SCTR's Pune Institute of Computer Technology Dhankawadi, Pune

A.Y. 2022-23

WADL MINI PROJECT REPORT ON

"Bus Ticket Booking System"

Submitted By

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DEPARTMENT OF INFORMATION TECHNOLOGY

ACADEMIC YEAR 2023-24

ABSTRACT

TRIPZY is a web application designed to facilitate the process of booking bus tickets for users. This project utilizes the MERN (MongoDB, Express.js, React, Node.js) stack to develop a robust and user-friendly platform. The system allows users to search for available buses based on their preferred route, date, and time, view seat availability, select seats, make payments, and generate tickets.

The backend of the system is built using Node.js and Express.js, providing a RESTful API to handle user requests, manage bus schedules and seat availability, process payments, and generate tickets. MongoDB is used as the database to store and manage data related to buses, routes, schedules, bookings, and users.

The frontend of the application is developed using React, offering an intuitive user interface for seamless navigation and interaction. Users can easily search for buses, select seats, enter passenger details, make payments securely, and receive tickets via email or download them from the platform.

This report provides an overview of the system architecture, key features and functionalities, implementation details, challenges faced during development, solutions applied, testing procedures, deployment strategies, future enhancements, and the overall impact of the bus ticket booking system on improving the user experience and efficiency of bus ticket booking services.

INTRODUCTION

In today's digital age, where convenience and efficiency are paramount, online booking systems have become essential tools for travelers seeking hassle-free transportation solutions. The Bus Booking System Website represents a significant advancement in this domain, offering users a streamlined platform to search, select, and book bus tickets with ease.

Key features and functionalities of the Bus Booking System Website are then discussed, highlighting its user-friendly interface, robust search capabilities, secure payment options, and real-time booking confirmations. Additionally, the report delves into the underlying architecture and technologies utilized, shedding light on the front-end frameworks, back-end databases, and integration with external services that power the platform's operations.

User experience design is a critical aspect of any online booking system, and this report examines how the Bus Booking System Website prioritizes usability, accessibility, and responsiveness across various devices. By analyzing interface layouts, navigation flows, and user feedback mechanisms, stakeholders can gauge the platform's effectiveness in meeting user expectations and driving engagement.

Features :

- Digital Transformation in Travel: The Bus Booking System Website represents a pivotal shift in the travel industry, leveraging digital technologies to streamline the process of booking bus tickets and enhancing the overall travel experience for users.

- Enhanced User Experience: By prioritizing user experience design, the Bus Booking System Website ensures a smooth and intuitive booking process, reducing friction points and enhancing user satisfaction. Features such as real-time availability updates, interactive seat selection, and personalized recommendations contribute to a more engaging and rewarding experience for users.

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LITERATURE SURVEY

Introduction to MERN Stack & Comparison with Previous Technologies:

The MERN stack is a popular technology stack used for developing web applications[1]. It consists of MongoDB, Express.js, React, and Node.js. This paper discusses why the MERN stack is widely used and its advantages over previous technologies such as HTML, CSS, SQL, and NoSQL. The paper also provides a brief overview of the MERN stack components, their functionalities, and their role in developing web applications.

Towards Smart Mobility in Cities - Bus Tracking and Booking System:

A.K. Sharma, R. Pandey, S. Tarafdar, and S. Dubey, "Towards Smart Mobility in Cities - Bus Tracking and Booking System [2] ," 2021 9th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO), Noida, India, 03-04 September 2021, doi: 10.1109/ICRITO51393.2021.9596492.

Online Bus Ticket Reservation System:

I. C. Nwakanma, C. Etus, I. Ajere, and U. G. Agomuo, "Online Bus Ticket Reservation System [3] ," Statistics and Computing, vol. 15, no. 1, pp. 30-35, Jan. 2015.

Smart E-Ticketing System for Public Transport Bus:

S. Kazi, M. Bagasrawala, F. Shaikh, and A. Sayyed, "Smart E-Ticketing System for Public Transport Bus [4] ," 2018 International Conference on Smart City and Emerging Technology (ICSCET), Mumbai, India, 05-05 January 2018, doi: 10.1109/ICSCET.2018.8537302.

IMPLEMENTATION DETAILS

Web technologies used: MERN stack

Frontend development:

1) **React**:
   i) A JavaScript library for building user interfaces.
   ii) Uses a component-based architecture, where UIs are composed of reusable components.
   iii) Allows developers to create dynamic and interactive web applications with ease.
   iv) Supports server-side rendering for improved performance and SEO.

2) **Redux**:
   i) A predictable state container for JavaScript apps.
   ii) Often used in conjunction with React, but can be used with other frameworks or libraries.
   iii) Provides a centralized location for state management, making it easier to debug and maintain complex applications.

3) **React Router**:
   i) A routing library for React applications.
   ii) Allows developers to define routes and navigation within a single-page application.
   iii) Supports declarative routing, where routes are defined using JSX syntax.

Backend development:

1) **Node.js**: The runtime environment for the server-side code.

