

# Ticketspot



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in partial fulfillment for the requirements of B.E Degree in Electrical (Telecom) Engineering.

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In the name of ALLAH, the Most benevolent, the Most Courteous

## **CERTIFICATE OF CORRECTNESS AND APPROVAL**

*This is to officially state that the thesis work contained in this report*

**“Ticketspot”**

*is carried out by*

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*under my supervision and that in my judgment, it is fully ample, in scope and excellence, for the degree of Bachelor of Electrical (Telecom.) Engineering in Military College of Signals, National University of Sciences and Technology (NUST), Islamabad.*

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Date: 23<sup>rd</sup> May, 2022

## **DECLARATION OF ORIGINALITY**

We hereby declare that no portion of work presented in this thesis has been submitted in support of another award or qualification in either this institute or anywhere else.

## ACKNOWLEDGEMENTS

In the very first instance, we thank **Almighty Allah**, without whose help we are nothing and who guided throughout this work for its completion and its constant improvement.

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Finally, we acknowledge the help and support of all our **friends, colleagues and acquaintances** for their prayers and motivation.

## DEDICATION

*To our parents, for everything they did for us without which this work would not be possible.*

*To our supervisor Dr. Mir Yasir, his immense support and valuable input throughout this whole  
journey.*

*To this institution of Military College of Signals and its faculty.*

## Plagiarism Certificate (Turnitin Report)

This thesis has a 12 similarity index. Turnitin report endorsed by Supervisor is attached.



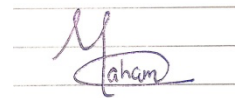
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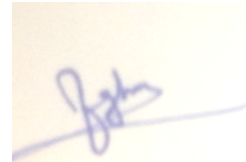
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## ABSTRACT

With the massive advancement of technology, every other field has progressed and updated itself from the traditional ways. Despite this, majority of the event organizations still use old conventional methods of booking, selling, and purchasing tickets. It increases the cost of staff and printing on the organizers' ends and inconveniences and time wastage on the attendees' ends. Attendees have to physically go to purchase the ticket, while organizers have to dedicate staff to print and provide tickets. Hence, It is a trouble not only for event organizers but also for the attendees.

We provide a solution to this problem through our project, Ticketspot. Event organizers do not have to worry about the marketing and sales of their events. Similarly, attendees will be able to buy tickets from anywhere in the world with convenience and ease. They will be provided with an electronic ticket instead of a physical one, eliminating the chances of losing the ticket. They will have to scan the QR provided to them with the ticket at the entrance to get themselves verified.

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## **Chapter 1: Introduction**

### **1.1. History:**

A ticket is a voucher granting entry to a specific event. In today's world, ticketing has become a vital part of events. It is the primary source of money for significant events, accounting for over 46 per cent of total event revenue. Like other products, it has also evolved with time through the integration of technology. Now, most of the ticketing process has transformed from traditional to digital mode, and almost 71 per cent of the tickets are purchased online [1].

### **1.2. Overview:**

Ticketspot is an online ticketing system that uses a web-based interface to register, sell, purchase, and promote event tickets. It then employs a QR code to verify those tickets. Ticketspot can be helpful for both the organizers of the events as well as the attendees. It is way more secure, flexible, convenient, and cost-effective than the traditional ticketing system. Users can buy tickets from anywhere in the world. By eliminating physical tickets, it not only reduces the chances of fraud but also cuts down the expense of paper and printing. Having tickets purchased with Ticketspot also obliterates the chance of tickets getting misplaced.

### **1.3. Problem Statement:**

Promoting an event and managing the attendees' list is usually an additional burden for the organizer, along with planning, setting up, and managing the whole event. Similarly, the guests also have to purchase the ticket beforehand from the specific location, and sometimes their tickets get lost as well. The majority of the online ticketing systems only provide booking and purchasing facilities but require a physical ticket at the entrance. Ticketspot provides a solution to it by integrating a hardware device at the entrance capable of scanning the QR code of the online ticket purchased by the attendee.

### **1.4. Scope:**

The scope of Ticketspot is to eliminate the use of physical tickets and also help with fraud. It also facilitates the attendee to buy tickets from anywhere at any time with a secure payment method. The only limitation is that the attendee must be connected to the internet to buy tickets.

