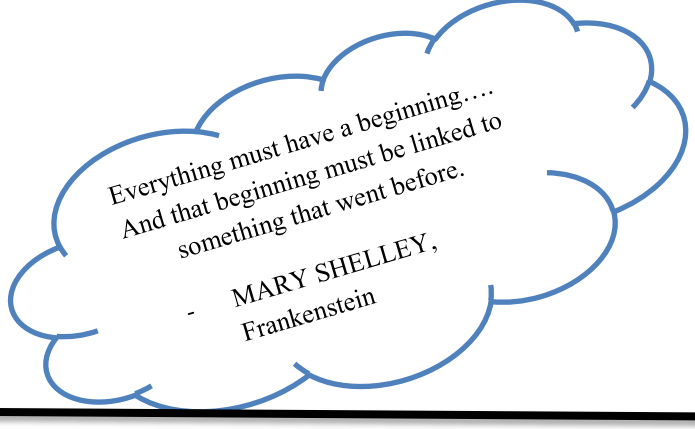


CHAPTER 1

INTRODUCTION

INTRODUCTION

This chapter covers the introduction of the software project. It presents a description of the company to implement the system. It also covers an analysis of the current systems implemented by the company and the problems the project aims to resolve. It discusses what the project work would do and what it would not do. It also explains the technologies to be used by the project and the operating environment requirement.

Content

1.1 Company Profile

1.2 Existing System and Need for System

1.3 Scope of Work

1.4 Operating Environment – Hardware and Software

1.5 Detailed Description of Technology Used

1.1 COMPANY PROFILE

Cross Country Transports is a multi-national bus transport company with branch offices across West Africa. It started in Nigeria as a local transport company that facilitates the movement of goods and human passengers via road. The company has since grown from there into a larger and international company that runs routes including Ghana, Togo, Benin, Nigeria and other West African Countries. [4]

The main business and administration operations are performed in her Nigerian office. The company still maintains its local operations in Nigeria but does not apply local routes in any other country. Although the company bus can be chartered and used for trips within the countries it has branches. [4]

The company offers two main transportation services by road. The services of the company are:

- Human Passenger Transportation (Local/International)
- Courier Service (Local/International)

This software Project is for a branch of the company - Cross Country Transport Accra Ghana.

Cross Country Transport Accra Ghana is an international outlet of Cross Country in Ghana. It serves the purpose of extending the company`s services to Ghana.

The company (Cross Country Accra Ghana) serves the single purpose of accepting passengers and goods from Nigeria to Ghana vice versa.[5]

It is receives administrative standard and rules from the head office in Nigeria. It does not have autonomous state to operate on its own.

It is managed by a manager and few staff members.

1.2 EXISTING SYSTEM AND NEED FOR THE SYSTEM

The company uses paper based manual system for the management and control of daily business operations and a file system for data storage.

The tickets are already printed and sent from the main office. Customer information on booking is inputted into the ticket, a copy of the ticket is kept for control. Information from all ticket is transferred to a company manifest used by the branch and a ticket analysis report is sent to the head office with all information for tickets sold. All of these are done manually on paper.[4]

Booking can be done in another branch and the information of the passenger is sent in and a ticket is assigned to the customer.

Customers with return tickets bought at another branch but want to travel from this branch would need to present their tickets, but before this, a control copy should have been sent from the issuing branch to notify the branch of such ticket.[4]

Booking and reservation can be made in two ways:

- single/multiple booking
- charter

The single booking is for individual booking. While the multiple booking is booking for more than one person on a bus or booking an entire bus for a trip from Lagos to Nigeria or any of their international set destinations. The multiple booking works as the single but just more than one seat booking at a time. When booking for multiple booking of an organization, a receipt is issued with the names of all seat numbers and tickets are not issued to the customer on booking.

The prices for this service are fixed based on the status of the identification – virgin passport; over stay; no passport and regular. It could be one-way or return.

The employee records are stored and maintained on a log file system and pay slips are used to issue and pay salaries.

The bus company because of the nature of the service and operation does not have an inventory of all the bus of the organization. Buses that arrive in the country from Nigeria are maintained while they are in the country and its responsibility is relinquished when it leaves the company for a trip. The company does maintenance and repair on the bus while it is in the country and should it generate any problem, it is handled by the company. Information about the vehicle that arrives at the company and repairs carried on it, is stored in log files.

The company uses a manual system of calculator and receipts to manage and calculate all expenditures and income. Reports are generated based on this manual system.

The company currently does not have a computer network. It does not use any computerized system. The company has a computer system and a printer that is used to print typed word and excel reports.

