A SEMINAR REPORT
ON

“QR based entry system for museum”

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Under the Guidance of
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Towards the partial fulfillment of Second Year Undergraduate Course in Computer Engineering
Of
SAVITRIBAI PHULE PUNE UNIVERSITY
(2022-23)

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Affiliated To
SAVITRIBAI PHULE PUNE UNIVERSITY
(2022-23)

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CERTIFICATE

This is to certify that Seminar Report
On

“QR based entry system for museum”

Presented By

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Towards the partial fulfillment of The Year underGraduate Course in
Computer Engineering
Of
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(2022-23)

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Guide Name

Dr. Farook Sayyad
Principal

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ABSTRACT

A QR Based Entry System is a paperless electronic document used for ticketing. It can help in better crowd management of museum / heritage sites. To devise a QR based ticketing system with necessary hardware for the seamless visitor experience in Museums / heritage sites. The traditional way of booking a ticket for a museum is the visitor needs to go to the specific museum and need to stand in queues and buy the ticket. This will become more difficult for a person. In order to overcome this problem, the project gives real-life understanding of the Ticketless Entry System.

Here we Provide automation for the ticket-booking system through the internet. This project captures activities performed by different roles in real life ticketing which provide enhanced techniques for maintaining the required information up-to-date, which result in efficiency. The main purpose that museums have been serving since their inception is to provide the tickets for the visitors to explore the museums. While providing tickets they also earn a certain amount of money based on the holiday's, on special festivals. Traditionally the museums will be on rush which wastes the time of the common man and hence by this system we can save the time and the energy of the visitor.

CONTENTS

CHAPTER 1
INTRODUCTION

1.1 Purpose :-

The purpose of this document is to present a detailed description of the "A QR Based Entry System". It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will react to external stimuli. This document is intended for both the stakeholders and the developers of the system.

At a time when digital technology offers more and more options to both professionals and individuals for buying, reserving and selling goods and services, our museum could also be making the most of this trend by launching an online ticket website!

A carefully deployed personalized e-ticket website is an important tool to help grow to museum's activity. We take a closer look at what we have to gain from it.

1.1.1 An improved customer experience :-

By putting our ticket services online, visitors can book tickets directly via our website. They can book in advance in just a few clicks, from their phone, tablet or computer and avoid long queues at ticket desks on the day of their visit. In the end, we can more easily control entries, limit physical contact with our staff and consequently ensure a safer visit in accordance with public safety guidelines. The same goes for payments: by letting users choose between several payment methods (ATM card, Debit card, Credit card, UPI Pay, PayPal, Paytm) we can offer them flexibility, modernize user experience and generate sales before the exhibition has even taken place. That's before taking into account the practicalities of paperless entry tickets, which reduce the impact of printing on the environment. Keep in mind that by making it easier for online customers to discover and buy tickets, we will greatly increase our chances of seeing bookings finalized. So we have added this user-friendly module to your site!

1.1.2 More in-depth knowledge of your audiences to hone your services :-

Depending on the type of event or exhibition (free, paid, private, public) on offer, the reservation criteria vary meaning that you need to set the data fields the user must complete according to your needs. This way, Internet users provide the personal data you need to start building their customer record: Country, If country is India : Aadhar Card else Passport ID, ID proof Image, Email Address, Mobile Number, First Name, Middle Name, Last Name, Gender, Birthdate, Current Address, Register, etc. This very useful information, while complying with the General Data Protection Regulation (GDPR), will help you communicate in a more direct and personalized way (email reminders, promo codes, upcoming programme, satisfaction questionnaire, etc.) as well as dividing your audiences into categories and ensuring their loyalty. Analyzing and interpreting your customer data will help you quickly learn which offers work best and allow you to redesign those that generate less activity: adjusting quotas based on demand, price changes, combined offers, subscriptions, etc. The possibilities are endless, letting

you adapt your catalog to the profile and preferences of your visitors, therefore optimizing your commercial strategy.

1.1.3 Scope :-

In our system users can view home, information, gallary, contact, booking, price, special offers, login and signup page. As a guest, users can give feedback also.

For the user who signs up as a visitor, after log in, they are able to view home, information, gallary, contact, booking, price, special offers, payment, profile update. Only visitors registered can book tickets and make payment online. For booking the details required.

Users who are not a member and would like to book a ticket must register and become a visitor. It is easy to register and requirements are name, phone number, email, address, id-proof for Indian person adhar card and for other country passports.

1.1.4 The services offered by Ticketless Entry Pass are :-

Visitors can view the list of offers. View the fees for that museum. View the information of a specific museum. Book the ticket whenever she/he wants. Get the QR code after booking.

1.2 Project Idea :-

A QR-based ticket entry system for a museum would work similarly to the general event ticketing system I described earlier, but with some additional features that are specific to museums. Here is an overview of how such a system would work :-

1. The ticketing system generates a unique QR code for each ticket sold.
2. The QR code is then sent to the visitor via email or text message.
3. The visitor can then print out the QR code or display it on their mobile device.
4. When the visitor arrives at the museum, they would present the QR code to be scanned by a scanning device at the entrance.
5. The scanning device would read the QR code and verify that the ticket is valid. If the ticket is valid, the device would display a message indicating that the visitor has been granted entry.

Here are some additional features that could be implemented to enhance the system for the museum:

- Add a feature that allows the museum to set up timed entry slots, so that the number of visitors in the museum can be controlled and crowding can be avoided.
- Incorporate a feature that allows the visitor to choose which exhibitions they want to see, so that the museum can manage the flow of visitors throughout the different sections.
- Add a self guided tour feature where the visitor can scan QR codes placed at different exhibits to get more information about them.

- Offer audio guide system that syncs with visitor's device through the QR code
- Send reminders about the museum events and exhibitions to the visitors via email or text message.
- Allow visitors to purchase the tickets in advance through online portals.

This system would help the museum to better manage visitor flow, reduce queues and provide a more engaging and personalized experience for visitors.

1.3 Motivation :-

There are several reasons why a QR-based ticket entry system would be a beneficial for museums:

1. Convenience :-

A QR-based system allows visitors to purchase tickets and enter the museum quickly and easily. They can simply present their mobile device or printed QR code at the entrance for scanning, rather than having to wait in line to purchase a ticket or show physical documentation.