### **1.5. Objectives:**

The primary goal of this project is to provide a secure and convenient ticketing system that is helpful for both the organizers and attendees of the events. Following are the Sustainable Developmental Goals relevant to this project:

- Industry, Innovation, and Infrastructure. We are working on innovating how people buy tickets for events with added security, protection, and ease.

- Responsible consumption and production. This is achieved by eliminating the need for printing tickets, thus avoiding paper waste.

## **1.6. Deliverables:**

1st Deliverable: Prototyping of the System

2nd Deliverable: System Development

3rd Deliverable: Implementation and Testing

## **1.7. Applications:**

- Professional Field
  - Conferences
  - Hackathons
  - Workshops
  
- Entertainment Field
  - Movies
  - Concerts
  - Sports Event

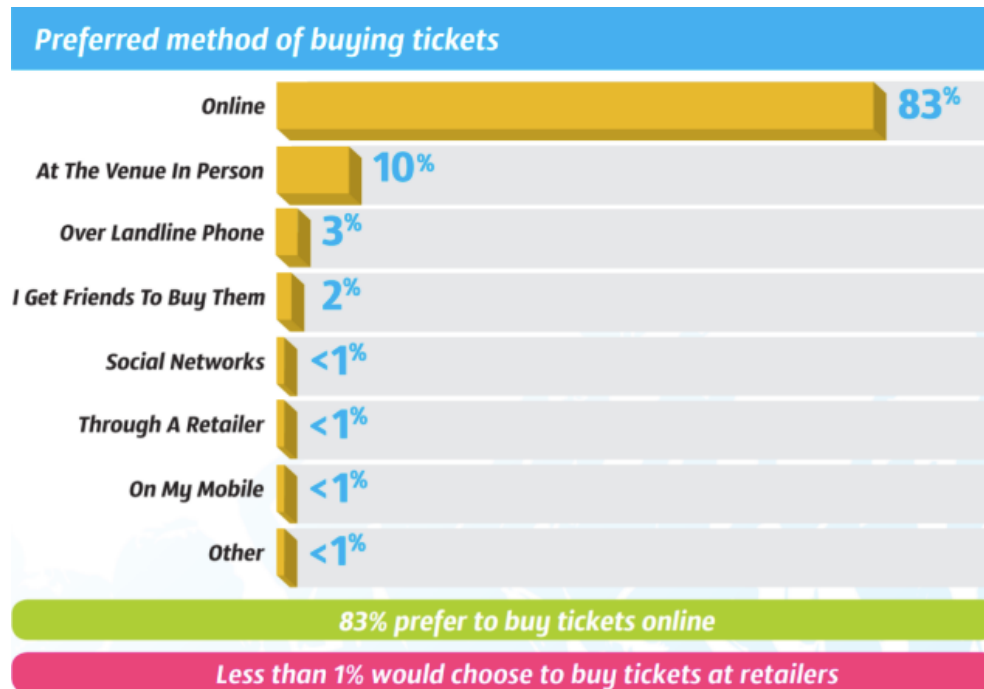
## Chapter 2: Literature Review

### 2.1 Overview:

Electronic Commerce (EC) or eCommerce is buying or purchasing products online. This applies to all physical and digital trading forms, which typically includes all trading elements such as online campaigns, online purchasing, online payments, and digital delivery for digital goods [2]. Global retail e-commerce sales report [3] estimated global retail e-commerce sales to be around 4.9 trillion dollars in 2021.

Just like other products, the selling and purchasing of tickets have also been performed online. The goal is to make the selling and purchasing of tickets easier to purchase or reserve tickets online, making the procedure more accessible and convenient. Tickets can be purchased through these services from any place anytime, as long as there is an Internet connection. Tickets are usually purchased through a website that offers both ticket information and a purchasing facility. This, of course, will boost sales. Companies that offer travel tickets, performing arts tickets, game tickets, concerts, movies, and a variety of other events have all used online ticketing systems.

According to a study conducted by TicketScript [4], the majority of the people prefer digital ticketing over traditional ticketing as they want to make a safe, convenient, and flexible purchase. This study conducted a survey that showed that almost 83% are in favour of online purchasing of tickets.