1.2.1 NEED FOR THE SYSTEM

The transport company has problems with saving and retrieving information relating to their customers, services rendered, making daily report on income generated and expenditures of the company. This is due to the rigorous nature of manual pattern for storing and retrieving data. [4]

Therefore, the company needs an electronic and automated system to ease the burden of management on managing and controlling the various operations of the company.

1.3 SCOPE OF WORK

This project work is to develop a Transport Management System (TMS) to fit the operations and services of the sponsoring company.

This TMS system is not a typical TMS system because of the structure of the company it is designed for. This software is to automate management tasks.

The system would entail a ticket management system which is strictly on managing and monitoring ticket sales. The system would not print or issue tickets.

This project work would also include a system to manage the employee information of the company. It would enable management to store employee information and their salary.

The project work would also include a vehicle management system to manage information of vehicles that come to the branch and leave it. It would also include information about the various routes and their fares that the bus applies.

The TMS system will focus on adding, editing, deleting and searching for information relating to the vehicle inventory, employee record, ticket booking/reservation, passenger information and bus routes

The system would use a database system to centrally store the information and an application to access information stored on the database. Reports would be generated for company operations; income and expenditures.

The software would not include tracking of the vehicle or a real time management of fuel. These features would be left out as future implementations on the system should the head organization decide to implement it across all the branches of the company.

1.4 OPERATING ENVIRONMENT – HARDWARE AND SOFTWARE

1.4.1 HARDWARE REQUIREMENTS:

- HDD: 20GB Min 40GB Recommended
- RAM: 1GB Min 2GB Recommended
- Processor: Pentium Processor (Intel 2.0GHz) Recommended

1.4.2 SOFTWARE REQUIREMENTS:

- Operating System: Windows XP with SP2 or Windows 7 or higher
- Database: MySQL
- Java Run Time 7 or above

1.5 DETAILED DESCRIPTION OF TECHNOLOGY USED

The main technologies used for this software product are:

- Java Programming Language
- MySQL Oracle Database
- Netbeans IDE

1.5.1 JAVA PROGRAMMING LANGUAGE

The java programming language is a robust object oriented programming language. Java as a programming language and computing platform was originally called OAK but renamed to Java Programming Language in 1995. It was created by James Gosling at Sun Micro Systems. It is now under Oracle Corporations.[11]

The syntax of Java is derived from C and C++.

Java has its own platform for executing its applications called the Java Virtual Machine (JVM). The JVM can be installed on any platform as each platform has its own specific designed JVM. This makes the Java Programming Language to be platform independent.[10]

The programs written on/with the Java programming language are compiled and interpreted. Java programs are written in source codes that are compiled into bytecodes. The bytecodes are then interpreted by the JVM which executes the program on the client system or device.[12]

The Java platform is divided into three:

- Java Standard Edition: This is used to develop standalone applications and Java applet (java applications that run on a browser).
- Java Enterprise Edition: it is used to develop distributed applications – applications that run on networks.
- Java Mobile Edition: it is used to develop application for mobile phones and specific devices such as TV, AC, and Cars etc.

It is a technology that is used to develop and power diverse programs such as utilities, games and business applications for standalone, distributed and internet based.

According to java official website, Java runs in more than 850 million personal computers worldwide and on billions of devices worldwide including TV and mobile devices.[10]

The Java plug-in software, Java Runtime Environment which contains the JVM and other library files and tools, is installed on client machines to be able to execute and run Java programs.

1.5.1.1 WHY JAVA

- General Purposed: It is used to develop programs for a variety of devices. It can be used to run standard alone desktop applications, distributed networked applications, distributed web applications, mobile device application and utility or embedded applications. It makes it easier for future upgrade and migration from just standalone to distributed application or creating a mobile version easy.
- Secure: Java programming language has been famous for two things, platform independence and security. The java codes are checked for viruses by the JVM before interpretation and the safety of the code before execution. The detection of a flaw causes the codes not to be executed.
- Purely Object Oriented: In Java, codes are written and structured as classes and objects. This feature makes java codes maintainable and reusable.
- Memory Management: It eliminates some features of its parent languages – C/ C++ such as the use of pointers. It uses the garbage collector to manage memory usage to avoid memory space wasting automatically.
- Platform Independent: It can run on multiple platforms (i.e. systems running different Operating Systems) that implement its JVM. It is designed to let developer "write once and run anywhere". Java codes do not need to be compiled on every platform they are to run on. Java is compiled in one platform and can run on any platform.
- Java is free and can be downloaded and used by anybody.

1.5.1.2 DISTRIBUTED OR WEB APPLICATION?

The typical TMS software is designed as a web-based and distributed application.