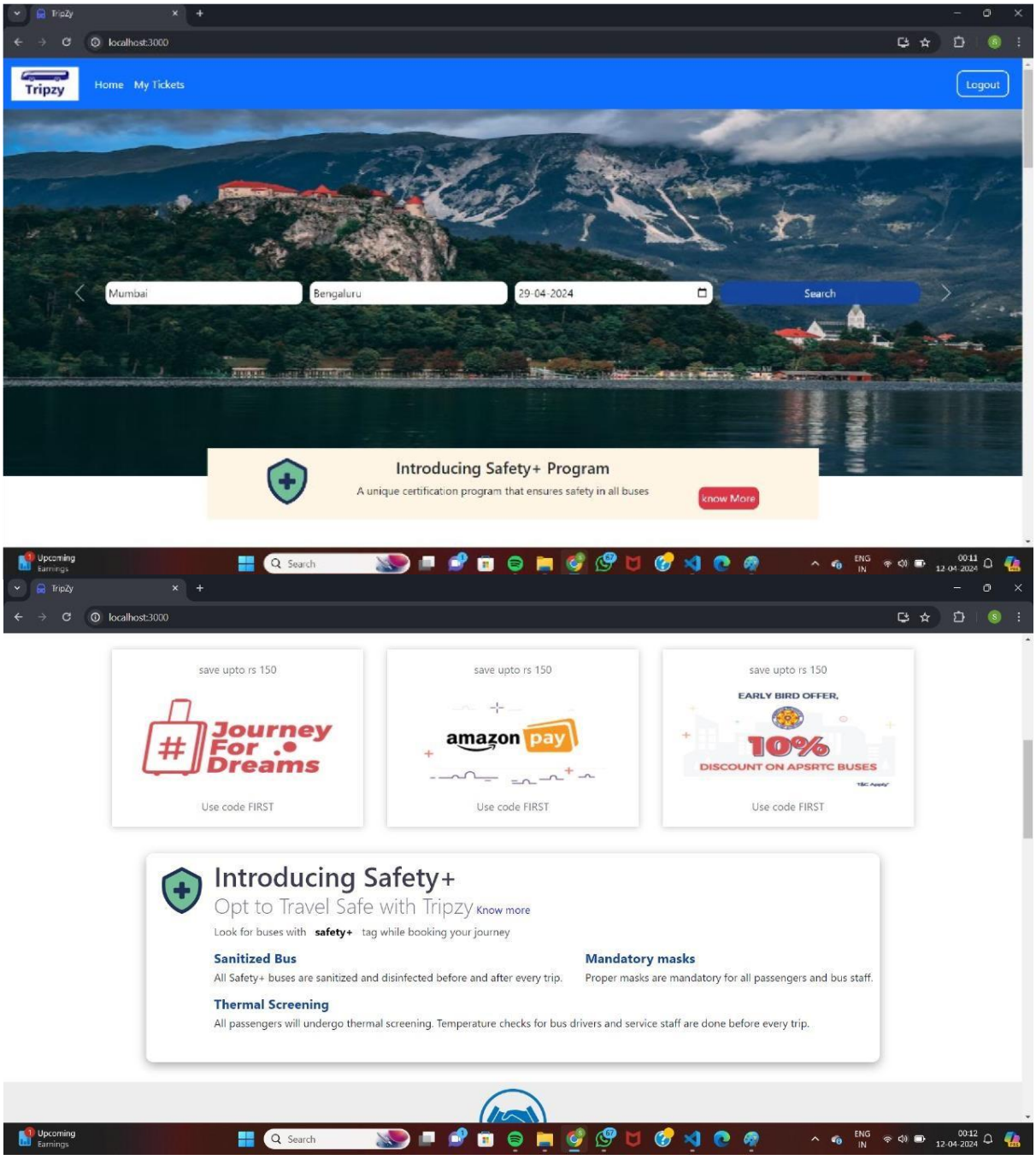
2) **Express.js**: A web framework built on Node.js that simplifies building APIs and handling server-side logic. Key functionalities include:
   i) Processing user requests for product data and price tracking information.
   ii) Interacting with the database to store and retrieve product information and user preferences.
   iii) Managing user authentication and authorization.
   iv) Potentially implementing a background process for scraping price data from external websites (requires responsible web scraping practices and adherence to terms of service).

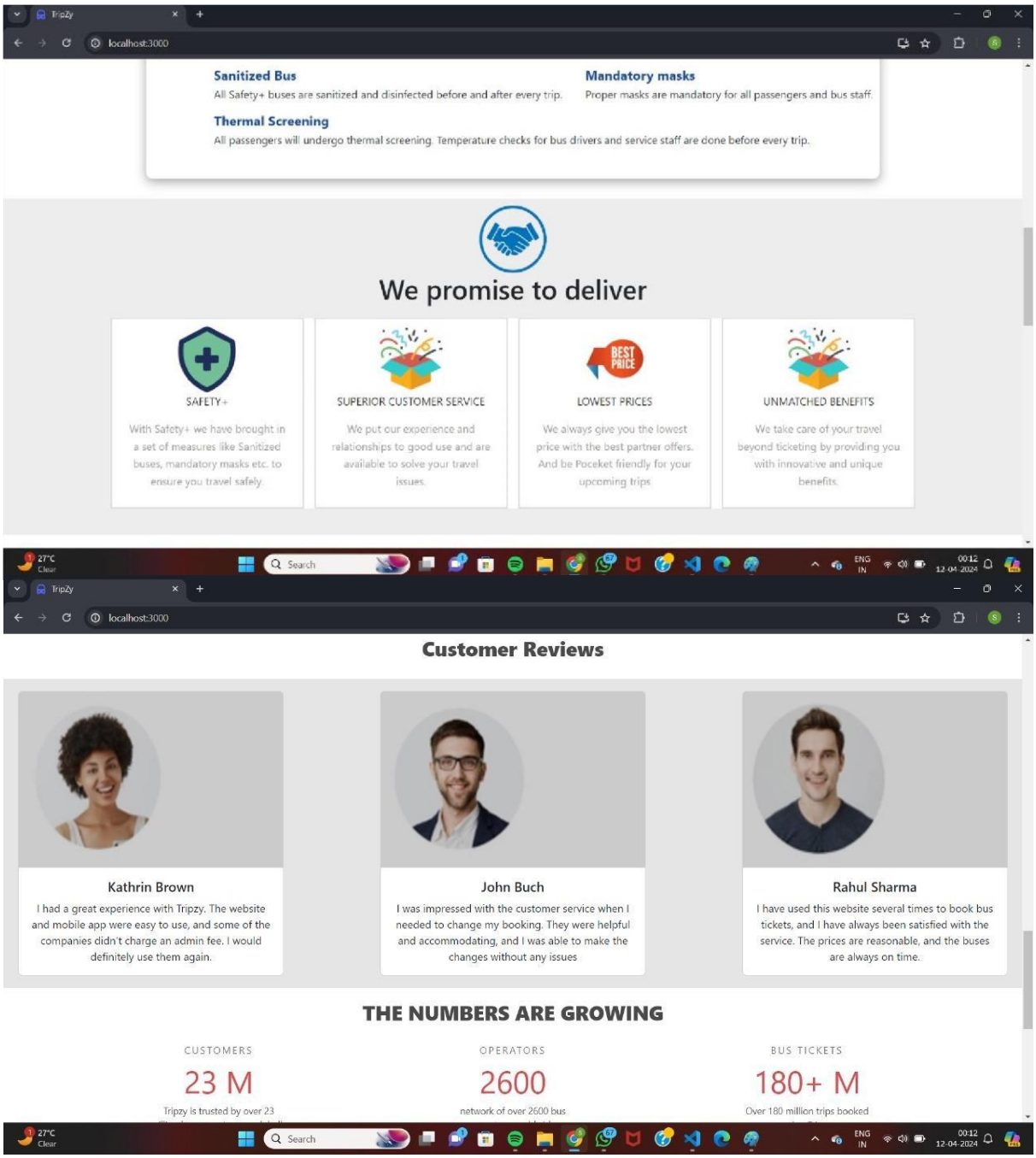
3) **MongoDB**: A NoSQL document database that offers flexibility and scalability for storing product information, user data, and price tracking history. It will be used to store product details like name, description, image, and price history.

