

Bus Ticket Booking System and its judicious utilization in COVID pandemic

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ABSTRACT: The project address the development of Bus Ticket Booking System - a Web based and user friendly application that facilitates its users to purchase bus tickets online and increase company's efficiency. The system enables the company to manage the ticket related operations more efficiently and also enables customers to check availability of bus ticket, buy bus ticket and pay for bus ticket online through credit / debit / ATM cards based on the passenger's sources and destination. This makes it easy for the customers to get bus tickets online instead of queuing up to buy the bus ticket. The software development methodology used for this system was the Object Oriented approach.

This research also focuses on the study of how this project can be used in making the transportation conditions better during the COVID - 19 pandemic and become future ready, if such situations arise in future.

Thirdly, we focus on implementing this project over the government and non - government transport buses that run in local areas, within the districts. This facility will enable the daily travelers to book their seats previously so that their daily routine life gets easy. Here, the users do not need to wait for the bus; they can schedule and synchronize their time as per the timings of the bus.

Keywords: - Bus Ticket Booking, E – Ticket, SDLC, reservation, transportation and pandemic.

I. INTRODUCTION

India is the second-densely populated country in the world. Transportation is one of the most common needs for daily passengers and mostly people use buses as their means of transportation.

The use of bus traveling is a large growing business in India and other countries; hence bus ticket management system deals with the maintenance of records of each passenger who had reserved a seat for a journey. It also includes

maintenance of information like schedule and details of each bus. [2]. To solve the various problems and further maintaining records of items, seat availability for customers, price per seat, bill generation, and other things, we are offering this proposal for a reservation system. E-ticketing is an electronic document without a physical paper. It reduces the ticket processing costs and increases the flexibility of passengers to schedule and book tickets.

The reservation system has two modules - the Admin module and the User module. Both the modules are further classified into several sub-modules that provide the functionalities to this project.

The first module i.e. the Admin module helps the administrator to check and update the details of Bus, add a new bus, remove a bus, set the price of the seat, check passenger's details and their bookings, and updating the route of the bus.

The second one i.e. the customer module, enables the customers to enquire about the availability of seats in a particular bus on a particular date. This module allows its customers to register as new user or log in to their account, book E-Tickets, cancel the reserved tickets, check the details and services of various buses, and give feedback on the transportation services.

II. PROBLEM STATEMENT

At present, the type of system being used in local buses is an internal system, in which customers take the bus tickets from the motor coach. Here, the customers don't know about the bus schedules, seat availability in the bus, and how long the bus may take to arrive at the source and reach the destination.

Sometimes, it also becomes difficult for the motor coach to handle massive people on the bus and sell the tickets. Especially, at the time of the pandemic, when one needs to maintain a social distance and avoid touching each other.

The method to solve this problem is to create an online buying bus ticket system. Customers can buy a bus ticket over the Internet, 24 hours a day, 7 days a week, and the bus ticket can't be lost, stolen, or left behind. In addition, the online system lets the customers check the availability of the bus ticket before they buy the bus ticket. [8].

II.I Objectives

This system is proposed to fulfill the below mentioned objectives. These objectives are as follows:-

1. To automate the manual procedure of buying tickets in the local buses.
2. To enable customers to check the status of the bus, seat availability in the bus, and route of the bus.
3. This system also facilitates its users to check the fare of the tickets, expected timing of reaching the destination, and to book tickets at anytime from anywhere.
4. Another aim of this system is to help people in maintaining the social distance during this period of pandemic. And, also to facilitate transportation if such a harsh situation again arises in future.

III RESEARCH METHODOLOGY

For theoretical or practical research, we need to collect some data. This system of collecting data is known as the research methodology. For this research, we have collected the information by oral interview.

III.I Choice of Methodology

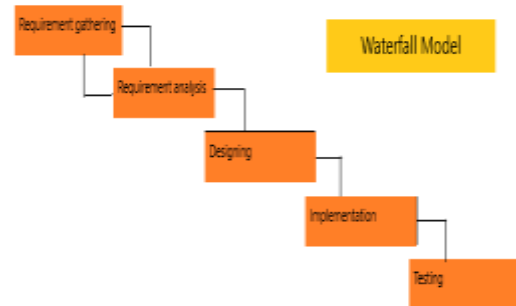
For the successful completion of a project, it has to go through several stages of development cycles. These development cycles are known as Software Development Life Cycle (SDLC) which composes of 5 phases:

Planning, Analysis, Designing, Implementation, and Testing.