2. Capacity Control :-

A QR-based system allows museums to control the number of visitors in the museum at any given time. This can be done by setting up timed entry slots, which can help to reduce crowding and ensure that visitors have a more pleasant experience.

3. Data Collection :-

A QR-based system allows museums to collect data on the number of visitors, their demographics, and which exhibitions they visit. This data can be used to make informed decisions about programming, marketing, and other aspects of museum operations.

4. Personalization :-

By using QR codes on exhibitions, museums can offer visitors a more interactive and personalized experience by giving them access to additional information about the exhibitions.

5. Increased revenue :-

With an online ticketing system, museums can have a round the clock ticket sales process and also have the ability to control the number of people allowed to enter the exhibition or set up timed slots which can increase revenue.

6. Flexibility :-

With online ticketing, the museum can also offer options for refunds and rescheduling which increases the convenience of the visitors.

Overall, a QR-based entry system can help to improve the visitor experience, increase revenue and make operations more efficient for museums. It can be a cost-effective way of updating the entry systems and offering more interactive and personalized experience to the visitors.

1.4 Project Challenges :-

While a QR-based entry system can bring many benefits to museums, there are also some challenges that will need to be addressed in order to implement such a system successfully. Here are some of the main challenges that may arise :-

1. Technical issues :-

There may be issues with the technology used to create and read the QR codes, such as poor internet connectivity, power outages, or the need for frequent maintenance of the scanning devices.

2. Data security and privacy :-

The museum will need to ensure that the data collected from the QR codes is secure and that visitors' personal information is protected.

3. User adoption :-

Some visitors may be hesitant to use a QR-based system, particularly if they are not familiar with the technology or if it requires them to have a specific type of device (such as a smartphone).

4. Accessibility :-

Some visitors may have difficulty using a QR-based system, such as those who are visually impaired or have difficulty using mobile devices. The museum will need to ensure that their system is accessible to all visitors.

5. Scalability :-

A QR-based system needs to be able to handle a high volume of visitors efficiently and the museum will need to ensure that the system can handle the number of visitors they expect to have.

6. Maintenance :-

Regular updates and maintenance will be required to ensure that the system remains functional, secure and up to date To overcome these challenges, it's important for the museum to conduct thorough testing of the system and implement the necessary security measures. It will also be essential for the museum to communicate clearly with visitors and provide training and support to ensure that they feel comfortable using the system. Additionally, it's important to keep in mind that there are also many third party libraries and platforms available to build this kind of system without a lot of coding and effort.

1.5 Proposed Solution :-

Here is a proposed solution for a QR-based ticket entry system for a museum :-

1. Develop or use a third party system for generating and managing the QR codes for the tickets. This system should be able to generate unique codes for each ticket, track the status of each ticket (valid/invalid), and revoke or cancel tickets if necessary.

2. Use a cloud-based database to store information about the tickets and the visitors who have purchased them. This will allow the museum to keep track of who has entered and who has not.

3. Use scanning devices at the museum entrance that can read the QR codes and verify the validity of the tickets. The devices should be able to connect to the internet to check the status of the tickets in real time and display a message indicating whether the visitor has been granted entry.

4. Incorporate a feature that allows the visitor to choose which exhibitions they want to see, so that the museum can manage the flow of visitors throughout
the different sections.

5. Use QR codes on exhibitions to offer visitors a more interactive and personalized experience by giving them access to additional information about the
Exhibitions.

6. Implement a system to send reminders about the museum events and exhibitions to visitors via email or text message.

7. Regularly test and maintain the system to ensure that it remains functional, secure and up to date.

1.6 Major Contribution :-

A QR-based ticket entry system can make several major contributions to a museum, such as:

1. Improving the visitor experience :-

By allowing visitors to enter the museum quickly and easily, the system can help to reduce queues and waiting times. This can make the overall museum experience more enjoyable for visitors.

2. Capacity Control :-

A QR-based system allows museums to control the number of visitors in the museum at any given time which helps in reducing the crowding and ensuring that visitors have a more pleasant experience.

3. Data collection and analysis :-

The system can collect data on the number of visitors, their demographics, and which exhibitions they visit. This data can be used to make informed decisions about programming, marketing, and other aspects of museum operations.

4. Personalization :-

By using QR codes on exhibitions, museums can offer visitors a more interactive and personalized experience by giving them access to additional information about the exhibitions.

5. Increased revenue :-

With an online ticketing system, museums can have a round the clock ticket sales process and also have the ability to control the number of people allowed to enter the exhibition or set up timed slots which can increase revenue.

6. Flexibility :-

With online ticketing, the museum can also offer options for refunds and rescheduling which increases the convenience of the visitors.

7. Accessibility :-

A QR-based system can make the museum more accessible to visitors who may have difficulty using traditional ticketing systems, such as those who are visually impaired or have difficulty using mobile devices.

8. Cost-effective :-

This system can be a cost-effective way of updating the entry systems and offering more interactive and personalized experience to the visitors.

CHAPTER 2
LITERATURE REVIEW

2.1 E-Ticketing System For Indian Museum :-

Aarohi Rathore Et.al.,Vol:04, Issue:11, November-2022

In this system, they build an E-Ticketing System for booking tickets only by logging into a registered account.

They have designed the web-application more efficiently and user-friendly for checking the ticket availability and user authentication at the time of ticket booking.

This website also allows the ticket to be transmitted in an encrypted and valid format.

2.2 Smart Guide - an approach to the smart museum using Android :-

Sagar Patil Et.al.,Vol: 05, Issue: 02, Feb-2018

In this system, they proposed a QR based museum system with a conventional USB webcam to authenticate the visitors.

They have included image recognition. While image recognitions in the museum environment would have some unique properties.

2.3 Entrizee- A QR based Digital Gate Security Management System :-

Ashwini Jarali.,Vol: 7, Special Issue, March 2019

In this system, The user will be provided with a dynamically system generated QR code which will contain the details of the person entering into the organization. Which are taken from the details provided at the time of signup. The QR code could also contain the time taken from the system of the person.

2.4 E-Ticketing System For Indian Museum :-

Pak Satana Saowapak Et.al.,Vol: 11, Issue: 04,April- 2021

In this system, they build a residential access control system using QR codes and the internet of things to improve security and help house owners. This system is safer and more flexible than the comparative methods and suitable for contactless authentication.