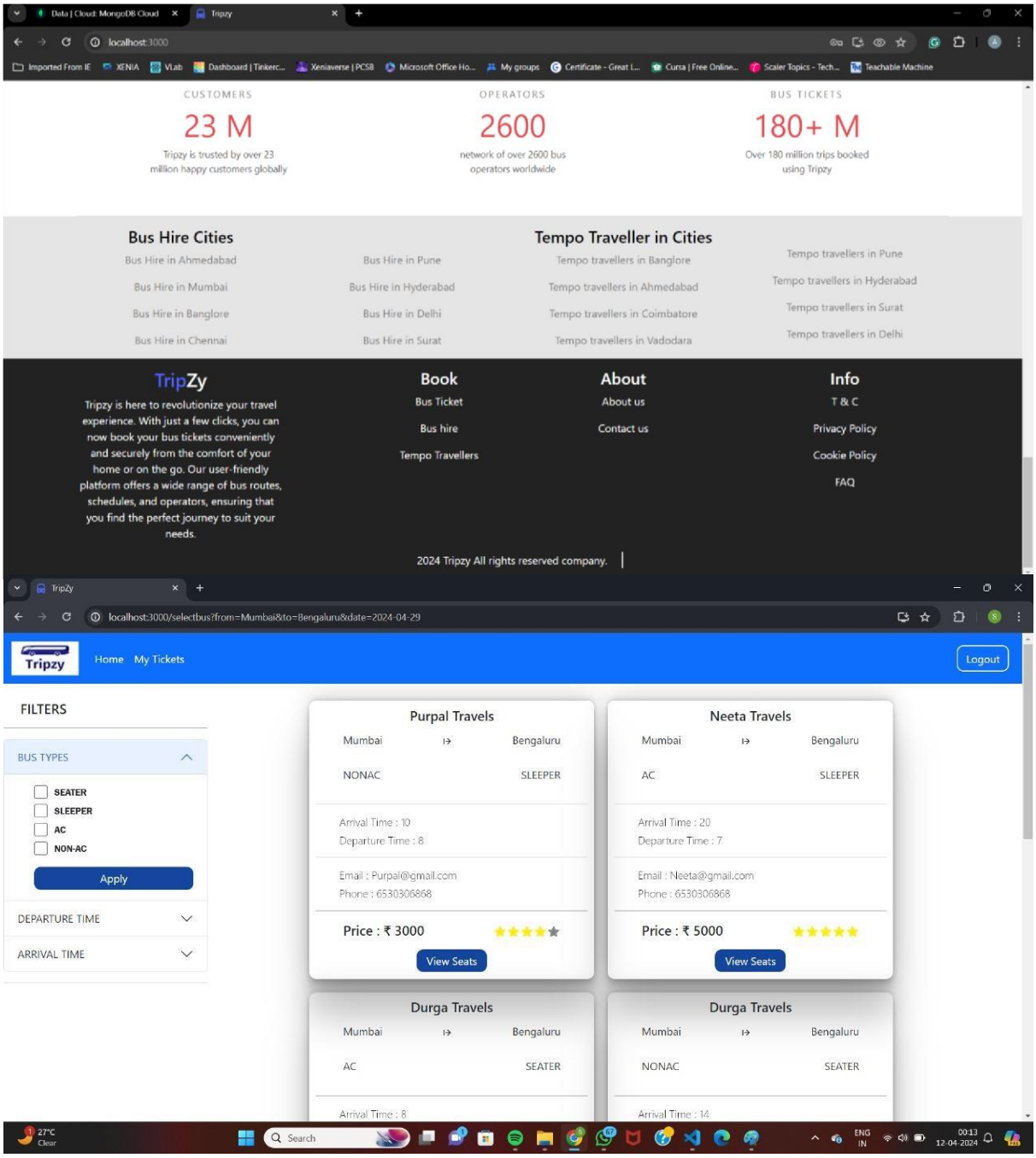
Integration:

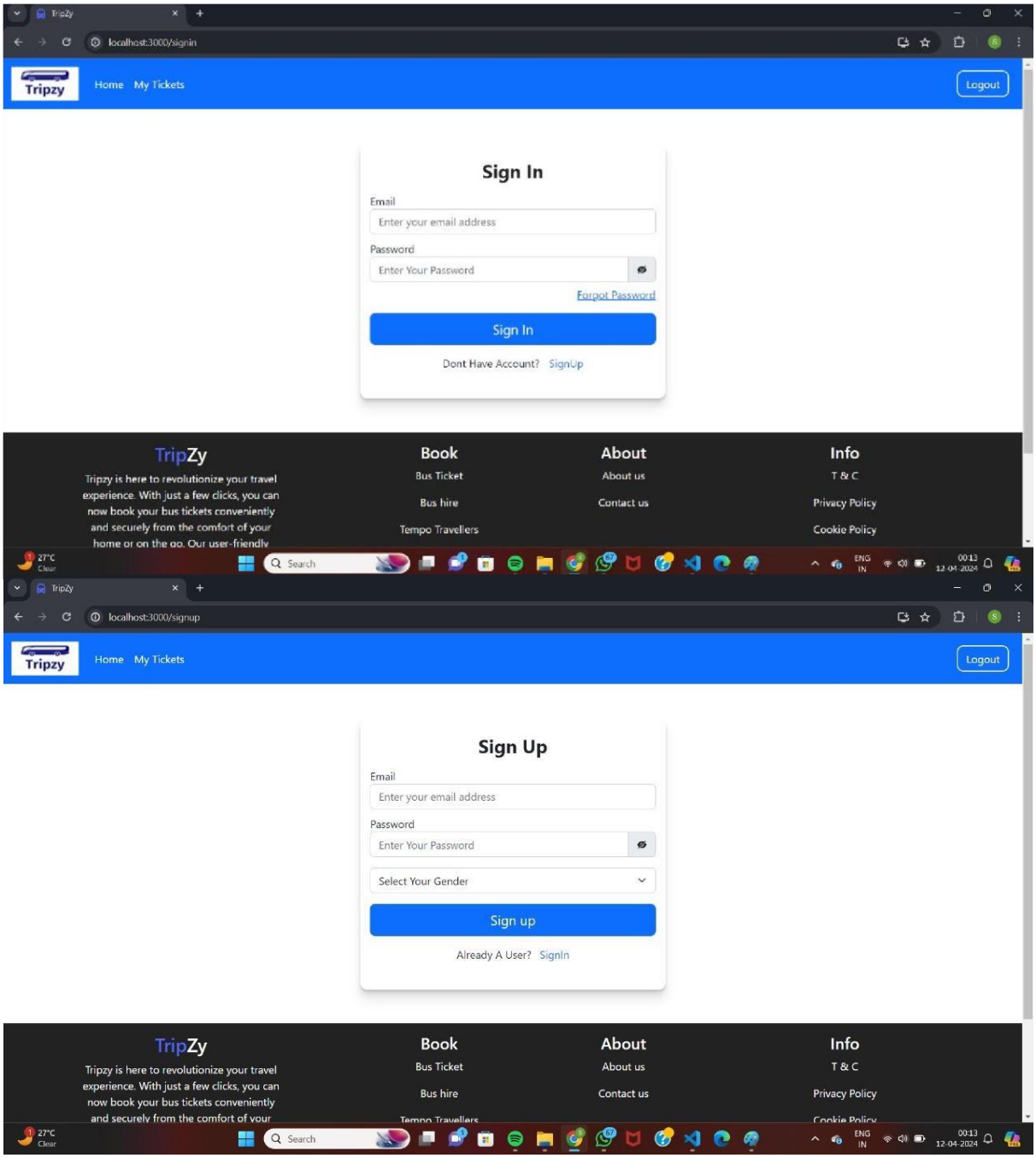
Email API Integration: An email API service will be required to send price drop notifications to users

OUTPUT


Tripzy
localhost:3000
Tripzy
Home
My Tickets
Logout
Mumbai
Bengaluru
29-04-2024
Search
Introducing Safety+ Program
A unique certification program that ensures safety in all buses
know More
save upto rs 150
Journey For Dreams
Use code FIRST
save upto rs 150
amazon pay
Use code FIRST
save upto rs 150
EARLY BIRD OFFER,
10%
DISCOUNT ON APSRTC BUSES
Use code FIRST
Introducing Safety+
Opt to Travel Safe with Tripzy
Know more
Look for buses with safety+ tag while booking your journey
Sanitized Bus
All Safety+ buses are sanitized and disinfected before and after every trip.
Mandatory masks
Proper masks are mandatory for all passengers and bus staff.
Thermal Screening
All passengers will undergo thermal screening. Temperature checks for bus drivers and service staff are done before every trip.


Tripzy
localhost:3000
Sanitized Bus
All Safety+ buses are sanitized and disinfected before and after every trip.
Mandatory masks
Proper masks are mandatory for all passengers and bus staff.
Thermal Screening
All passengers will undergo thermal screening. Temperature checks for bus drivers and service staff are done before every trip.
We promise to deliver
SAFETY+
With Safety+ we have brought in a set of measures like Sanitized buses, mandatory masks etc. to ensure you travel safely.
SUPERIOR CUSTOMER SERVICE
We put our experience and relationships to good use and are available to solve your travel issues.
LOWEST PRICES
We always give you the lowest price with the best partner offers. And be Poceket friendly for your upcoming trips
UNMATCHED BENEFITS
We take care of your travel beyond ticketing by providing you with innovative and unique benefits.
Customer Reviews
Kathrin Brown
I had a great experience with Tripzy. The website and mobile app were easy to use, and some of the companies didn't charge an admin fee. I would definitely use them again.
John Buch
I was impressed with the customer service when I needed to change my booking. They were helpful and accommodating, and I was able to make the changes without any issues
Rahul Sharma
I have used this website several times to book bus tickets, and I have always been satisfied with the service. The prices are reasonable, and the buses are always on time.
THE NUMBERS ARE GROWING
CUSTOMERS
23 M
OPERATORS
2600
network of over 2600 bus
BUS TICKETS
180+ M
Over 180 million trips booked


CUSTOMERS
23 M
Tripzy is trusted by over 23 million happy customers globally
OPERATORS
2600
network of over 2600 bus operators worldwide
BUS TICKETS
180+ M
Over 180 million trips booked using Tripzy
Bus Hire Cities
Bus Hire in Ahmedabad
Bus Hire in Pune
Bus Hire in Mumbai
Bus Hire in Hyderabad
Bus Hire in Banglore
Bus Hire in Delhi
Bus Hire in Chennai
Bus Hire in Surat
Tempo Traveller in Cities
Tempo travellers in Banglore
Tempo travellers in Pune
Tempo travellers in Ahmedabad
Tempo travellers in Hyderabad
Tempo travellers in Coimbatore
Tempo travellers in Surat
Tempo travellers in Vadodara
Tempo travellers in Delhi
TripZy
Tripzy is here to revolutionize your travel experience. With just a few clicks, you can now book your bus tickets conveniently and securely from the comfort of your home or on the go. Our user-friendly platform offers a wide range of bus routes, schedules, and operators, ensuring that you find the perfect journey to suit your needs.
Book
Bus Ticket
Bus hire
Tempo Travellers
About
About us
Contact us
Info
T & C
Privacy Policy
Cookie Policy
FAQ
2024 Tripzy All rights reserved company.
localhost:3000/selectbus?from=Mumbai&to=Bengaluru&date=2024-04-29
Tripzy
Home
My Tickets
Logout
FILTERS
BUS TYPES
SEATER
SLEEPER
AC
NON-AC
Apply
DEPARTURE TIME
ARRIVAL TIME
Purpal Travels
Mumbai
Bengaluru
NONAC
SLEEPER
Arrival Time : 10
Departure Time : 8
Email : Purpal@gmail.com
Phone : 6530306868
Price : ₹ 3000
View Seats
Neeta Travels
Mumbai
Bengaluru
AC
SLEEPER
Arrival Time : 20
Departure Time : 7
Email : Neeta@gmail.com
Phone : 6530306868
Price : ₹ 5000
View Seats
Durga Travels
Mumbai
Bengaluru
AC
SEATER
Arrival Time : 8
Durga Travels
Mumbai
Bengaluru
NONAC
SEATER
Arrival Time : 14