**Figure 1. Result of the Survey of TicketScript [5]**

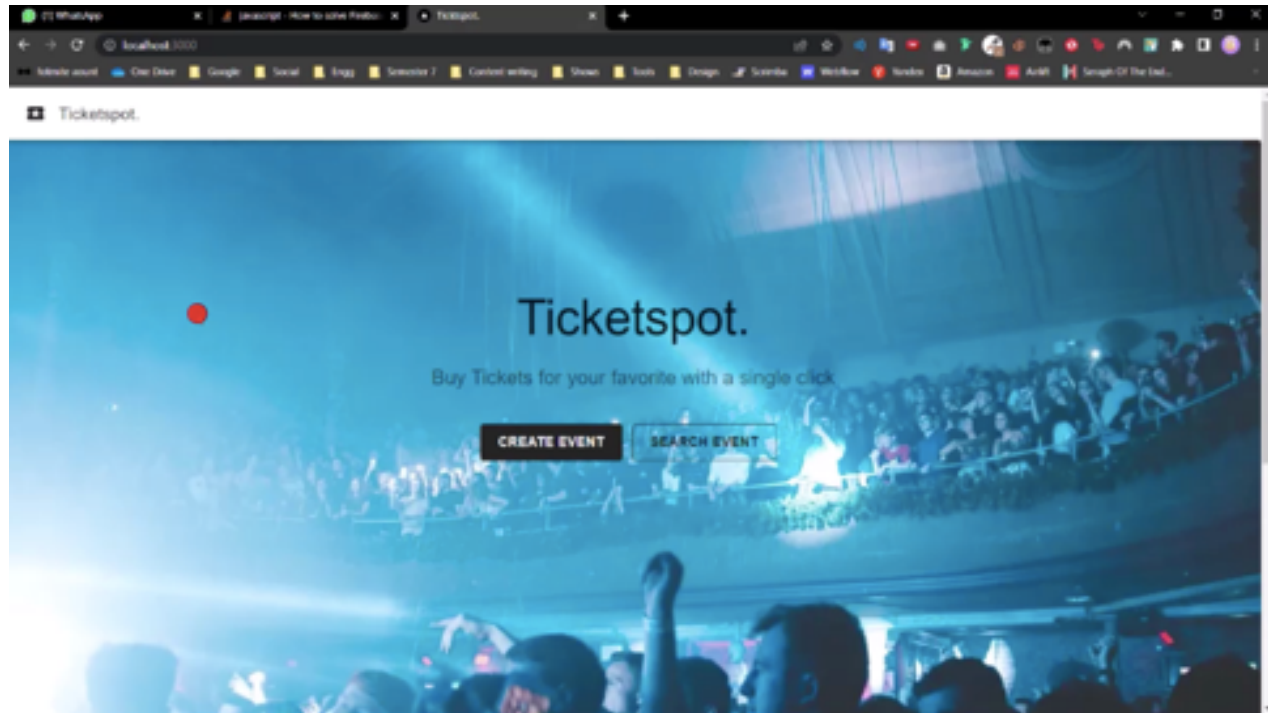
The traditional way of purchasing a ticket for an event requires the attendee to go to the specific location before the event, stand in a queue, and wait for the staff to give him a printed ticket. Then upon entering the event, a specific staff is assigned to verify the ticket and allow the attendee into the event.

To avoid all this hassle, we have proposed this model called Ticketspot. It automates the purchase of tickets prior to the event as well as the verification of the attendee at the entrance of the event.