2.5 E-Ticketing System For Indian Museum :-

Xiong Wei Et.al.,Vol: 05, Issue: 01, July-2017

This system is a couple of two applications, one for generating the QR Code by entering the student details and second is for taking the attendance and generating the attendance in CSV or XLS format.

The student QR code will be provided to the professor for taking their attendance.

The attendance will be marked as 0 and 1, 0 for absent and 1 for present in the database of the particular student row in the table.

CHAPTER 3
Problem Definition and Scope

3.1 Problem statement :-

An e-ticket (Electronic Ticket) is a paperless electronic document used for ticketing.
It can help in better crowd management of museums/heritage sites.

3.2 Goals and Objectives :-

- To design and develop a QR Based Entry Pass System for Museum.
- To provide a smart and efficient way of online ticket booking.
- The purpose of an online booking system is to allow potential Visitors to self book and pay through our website, securely store Visitor's data.

3.3 Scope and Major Constraints :-

In our system users can view home, information, gallary, contact, booking, price, special offers, login and signup page. As a guest, users can give feedback also.For the user who signs up as a visitor, after log in, they are able to view home, information, gallary, contact, booking, price, special offers, payment, profile update. Only visitors registered can book tickets and make payment online. For booking the details required. Users who are not a member and would like to book a ticket must register and become a visitor. It is easy to register and requirements are name, phone number, email, address, id-proof for Indian person adhar card and for other country passports.

3.4 Hardware and Software Requirements :-

- ➢ Hardware Specifications :-
- ➢ Processor -7th gen i5
- ➢ RAM - 4GB(min) – Hard Disc - 512GB(min)
- ➢ Software Specifications :-
- ➢ Platform - Windows 7 or above
- ➢ Frontend- HTML, CSS, JS, Bootstrap
- ➢ Programming Language- PHP 8
- ➢ Database- MySQL
- ➢ Server - Apache

3.5 Expected Outcomes :-

This project comes under the category of image processing and QR generation. It is useful to get easy entry to monuments/museums by skipping the ticket buying and standing in the long queue process altogether. It is used for easy tracking and managing of people and resources at the said monuments/museums. In future modifications this project can be further modified to directly see upcoming events and auctions at the said museums as well as monuments. The data can be used to collect the high time for the monuments/museums as well as gathering general feedback from people about the places and how the experience can be improved

CHAPTER 4
System Requirement Specification

4.1 Overall Description :-

4.1.1 Product Perspective :-

A QR code displayed at the museum's entrance that visitors can scan using their mobile device's camera app A web or mobile app where visitors can purchase tickets or show proof of pre-purchased tickets A unique QR code that is generated for each visitor upon ticket verification and grants access to the museum A way for the museum to manage and track entry, including the ability to check for valid tickets Option for timed entry tickets, real-time validation with QR codes to prevent overcrowding Security measures such as facial recognition or ID verification.

4.1.2 Product Function :-

Ticket purchase and verification: Visitors can purchase tickets or show proof of pre-purchased tickets using the system's web or mobile app. The system should be able to verify that the ticket is valid before granting access to the museum.

4.1.3 QR code generation :-

Upon successful ticket verification, the system should generate a unique QR code that can be scanned at the museum's entrance to gain entry.

4.1.4 Access control :-

The system should be able to check the validity of the QR code at the museum's entrance, and grant or deny access to the museum accordingly.

4.1.5 Data collection and management :-

The system should be able to collect data on visitors, such as the date and time of entry, and store it for the museum to use for tracking, reporting and data analytics purposes.

4.1.6 Real-time validation :-

The system should be able to validate the ticket in realtime and also implement the validation with timed-entry tickets if needed.

4.1.7 Security :-

The system should be able to include security measures, such as facial recognition or ID verification, to ensure that only authorized individuals are granted access to the museum.

4.2 Specific Requirements :-

Hardware Specifications :-

* Processor -7th gen i5
* RAM - 4GB(min) * Hard Disc - 512GB(min)

Software Specifications :-

* Platform - Windows 7 or above
* Frontend- HTML, CSS, JS, Bootstrap
* Programming Language- PHP 8
* Database- MySQL
* Server - Apache

4.2.1 Cost Analysis :-

* **Effort :-**

Amount of labor that will be required to complete a task. It is measured in person-months units.

* **Schedule :-**

Simply means the amount of time required for the completion of the job, which is, of course, proportional to the effort put in.

It is measured in the units of time such as weeks, months.

Different models of Cocomo have been proposed to predict the cost estimation at different levels as organic, semi detached, and embedded systems , based on the amount of accuracy and correctness required. So our project is Organic type.

Organic – A software project is said to be an organic type if the team size required is adequately small, the problem is well understood and has been solved in the past and also the team members have a nominal experience regarding the problem.

Constants : a=2.4, b=1.05, c=2.5, d=0.38

E(Effort)= 2.4(4)1.05=10.29 PM

Development Time= 2.5(10.29)0.38= 6.07 Months

Persons Required= 10.29/6.07= 1.67 Person

4.2.2 External Interface Requirements :-

* **Mobile device compatibility :-**

The QR code used for entry should be compatible with the camera app of most popular mobile devices, such as smartphones and tablets. The system should also support the most widely used mobile operating systems, such as iOS and Android.

* **Ticket purchasing platforms :-**

The system should be able to integrate with various ticket purchasing platforms, such as those used by ticketing companies or those provided by third-party ticketing providers.

* **Payment gateway integration :-**

The system should be able to integrate with a variety of payment gateways to facilitate ticket purchases.

* **Analytics integration :-**

The system should be able to integrate with analytics platforms and provide relevant data to the museum management, such as visitor trends, ticket sales, and more.

* **System scalability :-**

The system should be able to handle a high volume of traffic during peak periods and should be able to be scaled to accommodate an increasing number of visitors.

4.2.3 Functional Requirements :-

* **QR code scanning :-**

Visitors should be able to scan a QR code displayed at the museum's entrance using their mobile device's camera app.

* **Ticket purchasing and verification :-**

Visitors should be able to purchase tickets through the system's web or mobile app, and the system should be able to verify the validity of the ticket before granting access to the museum. It should also be able to check the validity of pre-purchased tickets.