TripZy
localhost:3000/signin
Tripzy
Home
My Tickets
Logout
Sign In
Email
Enter your email address
Password
Enter Your Password
Forgot Password
Sign In
Dont Have Account? SignUp
TripZy
Tripzy is here to revolutionize your travel experience. With just a few clicks, you can now book your bus tickets conveniently and securely from the comfort of your home or on the go. Our user-friendly
Book
Bus Ticket
Bus hire
Tempo Travellers
About
About us
Contact us
Info
T & C
Privacy Policy
Cookie Policy
27°C
Clear
Search
ENG
IN
00:13
12-04-2024
TripZy
localhost:3000/signup
Tripzy
Home
My Tickets
Logout
Sign Up
Email
Enter your email address
Password
Enter Your Password
Select Your Gender
Sign up
Already A User? SignIn
TripZy
Tripzy is here to revolutionize your travel experience. With just a few clicks, you can now book your bus tickets conveniently and securely from the comfort of your
Book
Bus Ticket
Bus hire
Tempo Travellers
About
About us
Contact us
Info
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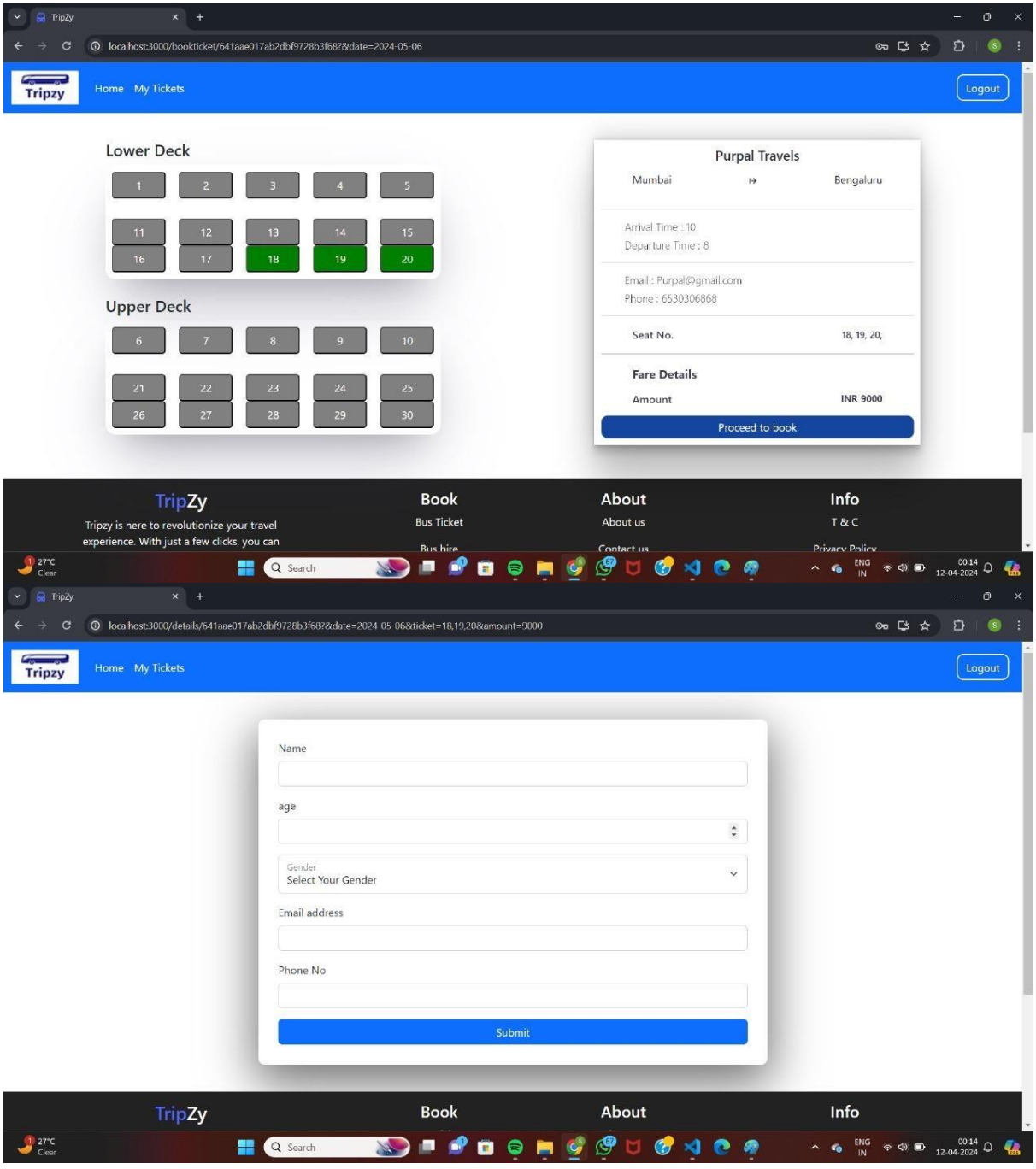
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Tripzy
Home
My Tickets
Logout
Lower Deck
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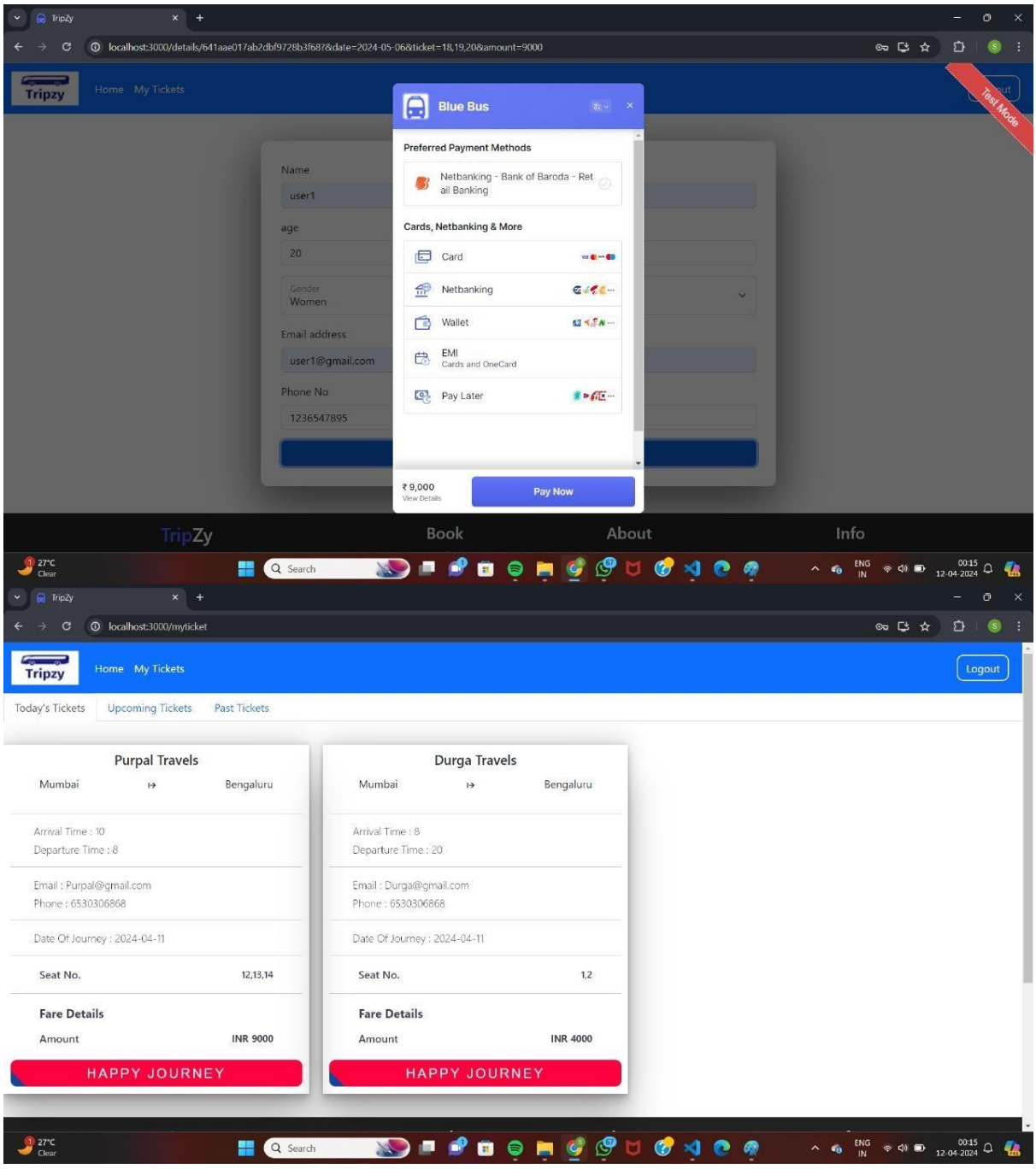
11 12 13 14 15
16 17 18 19 20
Upper Deck
6 7 8 9 10
21 22 23 24 25
26 27 28 29 30
Purpal Travels
Mumbai
Bengaluru
Arrival Time : 10
Departure Time : 8
Email : Purpal@gmail.com
Phone : 6530306868
Seat No.
18, 19, 20,
Fare Details
Amount
INR 9000
Proceed to book
TripZy
Tripzy is here to revolutionize your travel experience. With just a few clicks, you can
Book
Bus Ticket
About
About us
Info
T & C
Search
localhost:3000/details/641aae017ab2dbf9728b3f68?&date=2024-05-06&ticket=18,19,20&amount=9000
Name
age
Gender
Select Your Gender
Email address
Phone No
Submit