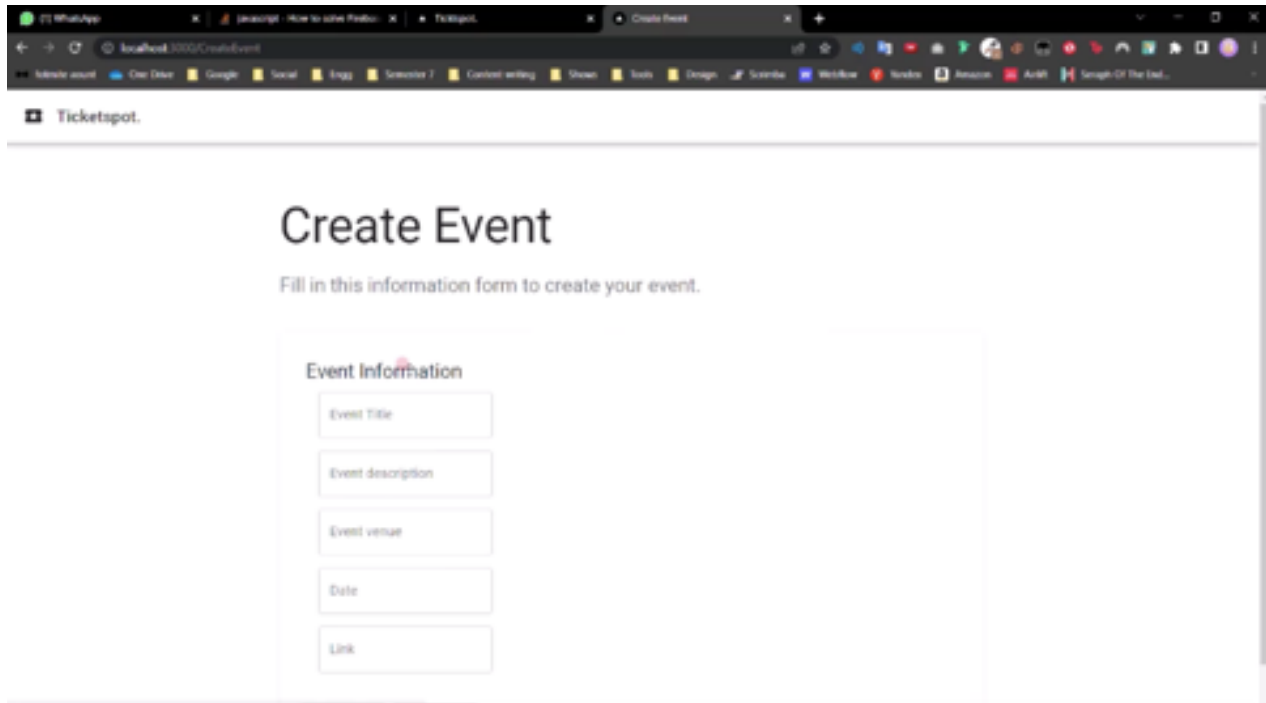
The event organizer creates an event. Anyone who wants to attend the event purchases a ticket from a web-based interface. For processing payments, we have



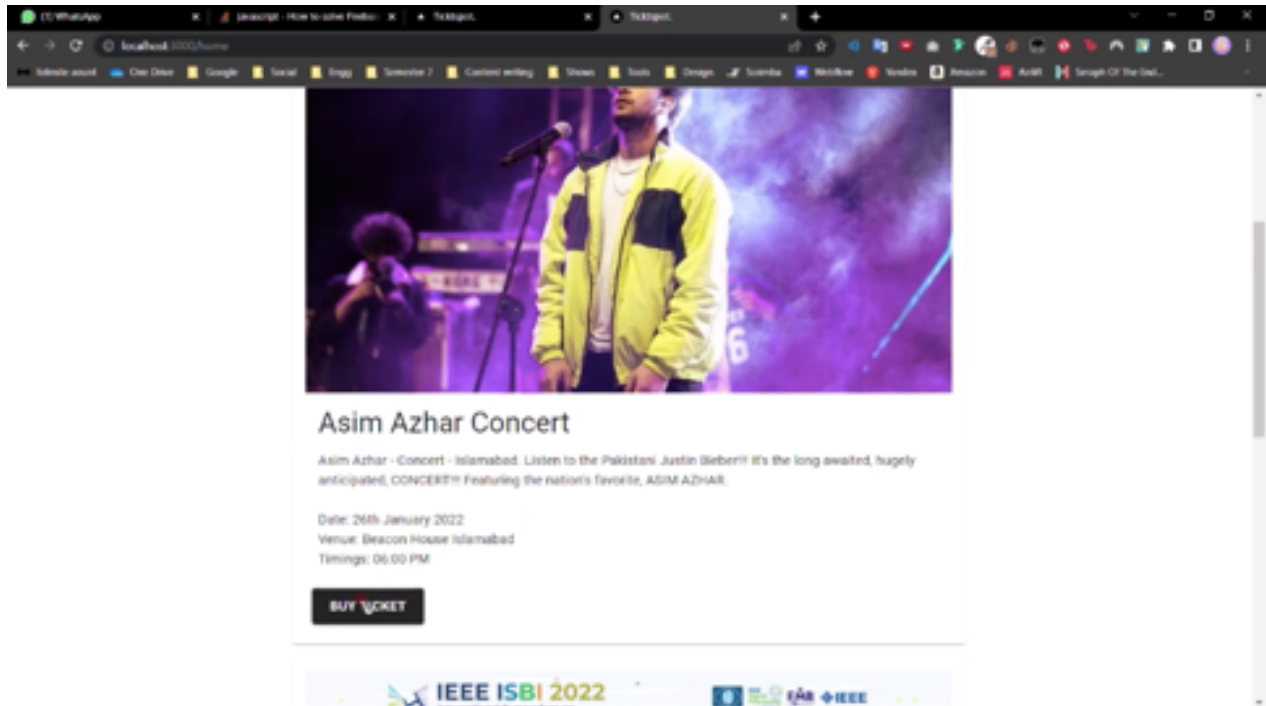
integrated stripe into our website. Once a person pays for the ticket, he is provided an e-ticket with a QR code. Upon entrance, he will be asked to scan that QR code in order to verify himself.