* **QR code generation :-**

Upon successful ticket verification, the system should generate a unique QR code that can be scanned at the museum's entrance to gain entry.

* **Access control :-**

The system should be able to check the validity of the QR code at the museum's entrance and grant or deny access accordingly.

* **Data collection and management :-**

The system should be able to collect data on visitors, such as the date and time of entry, and store it for the museum to use for tracking, reporting, and data analytics purposes.

∗ Real-time validation :-

The system should be able to validate the ticket in real-time and also implement the validation with timed-entry tickets if needed

4.2.4 Performance Requirement :-

∗ Response time :-

The system should be able to generate and display a unique QR code for the visitor in a timely manner, with minimal delay. The time it takes for the system to validate the ticket and generate the QR code should be within an acceptable range.

∗ Throughput :-

The system should be able to handle a high volume of traffic during peak periods, without significant delays or errors. The system should be able to process a certain number of requests per second, and the number should be sufficient to handle the expected volume of visitors.

∗ Scalability :-

The system should be able to scale to accommodate an increasing number of visitors over time. The system should be able to handle the expected increase in traffic and continue to perform efficiently and effectively.

∗ Error rate :-

The system should have a low rate of errors and should not have any major errors or system crashes that would impede the functionality of the system.

∗ Security :-

The system should have an appropriate level of security to protect personal and payment information and to ensure that only authorized individuals are granted access to the museum.

∗ Uptime :-

The system should have a high percentage of uptime to ensure that the museum can operate smoothly and that visitors are able to purchase tickets and gain entry to the museum.

4.3 Project Planning :-

∗ Define the project scope :-

Clearly define the objectives of the project and what the final product will look like. Identify the requirements for the system, such as those related to functionality, performance, security, and integration.

∗ Create a project plan :-

Develop a detailed project plan that outlines the tasks that need to be completed, the resources that will be required, and the schedule for completing the project. The plan should also identify any risks or potential issues that may arise and how they will be addressed.

∗ Identify and assemble the project team :-

Identify the key roles and responsibilities of team members and assemble the team. This may include developers, testers, project managers, and stakeholders from the museum.

∗ Create a budget :-

Develop a budget for the project, including the costs for resources, equipment, and services required to complete the project.

∗ Establish a communication plan :-

Establish a plan for communication among team members and with stakeholders. This may include regular team meetings, progress reports, and status updates.

∗ Training and Deployment :-

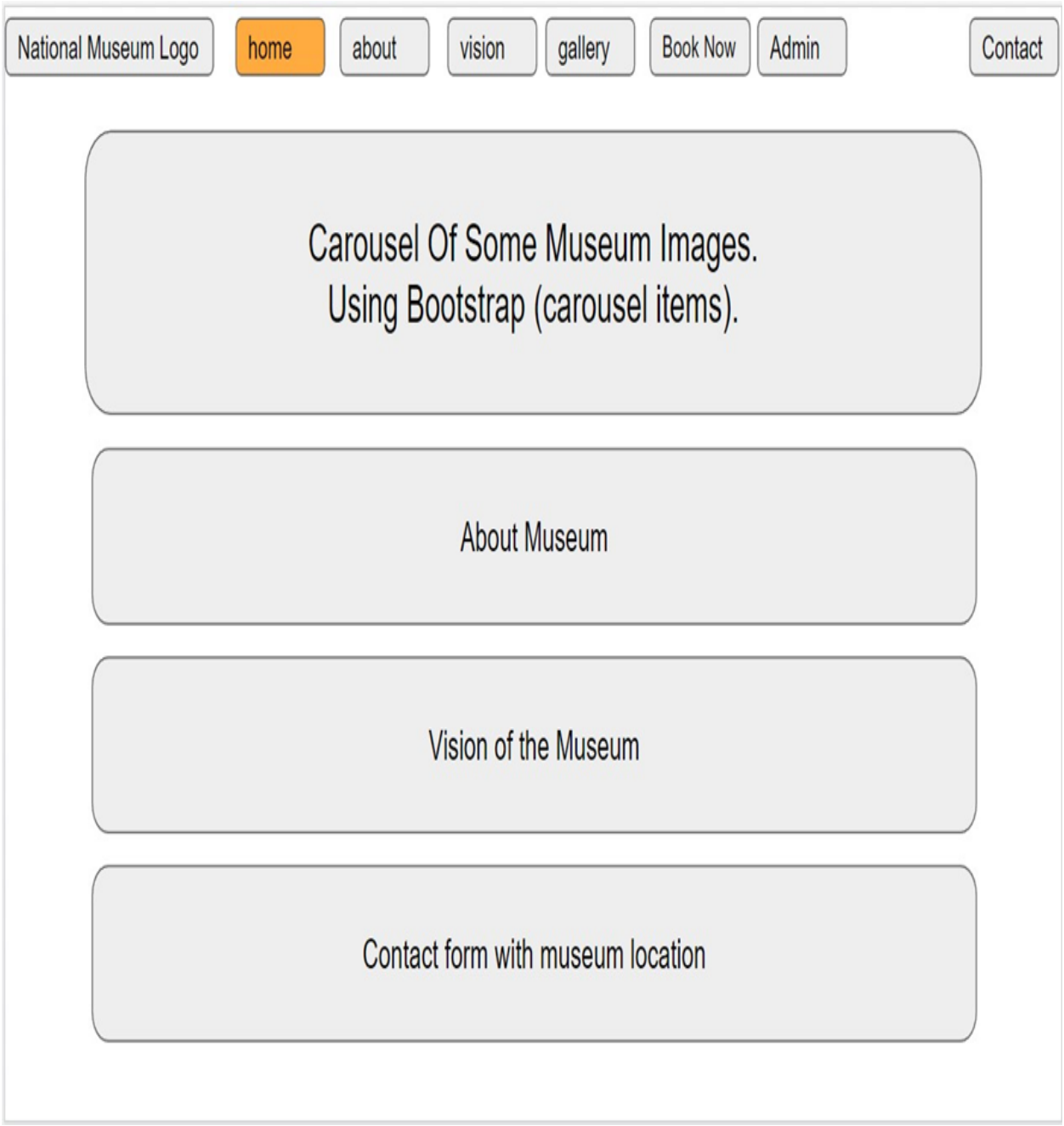
Once the system is ready, prepare a training plan for the museum staff and ensure that the system is properly deployed and configured.