TripZy
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Tripzy
Home
My Tickets
Test Mode
Blue Bus
Preferred Payment Methods
Netbanking - Bank of Baroda - Retail Banking
Cards, Netbanking & More
Card
Netbanking
Wallet
EMI
Cards and OneCard
Pay Later
₹ 9,000
View Details
Pay Now
Name
user1
age
20
Gender
Women
Email address
user1@gmail.com
Phone No
1236547895
TripZy
Book
About
Info
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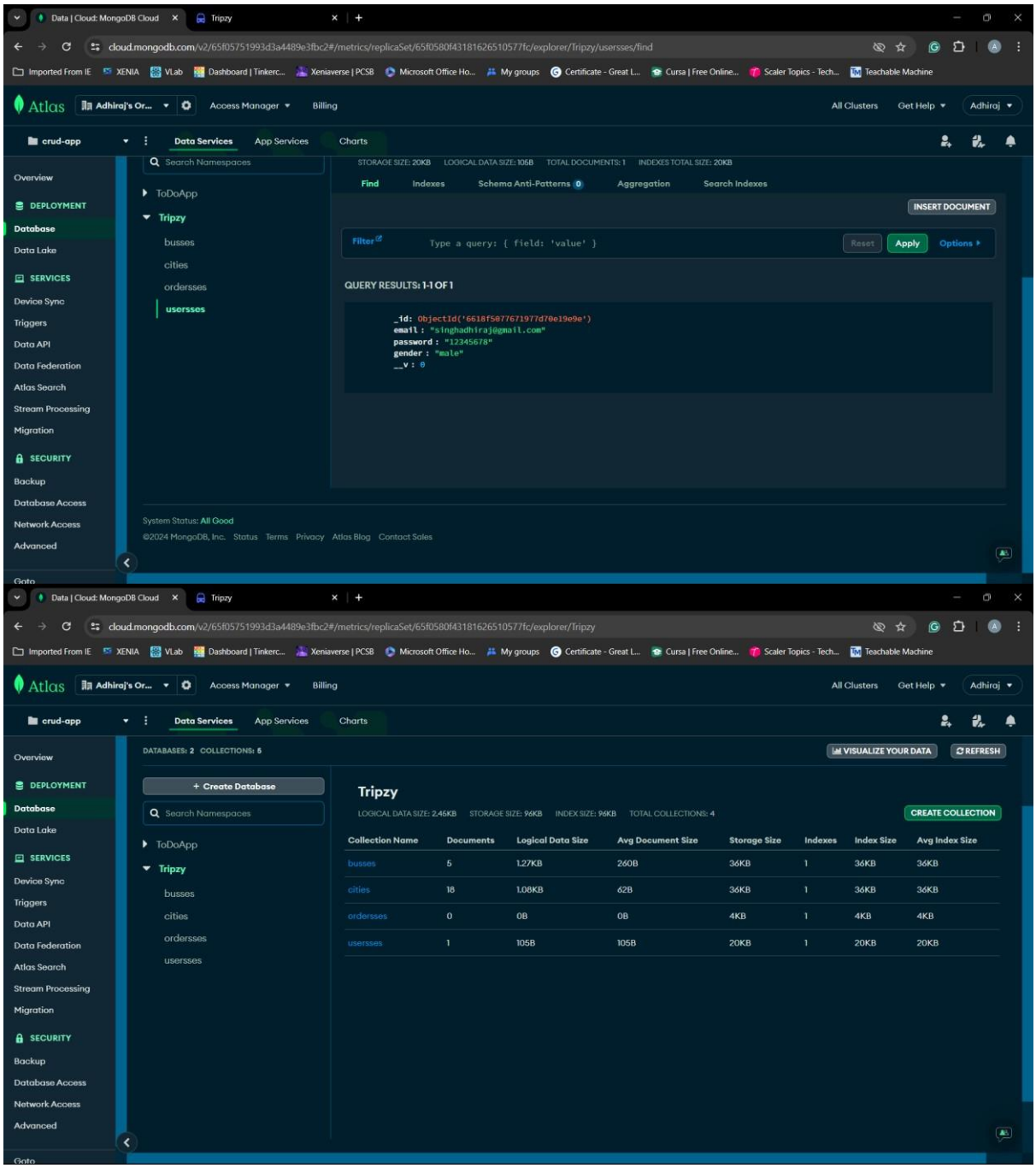
Logout
Today's Tickets
Upcoming Tickets
Past Tickets
Purpal Travels
Mumbai
Bengaluru
Arrival Time : 10
Departure Time : 8
Email : Purpal@gmail.com
Phone : 6530306868
Date Of Journey : 2024-04-11
Seat No.
12,13,14
Fare Details
Amount
INR 9000
HAPPY JOURNEY
Durga Travels
Mumbai
Bengaluru
Arrival Time : 8
Departure Time : 20
Email : Durga@gmail.com
Phone : 6530306868
Date Of Journey : 2024-04-11
Seat No.
1,2
Fare Details
Amount
INR 4000
HAPPY JOURNEY
Search


