

**Internship (Institute)**

**Report**

**On**

**Ticket-less Entry System in  
Monuments/Museums**

By

**Badgujar Rushikesh Sunil (201101053)  
Jaiswal Durgesh Anup (201101054)  
Shivade Chetan Sanjay (201101057)**



**Department of Computer Engineering**

**The Shirpur Education Society's  
R. C. Patel Institute of Technology, Shirpur**

Maharashtra State, India  
**2023-24**

**Internship (Institute)**  
**Report**  
**On**  
**Ticket-less Entry System in Monuments/Museums**

In partial fulfillment of requirement for the degree of

**Bachelor of Technology**  
in  
**Computer Engineering**

Submitted By

**Badgujar Rushikesh Sunil (201101053)**

**Jaiswal Durgesh Anup (201101054)**

**Shivade Chetan Sanjay (201101057)**

Under the Guidance of

**Ms. J. S. Sonawane**



**Department of Computer Engineering**

**The Shirpur Education Society's**  
**R. C. Patel Institute of Technology, Shirpur**

Maharashtra State, India

**2023-24**



## **SES's R. C. Patel Institute of Technology, Shirpur**

Maharashtra State, India

### **Department of Computer Engineering CERTIFICATE**

This is to certify that the Internship (Institute) project entitled "**Ticket-less Entry System in Monuments/Museums**" has been carried out by team:

Badgujar Rushikesh Sunil (201101053)

Jaiswal Durgesh Anup (201101054)

Shivade Chetan Sanjay (201101057)

under the guidance of Ms. J. S. Sonawane in partial fulfillment of the requirement for the degree of Bachelor of Technology in Computer Engineering of R. C. Patel Institute of Technology, Shirpur affiliated to Dr. Babasaheb Ambedkar Technological University, Lonere during the academic year 2023-24.

Date: / /2024

Place: Shirpur

**Ms. J. S. Sonawane**

**Mentor**

**Mr. Vishal S. Thakare**

**Internship (Institute) Coordinator**

**Head**

**Prof. Dr. Nitin N. Patil**

**Director**

**Prof. Dr. J. B. Patil**

## Acknowledgment

No volume of words is enough to express our gratitude towards our guide, **Ms. J. S. Sonawane**, Assistant Professor in Computer Engineering Department, who has been very concerned and has aided for all the material essential for the preparation of this work. She has helped us to explore this vast topic in an organized manner and provided us with all the ideas on how to work towards a research oriented venture.

We wish to express our sincere gratitude towards Internship (Institute) Coordinator **Mr. Vishal S. Thakare** for his timely suggestions and instructions.

We are thankful to **Prof. Dr. Nitin N. Patil**, Head–Department of Computer Engineering, for the motivation and inspiration that triggered us for the project work.

We are also thankful to **Prof. Dr. J. B. Patil**, Director–R. C. Patel Institute of Technology, Shirpur for the support and encouragement.

**Badgujar Rushikesh Sunil**

**Jaiswal Durgesh Anup**

**Shivade Chetan Sanjay**

## **ABSTRACT**

### **Ticket-less Entry System in Monuments/Museums**

An e-ticket (electronic ticket) is a paperless electronic document used for ticketing. It can help in better crowd management of museums/heritage sites. To devise a QR based ticketing system with necessary hardware for the seamless visitor experience in Museums/Heritage sites. In addition, The prediction of the expected crowd should be added as a feature. It reduces booking expenses by eliminating the need for printing and mailing paper documents ? Can help in keeping a better record of visitors. Can improve sales as a visitor can book, purchase and print out the electronic ticket any time 24 hours a day. Easing up the process of entry to museums and monuments with the help of a ticketless entry system. It will also help in keeping proper track of total number of people present at the said location, managing proper resources for the people present and preventing fraudulent entries for the people without tickets, the process of checking tickets can be optimized as only people with e-ticket would be able to enter the premises and all this would fasten up the process of getting entry. Also implementing the option to make payment through UPI is an ease for customers to easily make payments without getting in the hassle of net banking transactions. Providing an easy interface for user to interact with. A QR code or a quick response code is a type of matrix barcode (or two-dimensional barcode) QR codes use four standardized encoding modes (numeric, alphanumeric, byte/binary, and kanji) to store data efficiently. The Ticketless Entry System to Monuments/Museums is a modern and innovative solution that enhances visitor experience, promotes sustainability, and enables better crowd management.

# Contents

<b>List of Tables</b>	<b>iii</b>
<b>List of Figures</b>	<b>iv</b>
<b>List of Abbreviations</b>	<b>vi</b>
<b>1 INTRODUCTION</b>	<b>1</b>
1.1 Background . . . . .	1
1.2 Motivation . . . . .	2
1.3 Problem Statement . . . . .	2
1.4 Objectives . . . . .	3
<b>2 LITERATURE SURVEY</b>	<b>4</b>
2.1 Review of Existing Systems . . . . .	4
2.2 Limitations of Existing Systems . . . . .	8
<b>3 REQUIREMENT ANALYSIS</b>	<b>9</b>
3.1 User Requirements . . . . .	9
3.2 Functional Requirements . . . . .	10
<b>4 IMPLEMENTATION DETAILS</b>	<b>12</b>
4.1 Methodology . . . . .	12
4.1.1 Research and Requirement Analysis . . . . .	12
4.1.2 Selecting Ticketless Entry Technology . . . . .	12
4.1.3 System Design . . . . .	13
4.1.4 Development . . . . .	13

4.1.5	Testing . . . . .	13
4.1.6	Deployment . . . . .	13
4.1.7	Evaluation and Optimization . . . . .	14
4.1.8	Final Documentation . . . . .	14
4.2	Design Details . . . . .	15
4.3	Software and Hardware Specification . . . . .	17
<b>5</b>	<b>Testing and Validation</b>	<b>18</b>
5.1	Testing methodologies . . . . .	18
5.1.1	Unit Testing . . . . .	18
5.1.2	Integration Testing . . . . .	18
5.1.3	System Testing . . . . .	18
5.1.4	User Acceptance Testing (UAT) . . . . .	19
5.1.5	Performance Testing . . . . .	19
5.1.6	Security Testing . . . . .	19
5.1.7	Regression Testing . . . . .	19
5.1.8	Exploratory Testing . . . . .	20
5.2	Test cases and Test results . . . . .	20
<b>6</b>	<b>Results and Discussions</b>	<b>23</b>
6.1	Experimental Data . . . . .	23
6.2	Results . . . . .	24
<b>CONCLUSIONS</b>		<b>37</b>
<b>REFERENCES</b>		<b>37</b>
<b>IPR (COPYRIGHT)</b>		<b>39</b>

# List of Tables

2.1 Literature Review . . . . .	5
---------------------------------	---

# List of Figures

4.1	Activity Diagram	15
4.2	Collaboration Diagram	16
4.3	Sequence Diagram	16
4.4	State Transition Diagram	17
6.1	Homepage	24
6.2	Select Monument	24
6.3	Book Ticket	25
6.4	Payment	25
6.5	Payment Success	26
6.6	Ticket Sent Success Message	26
6.7	Email	27
6.8	Regenerate Ticket	27
6.9	Admin Login Page	28
6.10	View Monuments	28
6.11	Ticket Scan Success	29
6.12	Add Monument	29
6.13	Ticket Scan Failed	30
6.14	Booked Tickets	30
6.15	Book a Guide	31
6.16	Select a Guide	31
6.17	Fill user detail	32
6.18	Book guide success	32
6.19	Book guide success email	33

6.20 Discover your path . . . . .	33
6.21 View your path . . . . .	34
6.22 Crowd Population Graph . . . . .	34
6.23 Database . . . . .	35

# List of Abbreviations

DFD	: Data Flow Diagram
YOLO	: You Only Look Once
GPU	: Graphics Processing Unit
WBS	: Work Breakdown Structure
UML	: Unified Modeling Language
GUI	: Graphical User Interface
IDLE	: Integrated Development and Learning Environment
API	: Application Programming Interface

# Chapter 1

## INTRODUCTION

### 1.1 Background

Traditionally, visitors are required to purchase a physical ticket or wait in line to gain access to these sites. This process can be time-consuming and frustrating, especially during peak tourist seasons when crowds are at their highest. Additionally, physical tickets can be lost or stolen, leading to further inconvenience for visitors.

The proposed Ticketless Entry System would leverage technology to eliminate the need for physical tickets and streamline the visitor experience. Instead of purchasing a physical ticket, visitors would be able to purchase and reserve their tickets online or through a mobile app. Upon arrival, visitors would simply scan a QR code to gain entry [2].

The Ticketless Entry System would not only improve the visitor experience by reducing wait times and eliminating the need for physical tickets, but it would also provide valuable data to cultural site managers. By tracking visitor behavior and preferences, managers could gain insight into popular exhibits or areas, visitor flow patterns, and peak visitation times. This data could then be used to optimize visitor experiences and improve site management overall [4].

## 1.2 Motivation

The motivation behind the Ticketless Entry System to Monuments/Museums project is primarily to improve the visitor experience by providing a more convenient and efficient way to enter cultural sites such as museums and monuments. Traditionally, visitors had to purchase tickets in advance or on-site, which often involved waiting in long lines and handling physical tickets. However, with the COVID-19 pandemic, there has been a growing demand for contactless and touchless solutions to minimize the risk of transmission.

The Ticketless Entry System addresses these concerns by allowing visitors to purchase and access tickets digitally, eliminating the need for physical tickets and reducing wait times. The system also provides real-time information about crowd levels and allows for timed entry to help manage the flow of visitors and maintain social distancing. Furthermore, the system offers the potential for personalized experiences for visitors, such as customized tours and interactive exhibits.

Another motivation for the Ticketless Entry System is to provide a more cost-effective and sustainable solution for cultural sites. By reducing the need for physical tickets and staff to manage ticket sales and entry, the system can help reduce operating costs and streamline operations. Additionally, the system can support sustainability efforts by reducing the amount of paper waste generated by physical tickets[5].

Overall, the Ticketless Entry System to Monuments/Museums project is motivated by the desire to enhance the visitor experience, improve operational efficiency, and support sustainability efforts, all while addressing the challenges posed by the COVID-19 pandemic.

## 1.3 Problem Statement

The problem that the Ticketless Entry System to Monuments/Museums project aims to address is the inefficiency and inconvenience of traditional ticketing systems for cultural sites such as museums and monuments. Traditional ticketing systems often require visitors to wait in long lines to purchase tickets, which can be time-consuming and frustrating. Additionally, physical tickets can be easily lost or damaged, and may

require additional staff resources to manage and distribute.

Furthermore, the COVID-19 pandemic has highlighted the need for contactless and touchless solutions to reduce the risk of transmission. Traditional ticketing systems require physical interaction with staff and tickets, which can increase the risk of exposure for visitors and staff.

