

A Project Report

on

Bus Seat Booking System

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ABSTRACT

Online Bus Ticket Reservation System is a Web based application that works within a centralized network. This project presents a review on the software program “Online Bus Ticket Reservation System” as should be used in a bus transportation system, a facility which is used to reserve seats, cancellation of reservation and different types of route enquiries used on securing quick reservations. OBTRS is built for managing and computerizing the traditional database, ticket booking and tracking bus and travel made. It maintains all customer details, bus details, reservation details. In order to achieve the design, Imo Transport Company (ITC) was chosen as a case study because of its strategic importance to Imo State. Structured Systems Analysis and Design Methodology (SSADM) was adopted. In addition, PHP Hypertext Preprocessor (PHP) language was used for the front- end of the software while the back end was designed using MySQL. The software achieved is capable of improving the customer hand and relationship management in ITC operations. It is recommended that despite the present functionality of the designed software, an additional functionality such as the use of E-mail to send tickets and notifications to the customer and an online payment using credit cards/debit cards should be implemented into the system. Furthermore, other operations carried by ITC such as the courier services should also be integrated in order to enhance the system.

Key words: OBTRS, Electronic Ticketing, ITC, Reservation, Transportation

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CHAPTER-1

Introduction

A common view in various circles of the world is that man now lives in the growth of years of data collection, processing and distribution, is very popular years of knowledge called. For this reason, managers and other data users especially in the transportation industry are looking for more types of management and operational support details. So they have to answer there is a growing need for information and data management. Electronic tickets, or e-tickets, provide proof that their owners have permission to enter the amusement park, use a travel item, or have it access to other Internet services. The design of this online program will be is profitable for the company because it has never existed before. Therefore, Imo Transport Company, Owerri, is a viable investment managed by the government of the country has its main objectives: to distribute comfort and hospitality for passengers who do not live in their homes, in order to make a profit, they will definitely inform a a system that can make its handicrafts work in place of a bus ticket reservations to meet customers rising demand during peak and high prices seasons. Great expectations to encourage a possible targeted study provide appropriate guidance and awareness to any potential investors, especially those in the bus industry, considering using Imo transport, e.g. a gateway to the fertile soil of endless opportunities in southeastern Nigeria. Currently, employees at the bus ticket counter use an internal system to sell tickets counter and customers can buy a bus ticket online at this time you will need to go to the counter to buy a bus ticket. Sometimes, customer needs line up a long line to buy a bus ticket and ask for details and this brings many distractions for customers.

Currently, the type of system used in the counter is the internal system used manually to sell bus tickets. The company's problems are that customers have to go to the counter to buy a bus ticket or ask for a bus system, customers will also have to wait in line for longer to get a bus ticket and will also have to pay cash when they buy a bus ticket.

The main purpose of this study is to implement flexible procedures for booking a bus ticket for any trip made by Imo Transport Company (ITC). The system is said to be the default system and customers can choose their own seats. Specifically, the objectives of this project will be to:

- i) Provide a web-based bus booking service where a customer can Buy a bus ticket online without the need to line up counter to buy a bus ticket.
- ii) Empowering customers to check availability and types of buses online. The customer can check the timing of the entire ITC bus by using system.
- iii) Facilitating the payment of bus tickets by obtaining a bank pin after payment various designated banks.
- iv) The ability of customers to cancel their booking.

1. Background of Study

The prevalent view in various global circles is that man is presently living in an age growth of information gathering, processing and dissemination, popularly called the information age. For this reason, managers and other users of information especially in transport industries are demanding more kinds of information to support management and operations. They must therefore respond to the increasing requirement for information and data management.

Electronic tickets, or e-tickets, gives evidence that their holders have the permission to enter a place of entertainment, use a means of transportation, or have access to some Internet services. The design of this online system will be beneficial to the company because it has not existed before.

Therefore, Imo Transport Company, Owerri, a viable investment owned by the state government whose primary objectives are: to spread comfort and hospitality to passengers away from their home, to make profit, will definitely appreciate a system which can automate its manual operations in the area of bus ticket reservation in order to meet customers increasing demand during peak and off peak seasons. The ultimate expectation is to inspire a feasibility study aimed at providing proper guidance and awareness to any future potential investors, particularly those in the bus industry, to consider utilizing the Imo transport, as a gateway to the fertile soil of unlimited opportunities in the south-east Nigeria.

Currently, staff at the bus ticket counter is using an internal system to sell tickets at the counter and customers who are unable to buy bus ticket online at this moment would have to go to the counter to a buy bus ticket. Sometimes, customers' needs to queue up a long queue to buy bus ticket and ask for information and this brings a lot of inconveniences to customers.

However, Online Bus Ticket Reservation System enables the customer to buy bus ticket, make payment, and ask for information online easily. Furthermore, staff can sell bus ticket using Bus Ticket Reservation System after checking the bus ticket availability for the customer and print the bus ticket to the customer.

1.2 Statement of Problem

Currently, the type of system being used at the counter is an internal system which is manually used in selling the bus tickets. The problems facing the company are that customers have to go to the counter to buy bus ticket or ask for bus schedule, customers will also have to queue up for a long time in order to secure a bus ticket and will also need to pay cash when they buy the bus ticket.

1.3 Objectives of Study

The main purpose of this study is to automate the manual procedures of reserving a bus ticket for any journey made through Imo Transport Company (ITC). This system is said to be an automatic system and customers can select seats by themselves. Specifically, objectives of this project will consist of:

- i) Providing a web-based bus ticket reservation function where a customer can buy bus ticket through the online system without a need to queue up at the counter to purchase a bus ticket.
- ii) Enabling customers to check the availability and types of busses online. Customer can check the time departure for every ITC bus through the system.
- iii) Easing bus ticket payment by obtaining a bank pin after payments is made to the various designated banks.
- iv) Ability of customers to cancel their reservation.

CHAPTER 2:

FEASIBILITY STUDY/LITERATURE REVIEW

An important outcome of the preliminary investigation is the determination that the system requested is feasible. Feasibility study is carried out to select the best system that meets the performance requirements.

Feasibility study is both necessary and prudent to evaluate the feasibility of the project at the earliest possible time. It involves preliminary investigation of the project and examines whether the designed system will be useful to the organization. Months or years of effort, thousand for millions of money and untold professional embarrassment can be averted if an in-conceived system is recognized early in the definition phase.

The different types of feasibility are: Technical feasibility, Operational feasibility, Economical feasibility.

Technical feasibility

Technical Feasibility deals with the hardware as well as software requirements. Technology is not a constraint to type system development. We have to find out whether the necessary technology, the proposed equipments have the capacity to hold the data, which is used in the project, should be checked to carryout this technical feasibility.

The technical feasibility issues usually raised during the feasibility stage of investigation includes these

- This software is running in windows 2000 Operating System, which can be easily installed.
- The hardware required is Pentium based server.
- The system can be expanded.

2.2.2 Behavioral Feasibility

This feasibility test asks if the system will work when it is developed and installed.