Data | Cloud: MongoDB Cloud
Tripzy
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Atlas
Adhiraj's Or...
Access Manager
Billing
All Clusters
Get Help
Adhiraj
crud-app
Data Services
App Services
Charts
Search Namespaces
ToDoApp
Tripzy
busses
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ordersses
usersses
STORAGE SIZE: 20KB LOGICAL DATA SIZE: 105B TOTAL DOCUMENTS: 1 INDEXES TOTAL SIZE: 20KB
Find
Indexes
Schema Anti-Patterns 0
Aggregation
Search Indexes
INSERT DOCUMENT
Filter
Type a query: { field: 'value' }
Reset
Apply
Options
QUERY RESULTS: 1-1 OF 1
_id: ObjectId('6618f587671977d70e19e9e')
email : "singhadhiraj@gmail.com"
password : "12345678"
gender : "male"
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Overview
DEPLOYMENT
Database
Data Lake
SERVICES
Device Sync
Triggers
Data API
Data Federation
Atlas Search
Stream Processing
Migration
SECURITY
Backup
Database Access
Network Access
Advanced
System Status: All Good
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cloud.mongodb.com/v2/65f05751993d3a4489e3fbc2#/metrics/replicaSet/65f0580f43181626510577fc/explorer/Tripzy
DATABASES: 2 COLLECTIONS: 5
VISUALIZE YOUR DATA
REFRESH
+ Create Database
Tripzy
LOGICAL DATA SIZE: 2.46KB STORAGE SIZE: 96KB INDEX SIZE: 96KB TOTAL COLLECTIONS: 4
CREATE COLLECTION
Collection Name Documents Logical Data Size Avg Document Size Storage Size Indexes Index Size Avg Index Size
busses 5 1.27KB 260B 36KB 1 36KB 36KB
cities 18 1.08KB 62B 36KB 1 36KB 36KB
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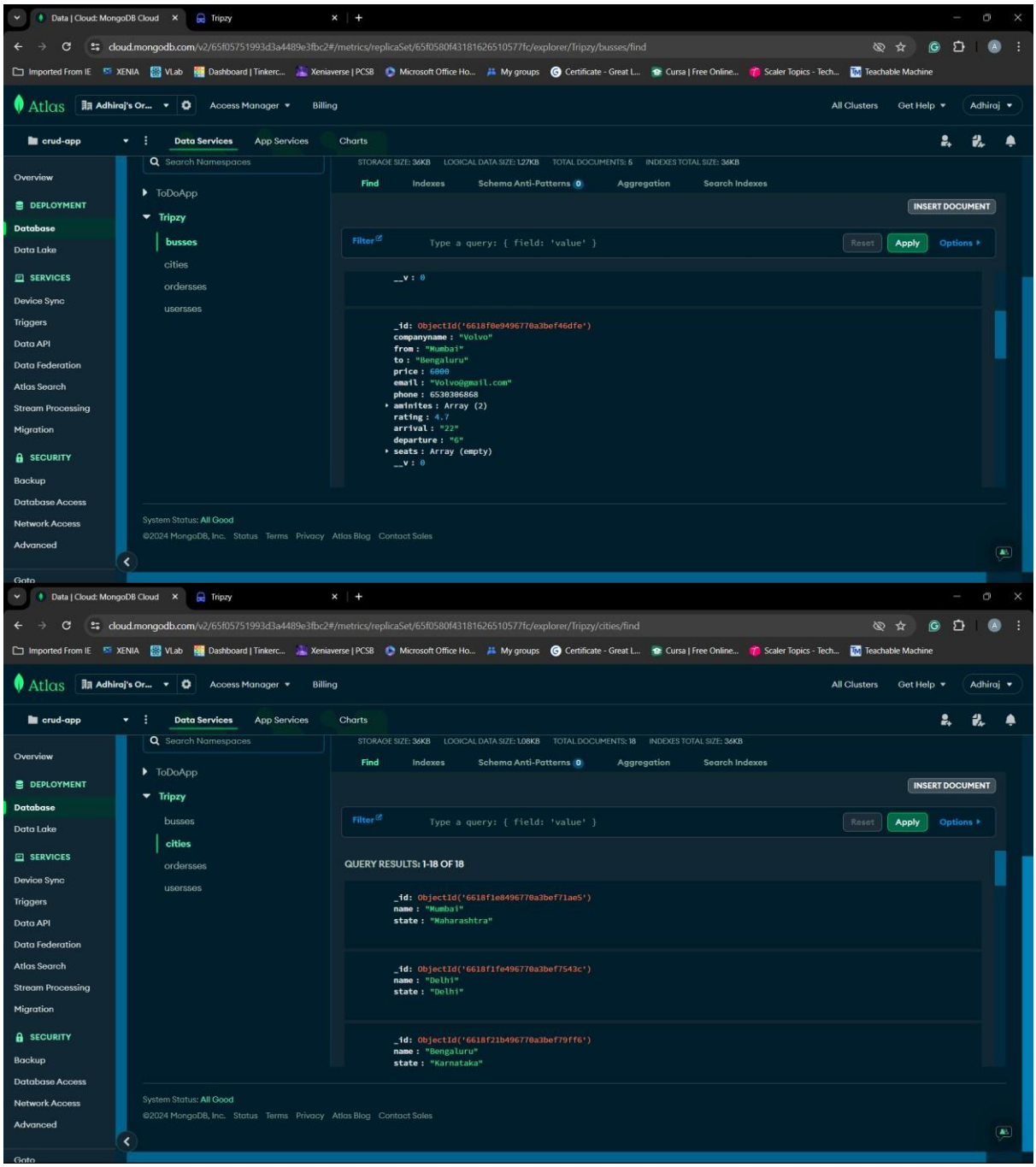
usersses 1 105B 105B 20KB 1 20KB 20KB