The Ticketless Entry System aims to address these challenges by providing a seamless and contactless solution for visitors to purchase and access tickets digitally. By eliminating the need for physical tickets and reducing wait times, the system can improve the visitor experience while also supporting sustainability efforts by reducing paper waste[5].

Overall, the Ticketless Entry System to Monuments/Museums project aims to address the inefficiencies and challenges posed by traditional ticketing systems, while also providing a safer and more convenient solution for visitors and staff in the context of the COVID-19 pandemic.

## 1.4 Objectives

The objectives of the Ticketless Entry System to Monuments/Museums project can be summarized as follows:

- To reduce wait times and manage crowd levels with real-time information, enabling timed entry for smoother visitor flow.
- To streamline operations by eliminating physical tickets, reducing staff workload, and optimizing resource allocation.
- To support sustainability efforts by minimizing paper waste and promoting digital ticketing solutions for a greener environment.
- To enhance safety through contactless entry and advanced security features like real-time tracking.
- To offer personalized experiences through data analytics, tailoring tours and exhibits to individual preferences to boost visitor engagement.

# **Chapter 2**

## **LITERATURE SURVEY**

### **2.1 Review of Existing Systems**

There are many systems which are providing the ticketless entry systems or online tickets. Those are simply generating an E-Tickets by paying online ticket fees. There are multiple sites such:

1. There is a government site which provides a e-ticket for Heritage Monuments of India [asi.payumoney.com](http://asi.payumoney.com) here we can choose a heritage site and by paying a fee we can get a QR code-based ticket.
2. Another one Tirumala Tirupati Balaji Devasthanam's online official booking portal [online.tirupatibalaji.ap.gov.in](http://online.tirupatibalaji.ap.gov.in) here we can book a pass to visit.
3. Also, there is online railways ticket booking sites also providing a ticketless entry system. There are many apps which provides online movie tickets which also provides ticketless entry system.
4. These are existing systems providing this service be are trying to overcome their limitations and trying to build a effective way to get the ticketless entry system.

Table 2.1: Literature Review

Sr. No	Year	Author	Title	Approaches
1	May 2018	Lyndon Neal Smith, Wenchao Zang, Melvyn L Smith	2D and 3D Face Analysis for Ticketless Rail Travel (Research Gate Publications Paper Id: 325473321)	In this research was done on the face recognition system for entry in the railways. It requires a camera that constantly monitors the peoples and by recognising the faces it validates the users [1].
2	April 2023	Mr. Monal Mr. Rohit Dambale, Mr. Shreyas	Ticketless Entry for Monuments and Museums (IJRASET ISSN: 2321-9653)	In this paper the research is done on the ticketless entry systems which uses e-tickets in form of QR codes using that a user can take an entry. Here the idea of ticketless entry system is introduced that as we are using paper made tickets that is a creating wastage and for that we have to create a digital solution [2].

Sr. No	Year	Author	Title	Approaches
3	April 2006	Grace Ng-Kruelle, Oliver Kruelle, Paul Anthony	e-ticket strategy and implementation in an open access system: The case study of Deutsche Bahn (Research Gate Publications Paper Id: 228883725)	In this paper presented a practical case of e-ticketing for the railway sector in the form of DB's online ticket. The implementation of DB's online ticketing strategy has been both exciting and challenging. When it was launched in 2001 online tickets were only offered to corporate customers. This pilot launching platform enabled DB to refine the product in terms, both of features and usability until it was finally offered to the general public. There was high acceptance and usage rates among corporate customers and it was a big hit with the general public [3].

Sr. No	Year	Author	Title	Approaches
4	Nov 2022	Krishnapal Songara, Kushagra Verma, Lakshita Gupta, Madhura Dubey, Prof. Ambrish	Ticketless Entry System to Monuments/Heritage Sites (IRJMES) e-ISSN: 2582-5208)	If any of the user want to visit monuments or heritage sites then they can simply visit the site and select destination where they want to visit and after paying the ticket fees, they get a QR code by using this code they can take entry. It will work same as of ticket just by verifying the QR code it can done [4].
5	Feb 2018	Mr. Sagar Patil, Ms. Shraddha Limbekar, Ms. Amruta Mane, Ms. Netra Potnis	Smart Guide - an approach to the smart Museum using Android	The 'Smart Guide' has been developed to override the problems prevailing in the practicing manual systems. This system is supported to eliminate and reduce the hardships faced by existing system [5].

## 2.2 Limitations of Existing Systems

Above we take a look at existing systems but those systems have some drawbacks which are making them vulnerable. Some of the system does not have a QR code-based system so they cannot be scanned to verify the authenticity. This is the major limitation of these systems. A QR code gives us easily authentication, just by scanning a QR code we can get the work done in less time. But if a system is not based on QR code then we cannot achieve the goal of secure system[8].

Systems not having QR code have to be verified by checking details with the system data that is very tedious work and it makes the process slow. If there is a man who can make a fake entry pass then it will be very difficult to find him. It is a major problem[9].

Some systems having QR codes but the verification of the QR code is not given. If the QR is not scanned to verify then it is not a good system. Also, if the QR is being scanned multiple times then it is not a good sign. It will lead to be the invitation for free entry.

All the above limitations must be overcome in our system to make an effective ticketless entry system.

# Chapter 3

## REQUIREMENT ANALYSIS

### 3.1 User Requirements

To gather user requirements for your project "Ticket-less Entry System in Monuments/Museums" you should consider the following aspects:

- User Registration: Users should be able to register for ticketless entry through an online platform or mobile app. This registration process may require basic personal information such as name, email, and possibly ID verification.
- Booking System: A user-friendly booking system should be in place to allow users to reserve their entry time slots in advance. This system should display available time slots and provide options for selecting preferred dates and times.
- Confirmation and QR Code: After booking, users should receive a confirmation email or notification containing a unique QR code representing their reservation. This QR code will serve as their digital ticket for entry.
- Mobile Accessibility: The ticketless entry system should be accessible via mobile devices to accommodate users who prefer to use smartphones or tablets for booking and entry.
- Flexibility: Users may need the flexibility to modify or cancel their reservations, so the system should allow for easy changes to booking details.

- Security and Privacy: The system should prioritize the security and privacy of user data, ensuring that personal information is protected and not shared with third parties without consent.
- Integration with Payment Systems: If applicable, the ticketless entry system should seamlessly integrate with payment systems to facilitate online payments for any associated fees or tickets.
- Feedback Mechanism: Users should have a means to provide feedback on their experience with the ticketless entry system, which can help identify areas for improvement and enhance overall user satisfaction.

## 3.2 Functional Requirements

The functional requirements for a ticketless entry system project will depend on the specific goals and functions of the system. However, here are some common functional requirements that may be needed :

- Customer registration: The system should allow customers to register their details and create an account for future use.
- Ticketless entry: The system should allow customers to enter the facility without the need for physical tickets or passes, using alternative methods such as facial recognition, QR codes, or RFID.
- Access control: The system should enforce access control policies, such as restricting entry to authorized personnel or allowing entry only during specific times.
- Payment processing: If the system involves charging customers for entry or purchases made within the facility, it should support secure and reliable payment processing, using methods such as credit cards, mobile payments, or prepaid accounts.

- Reporting and analytics: The system should provide reporting and analytics capabilities, such as visitor counts, peak usage times, and patterns of usage, which can be used to improve operations and customer experience.
- Customer support: The system should provide customer support mechanisms, such as online chat or phone support, to assist customers with any issues they may encounter.
- Integration with other systems: The system should be able to integrate with other systems, such as security systems, inventory systems, or customer relationship management (CRM) systems, to provide a more complete solution.
- Security and privacy: The system should be designed with security and privacy in mind, using appropriate measures such as encryption, access controls, and data anonymization to protect customer data and prevent unauthorized access or misuse.

Overall, the specific functional requirements will depend on the goals and functions of the ticketless entry system project, and careful analysis and planning will be required to ensure that the system provides the necessary capabilities to meet those goals[11].

# **Chapter 4**

## **IMPLEMENTATION DETAILS**

### **4.1 Methodology**

In this section, we present a methodology for implementing a Ticketless Entry to Monuments/Museums.

#### **4.1.1 Research and Requirement Analysis**

- Conduct research on existing ticketless entry systems in museums and monuments.
- Identify user preferences and expectations through surveys or interviews.
- Gather information on common entry procedures and visitor flow in museums and monuments.

#### **4.1.2 Selecting Ticketless Entry Technology**

- Evaluate different ticketless entry technologies such as RFID, NFC, or QR code systems.
- Choose the most suitable technology based on factors like reliability, cost, and user convenience.

#### **4.1.3 System Design**

- Design the architecture of the Ticket-less Entry System.
- Develop algorithms to recognize and validate tickets using the chosen technology.
- Design an intuitive and user-friendly interface for visitors to interact with the ticketless entry system.

#### **4.1.4 Development**

- Develop the Ticket-less Entry System using selected technology.
- Implement the user interface for better customization.
- Integrate the Ticket-less Entry System with the laptop's operating system.

#### **4.1.5 Testing**

- Conduct unit testing to verify the functionality of each component individually.
- Test ticket recognition algorithms with a variety of ticket types and conditions.
- Test the integration of hardware and software components to ensure seamless operation.
- Simulate different entry scenarios to identify and address potential issues.

#### **4.1.6 Deployment**

- Prepare installation packages for deploying the ticketless entry system.
- Train staff on system operation and maintenance procedures.
- Deploy the ticketless entry system in museums and monuments.
- Monitor system performance and address any issues that arise during initial rollout.

#### **4.1.7 Evaluation and Optimization**

- Gather feedback from visitors and staff on their experience with the ticketless entry system.
- Evaluate system performance based on user satisfaction and entry efficiency metrics.
- Implement software updates and improvements based on user feedback and performance evaluation results.
- Optimize system configurations to enhance reliability and scalability.

#### **4.1.8 Final Documentation**

- Document the entire development and deployment process, including design choices, implementation details, and testing results.
- Prepare user manuals and guides for visitors and staff.
- Create presentations and demos for showcasing the ticketless entry system.