Operational feasibility in this project:

- The proposed system offers greater level of user-friendliness.
- The proposed system produces best results and gives high performance. It can be implemented easily .So this project is operationally feasible.

2.2.3 Economical feasibility

Economical Feasibility deals about the economical impact faced by the organization to implement a new system. Financial benefits must equal or exceed the costs. The cost of conducting a full system, including software and hardware cost for the class of application being considered should be evaluated. Economic Feasibility in this project:

- The cost to conduct a full system investigation is possible.
- There is no additional manpower requirement.
- There is no additional cost involved in maintaining the proposed system.

3. SYSTEM SPECIFICATION

3.1 Hardware Specification

Processor	: Intel Pentium IV 2.4 GHZ or above
Clock speed	: 500 MHZ
System bus	: 32 bits
RAM	: 256MB of RAM
HDD	: 40 GB or higher
Monitor	: SVGA COLOR
Keyboard	: 108 keys
Mouse	: 2 button mouse

3.2 Software Specification

OS	:	MS WINDOWS XP SP2
Front End	:	Visual Basic 6.0
Back End	:	MS ACCESS 2003

4. EXISTING SYSTEM

Existing system refers to the system that is being followed till now. The existing system requires more computational time, more manual calculations, and the complexity involved in Selection of features is high. The other disadvantages are lack of security of data, Deficiency of Data accuracy, Time consuming etc. To avoid all these limitations and make the working more accurately the system needs to be computerized. Here in the Electronic bus ticketing, a detailed study of existing system is carried along with all the steps in system analysis.

4.1 Draw backs of existing system.

Here in the Electronic bus ticketing, a detailed study of existing system is carried along with all the steps in system analysis. An idea for creating a better project was carried and the next steps were followed.

- ❖ Lack of security of data.
- ❖ More man power.
- ❖ Time consuming.
- ❖ Consumes large volume of pare work.
- ❖ Needs manual calculations.
- ❖ No direct role for the higher officials.
- ❖ Damage of machines due to lack of attention.

To avoid all these limitations and make the working more accurately the system needs to be computerized.

5. PROPOSED SYSTEM

The aim of proposed system is to develop a system of improved facilities. The proposed system can overcome all the limitations of the existing system. The system provides proper security and reduces the manual work. The existing system has several disadvantages and many more difficulties to work well. The proposed system tries to eliminate or reduce these difficulties up to some extent. The proposed system will help the user to reduce the workload and mental conflict. The proposed system helps the user to work user friendly and he can easily do his jobs without time lagging.

5.1 Advantages of Proposed System

The system is very simple in design and to implement. The system requires very low system resources and the system will work in almost all configurations. It has got

following features

- Ensure data accuracy.
- Minimize manual data entry.
- Minimum time needed for the various processing
- Greater efficiency
- Better Service
- Minimum time required
- The ticket machines would help prevent loss on account of malpractice
- It would also help in providing adequate data to the corporation, particularly with regard to boarding of passengers from fare stages and important points
- This would help the corporation prepare and organize its schedules more efficiently on the basis of traffic demand.
- It would provide data on concessions given to various sections.
- Another additional feature is that the data in the ticket machine could be fed into the computer.

6. SYSTEM DESIGN

6.1 INTRODUCTION

System Design is the most creative and challenging phase in the system life cycle. Design is the first step into the development phase for any engineered product or system. Design is a creative process. A good design is the key to effective system. System design is a solution *how to approach* the creation of a new system. System design transforms a logic representation of what is required to do into the physical specification. The specification is converted into physical reality during

development.

6.2 LOGICAL DESIGN

The logical flow of a system and define the boundaries of a system. It includes the following steps:

- Reviews the current physical system – its data flows, file content, volumes, frequencies etc.
- Prepares output specifications – that is, determines the format, content and Frequency of reports.
- Prepares input specifications – format, content and most of the input functions.
- Prepares edit, security and control specifications.
- Specifies the implementation plan.
- Prepares a logical design walk through of the information flow, output, input, controls and implementation plan.
- Reviews benefits, costs, target dates and system constraints.

6.3 PHYSICAL DESIGN

Physical system produces the working systems by define the design specifications that tell the programmers exactly what the candidate system must do. It includes the following steps.

- Design the physical system.
- Specify input and output media.
- Design the database and specify backup procedures.
- Design physical information flow through the system and a physical design Walk through.
- Plan system implementation.

- Prepare a conversion schedule and target date.
- Determine training procedures, courses and timetable.
- Devise a test and implementation plan and specify any new hardware/software.
- Update benefits , costs , conversion date and system constraints

Design/Specification activities

- Concept formulation.
- Problem understanding.
- High level requirements proposals.
- Feasibility study.
- Requirements engineering.
- Architectural design.

6.4 INPUT DESIGN

Input Design deals with what data should be given as input, how the data should be arranged or code, the dialog to guide the operating personnel in providing input, methods for preparing input validations and steps to follow when error occur. Input Design is the process of converting a user-oriented description of the input into a computer-based system. This design is important to avoid errors in the data input process and show the correct direction to the management for getting correct information from the computerized system. It is achieved by creating user-friendly screens for the data entry to handle large volume of data. The goal of designing input is to make data entry easier and to be free from errors. The data entry screen is designed in such a way that all the data manipulates can be performed. It also provides record viewing facilities.

When the data is entered it will check for its validity. Data can be entered with the

help of screens. Appropriate messages are provided as when needed so that the user will not be in maize of instant. Thus the objective of input design is to create an input layout that is easy to follow.

In this project, the input design consists of a log in screen, tab for compression/decompression, source and destination browsing button, a menu list for selecting the algorithm, Compress/Decompress option, compress/decompress button.

6.5 OUTPUT DESIGN

A quality output is one, which meets the requirements of the end user and presents the information clearly. The objective of output design is to convey information about past activities, current status or projections of the future, signal important events, opportunities, problems, or warnings, trigger an action, confirm an action etc. Efficient, intelligible output design should improve the system's relationship with the user and helps in decisions making. In output design the emphasis is on displaying the output on a CRT screen in a predefined format. The primary consideration in design of output is the information requirement and objectives of the end users. The major formation of the output is to convey the information and so its layout and design need a careful consideration.

There is an output display screen for showing the compressed/ decompressed file or folder details (Original file size, Compressed/Decompressed file size, distinct characters)

7. Research gaps

According to Kevin (2012) Web-based Bus Reservation and Ticketing System is a generic web portal application that aids bus customers to reserve a seat in a certain bus company anytime and anywhere and variety of buses that satisfy the customer's requirements are provided. The project, on the bus company's side, serves as a marketing strategy and aids an efficient processing and delivery of itinerary receipts. The project used software like Adobe Photoshop CS4 for the creation of the images, Adobe Dreamweaver CS4 and Notepad++ as a development tool, MySQL for the database, Apache as the web server, mPDF for the creation of PDF and PayPal Sandbox for the payment. For the main effects, it used jQuery.