The SDLC model used for the development of this project is the 'Waterfall' model. It is a sequential model that divides software development into pre-defined phases.

The other main advantage of using the waterfall model is that the interaction between the client and developer is more. The requirements can be refined again and again, and the system can be precisely created as per the requirements of the client.

With Waterfall Development, analysts and users proceed to sequence from one phase to the next can be mapped out and evaluated. [8].



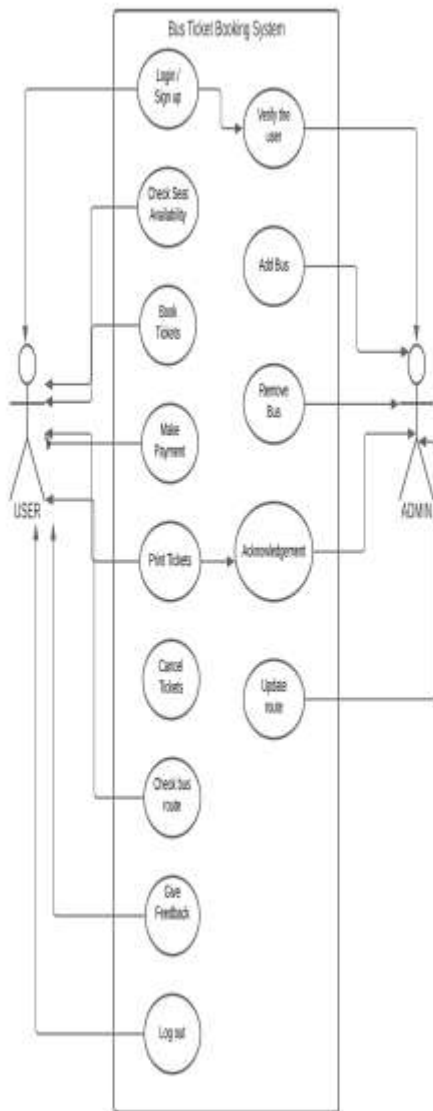
IV. PROPOSED SYSTEM

The system is very simple in design and easy to implement. The system requires very low system resources and the system will work in almost all configurations [10], and on every device with any of the operating system (say Windows, Mac or Linux). Because, it is a web-based system and just requires a web-browser for booking the tickets, checking the route, checking the seat availability and performing other activities.

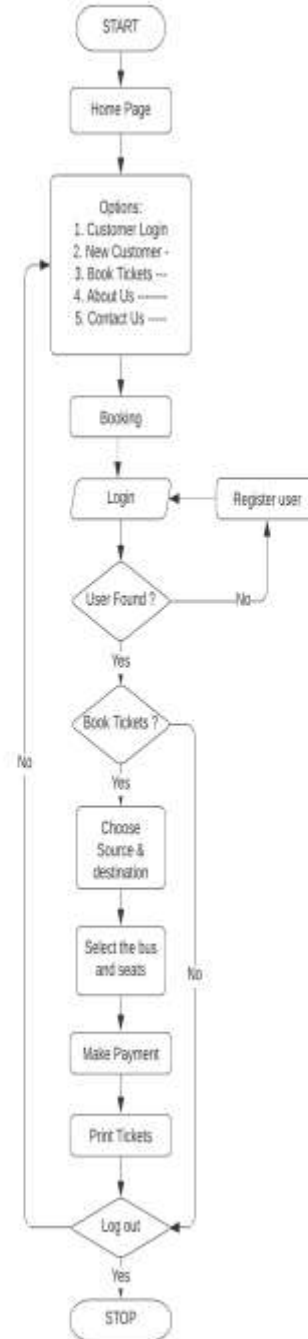
IV.I Use Case Diagram

The Unified Modeling Language (UML) Use Case diagram is the primary form of software requirements for a new underdeveloped software program. The use case modeling is very helpful in designing a system from the end user's perspective. It is a simple diagram and an effective technique for describing the system's behavior to the end user.