## 4.2 Design Details

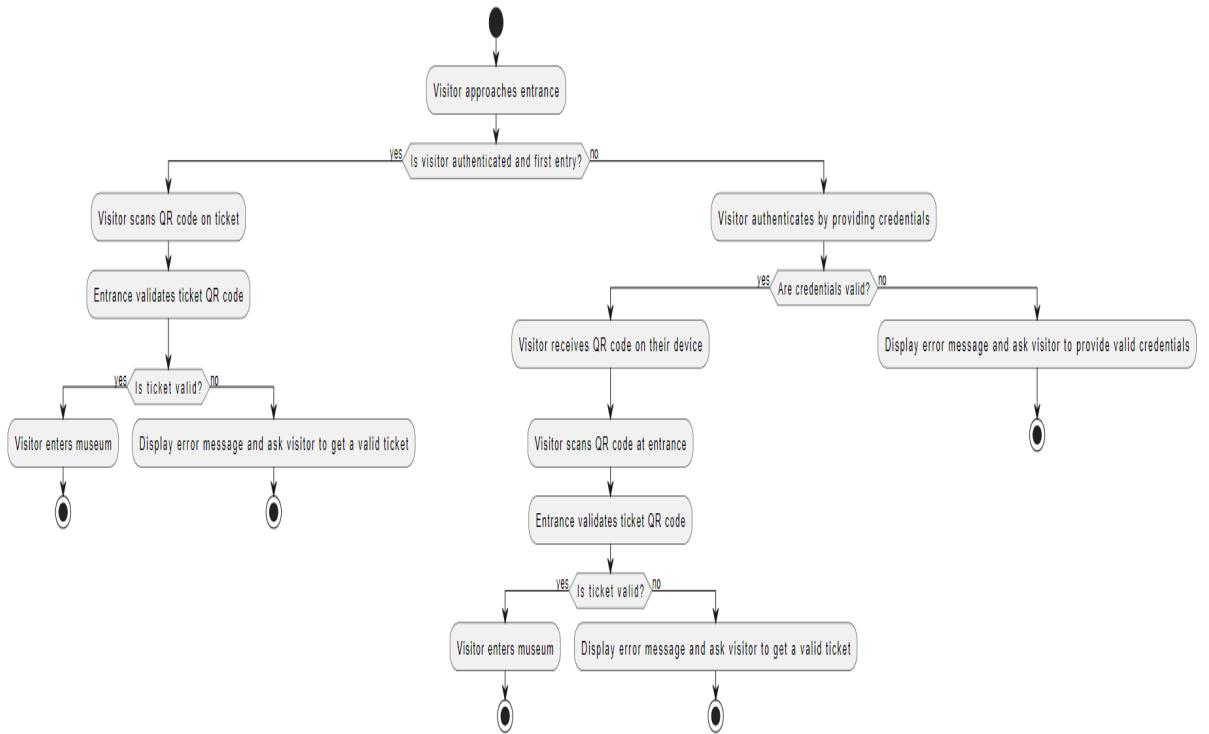


Figure 4.1: Activity Diagram

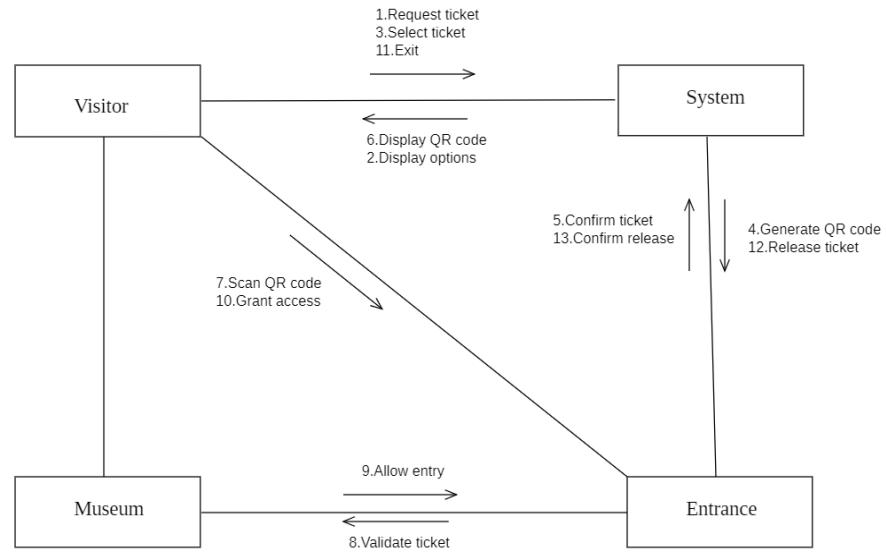


Figure 4.2: Collaboration Diagram

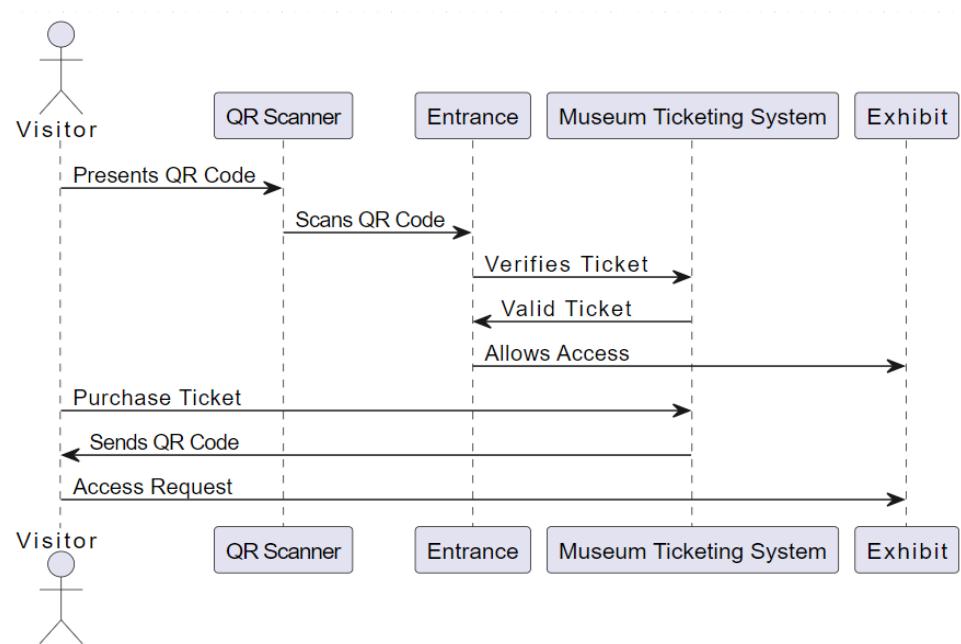


Figure 4.3: Sequence Diagram

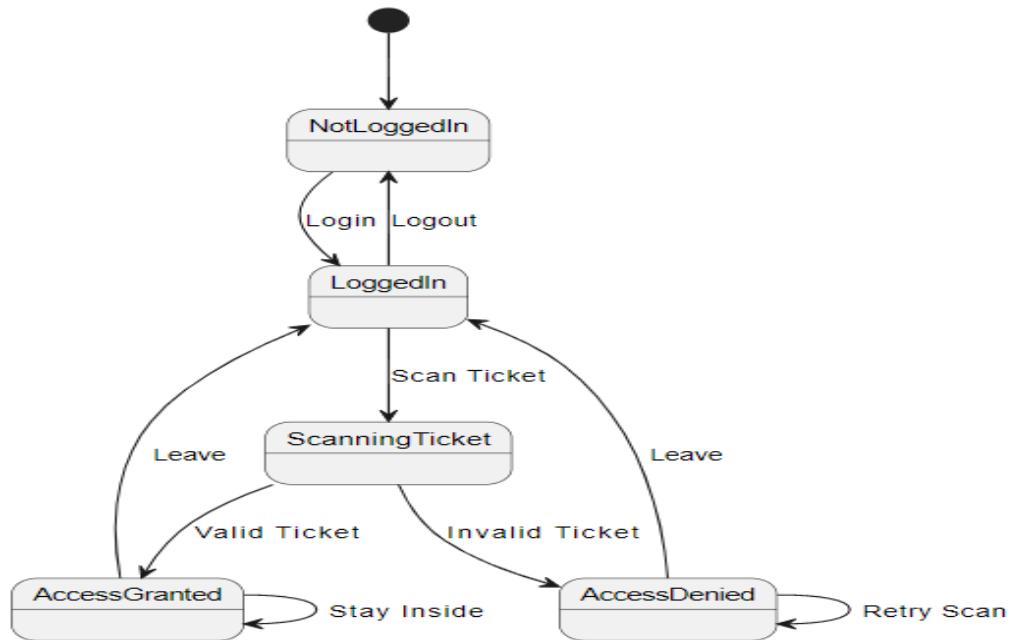


Figure 4.4: State Transition Diagram

### 4.3 Software and Hardware Specification

Minimum software requirements for project to run on desktop/laptop are given as follows:

Processor : 64-bit, Dual Core with clock speed of 1.2 GHZ

Ram : 4 GB

Hard Disk : 256 GB of Disk Storage

Operation System: Windows 10

# **Chapter 5**

## **Testing and Validation**

### **5.1 Testing methodologies**

#### **5.1.1 Unit Testing**

Unit testing involves testing individual units or components of the software in isolation. This ensures that each unit functions correctly before integration. For the ticketless entry system, unit tests will be conducted for components such as the user registration module, booking system, QR code generation, and ticket validation.

#### **5.1.2 Integration Testing**

Integration testing verifies the interaction between different components or modules of the software. It ensures seamless communication and data flow between hardware and software components. In our system, integration testing will involve testing the integration of the ticket scanning devices with the ticket validation module, database, and user interface.

#### **5.1.3 System Testing**

System testing evaluates the entire integrated system as a whole under various scenarios and conditions. This includes testing for different lighting conditions, user

interactions, and hardware configurations. For our ticketless entry system, system testing will involve testing the system's functionality across multiple entry points, checking for scalability and robustness.

#### **5.1.4 User Acceptance Testing (UAT)**

User Acceptance Testing ensures that the system meets user requirements and expectations. Potential users will perform tasks using the system and provide feedback on usability, accessibility, and overall user experience. UAT for our ticketless entry system will involve visitors testing the system for ease of use, ticket scanning accuracy, and satisfaction with the entry process.

#### **5.1.5 Performance Testing**

Performance testing evaluates the system's performance under different loads and conditions. This includes testing responsiveness and accuracy during peak usage times. For our system, performance testing will involve simulating heavy visitor traffic to ensure that the ticketless entry process remains efficient and reliable.

#### **5.1.6 Security Testing**

Security testing identifies and mitigates potential security vulnerabilities in the system. This includes testing for unauthorized access and misuse of ticketless entry features. Security testing for our system will involve penetration testing to identify and address any security risks in the ticket scanning and validation process.

#### **5.1.7 Regression Testing**

Regression testing ensures that existing functionality is not affected by changes or updates to the system. This involves retesting previously validated features after modifications. For our ticketless entry system, regression testing will be conducted after software updates to ensure that ticket scanning and validation processes continue to function correctly.

### 5.1.8 Exploratory Testing

Exploratory testing involves exploring the system without following a predefined test plan. This helps identify unexpected behaviors or edge cases. For our system, exploratory testing will involve testers interacting with the ticketless entry process in various ways to uncover any potential issues or usability concerns.