Data | Cloud: MongoDB Cloud
Tripzy
cloud.mongodb.com/v2/65f05751993d3a4489e3fbc2#/metrics/replicaSet/65f0580f43181626510577fc/explorer/Tripzy/busses/find
Atlas
Adhiraj's Or...
Access Manager
Billing
All Clusters
Get Help
Adhiraj
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Data Services
App Services
Charts
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Overview
DEPLOYMENT
Database
Data Lake
SERVICES
Device Sync
Triggers
Data API
Data Federation
Atlas Search
Stream Processing
Migration
SECURITY
Backup
Database Access
Network Access
Advanced
ToDoApp
Tripzy
busses
cities
ordersses
usersses
STORAGE SIZE: 36KB LOGICAL DATA SIZE: 1.27KB TOTAL DOCUMENTS: 6 INDEXES TOTAL SIZE: 36KB
Find
Indexes
Schema Anti-Patterns 0
Aggregation
Search Indexes
INSERT DOCUMENT
Filter
Type a query: { field: 'value' }
Reset
Apply
Options
__v : 0
_id: ObjectId('6618f0e9496770a3bef46dfe')
companyname : "Volvo"
from : "Mumbai"
to : "Bengaluru"
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email : "Volvo@gmail.com"
phone : 6530306868
aminites : Array (2)
rating : 4.7
arrival : "22"
departure : "6"
seats : Array (empty)
__v : 0
System Status: All Good
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Data | Cloud: MongoDB Cloud
Tripzy
cloud.mongodb.com/v2/65f05751993d3a4489e3fbc2#/metrics/replicaSet/65f0580f43181626510577fc/explorer/Tripzy/cities/find
Atlas
Adhiraj's Or...
Access Manager
Billing
All Clusters
Get Help
Adhiraj
crud-app
Data Services
App Services
Charts
Search Namespaces
Overview
DEPLOYMENT
Database
Data Lake
SERVICES
Device Sync
Triggers
Data API
Data Federation
Atlas Search
Stream Processing
Migration
SECURITY
Backup
Database Access
Network Access
Advanced
ToDoApp
Tripzy
busses
cities
ordersses
usersses
STORAGE SIZE: 36KB LOGICAL DATA SIZE: 1.08KB TOTAL DOCUMENTS: 18 INDEXES TOTAL SIZE: 36KB
Find
Indexes
Schema Anti-Patterns 0
Aggregation
Search Indexes
INSERT DOCUMENT
Filter
Type a query: { field: 'value' }
Reset
Apply
Options
QUERY RESULTS: 1-18 OF 18
_id: ObjectId('6618f1e8496770a3bef71ae5')
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state : "Maharashtra"
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state : "Delhi"
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name : "Bengaluru"
state : "Karnataka"
System Status: All Good
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CONCLUSION

The bus ticket booking system (TRIPZY) developed using the MERN stack represents a significant advancement in online ticketing services. Leveraging modern web technologies, we have created a user-friendly platform that streamlines the booking process, ensures payment security, and provides valuable insights for bus operators. The system's scalability, responsiveness, and adherence to regulatory standards position it as a valuable tool for enhancing the efficiency and user experience of bus travel services. Future enhancements will focus on real-time tracking, notifications, and personalized recommendations to further elevate the system's capabilities.

REFERENCES

1) [3] I. C. Nwakanma, C. Etus, I. Ajere, and U. G. Agomuo, "Online Bus Ticket Reservation System," Statistics and Computing, vol. 15, no. 1, pp. 30-35, Jan. 2015.

2) [2] A. K. Sharma, R. Pandey, S. Tarafdar, and S. Dubey, "Towards Smart Mobility in Cities - Bus Tracking and Booking System," 2021 9th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO), Noida, India, 03-04 September 2021, doi: 10.1109/ICRITO51393.2021.9596492.

3) [4] S. Kazi, M. Bagasrawala, F. Shaikh, and A. Sayyed, "Smart E-Ticketing System for Public Transport Bus," 2018 International Conference on Smart City and Emerging Technology (ICSCET), Mumbai, India, 05-05 January 2018, doi: 10.1109/ICSCET.2018.8537302.

4) https://www.researchgate.net/publication/361465446_Application_using_MERN_Stack

5) https://www.ijert.org/research/performance-optimization-using-mern-stack-on-web-application-IJERTV10IS060239.pdf

6) https://ieeexplore.ieee.org/Xplore/home.jsp