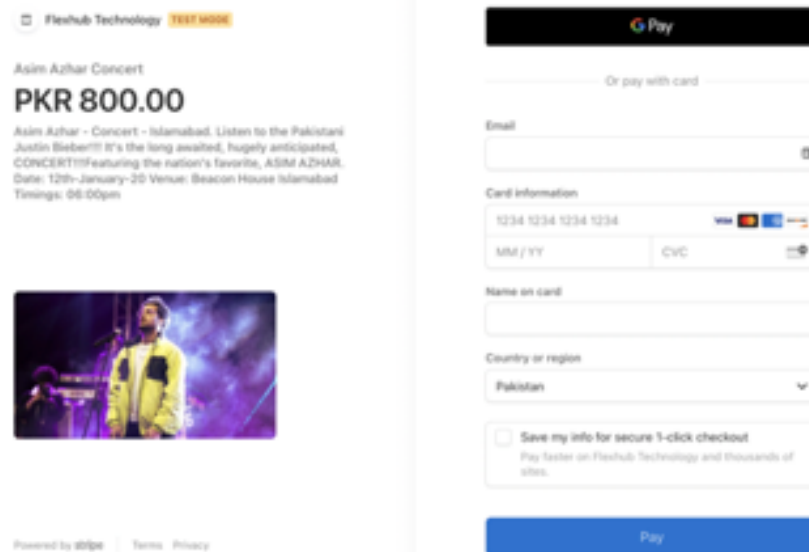
**Figure 2. Homepage of the Website**



**Figure 3. Event Creation on the Website**



**Figure 4. Purchasing Ticket**

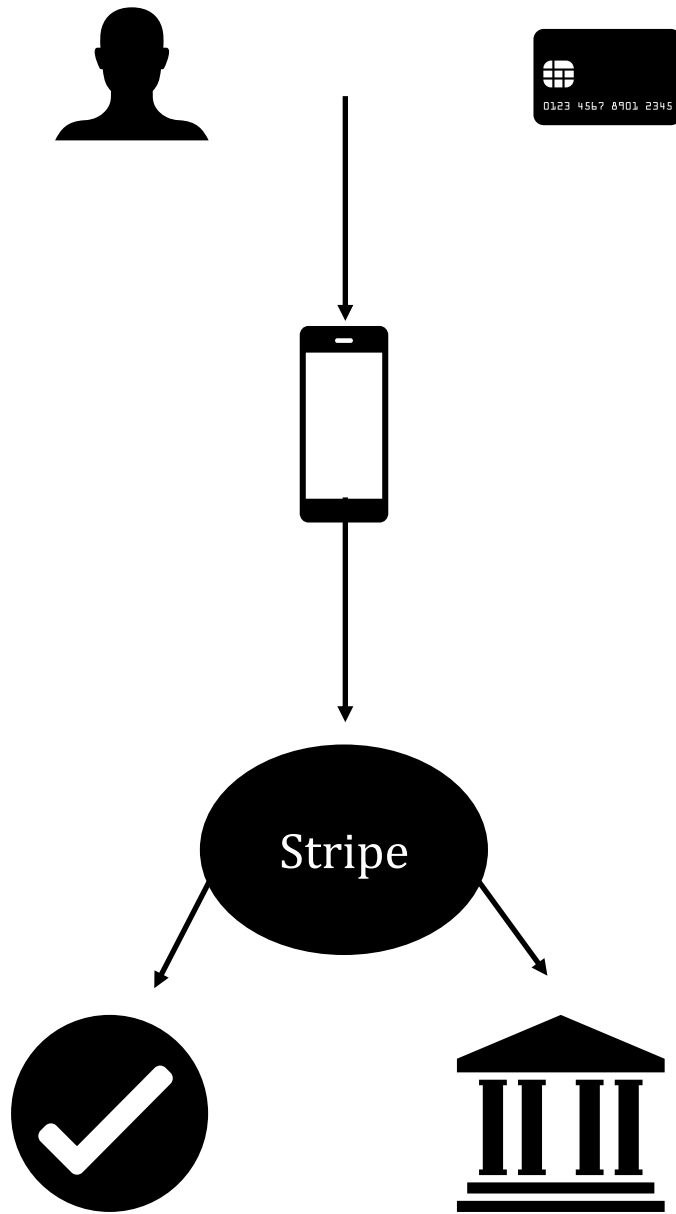


**Figure 5. Stripe Integration**

## **2.2 Block Diagram:**

Following is the block diagram of the proposed model and its explanation:

- A. In step-1, attendee enters his details to buy the ticket of his desired event.
- B. In step-2, he buys the electronic ticket through his credit card.
- C. In step-3, strip charges his credit card.
- D. In step-4, attendee receives his ticket and organizer receives his payment.



**Figure 6. Block Diagram**

## **2.3 Previous Work:**

Previously, a few similar works have been carried out, such as Event Zilla, BmS, and Eventify.

Event Zilla is the project of the Military Institute of Science and Technology, Dhaka, Bangladesh. It is an event marketing and registering platform and helps sell tickets, manage registrations and process payments. However, it has payment issues, the transaction fee is too high, and ticket sale dates also do not work accurately.