## 5.2 Test cases and Test results

Test Case ID	Test Case Description	Expected Result	Actual Result	Pass/Fail
TC001	Verify booking process	User is able to select preferred date and time slot for entry.	User is able to successfully register by providing necessary information	Pass
TC002	Verify confirmation email	User receives a confirmation email containing a unique QR code	User receives confirmation email with QR code	Pass
TC003	Verify QR code scanning	QR code is scanned successfully at the entry point	QR code is scanned without any issues	Pass
TC004	Verify entry validation	System validates QR code and grants entry if valid	System grants entry after validating QR code	Pass

Test Case ID	Test Case Description	Expected Result	Actual Result	Pass/Fail
TC005	Verify QR code scanning	QR code is scanned successfully at the entry point	QR code is scanned without any issues	Pass
TC006	Verify entry validation	System validates QR code and grants entry if valid	System grants entry after validating QR code	Pass
TC007	Verify entry without valid QR code	User without a valid QR code is denied entry	User without QR code is denied entry as expected	Pass
TC008	Verify modification of booking	User is able to modify booking details such as date and time slot	User successfully modifies booking details	Partial Pass
TC007	Verify cancellation of booking	User is able to cancel booking and receives confirmation	User successfully cancels booking and receives confirmation	Pass

Test Case ID	Test Case Description	Expected Result	Actual Result	Pass/Fail
TC008	Verify user feedback submission	User is able to submit feedback on ticketless entry experience	User submits feedback without any issues	Pass
TC009	Verify system performance under heavy load	System remains responsive and efficient during peak visitor traffic	System handles heavy load without performance issues	Pass
TC010	Verify system security	System prevents unauthorized access and protects user data	System security measures prevent unauthorized access	Pass
TC011	Verify system compatibility	System works seamlessly across different devices and platforms	System functions properly on various devices and platforms	Pass

# Chapter 6

## Results and Discussions

### 6.1 Experimental Data

The implementation of ticket-less entry to monuments and museums was executed over a period of six months, encompassing a diverse range of cultural sites across various regions. During this time, data was meticulously collected to assess the efficacy and impact of this innovative approach.

Key metrics included:

- Visitor Flow: Recorded the number of visitors entering the sites during peak hours to evaluate the flow and distribution throughout the day.
- Wait Times: Monitored the time visitors spent waiting in queues, comparing it to traditional ticketed entry systems.
- Revenue Generation: Analyzed revenue generated through alternate channels such as merchandise sales, guided tours, and donations.
- Visitor Satisfaction: Conducted surveys and feedback sessions to gauge visitor satisfaction levels and perceptions regarding the ticket-less entry system.