However, the softwares adopted in this project, has in recent times been upgraded. Therefore, Adobe Dreamweaver CS6, Adobe Photoshop CS6, MySQL v.5 are going to be used to implement this project.

7.1 Study on Electronic Ticketing in Public Transport

A consultant with European Metropolitan Transport Authority (EMTA), Mohamed Mezghani (2008) stated that EMTA has established a working group to work on the issue of electronic ticketing. This group is mandated to generate knowledge, exchange/compile information and learn from the experience of its members in the field of electronic ticketing. In his framework, EMTA has launched a study on electronic ticketing in public transport under the supervision of the working group and they designed certain concepts such as the public transport pricing, public transport ticketing and electronic ticketing in public transport.

On the contrary, his research which discussed certain concepts in relation to electronic ticketing in public transport was a one-directional article which didn't

relate the idea about customer reserving seats and for their journey at a date chosen by them. Nevertheless, this project will be designed to encapsulate these areas mentioned as well as display certain screenshots of the customers' reservations system.

7.2 Online Transport Booking System

Badariah, (2007) emphasized that the Online Transport Booking System which was developed at Politeknik Kota Kuala Terengganu (PKKT) was to make sure that users could make their online booking or reservations to their desired transport companies with facilities provided by the new system. He pointed out that the methodology and technology being used in this new transport system could be applied to other areas of activities. The user who wants to use the transport must make an application to book the transport before boarding.

Similarly, after considering the type of system which Badariah adopted, this project will be designed with the same aim of presenting the customers of Imo Transport Company with the opportunity of making reservations at the comfort of their homes or offices without being faced with the challenges of queuing at counters before embarking on any journey. This project will also enlighten prospective customers and users of the system on the need to patronize the system as it displays more advantages over the old system by providing an easy to use Graphic User interface (GUI) interaction, checking availability of routes before boarding etc.

1. Research Methodology

The system of collecting data for research project is known as research methodology. The data may be collected for either theoretical or practical research for example management research may be strategically conceptualized along with

operational planning method and change management. Information which was used for this study was carried out by oral interview.

3.1 Choice of Methodology

For any project to be completed, it has to go through stages called Development Life Cycles. System Development Life Cycle (SDLC) is the process of understanding how an Information System (IS) can support business needs, designing the system, building it and delivering it to users. The SDLC composes of four phases: Planning, Analysis, Design and Implementation.

In order for this project to be developed, the methodology that will be used is the System Structured Analysis and Design Methodology. The SSADM is classified as a Waterfall Development. With Waterfall Development, analyst and users proceed sequentially from one phase to the next and each phase can be mapped out and evaluated (Hevner, 2004). Below, in figure 3.1 is a diagram on the waterfall methodology.

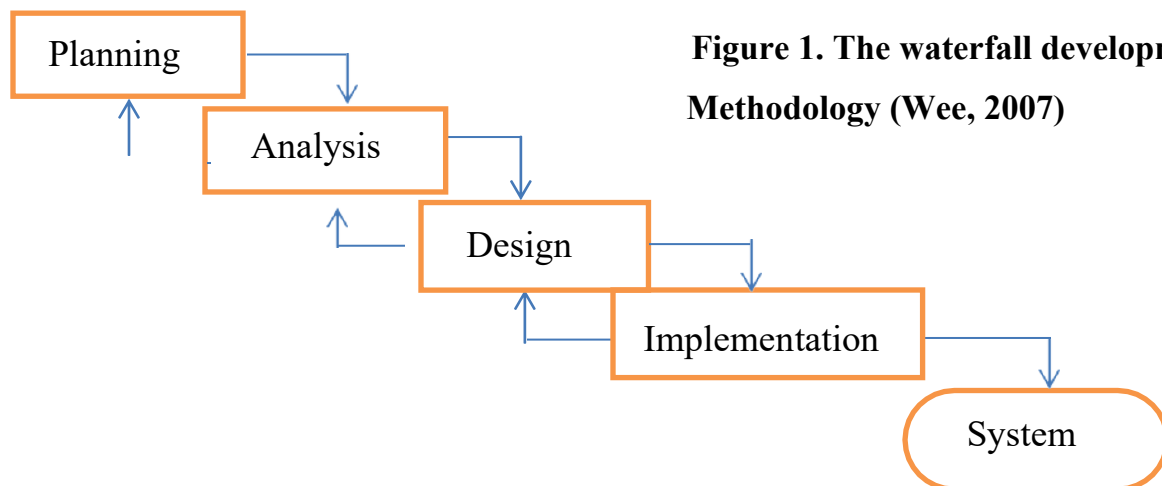


Figure 1. The waterfall development Methodology (Wee, 2007)

1.DATA FLOW DIAGRAM (DFD)

A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system, modeling its process aspects. A DFD shows what kind of information will be input to and output from the system, where the data will come from and go to, and where the data will be stored.

The development of DFD'S is done in several levels. Each process in lower level diagrams can be broken down into a more detailed DFD in the next level. The Top-level diagram is often called context diagram. It consist a single process bit, which plays vital role in studying the current system. The process in the context level diagram is exploded into other process at the first level DFD. Figures 3.1 to 3.2 shows a data flow diagram about the system.