∗ Maintenance and support :-

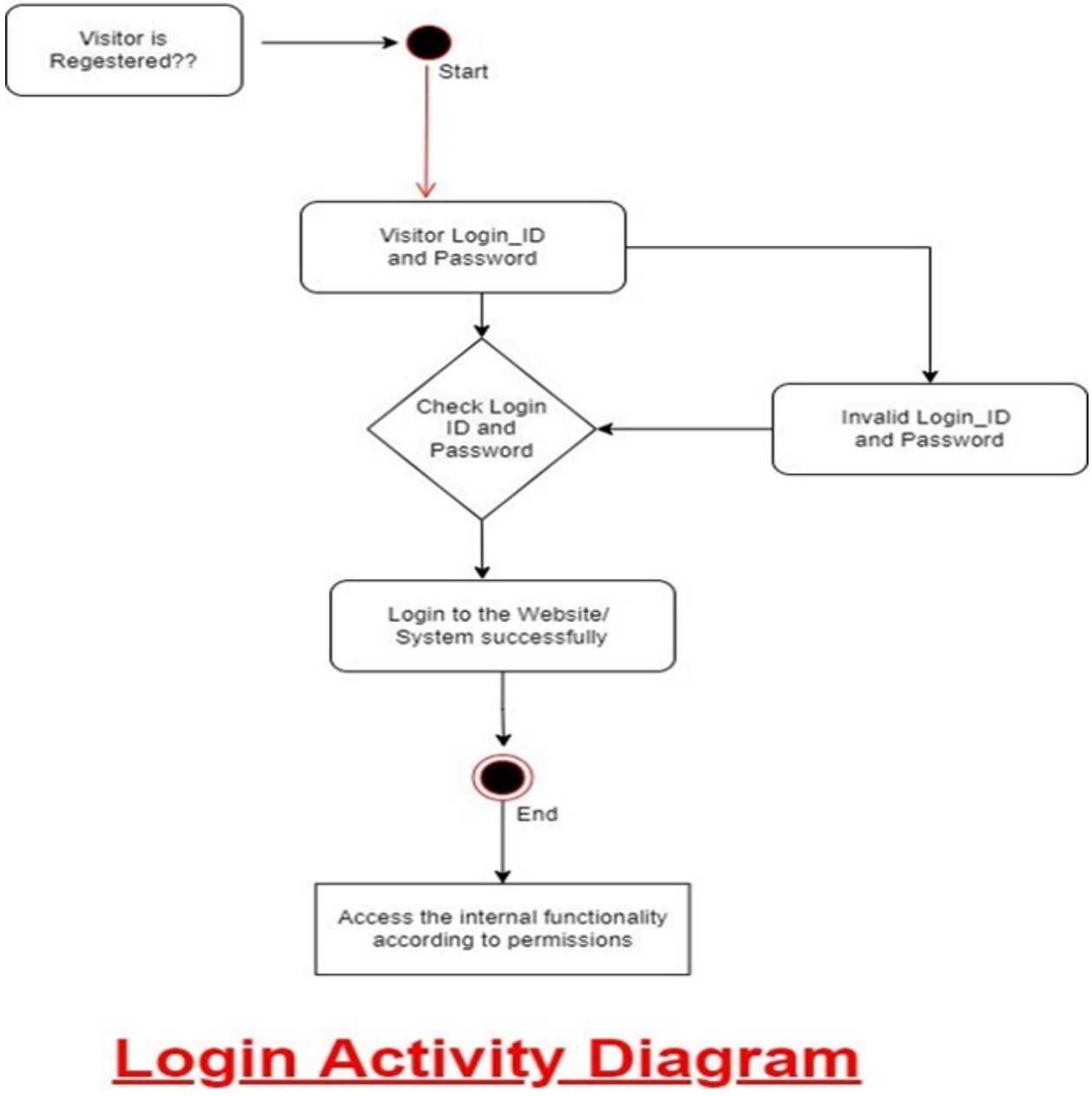
Establish a maintenance and support plan for the system to ensure its smooth operation, providing updates and fixing bugs if needed.

CHAPTER 5
Methodology

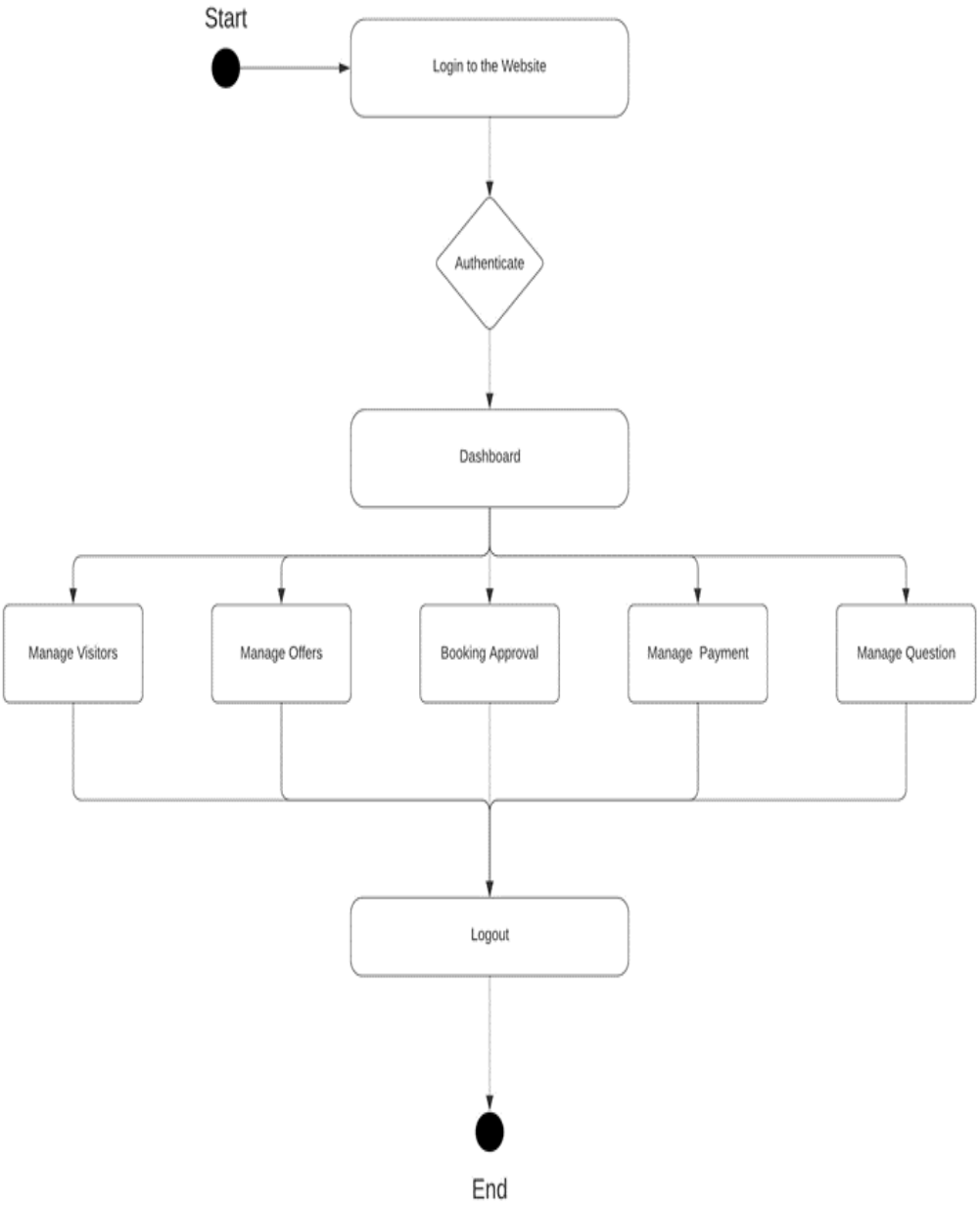
5.1 System Architecture Home Page of Portal :-