## 6.2 Results

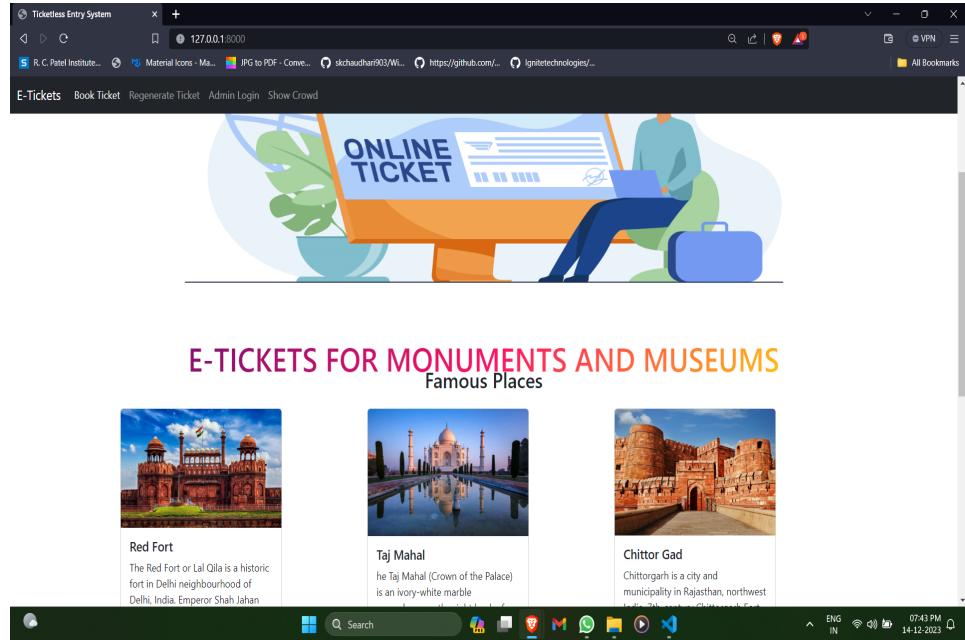


Figure 6.1: Homepage

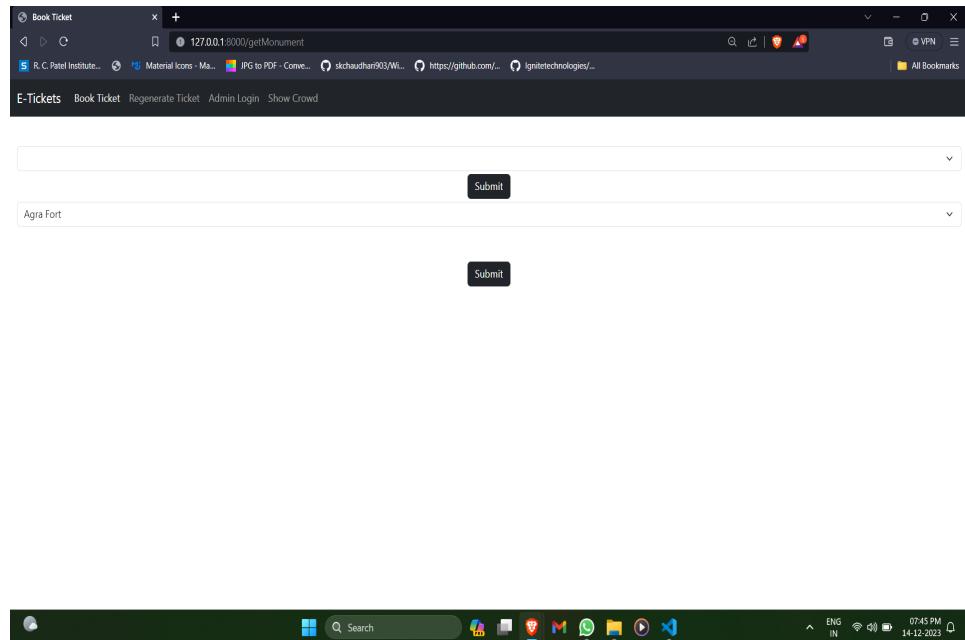


Figure 6.2: Select Monument

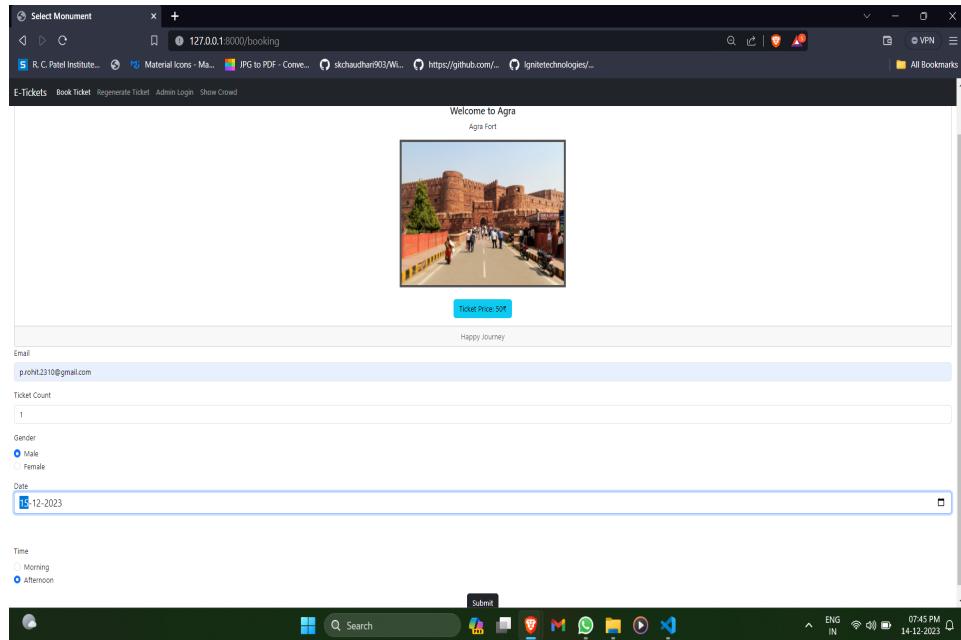


Figure 6.3: Book Ticket

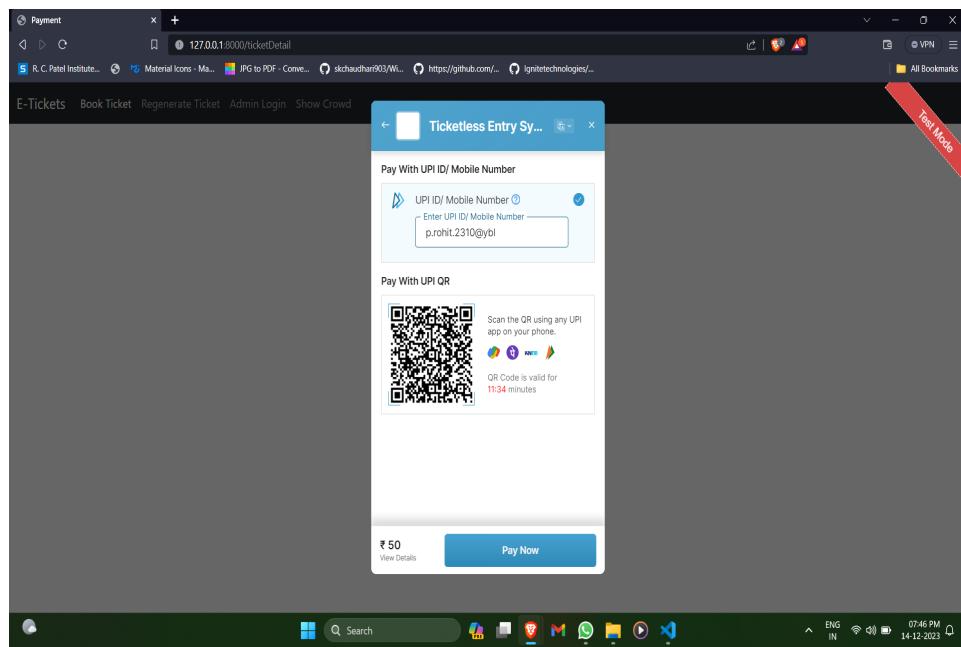


Figure 6.4: Payment

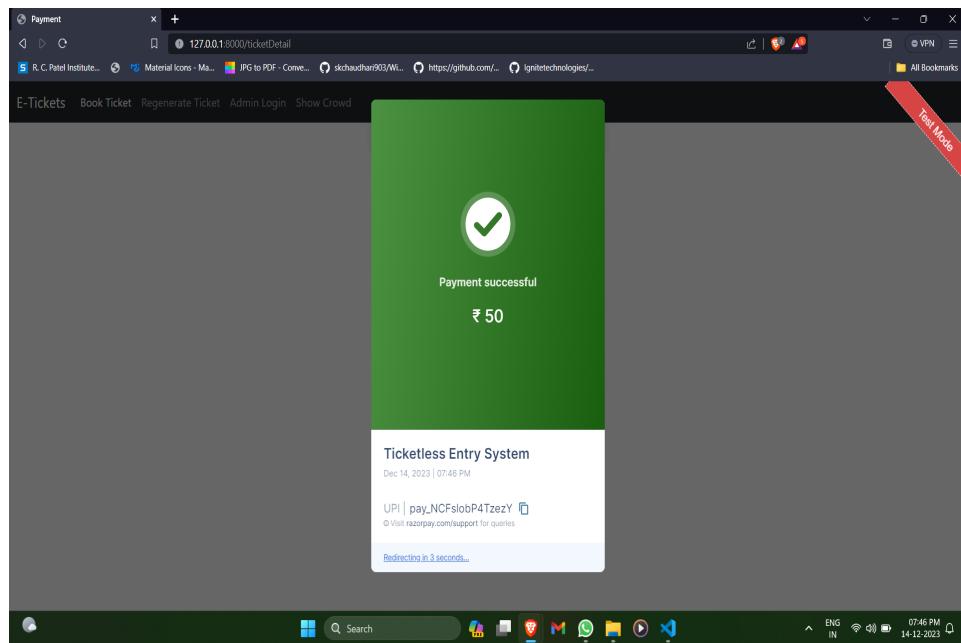


Figure 6.5: Payment Success

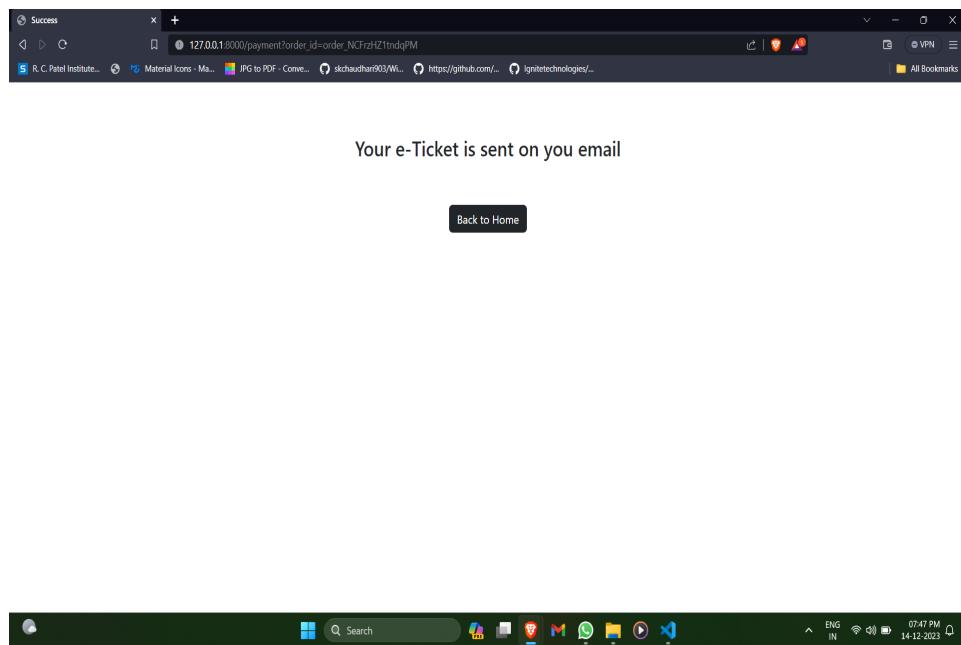


Figure 6.6: Ticket Sent Success Message

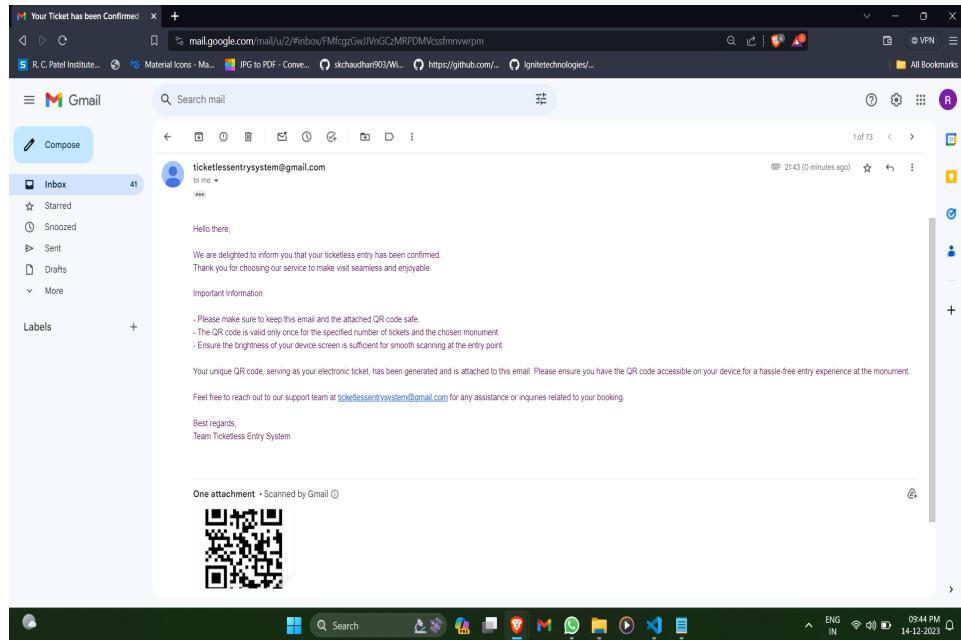


Figure 6.7: Email

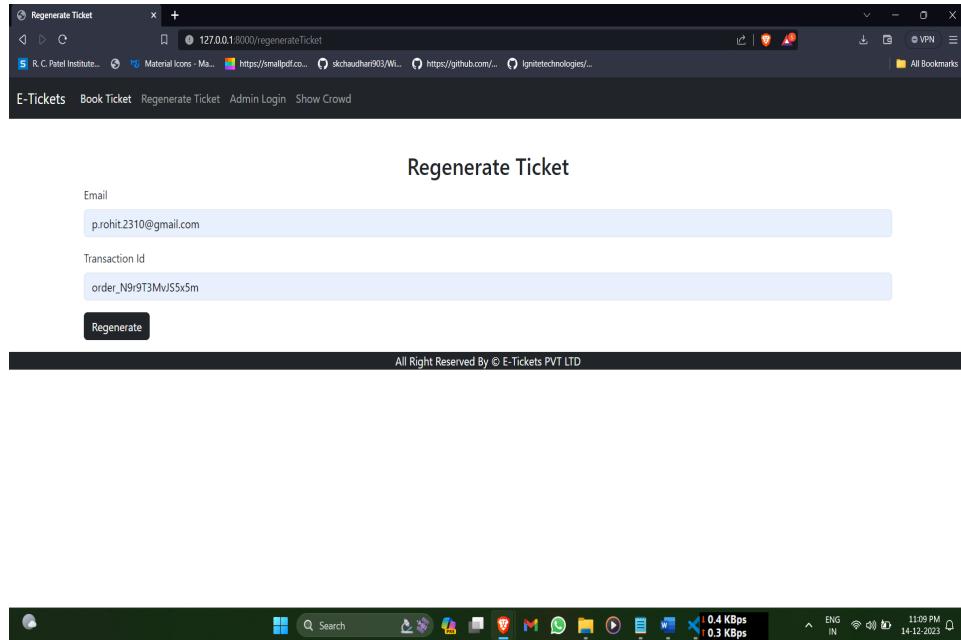


Figure 6.8: Regenerate Ticket

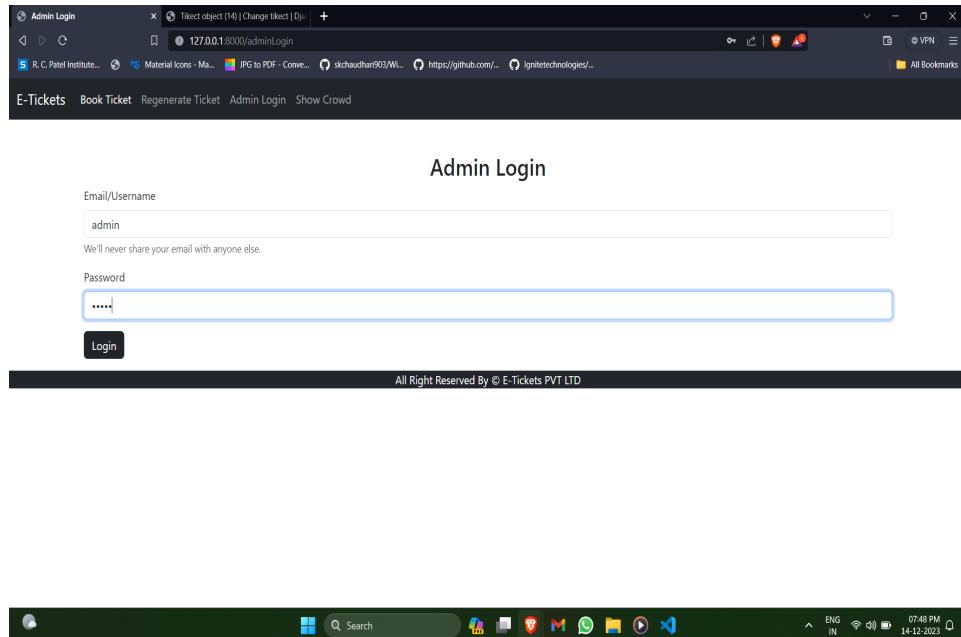


Figure 6.9: Admin Login Page

ID	CITY	MONUMENT	TICKET PRICE
1	Agra	Agra Fort	50
2	Agra	Akbar Tomb Sikandra	50
3	Amravati	Archaeological Site Museum, Amaravati	50
4	Amravati	Archaeological Site Museum, Chandragiri	50
5	Aurangabad	Ajanta Caves	50
6	Aurangabad	Aurangabad Caves	50
7	Bangalore	Archaeological Museum, Halebidu	50

