07:24	07:27	07:30	07:34	07:38	07:42	07:46	07:50	07:55	07:58	08:01	08:04	08:12
07:43	07:48	07:51	07:54	07:58	08:02	08:06	08:11	08:15	08:19	08:22	08:22	08:28	08:36
08:04	08:09	08:12	08:15	08:19	08:23	08:27	08:31	08:35	08:39	08:42	08:45	08:48	08:56
09:01	09:06	09:09	09:12	09:16	09:20	09:24	09:28	09:32	09:36	09:39	09:42	09:45	09:53
09:48	09:53	09:56	09:59	10:03	10:07	10:11	10:15	10:19	10:23	10:26	10:29	10:32	10:40
10:41	10:46	10:49	10:52	10:56	11:00	11:04	11:08	11:12	11:16	11:19	11:32	11:25	11:33
11:02	11:07	11:10	11:13	11:17	11:21	11:25	11:30	11:34	11:38	11:41	11:44	11:47	11:55
12:19	12:24	12:27	12:30	12:34	12:38	12:42	12:46	12:50	12:55	12:58	13:01	13:04	13:12
13:04	13:09	13:12	13:15	13:19	13:23	13:27	13:31	13:35	13:39	13:42	13:45	13:48	13:56
13:57	14:02	14:05	14:08	14:12	14:16	14:20	14:24	14:28	14:33	14:36	14:39	14:42	14:50
Console	1:29	14:32	14:35	14:39	14:43	14:47	14:51	14:55	14:59	15:02	15:05	15:08	15:16

Fig. 6 Train Timing Table

In Fig. 6 we can see table, which is use to show table alltrain timing details in the database.

B. Application Running

This will show running of application and how the ticket isbooked in this application/website.



Fig. 7 Landing page

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In the above Fig. 7, we can see it is the landing page of our application/website where you can register if you are new user or sign in if you have already registered yourself.

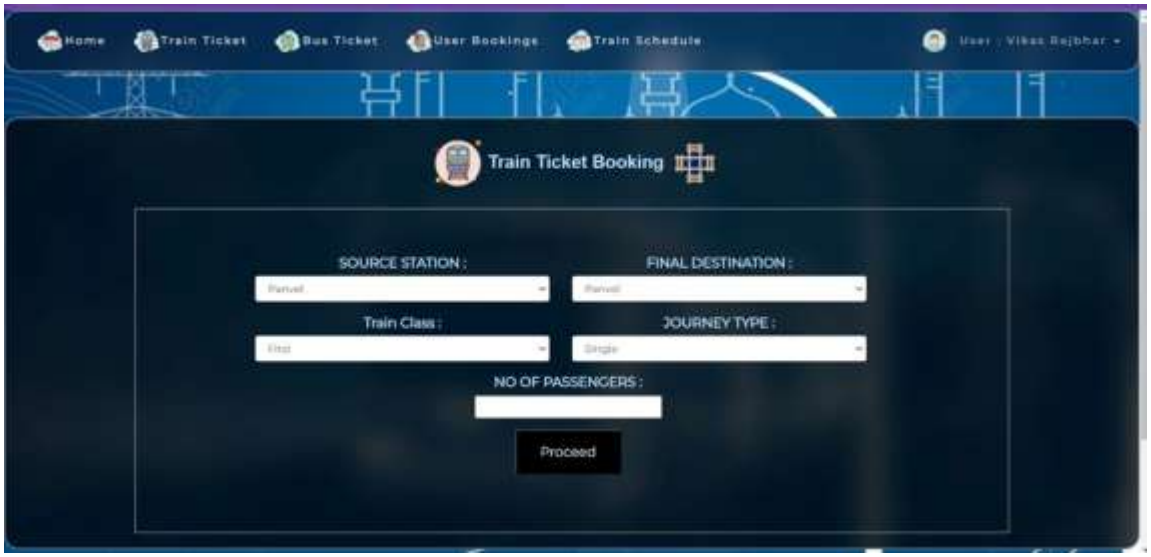


Fig. 8 Train Ticket Booking

Now for booking a local train ticket we need to go to "Train Ticket" as you can see in Fig. 8 and enter source and destination along with train class, journey type and total number of passengers. Train tickets are only of Mumbai cities only. Also note that more than 5 passengers are not allowed to book ticket together.