BmS is an online movie and ticketing platform made by Panipat Institute of Engineering and Technology, Samalkha, Haryana, India. Nevertheless, it does not provide ticket cancellation support. Another problem with this project is that it is limited to the events near Mumbai only.

Eventify is an event management app designed by Matoshri COE&RC, Nashik, India. It helps event organizers and attendees sell and buy tickets, respectively. But it also has issues like automatic email triggering etc.

## **2.4 QR Code:**

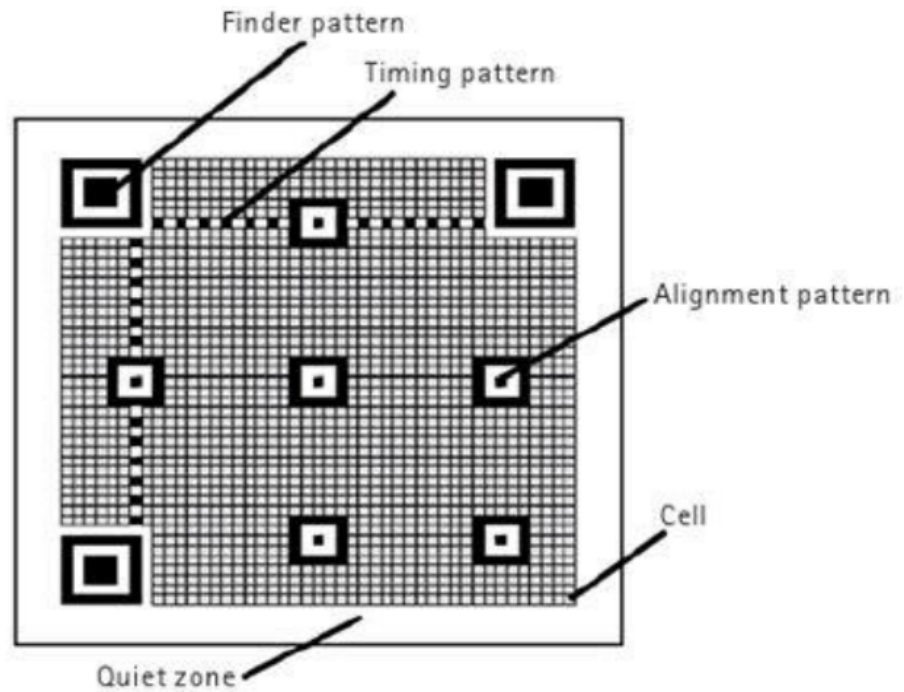
### **2.4.1 Definition:**

QR code or Quick Response code is a two-dimensional matrix code that is built with two goals in mind:

- It must hold a lot of data compared to one-dimensional barcodes.
- It must be deciphered quickly with the help of some portable device like a mobile phone. [6]

### **2.4.2 Architecture:**

It consists of a square pattern having 2 regions, encoding region and function patterns. The square dots also known as black modules are fixed in a square pattern on a white background.