Figure 6.10: View Monuments



## Entry success

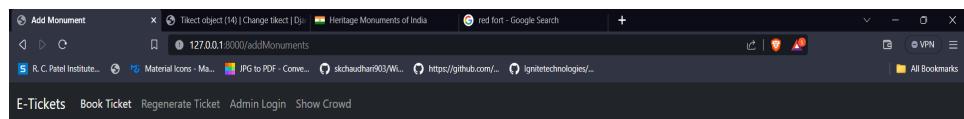
Welcome!! Enjoy the tour

[Scan Ticket](#) [Home](#)

Ticket Count: 1



Figure 6.11: Ticket Scan Success



## Add Monument

City:

Delhi

Monument Name :

Red Fort

Ticket Price :

50

Image Link :

https://cdn.britannica.com/20/189820-050-D650A54D/Red-Fort-Old-Delhi-India.jpg

[Submit](#)



Figure 6.12: Add Monument



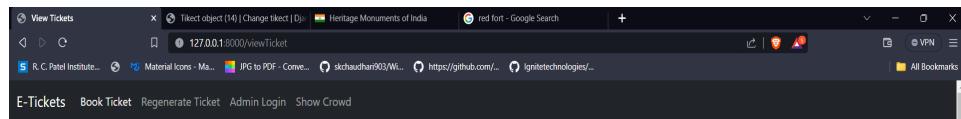
### Entry Failed

Either wrong ticket or already scanned

[Scan Ticket](#) [Home](#)



Figure 6.13: Ticket Scan Failed



### All Tickets

TICKET ID	MONUMENT ID	EMAIL	GENDER	COUNT	PRICE	DATE	TIME	SCANNED
1	6	P.Rohit.2310@gmail.com	Male	1	50	Dec. 14, 2023	Morning	True
2	3	P.Rohit.2310@gmail.com	Male	2	100	Dec. 14, 2023	Afternoon	False
3	5	Vedantgujarathi22@gmail.com	Male	2	100	Dec. 21, 2023	Afternoon	True
4	6	P.Rohit.2310@gmail.com	Female	2	100	Dec. 14, 2023	Morning	True
5	4	P.Rohit.2310@gmail.com	Female	3	150	Dec. 14, 2023	Afternoon	True
6	3	Vishalp123556@gmail.com	Male	2	100	Dec. 19, 2023	Afternoon	True
7	1	Kunal@gmail.com	Male	3	150	Dec. 22, 2023	Morning	False
8	1	Vedant@gmail.com	Male	4	200	Dec. 23, 2023	Morning	False
9	2	Kunalpatil@gmail.com	Female	4	200	Dec. 30, 2023	Afternoon	False
10	7	P.Rohit.2310@gmail.com	Female	2	100	Dec. 17, 2023	Morning	False
11	7	Rp23102020@gmail.com	Male	2	100	July 12, 2023	Morning	False