Fig. 9 Train Ticket confirming details

After booking, the portal will verify the details and show you the price and ask you to checkout with your process as shown in Fig. 9. Click on checkout to move on to payments or go back if any correction.

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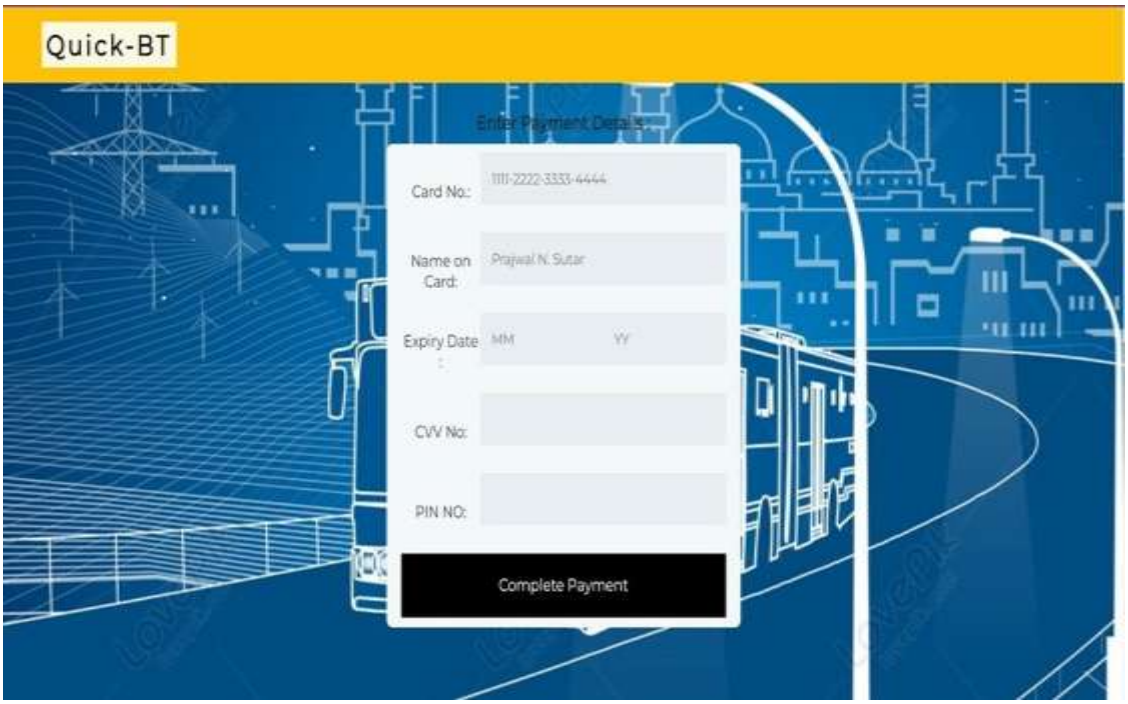


Fig. 10 Train Ticket payment

After you click on checkout, then it will redirect you to payment via card and you have to fill all your card details and complete payment as shown in Fig. 10. After that you will get OTP on your card registered number and put that, then payment will be successful.



Fig. 11 Train Ticket Booking Summary

Once the payment is done, the website/application will take you can see booking summary as shown in Fig. 11 and there you can print your ticket or save it in your device thought clicking on “Print Ticket”.

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Fig. 12 Train Ticket

In above Fig. 12 we can see it is the ticket which we get after booking train ticket. Similarly, you can also book local bus tickets in Mumbai through the same application in above same way.

Now if somehow you lost your digital ticket so you can go to "User Booking" as shown in Fig.13 and click there "View Train Booking" if its train ticket or if its bus then click on "View Bus Booking".