**Figure 7. Architecture of a QR Code**

- A. Finder Patterns** are located in the 3 corners of the QR code and determine its position, size, and angle.
- B. Timing Patterns** are 2 lines, a horizontal and a vertical, with alternating sequences of black and white patterns and are used to correct the central coordinate of the cell when the QR code gets distorted [8].
- C. Alignment Pattern** is the pattern used to correct the distortion of the QR code.

### **2.4.3 Characteristics:**

A QR code has the following characteristics:

- It has larger storage capacity than barcodes and can store up to 7086 characters of information.
- It has smaller printout size than one-dimensional barcode.
- It is readable from any direction.
- It has be restored if distorted and if it gets corrupted, error can be detected and corrected.

## Chapter 3: Design Specification

### 3.1 Hardware:

- Scanner
- Capacitive Touch Screen
- Camera Module

### 3.2 Software:

- Next.js
- Firebase
- Material-UI
- Stripe



## **Chapter 4: Detailed Design**

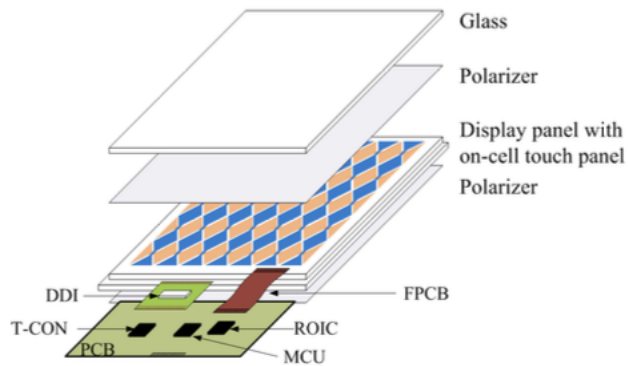
### **4.1 Hardware**

#### **4.1.1 Scanner:**

Scanner is an input device that scans codes, images, text, or objects by using the beam of light. It converts them into digital data via Optical Character Recognition (OCR). A scanning head does this task, capturing the image in the form of light or electrical charges using one or more sensors.

#### **4.1.2 Capacitive Touch Screen:**

It is a touch screen display panel that takes input from the electrical qualities of the human body. When a fingertip (or any other specialized input device, like a pen) touches the display, it identifies when and where the user has touched it. It is an accumulation of both input - touch screen - and output - display - device.



**Figure 8. Configurations of a LCD system with an on-cell capacitive Touch Screen Panel (TSP) [9]**

### 4.1.3 Camera Module:

It is an image sensor amalgamated with a lens, control electronics, and an interface like CSI, Ethernet or low-voltage differential signalling. It is used to capture images from any device.

## 4.2 Software

### 4.2.1 Next.js:

Next.js is a JavaScript framework that lets you create ultra fast and consumer-friendly static websites as well as web applications on React.

### **4.2.2 Firebase**

It is a platform on which mobile (both iOS and Android) and web applications are created. It also provides tools tracking analytics, reporting and fixing app crashes, and marketing and experimenting it.

### **4.2.3 Material-UI**

It is a library that allows to import and use different components to build User Interface (UI) in applications on React.

### **4.2.4 Stripe**

It is a cloud-based software that facilitates the processing of online payments. It contains various unified APIs and tools that enable businesses to manage and accept payments online.

## Chapter 5: Conclusion

In this thesis, we have discussed in detail an online ticketing model that facilitates marketing, buying, and purchasing tickets more conveniently than that of the traditional ticketing system.

In the suggested model, the organizers create the events on the web-based interface. Those who are interested in taking part in the event purchase tickets from the same platform. The organizer does not have to worry about the marketing of the event, arranging staff to print tickets before the event and verifying them on the day of the event. Similarly, the attendee does not have to go to the ticket office to purchase the ticket. It benefits both the organizer and attendee by minimizing time, and additional expenditure and burden.

Our proposed system fulfills the two of the Sustainable Developmental Goals by innovating the ticketing system and reducing the need for the printing of paper tickets.