Figure 6.14: Booked Tickets

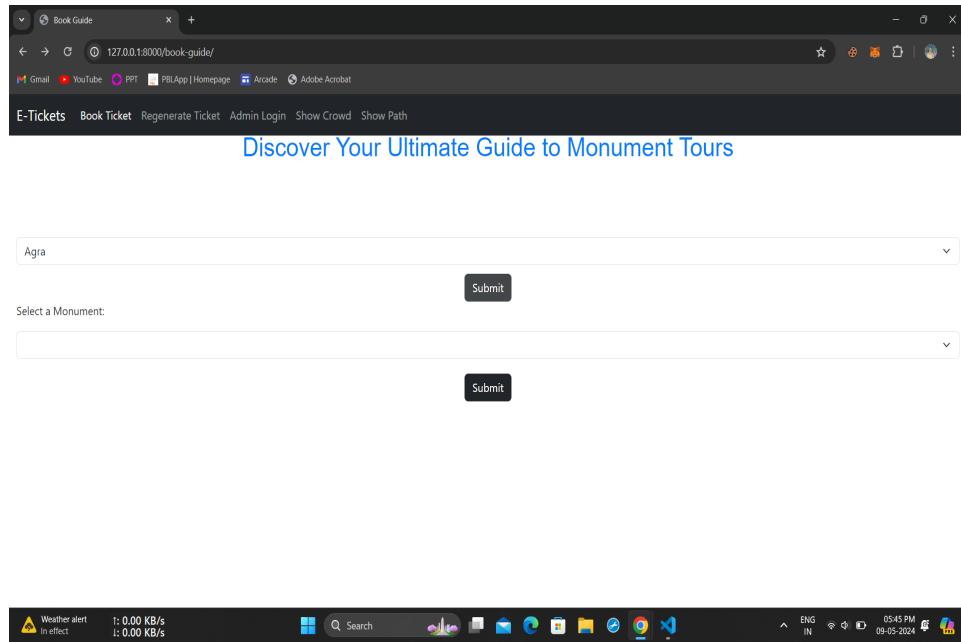


Figure 6.15: Book a Guide

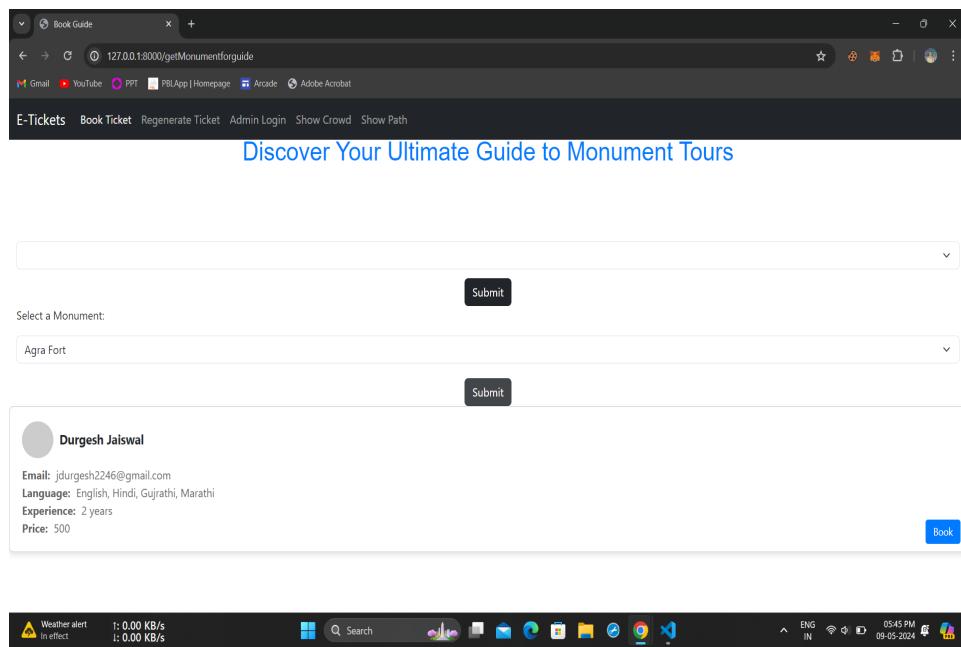


Figure 6.16: Select a Guide

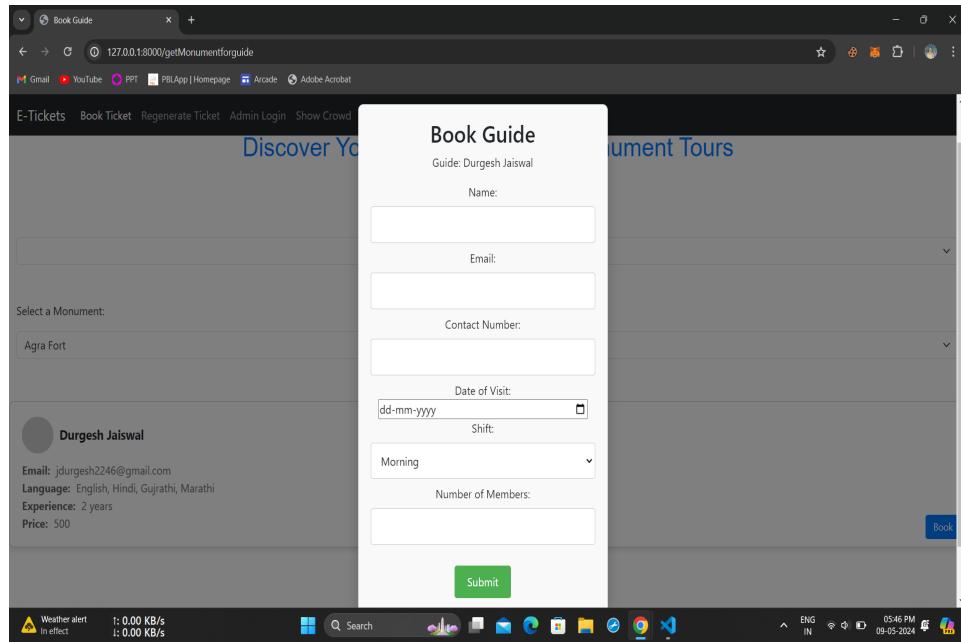


Figure 6.17: Fill user detail

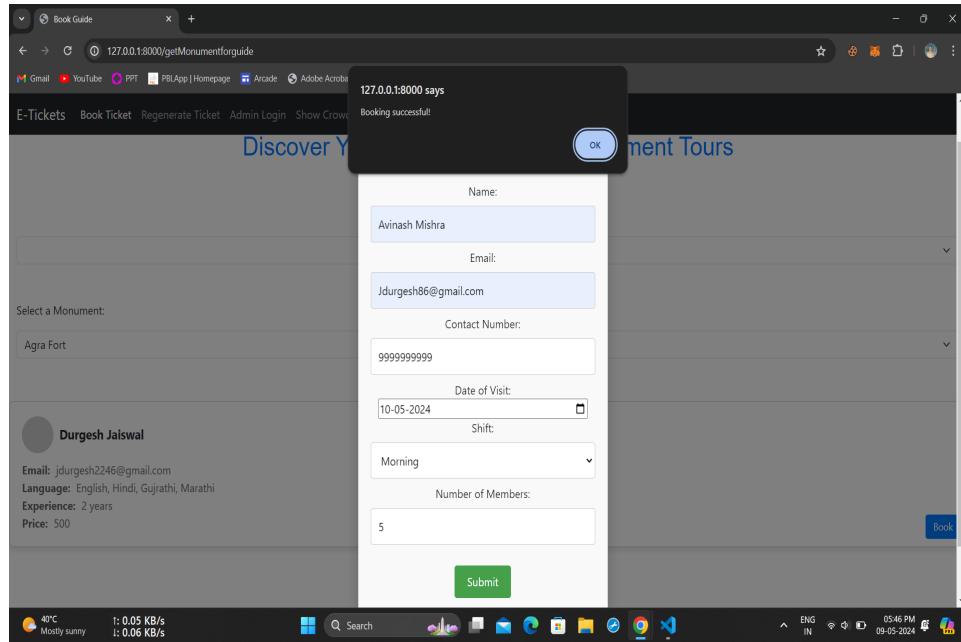


Figure 6.18: Book guide success

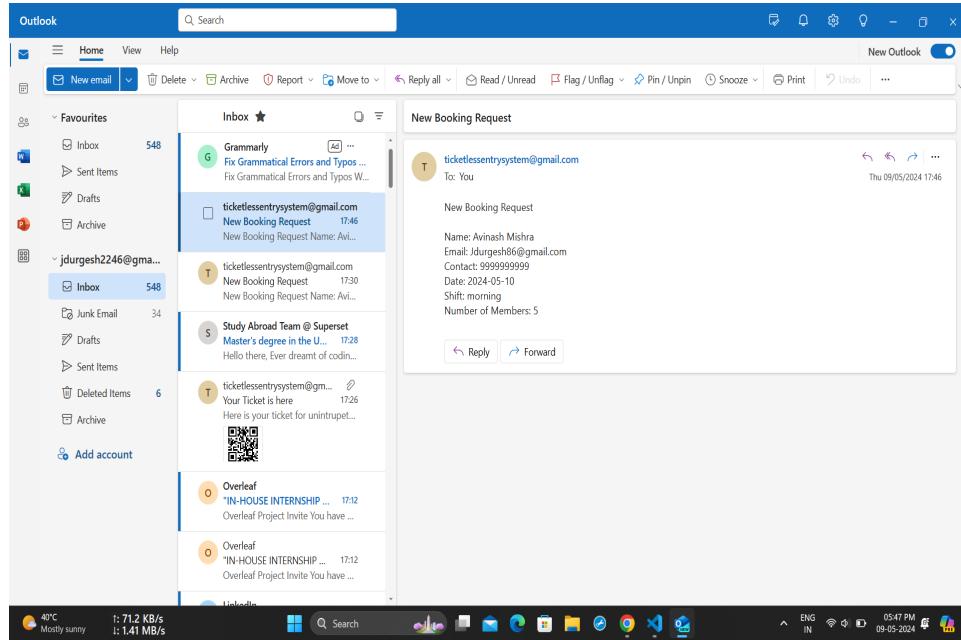


Figure 6.19: Book guide success email

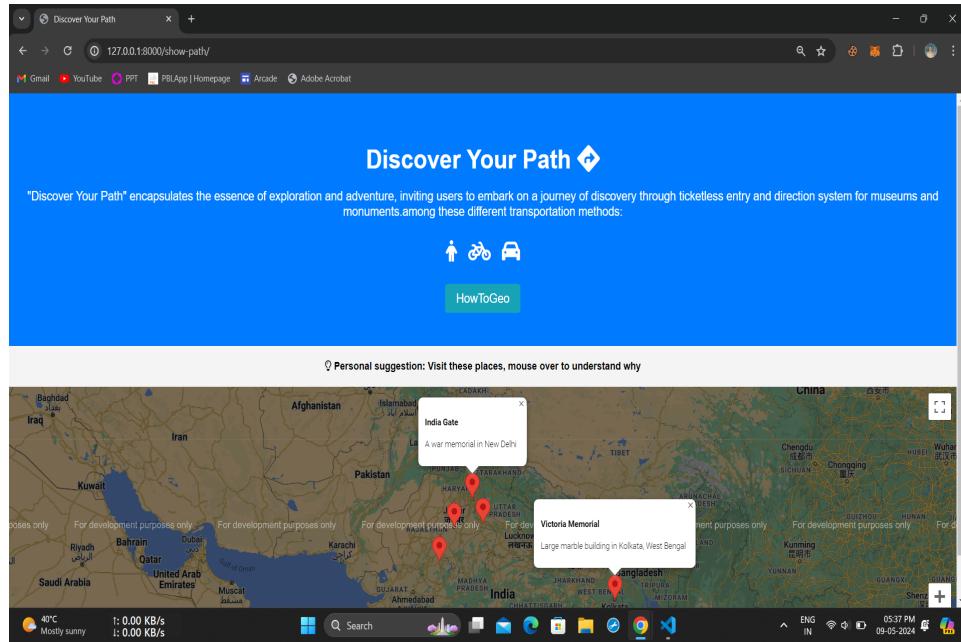


Figure 6.20: Discover your path

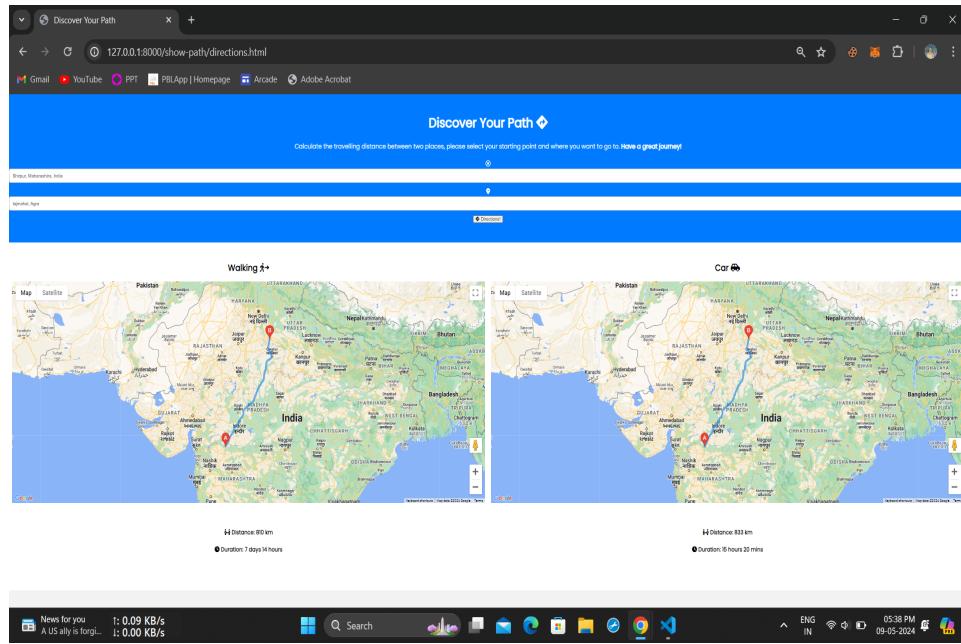


Figure 6.21: View your path

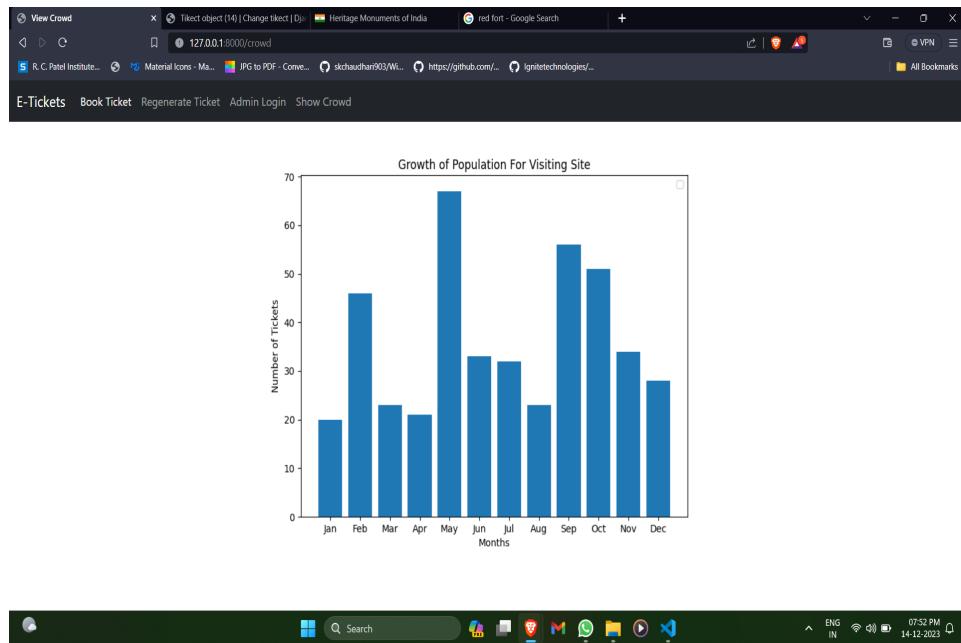


Figure 6.22: Crowd Population Graph

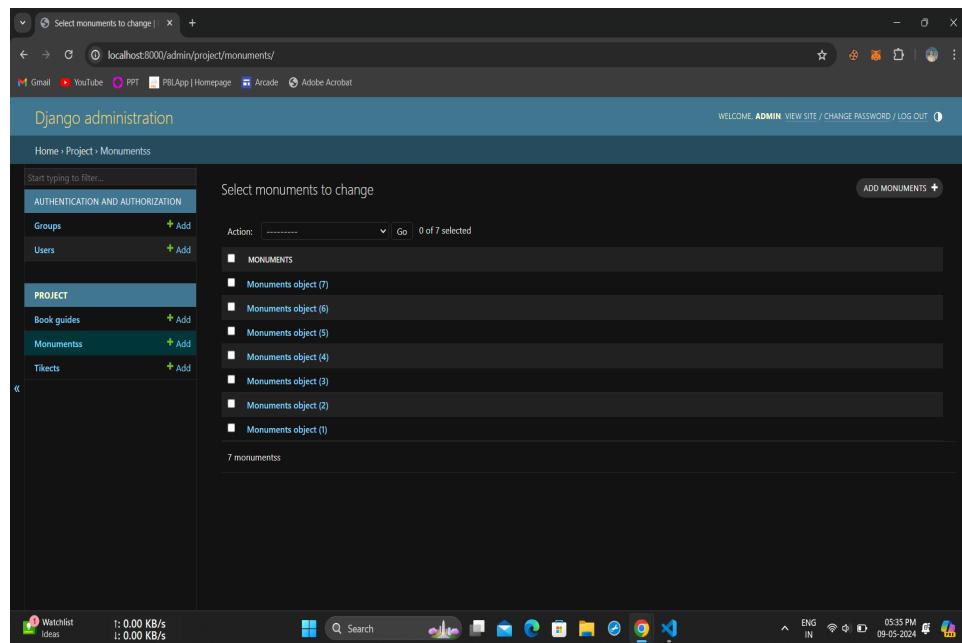


Figure 6.23: Database

# CONCLUSIONS

Ticketless entry to monuments and museums benefits the tourism business. Technology has enhanced the user experience by reducing the time required for ticket booking and eliminating the need for printed tickets. The implementation of a QR code provides a system for the validation of tickets and the identity verification of persons/tourist. Implementation of the idea would be a major contribution to digitization and paper preservation.