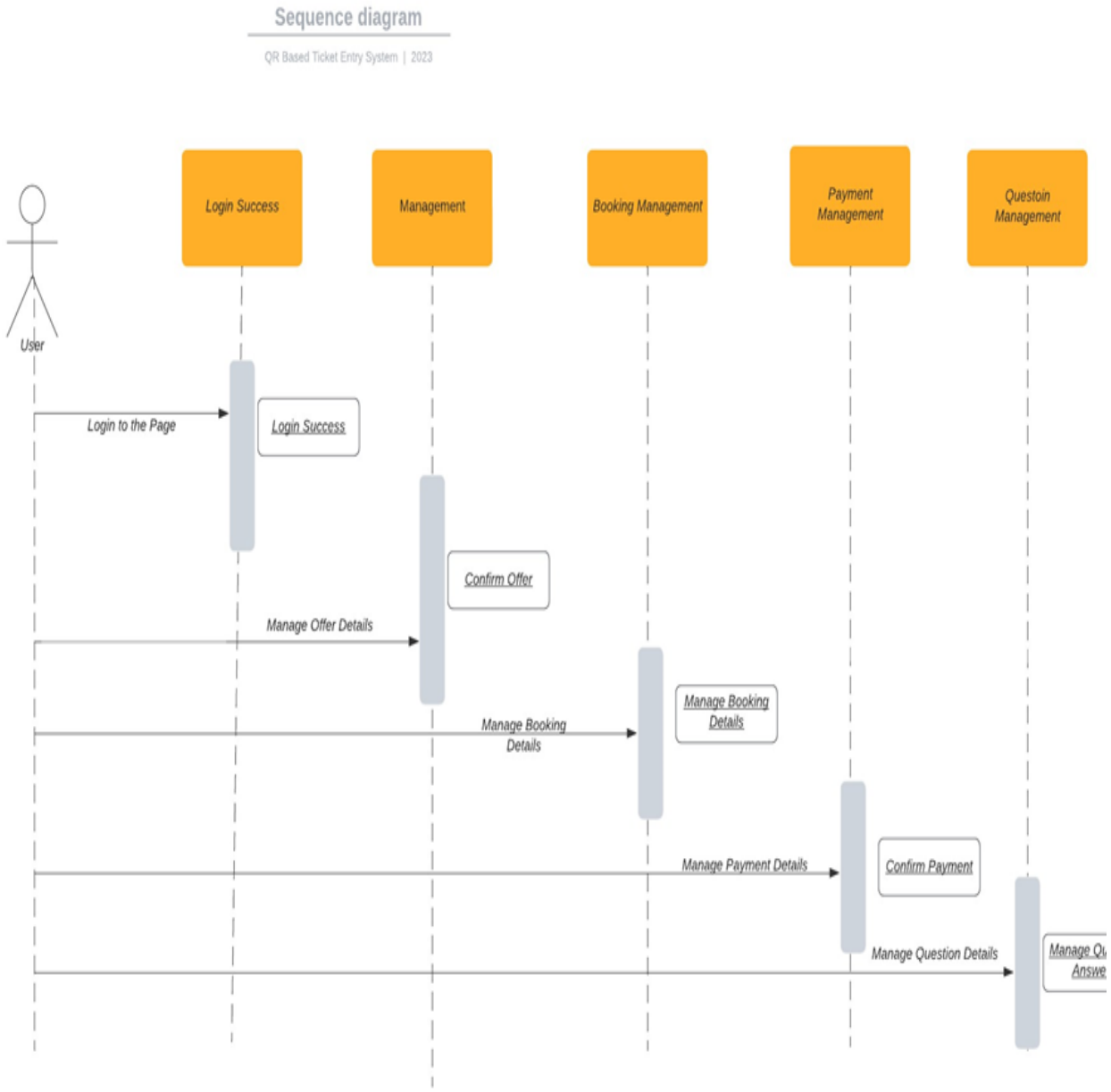
5.2 Diagrams :-



Login Activity diagram.