## Appendix - A (Synopsis)

<b>Title</b>	Ticketspot
<b>Brief description of project / thesis with salient specifications:</b>	It is online ticketing system that has digitalized the selling and purchase of event tickets. It is a convenient, flexible, economical, and time-saving system benefiting organizers and attendee at the same time.
<b>Scope of work:</b>	<ul style="list-style-type: none"> <li>• Eliminates the use of physical tickets</li> <li>• Helps with fraud</li> <li>• Facilitates the attendee to buy tickets from anywhere at any time with a secure payment method</li> </ul>
<b>Previous work done on the subject</b>	Event Zilla, BmS, and Eventify etc.
<b>Material resources required:</b>	<p>Hardware: Scanner, Capacitive Touch Screen, and Camera Module</p> <p>Software, Next.js, Firebase, Material-UI</p>
<b>No. of students required:</b>	Five: Ehtisham Sajjad, Maham Fatima, Mahnoor Nasar, Rida Zahra Kazmi, and Noor Fatima
<b>Applications:</b>	<p>In professional field like conferences, hackathons, and workshops.</p> <p>In the field of entertainment like movies, concerts, and sports event.</p>

## Appendix - B (Code)

The code can be found at the following link.

<https://github.com/ehtishamsajjad1/fyp-nextjs-mui-stripe>

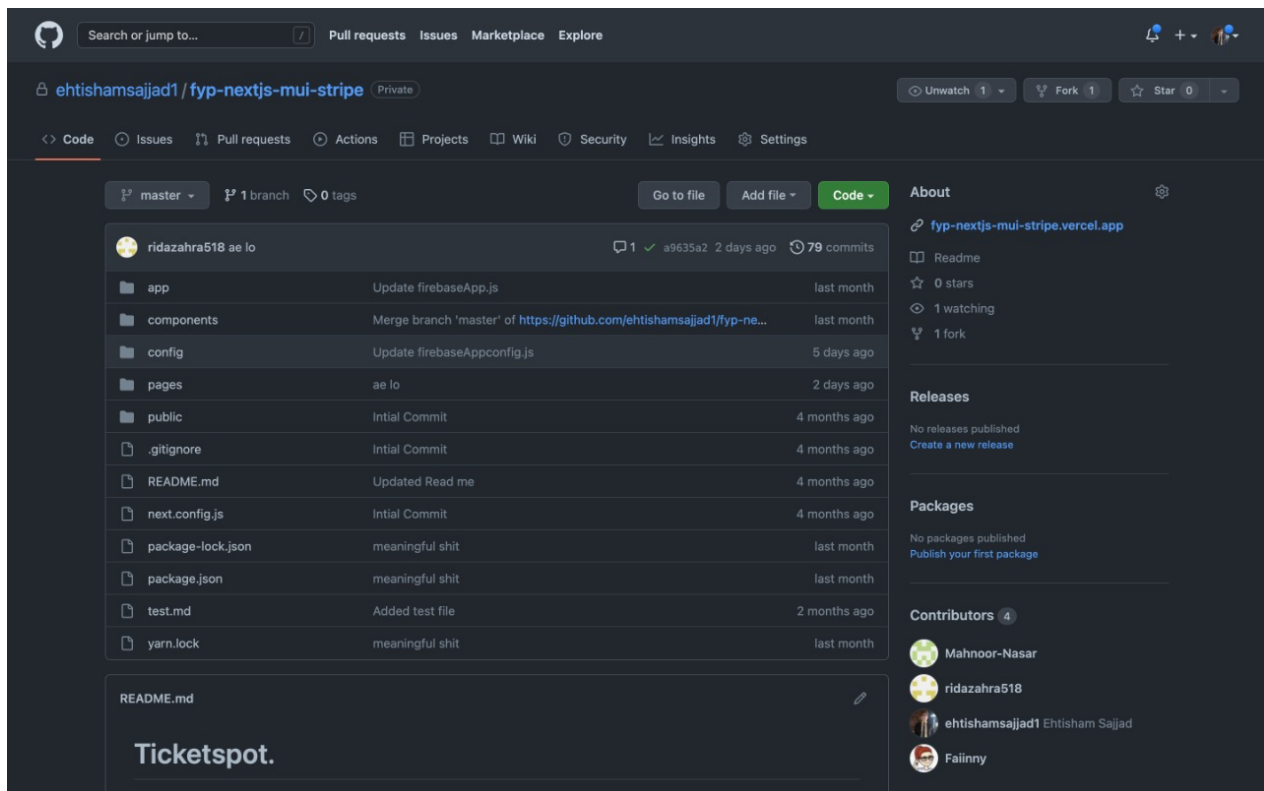


Figure 9. Code

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