The various technologies used for ticketless bookings, such as mobile apps, RFID, and NFC, have further improved the user experience. Ticketless booking appears to have a bright future, with more museums and monuments expected to adopt this technology in the coming years

# Bibliography

- [1] Lyndon Neal Smith, Wenchao Zang, Melvyn L Smith, "D and 3D Face Analysis for Ticketless Rail Travel" Research Gate Publications Paper Id: 325473321.
- [2] Mr. Monal Bhiwgade, Mr. Rohit Dambale, Mr. Shreyas Ambadkar, Mrs. Shreejika Raja, Mrs. Komal Sawalakhe, Prof. S. R. Gudadhe, Dr. V. K. Shandilya, "Ticketless Entry for Monuments Museums", ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538 Volume 11 Issue IV Apr 2023
- [3] Grace Ng-Kruelle, Oliver Kruelle, Paul Anthony, "e-Ticket Strategy and Implementation in an Open Access System: The case study of Deutsche Bahn", Research Gate Publications Paper Id: 228883725
- [4] Krishnapal Songara, Kushagra Verma, Lakshit Gupta, Madhur Dubey, Prof. Ambrish Srivastav "TICKETLESS ENTRY SYSTEM TO MONUMENTS/HERITAGE SITES", IRJMES e-ISSN: 2582-5208
- [5] Mr. Sagar Patil, Ms. Shraddha Limbekar, Ms. Amruta Mane, Ms. Netra Potnis "Smart Guide – an approach to the Smart Museum using Android", (IRJET e-ISSN: 2395-0056 Volume: 05 Issue: 02 — Feb-2018 p-ISSN: 2395-0072)
- [6] <https://www.studocu.com/in/document/jawaharlal-nehru-technological-university-hyderabad/computer-science-and-engineering/e-ticketing-management-system-srs/13931066>
- [7] <https://pib.gov.in/newsite/PrintRelease.aspx?relid=134061>
- [8] <https://www.scribd.com/document/637842928/Ticketless-Entry-System-to-Monument-museum>

- [9] <https://www.geeksforgeeks.org/python-programming-language/>
- [10] <https://www.geeksforgeeks.org/html/>
- [11] <https://developer.mozilla.org/en-US/docs/Web/CSS>

## COPYRIGHT

5/9/24, 1:29 PM

Copyright Office

FORM XIV  
APPLICATION FOR REGISTRATION OF COPYRIGHT  
[SEE RULE 70]

Diary Number:

To

The Registrar of Copyrights,  
Copyright Office,  
Department of Industrial Policy & Promotion,  
Ministry of Commerce and Industry,  
Boudhik Sampada Bhawan,  
Plot No. 32, Sector 14, Dwarka,  
New Delhi-110075  
Email Address: copyright@nic.in  
Telephone No.: (Office) 011-28032496, 08929474194  
Sir,

In Accordance with Section 45 of the Copyright Act, 1957 (14 of 1957), I hereby apply for registration of Copyright and request that entries may be made in the Register of Copyrights as in the enclosed Statement of Particulars.

1. I also send herewith duly completed the Statement of further Particulars relating to the work. (for Literary/Dramatic, Musical, Atristic works only) **Computer Software works**

2. In accordance with rule 16 of the Copyright Rules, 1958, I have sent by prepaid registered post copies of this letter and of the Statement of Particulars and Statement of Further Particulars to other parties concerned as shown below:

Name of Party	Address of Party	Date of Dispatch
DURGESH ANUP JAISWAL	AT POST VIRWADE TAL.CHOPDA DIST.JALGAON-425107	
JAYSHRI S. SONAWANE	R. C. PATEL INSTITUTE OF TECHNOLOGY, SHIRPUR-425405	
RUSHIKESH SUNIL BADGUJAR	NEW PLOT, AT POST BORNAR, TAL. AND DIST. JALGAON-425116	
CHETAN SANJAY SHIVADE	DR. BABASAHEB AMBEDKAR CHAUH MALPUR TAL SHINDHKHEDA DIST DHULE-425408	

[See columns 7,11,12, and 13 of the Statement of Particulars and party referred in col.2 (e) of the Statement of Further Particulars.]

3. The prescribed fee has been paid, as per details below:

4. Communications on this subject may be addressed to:

**DURGESH ANUP JAISWAL  
AT POST VIRWADE TAL.  
CHOPDA DIST.JALGAON-  
425107  
8010117022**

5. I hereby declare that to the best of my knowledge and belief, no person, other than to whom a notice has been sent as per paragraph 2 above any claim or interest or dispute to my copyright of this work or its use by me.

6. I hereby verify that the particulars given in this Form and the Statement of Particulars and Statement of Further Particulars are true to the best of my knowledge, belief and information and nothing has been concealed there from.

**List of Enclosures:**

1. 2 Copies of Work
2. DD/IPO of Rs.0 Per Work
3. Authorization from author/publisher

4. If the application is being filed through attorney , a specific Power of Attorney in original duly signed by the applicant and accepted by the attorney

Place:

Date: **09/05/2024**

For : **RUSHIKESH SUNIL BADGUJAR**

R. C. P. I. T., Shirpur

---

5/9/24, 1:29 PM

Copyright Office



Proprietor

5/9/24, 1:29 PM

Copyright Office

## STATEMENT OF PARTICULARS

Diary Number:

1.	Registration Number	
2.	Name, Address and Nationality of the Applicant	NAME: RUSHIKESH SUNIL BADGUJAR, ADDRESS: NEW PLOT, AT POST BORNAR, TAL. AND DIST. JALGAON-425116, Indian NAME: JAYSHRI S. SONAWANE, ADDRESS: R. C. PATEL INSTITUTE OF TECHNOLOGY, SHIRPUR-425405, Indian NAME: DURGESH ANUP JAISWAL, ADDRESS: AT POST VIRWADE TAL.CHOPDA DIST.JALGOAN-425107, Indian NAME: CHETAN SANJAY SHIVADE, ADDRESS: DR. BABASAHEB AMBEDKAR CHAUK MALPUR TAL SHINDHKHEDA DIST DHULE-425408, Indian
3.	Nature of the Applicant's interest in the Copyright of the work	Author
4.	Class and description of the work	Computer Software Work
5.	Title of the work	Ticket-less Entry System in Monuments/Museums
6.	Language of the work	Python, Django, Javascript
7.	Name, Address and Nationality of the Author and if the Author is deceased, the date of decease.	NAME: RUSHIKESH SUNIL BADGUJAR, ADDRESS: NEW PLOT, AT POST BORNAR, TAL. AND DIST. JALGAON-425116, Indian, NAME: JAYSHRI S. SONAWANE, ADDRESS: R. C. PATEL INSTITUTE OF TECHNOLOGY, SHIRPUR-425405, Indian, NAME: DURGESH ANUP JAISWAL, ADDRESS: AT POST VIRWADE TAL.CHOPDA DIST.JALGOAN-425107, Indian, NAME: CHETAN SANJAY SHIVADE, ADDRESS: DR. BABASAHEB AMBEDKAR CHAUK MALPUR TAL SHINDHKHEDA DIST DHULE-425408, Indian,
8.	Whether the work is Published or Unpublished	Unpublished
9.	Year and Country of first publication, and Name, Address and Nationality of the publisher	N/A
10.	Year and Countries of subsequent publications, if any, and Name, Address and Nationality of the publisher	N/A
11.	Name, Address and Nationality of the Owners of the various rights comprising the copyright in the work and extent of rights held by each, together with particulars of assignments and licence. If any	NAME: RUSHIKESH SUNIL BADGUJAR, ADDRESS: NEW PLOT, AT POST BORNAR, TAL. AND DIST. JALGAON-425116, Indian NAME: JAYSHRI S. SONAWANE, ADDRESS: R. C. PATEL INSTITUTE OF TECHNOLOGY, SHIRPUR-425405, Indian NAME: DURGESH ANUP JAISWAL, ADDRESS: AT POST VIRWADE TAL.CHOPDA DIST.JALGOAN-425107, Indian NAME: CHETAN SANJAY SHIVADE, ADDRESS: DR. BABASAHEB AMBEDKAR CHAUK MALPUR TAL SHINDHKHEDA DIST DHULE-425408, Indian
12.	Name and address and nationality of other persons, if any authorized to assign or licence the rights comprising the copyright	NAME: RUSHIKESH SUNIL BADGUJAR, ADDRESS: NEW PLOT, AT POST BORNAR, TAL. AND DIST. JALGAON-425116, Indian NAME: JAYSHRI S. SONAWANE, ADDRESS: R. C. PATEL INSTITUTE OF TECHNOLOGY, SHIRPUR-425405, Indian NAME: DURGESH ANUP JAISWAL, ADDRESS: AT POST VIRWADE TAL.CHOPDA DIST.JALGOAN-425107, Indian NAME: CHETAN SANJAY SHIVADE, ADDRESS: DR. BABASAHEB AMBEDKAR CHAUK MALPUR TAL SHINDHKHEDA DIST DHULE-425408, Indian
13.	If the work is an 'Artistic work', the location of the original work, including name, address and nationality of the person in possession of the work, (In the case of an architectural work, the year of completion of the work should also be shown)	N/A
14.	If the work is an 'Artistic work' which is used or capable of being used in relation to any goods or	N/A

5/9/24, 1:29 PM

Copyright Office

	services, the application should include a certification from the Registrar of Trade Marks in terms of the provision to Sub-Section (i) of Section 45 of the Copyright Act, 1957	
15.	If the work is an 'Artistic work' whether it is registered under the Desings Act 2000 If yes give details.	N/A
16.	If the work is an 'Artistic work' capable of being registrar as a design under the Designs Act 2000, whether is has been applied to an article though an industrial process and,if yes ,then number of times it is reproduced	N/A
17.	Remarks, if any	

Place:

Date: 09/05/2024

For : RUSHIKESH SUNIL BADGUJAR



Proprietor

5/9/24, 1:29 PM

Copyright Office

**STATEMENT OF FURTHER PARTICULARS**

(For Literary/Dramatic, Musical and Artistic works only)

Diary Number:

1. Is the work to be registered

(a) an original work? : Yes

(b) a translation of a work in the public domain? : N.A.

(c) a translation of a work in which Copyright  
subsists? : N.A.

(d) an adaptation of a work in the public domain? : N.A.

(e) an adaptation of a work in which Copyright  
subsists? : N.A.

2. If the work is a translation or adaptation of a work in  
which copyright subsists

(a) Title of the original work : N.A.

(b) Language of the original work : N.A.

(c) Name, address, and nationality of the author  
of the original work and if the author is deceased, the : N.A.  
date of decease

(d) Name, address, and nationality of the  
publisher, if any, of the original work : N.A.

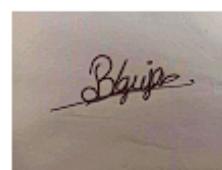
(e) Name, address, and nationality of the  
publisher, or adaptation including the name, address : N.A.  
and nationality of party authorizing

3. Remarks, if any

Place:

Date: 09/05/2024

For : RUSHIKESH SUNIL BADGUJAR



Proprietor