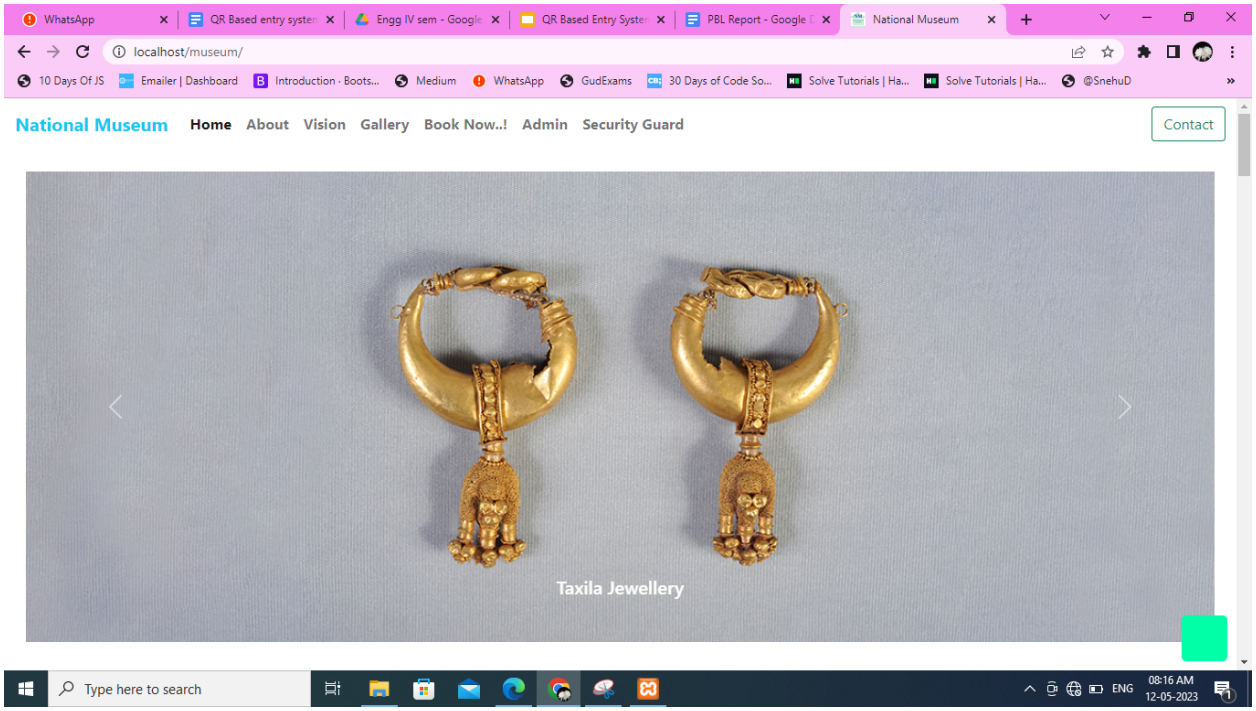
[fg.5.2-1] Activity diagram.



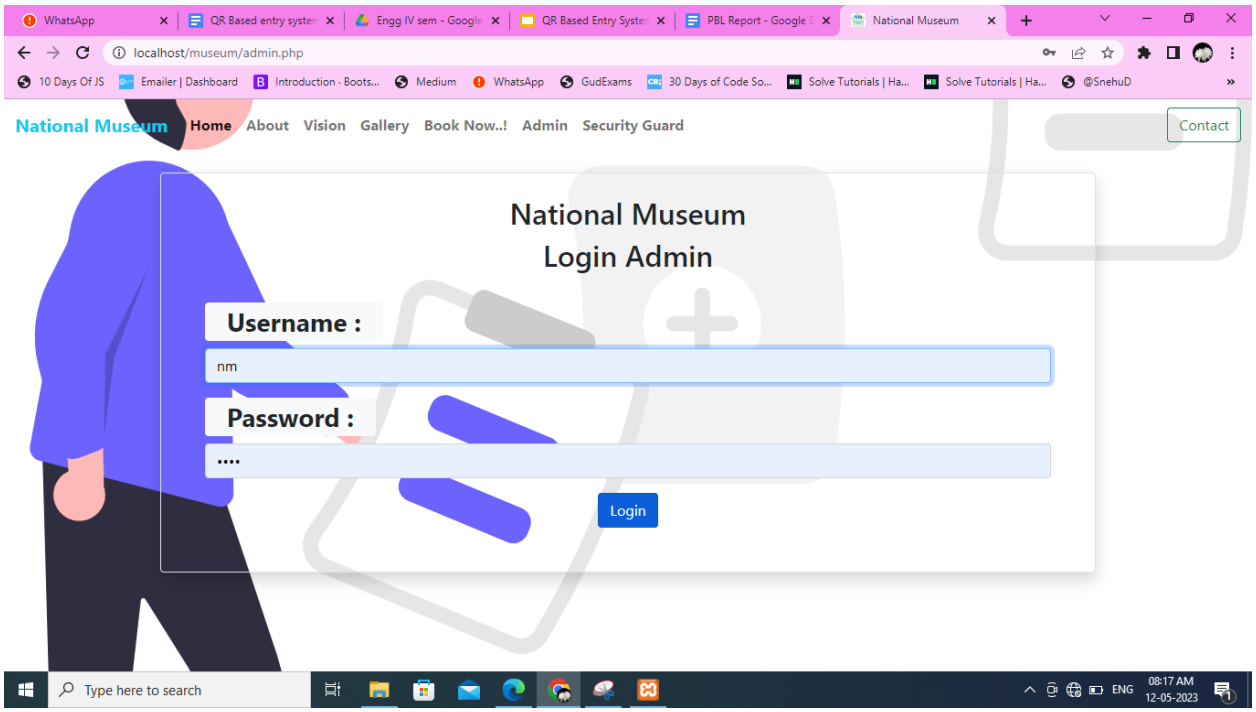
[fg.5.2-2] Sequence diagram.