Level 0

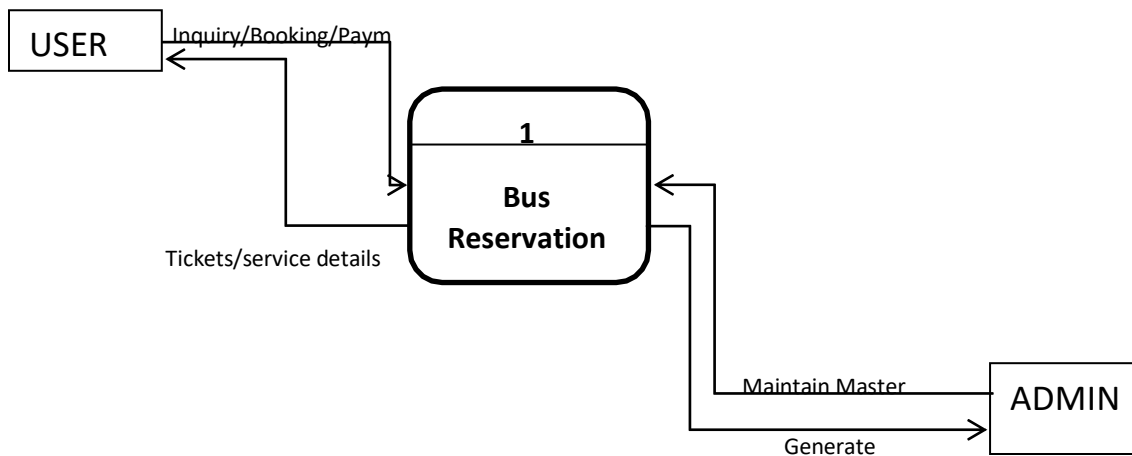


Figure 2. Context View of Online Bus Ticket Reservation System

LEVEL 1

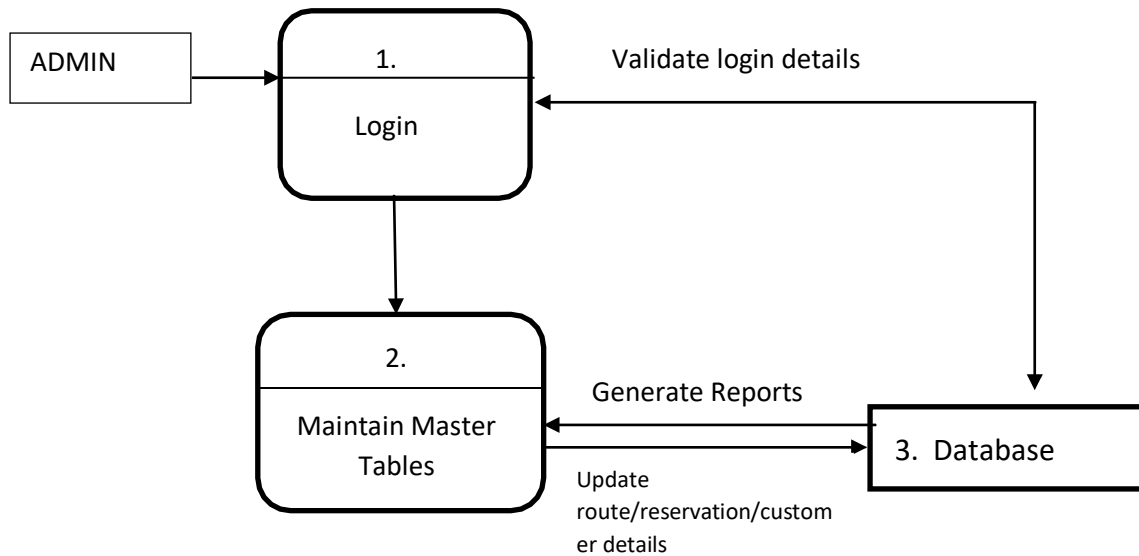


Figure 3. User view of Online Bus Ticket Reservation System

Level 2

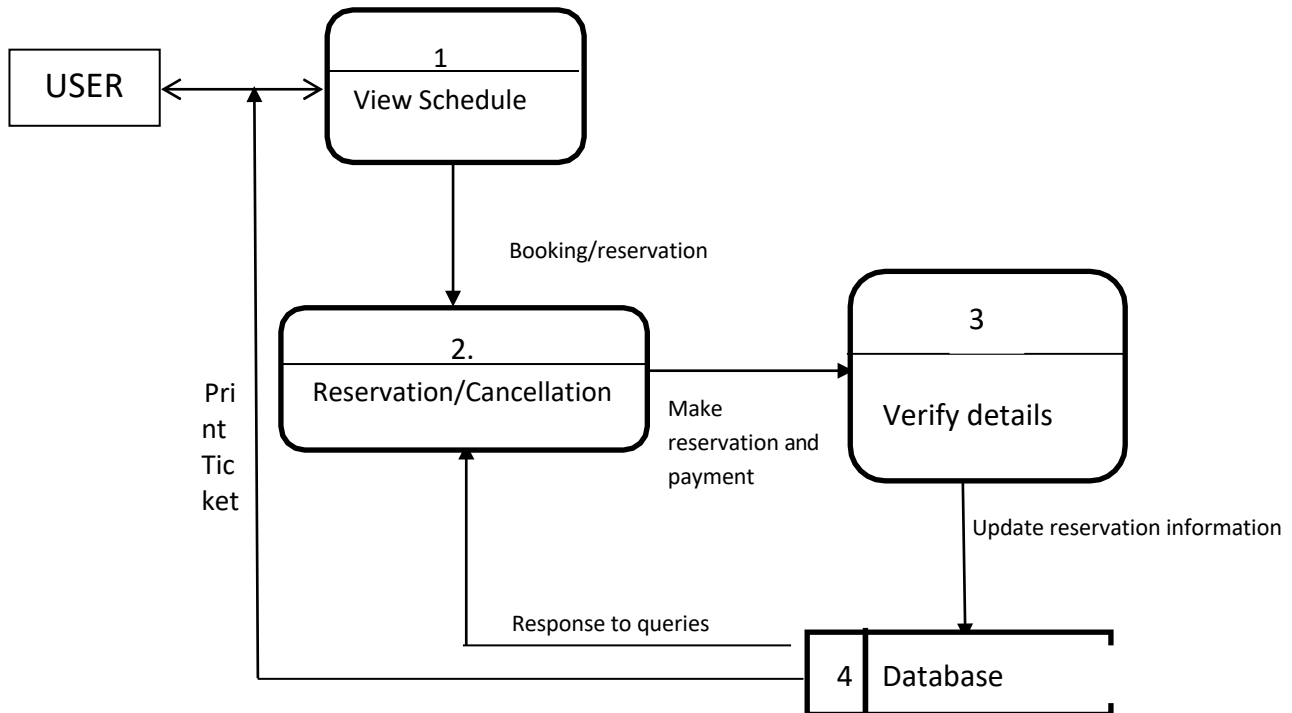


Figure 4 Admin view of Online Bus Ticket Reservation System

3.3 USE CASE DIAGRAM FOR USERS AND ADMIN

A use case is a description of a system's behaviour as it responds to a request that originates from outside of that system (the user). In figure 3.4, a use case of the activities in a bus transport system is shown.