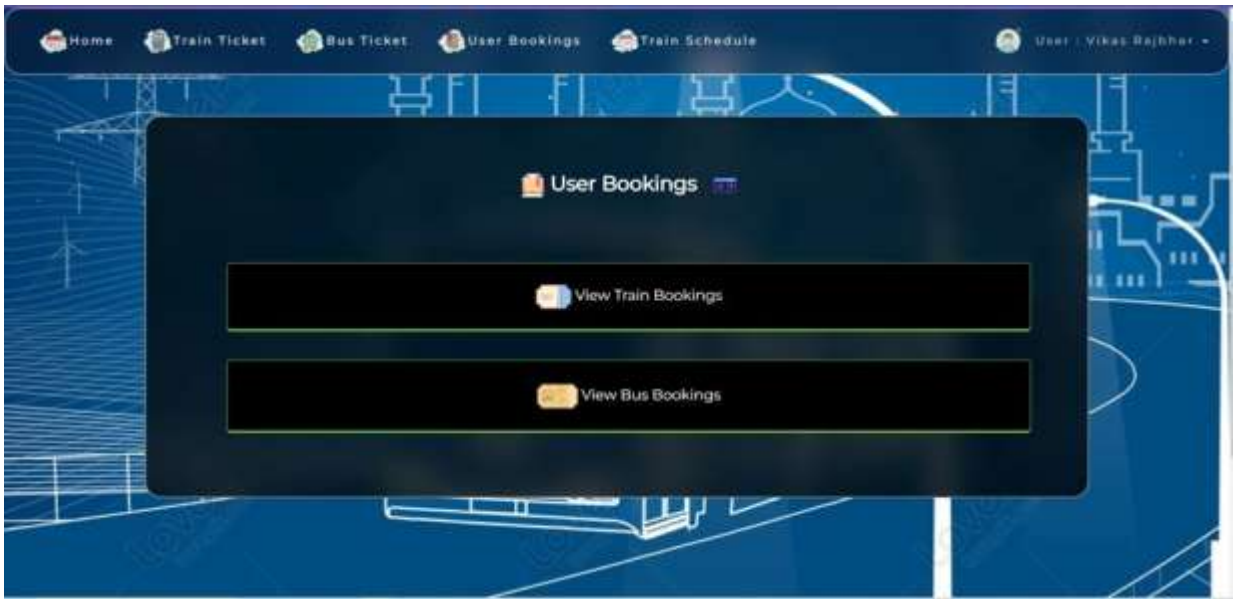


Fig. 13 User Booking

After clicking on "View Train Booking you can see there your all previous tickets details along with option to download your ticket again as shown in Fig. 14. Similarly, you can viewfor bus as well.

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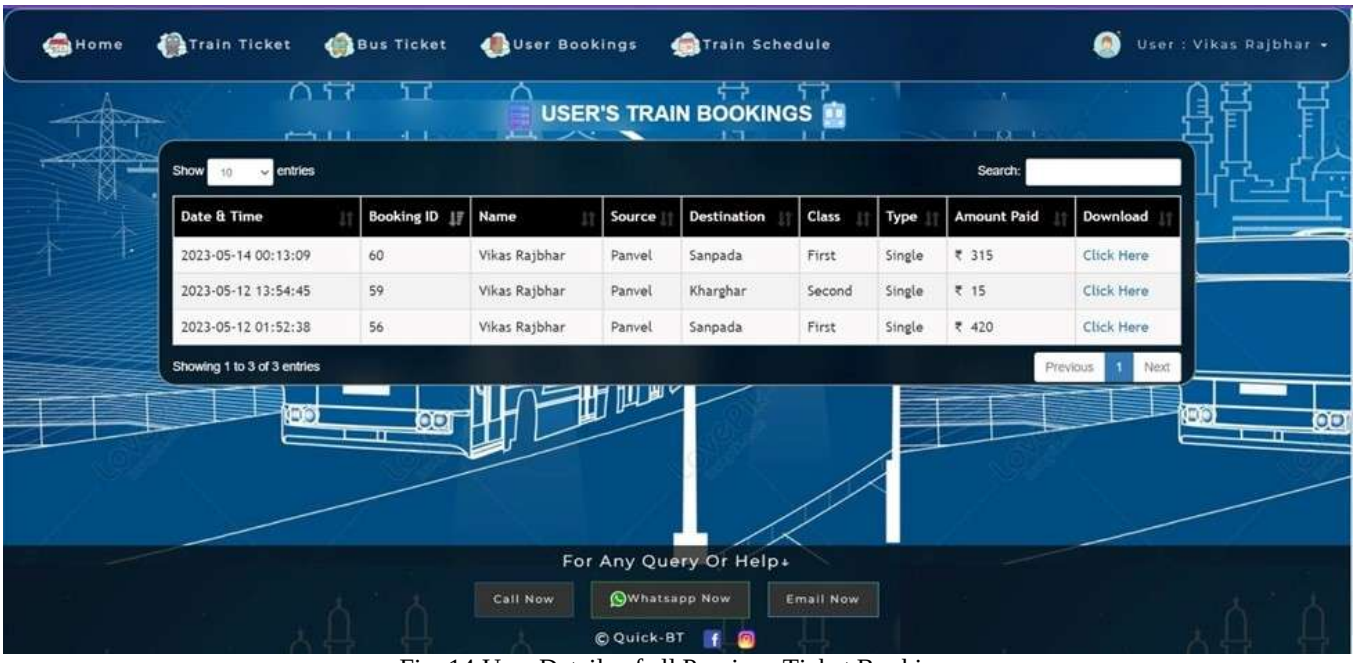