5.3 Output :-

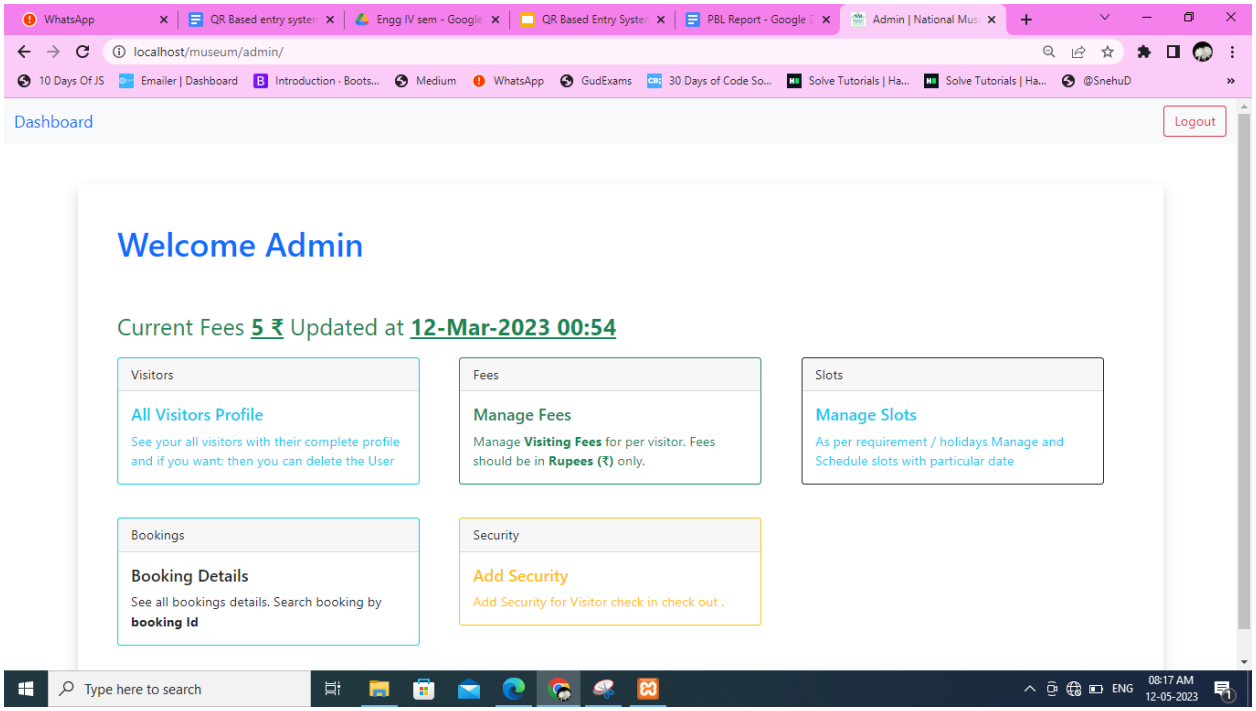
Home Page



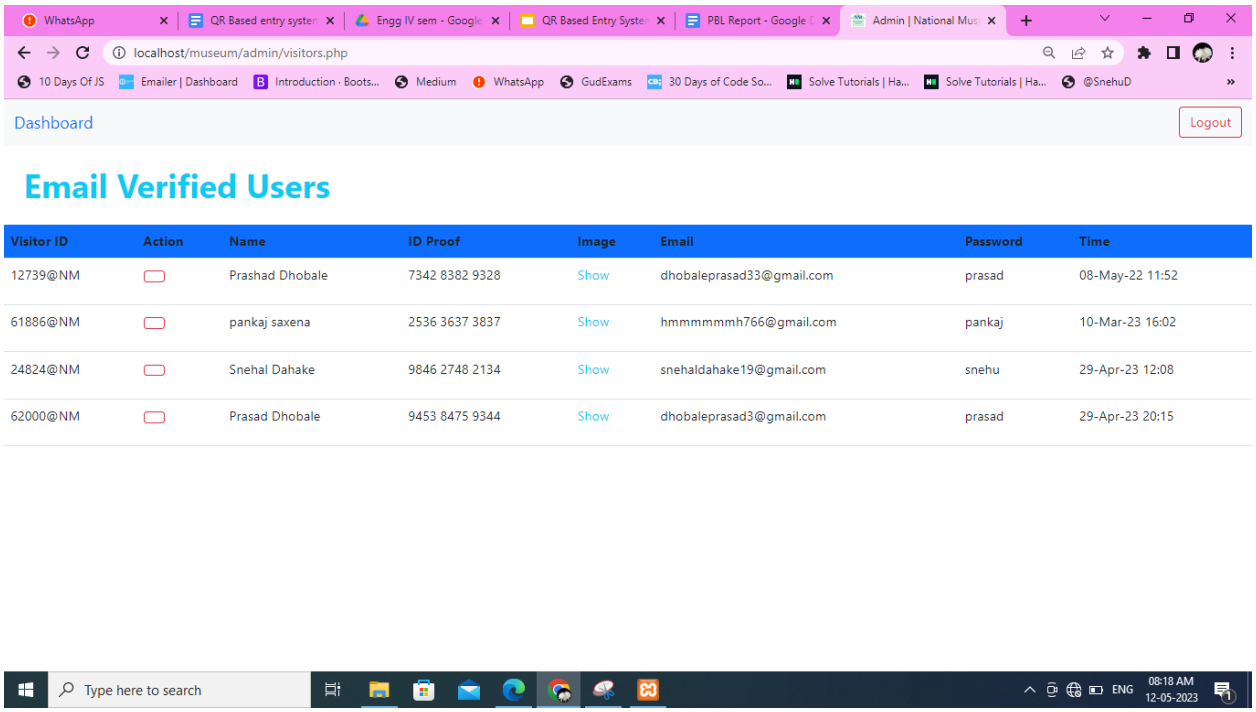
Admin Login



Admin Dashboard



All Visitor Profiles



CHAPTER 6
CONCLUSION

6.1 Conclusion :-

A QR-based entry system can be a valuable addition to a museum, helping to improve the visitor experience, increase revenue, and make operations more efficient. The system works by generating unique QR codes for each ticket, which can be scanned at the museum entrance to verify the validity of the tickets and grant entry. The system also has the ability to collect data on the number of visitors, their demographics, and which exhibitions they visit, which can be used to make informed decisions about programming, marketing, and other aspects of museum operations. Additionally, the system can also be personalized and can also be made accessible to visitors.

However, it is important to keep in mind that there are also some challenges that will need to be addressed in order to implement such a system successfully. These include technical issues, data security and privacy, user adoption, accessibility, scalability, integration, and maintenance. To overcome these challenges, it is important to conduct thorough testing of the system, implement the necessary security measures, and provide training and support to ensure that visitors feel comfortable using the system. With the right approach, a QR-based ticket entry system can be a cost-effective and valuable addition to a museum.

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