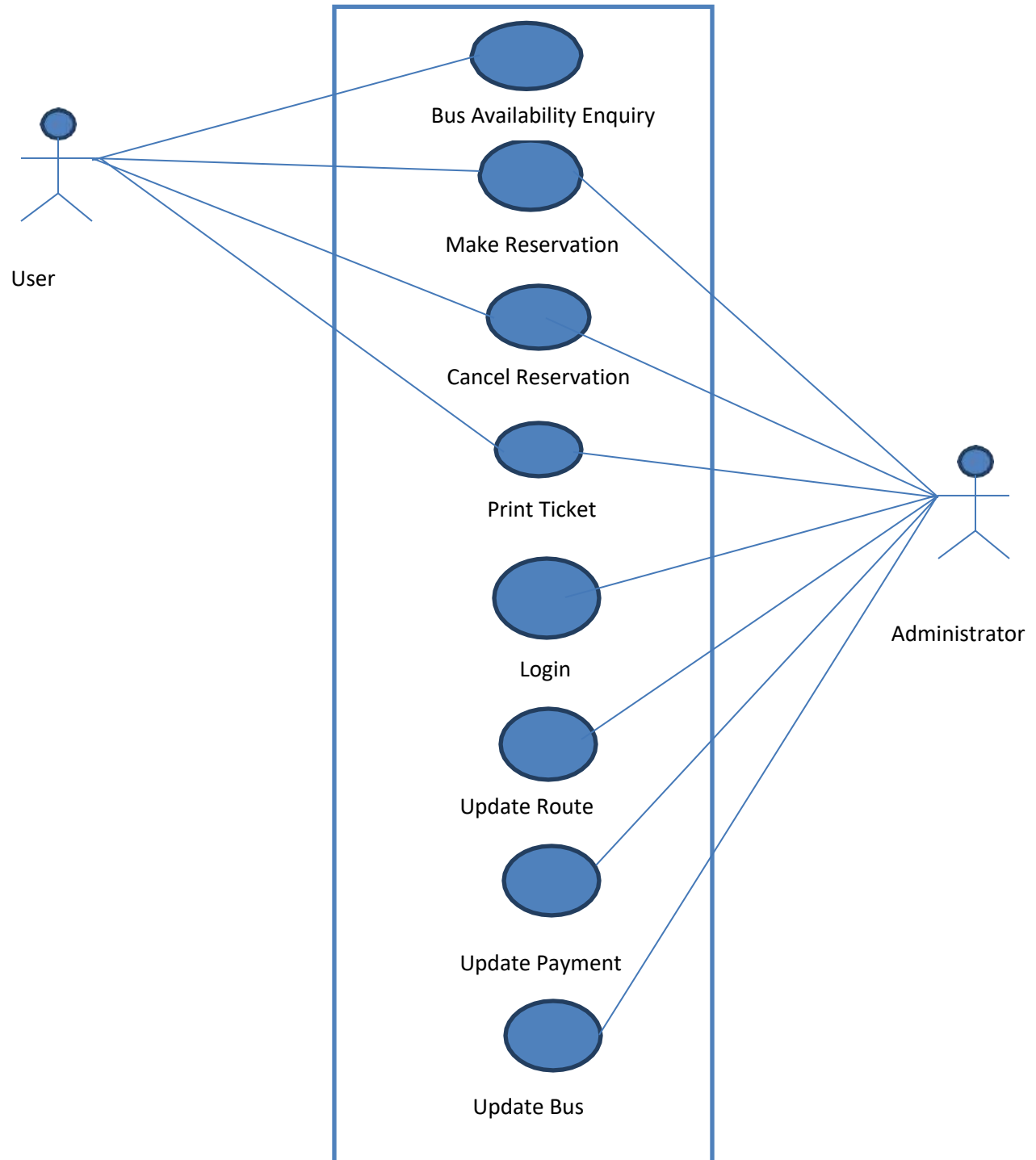


Figure 5 Use case diagram for users and admin

In other words a use case describes “who” can do “what” with the system in question. The use case technique is used to capture a system’s behavioural requirements by detailing scenario-driven threads through the functional requirements.

4. INPUT AND OUTPUT DESIGN

The input design is the link between the information system and the user. It comprises of the developing specification and procedures for data preparation and those steps are necessary to put transaction data into a usable form for processing data entry while an output design is a process that involves designing necessary outputs in the form of reports that should be given to the users according to the requirements. Below are some screenshots which comprises of both input and output designs of the proposed system.