The UML User Case diagram, in the next column, depicts the possible interaction of the user and admin with the system.



Flow Chart for Bus Ticket Booking System



IV.II Flowchart of System

A flow chart shows the graphical representation of an algorithm. It is often used as a program-planning tool to solve problems. It makes use of various symbols like terminals, input/output box, processing box, decision box, flow lines, etc, that are connected to indicate the flow of information and processing.

The process of drawing a flowchart for an algorithm is known as “flowcharting”. The Bus Ticket Booking system above can be described in the form of a flow chart as shown below.

V. SYSTEM IMPLEMENTATION

In computer science, an implementation is a realization of a technical specification or algorithm as a program, software component, or other computer systems through computer programming and deployment [13]. It is the process of ensuring whether the system is functional or not.

In this process, either a new system is developed from scratch or is developed from an existing system. It also ensures whether the developed system meets the quality standard or not.

V.I Tools Used

To develop this project some tools were used. These tools along with their advantage in developing this system are discussed below.

1. **Java:** Java is a strange state, dynamic, pitifully wrote, model-based, multi-world view, and deciphered programming dialect. It can be used to create complete applications that may run on a single computer or be distributed among servers and clients in a network. It can also be used to build a small application module or applet for use as part of a Web page.

In this project, Java Server Pages (JSP) is used for creating this web application.

2. **SQL:** SQL stands for Structured Query Language. It is a standard database language that is used to create, maintain and retrieve relational databases. We can also perform some other operations over databases like accessing, updating, inserting, manipulating, and modifying data.

In this project, we have used SQL for creating the database and maintaining various records, like the record of buses, customers, bus owners, tickets, etc.

3. **Apache Tomcat:** Apache Tomcat is a Java Servlet container or web container. It is an open-source project by Apache Software Foundation (ASF), that provides the extended functionality to interact with Java Servlets and also implement several technical specifications of the Java platform: Java Server Pages (JSP), Java Expression Language (Java EL) and WebSocket.

This Tomcat Server is popular for building and maintaining dynamic websites and applications based on the Java software platform.

4. **XAMPP:** XAMPP is a cross-platform web server. It is an abbreviation for cross-platform, Apache, MySQL, PHP and Perl. It allows you to build WordPress sites and test the programs offline on a local web server on your computer.

V.II System Interface

An interface is a point of interaction between the User and the System. The interaction through interfaces consists of various windows /

web-pages that enable different categories of users to give various inputs to the system and get the respective output. These windows include some of the user pages, administrative pages and their respective outputs.

- **Admin Page:** This page is for the admin of the system who can see bus details, booking history, add bus remove bus, check the owner's details and much more.



- **Admin Dashboard:** This window shows the functionality of the Admin and facilitates him to do various changes.



- **Home Page:** This is the first page the users will see when they will access this site.



- **Customer Login:** On this page, the customer can enter their used id and password to login

and book the tickets. Secondly, new customers can sign up and continue to their ticket booking process.



- Bus List: This page shows the list of available buses.



- Booking History: This is one of the administrator's interface that allows him to see the booking history.



- Bus Owner Login: Through this page, the bus owner can login and enter the time of reaching the destination.



- Contact Us: This page is made to get the contact details. This will help the customers in solving their queries and other technical issues.



VI. CONCLUSION

Bus Ticket Booking System is a web-based application. It comprises an online bus ticket booking software that enables its users to book the tickets, check the availability of seats in the bus, check the bus route, etc. It gives power to the admin to add or remove buses, check passenger's details, check bus details, etc. It eliminates many disadvantages of ticket collecting systems such as users can buy tickets anytime before the journey. Through this system the users can pay the fare online and they don't need to carry the exact change to buy the tickets.

This is a potential system developed in JSP and uses HTML, CSS and JS for web view and SQL as a database.

VII. FUTURE SCOPE

In the future, many advancements can be made in the system, such as, we can also include the government buses for providing transportation services in the local area. Especially, during the festive season it will be very much helpful for the daily passengers as well as for the people who travel to their hometown during the festival.

Secondly, depending on the density of passengers we can add or remove buses over that route. Another advancement may be to make it possible that if there are no passengers over a station the bus driver can know this and continue without stopping so that the journey becomes efficient.

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