Fig. 14 User Details of all Previous Ticket Booking

In case you have any query or problem you can contact us through mail and if we don't response within 24 hours you can directly call us to our helpline or WhatsApp us. This you will find below all our booking sections as shown in Fig. 14 also. You can also use our chatbox AI for your help in case ofemergency which you will find on landing page which isshown in Fig. 7. You can see how it works as shown in Fig. 15.

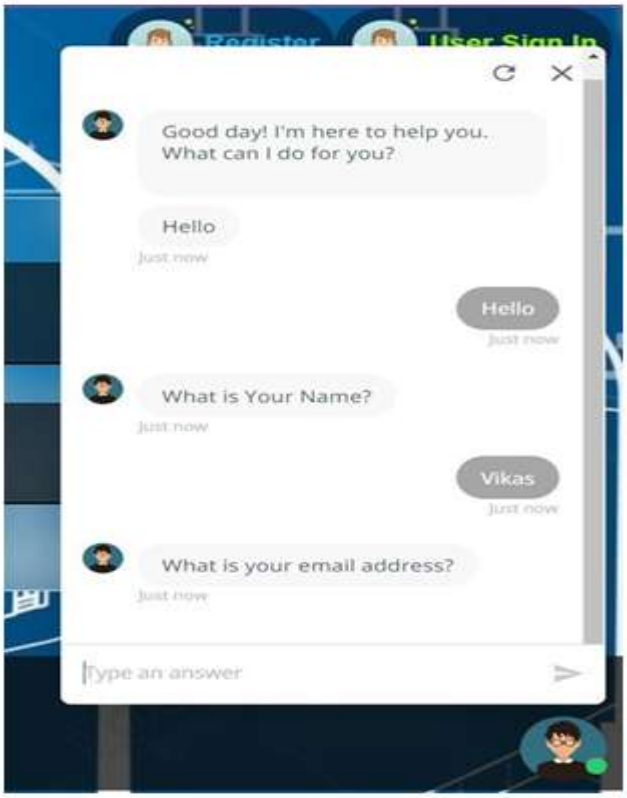


Fig. 15 Chatbox

IV. CONCLUSIONS

It can be observed that computer applications are very important in every field of human endeavor. Here all the information about customer that made reservation can be gotten just by clicking a button with this new system, some of the difficulties encountered with the manual system are overcome. It will also reduce the workload of the staff, reduce the time used for making reservation at the bus terminal and also increase efficiency. The application also has the ability to update records in various files automatically thereby relieving the company's staff the stress of working from file security of data. It has been developed in XHTML, PHP, CSS, JAVASCRIPT and database has been built in MySQL. By using this application, the company can provide reservation services and information to their customers without the limitation of office hours or manpower. Not only does it let customers book trips around the clock from any location with an internet connection but it is also designed for use by the company to internally manage their business processes; minimizing human errors and overcoming difficulties and problems that arose in the previous system.

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