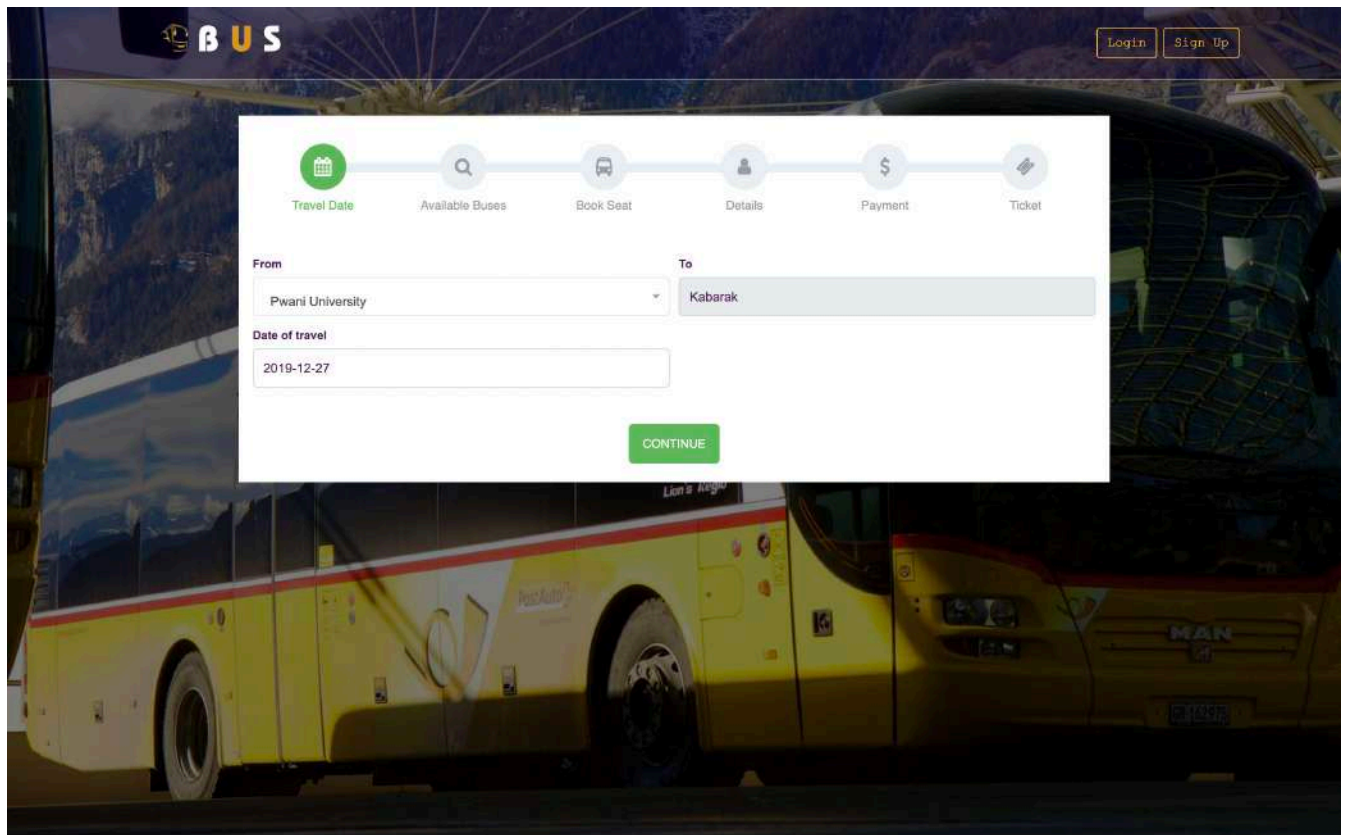


Figure 6 Reservation Module

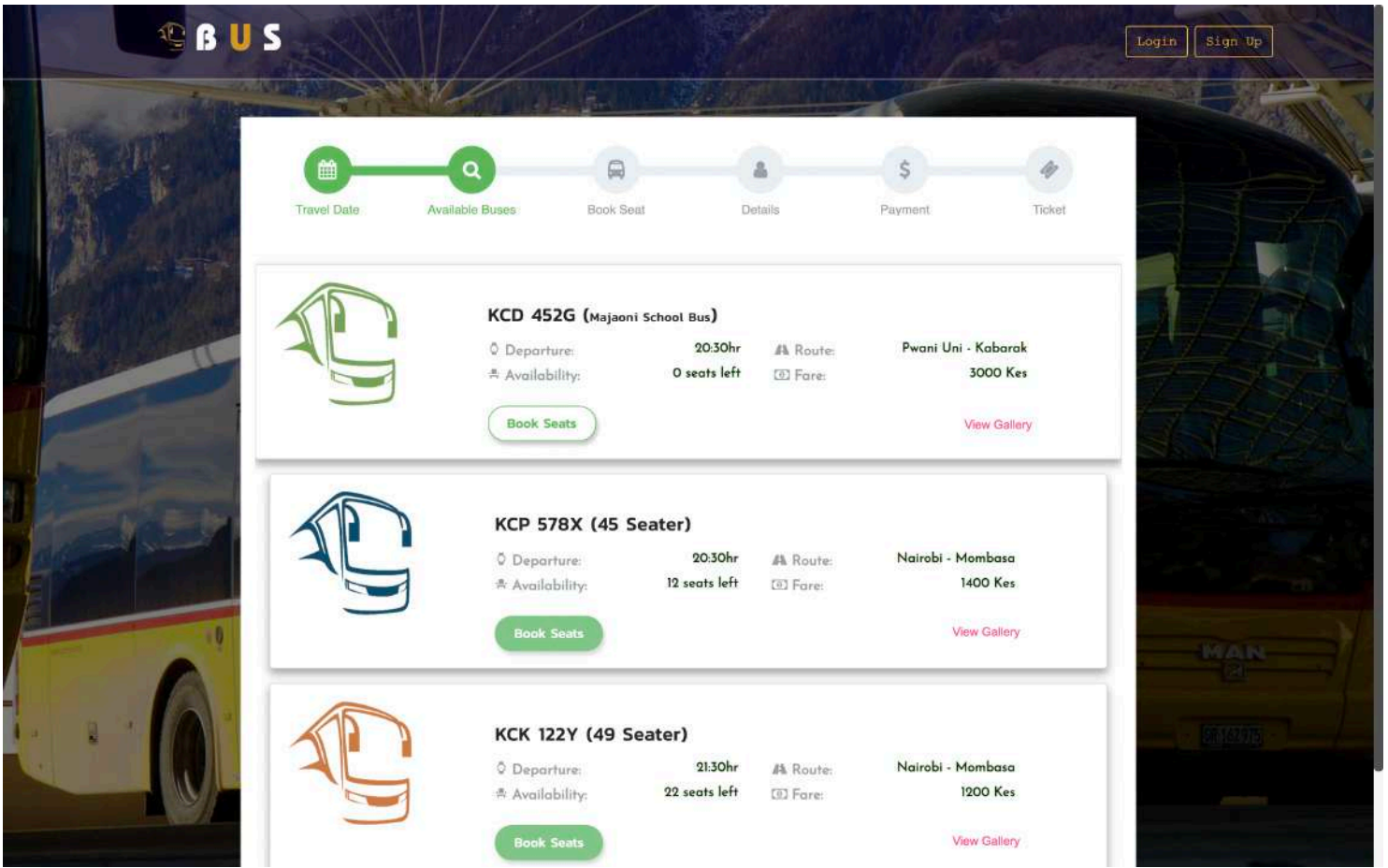


Figure 7. Bus Providers

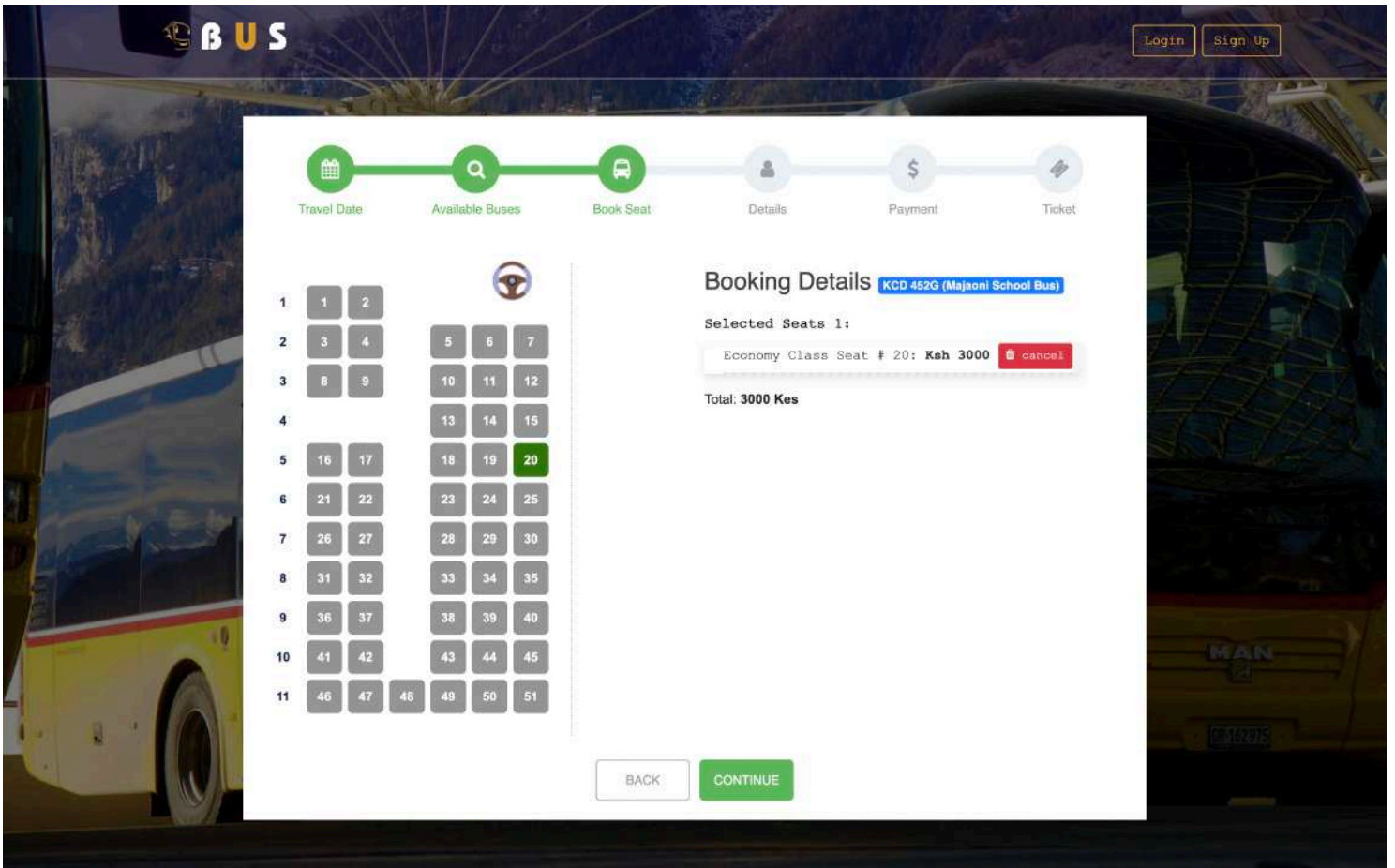


Figure 8. Seat Booking

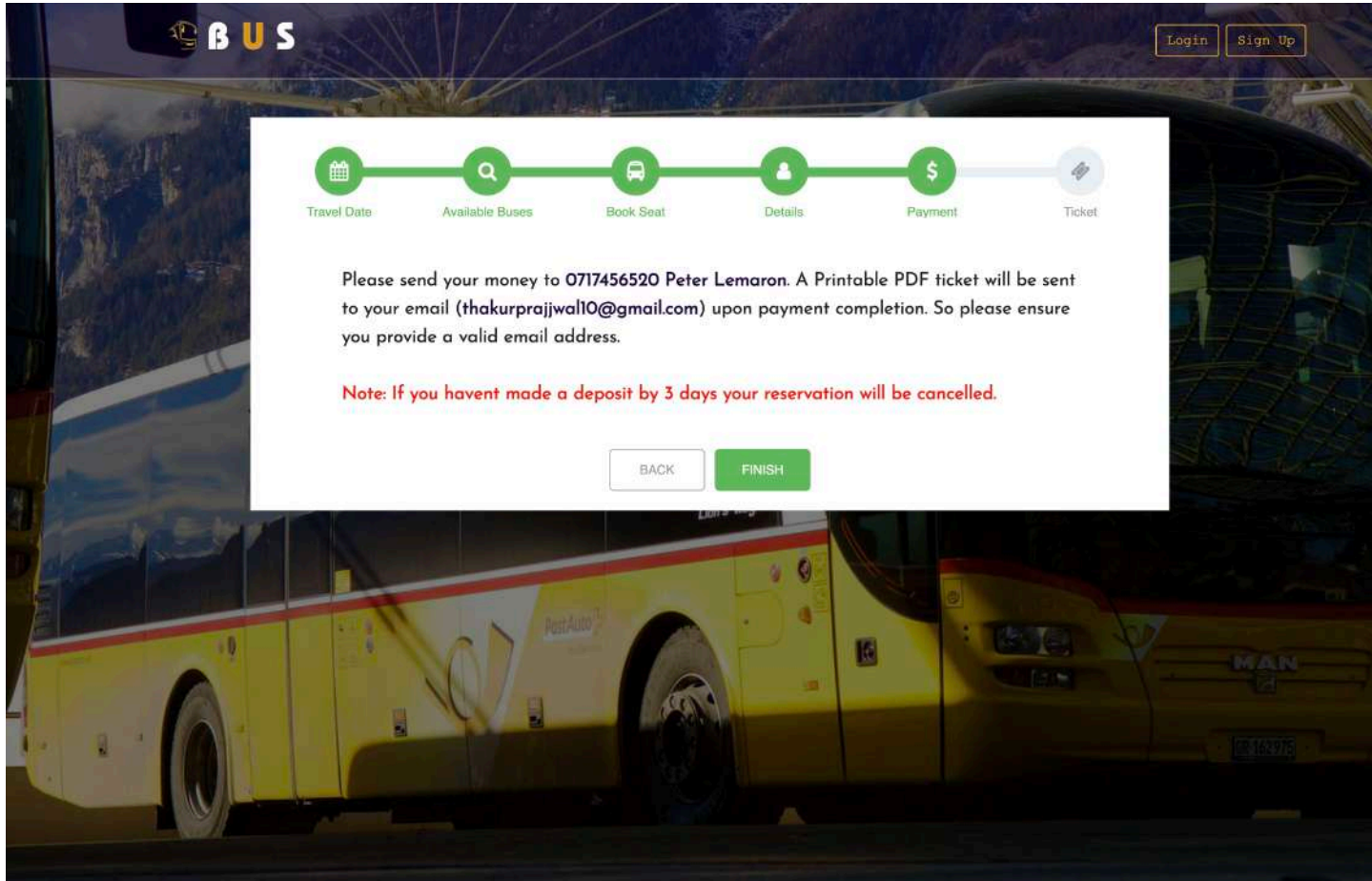


Figure 9. Payment

Seat Number Auto Generated view seat	<input type="text" value="1,"/>
First Name Enter first name	<input type="text" value="okeke"/>
Last Name Enter last name	<input type="text" value="kelvin"/>
Address Enter Address	<input type="text" value="123, ikenegbu layout"/>
Contact Enter Contact Number	<input type="text" value="07030592246"/>
Slip Number Enter Bank Slip Number	<input type="text" value="12345"/>
Amount Paid Enter Amount Paid	<input type="text" value="600"/>
<input type="button" value="Confirm"/>	

Figure 10. Seat Selection and Contact details

Print and present this Ticket upon boarding the vehicle

ITC TICKET RESERVATION DETAILS

Transactio ID: *vnykdq50*

Transaction Type : *Online. [Transaction Code: 12345]*

Fullname: *okeke kelvin*

Address: *123, ikenegbu layout*

Contact: *07030592246*

Payable: *N450*

Owerri - Umuahia: *Hummer*

Time of Departure: *10:30*

Seat Number: *1,*

Date of Travel:

Print Ticket

Close

Figure 11. Reservation Ticket

The screenshot shows the Admin Dashboard interface. At the top right, it says "Hi Admin!" with a "Logout" link and a user profile icon. Below this is a navigation bar with four icons: "Dashboard", "Vehicle", "Seat Inventory", and "Add Payment". A "Filter" input field is located above the main table. The table contains reservation details with columns for Firstname, Lastname, Address, Contact, Route, Vehicle Type, Time, Seat Number, Payable, Status, and Action. The footer of the dashboard reads "2014 © ITCAdmin 1.1 by ITC".

FIRSTNAME	LASTNAME	ADDRESS	CONTACT	ROUTE	VEHICLE TYPE	TIME	SEAT NUMBER	PAYABLE	STATUS	ACTION
Philips	Mark	23 Aba Road	07048557558	Owerri - Enugu	Coaster	10:45	1,	350	Onboard	edit delete
Philips	Mark	23 Aba Road	07048557558	Owerri - Enugu	Coaster	10:45	3,	350	Onboard	edit delete
queen	Mark	45b bbbb	07048557558	Owerri - Enugu	Coaster	10:45	5, 6, 7,	1050		edit delete
Philips	Brace	23 Aba Road	07048557558	Owerri - Enugu	Coaster	10:45	1,	350	Onboard	edit delete
Philips	West	23 Aba Road	7787876786	Owerri - Umuahia	Hummer	10:30	1,	450		edit delete
Peter	Johnson	23 Warri Street	08065422722	Owerri - Aba	Toyota Siena	12:30	2,	550	Not Void	edit delete
Peter	Neon	23 Aba Road	07048557558	Owerri - Enugu	Coaster	10:45	3,	350		edit delete
Philips	Gideon	23 Aba Road	07048557558	Owerri - Enugu	Coaster	10:45	4,	350		edit delete
Philips	Mark	23 Aba Road	07048557558	Owerri - Aba	Toyota Siena	12:30	1,	550		edit delete
okeke	chidinma	owerri	00803389890	Owerri - Aba	Toyota Siena	12:30	1,	550		edit delete
okeh	kelvin	123, ikenegbu layout	08033267840	Owerri - PH	Wagon	10:00	1, 2, 3,	1500		edit delete

Figure 12. Admin Dashboard

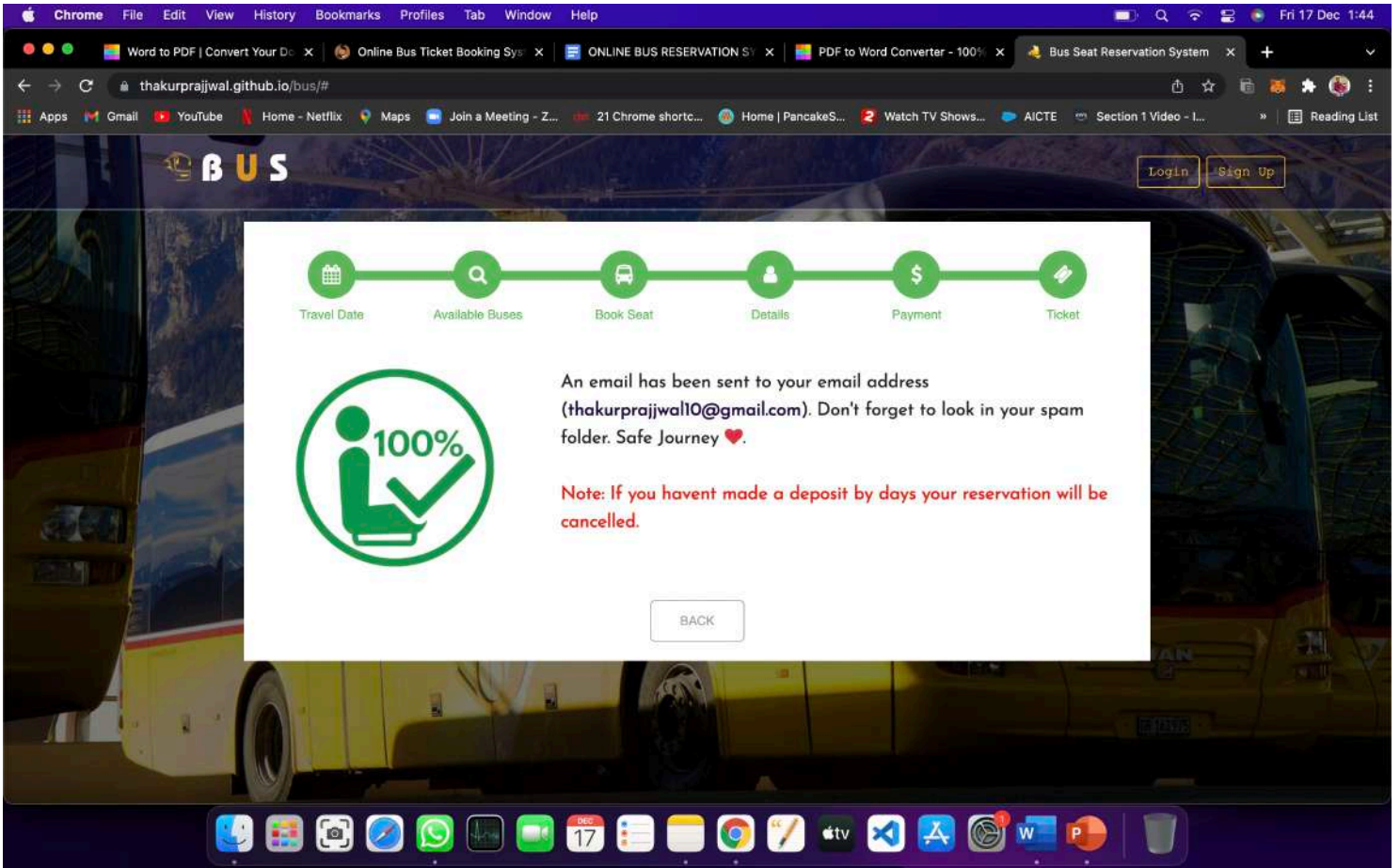


Figure 13. Ticket On mail.

5. Summary

In 1974, American airlines were the first to use an automated booking system, which was still almost manual. Technology grew, and a computer reservation system was developed. In this present era, online booking or reservation system has improved the operations of various sectors of a nation's economy deploying this system. Online Bus Ticket Reservation System being a web based system that ensures that the company would be able to transform most of the processes carried out manually into automated, error-free and easy to use operations in the organization especially in the area of transportation; also it would be able to generate report for the management decision purpose.

This system will be developed using a waterfall methodology for research and design purposes, PHP as the programming language because of its server-side processing capabilities that makes data process less on the client personal computer, an implementation strategy as well as testing and maintenance strategies suitable for efficient deployment of the system.

5.1 Recommendations

Research and development are continuous processes; this is the same in computer and software development. However, this work is recommended for Imo Transport Company Limited, Owerri, since their operation are still carried out manually and it can also be useful to other Bus Transportation industries whose processes are still manually done. The system can contribute more on those bus representatives handling the account if it can generate reports by trip so that they will no longer go to a certain module to check the reservation and its details. Also, it will be more beneficial to both clients and bus representatives if clients can create an account just like in airlines websites. With that, the system can record the modifications made. Other functionalities such as E-Mail facility for sending Ticket to passenger, Online Payment with Credit Card / Debit Card etc. could also be integrated into the system in order to enhance user friendliness and interactions

5.2 Conclusion

It can be observed that computer applications are very important in every field of human endeavor. Here all the information about customer that made reservation can be gotten just by clicking a button with this new system, some of the difficulties encountered with the manual system are overcome. It will also reduce the workload of the staff, reduce the time used for making reservation at the bus terminal and also increase efficiency. The application also has the ability to update records in various files automatically thereby relieving the company's staff the stress of working from file security of data.

This project, as a whole, will give a new way in bus reservations and ticketing processes. The automation and management of seats and reservations will be done online. However, this project does not limit the walk-in passengers that is passengers who visit the company's counter because it also caters for them. This also lessens the use of papers like in the traditional way of ticketing.

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