The software designed by this project is not a typical TMS. The company has some challenges that would prevent a typical TMS from being implemented.

These are:

- The nature and structure of the company. The company is only a branch of a multi-national transport company. The system would not be implemented or used by all the branches or even the head organization but the specific branch sponsoring the project.
- The company has some infrastructural challenges. The organization does not have a network in place and does not want to create one for the purpose of this project work. The company only has one computer system and does not intend to buy another one. The management staff is very few. It comprise of the manager, secretary and an assistant for ticket sales.
- The requirement of the user for the system and the features of the system.

The manager has a laptop that he uses. The system would be used by the desktop system and the laptop and any other system, should the company purchase any.

After a thorough study of Java programming Language and the resources and expectation of the system, a distributed application is chosen as preferable. This is in consideration of future expansion of the company staff and resources.

1.5.2 MYSQL DATABASE

MySQL is a Relational Database Management Software originally co-founded by Michael Widenius and partners at MySQL AB and initially released on 23 May 1995. It is named after the daughter of Michael, My. Thus, the name MySQL. It is currently owned by Oracle Corporations.

It is the world's most popular and widely used open-sourced database. Its source code is available for use under the terms of GNU and other proprietary agreements.

The MySQL is used for the management (storing, retrieving and manipulating) of a collection of data considered as a single unit.

The database is light and allows for it to be embedded into applications. It is also large enough to use for multi-user systems and web-based applications. It is mostly used with LAMP – Linux, Apache, MySQL, Perl/PHP/Python.

MySQL has various editions and renderings called versions. These versions are:

- Free Versions: These versions are free for all to download and modify to meet and suit specific needs with the constraints of some features that may not be changed. The software source code can be downloaded online and improved or modified for use by anybody without paying anything.
- Commercial Versions: There are several editions available of MySQL available with additional features for commercial use.

1.5.2.1 WHY MySQL DATABASE

- Its data objects can be accessed from a front end application through structured query language (SQL).
- It is fast, reliable, secure and easy to manage.
- The MySQL database is fully scalable and one of the most trusted database architecture for managing and processing data across wide area and local area networks.
- It runs on most major platforms such as Windows, UNIX, Linux and Mac.
- MySQL DB and Java are both managed by Oracle Corporation and extension and support for each other is easier than with other languages and database platforms.

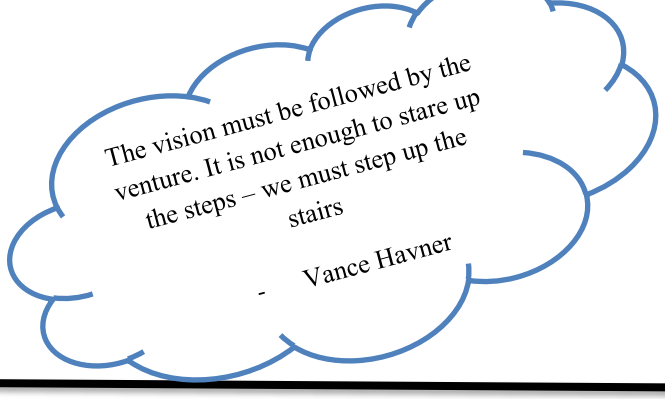
1.5.3 NETBEANS IDE

Netbeans is an Integrated Development Environment (IDE) for developing software applications mainly with Java, although it can be used for developing software applications with other programming languages such as PHP and C/C++.

Its origin can be traced from a university project in the Czech Republic in the late 90`s. It was acquired by Sun Microsystems and Sun Microsystems by Oracle Corporations.

It is an extensible development platform and framework that supports and provides all the tools required to develop mobile, desktop, enterprise and web applications. Plug-in can be used to extend the functionalities of the IDE making it an ideal IDE for wide and varied software development.

It is written in Java and can run on Linux, Windows, Solaris and other platforms that are compatible with the JVM.



CHAPTER 2

PROPOSED SYSTEM

INTRODUCTION

This chapter presents the proposed system to be designed. It discusses the various deliverables of the project and the requirement of the user for the system. It also highlights the objectives and aims of the system.

Content

2.1 PROPOSED SYSTEM

The proposed system is a computerized system divided into modules to enable the proper management and control of the daily operations of the company.

The modules of the system:

- Vehicle Management: This module is to manage a central storage of information related to all the vehicles of the company. It includes functionality to add new vehicle information, to modify/edit stored information; and to search for specific vehicle in the system.
- Passenger Booking/Reservation: This module enables tickets to be bought and seats reserved for a particular trip. The system also includes an option to either make individual/single booking or charter a bus for a trip.
- Employee Management: The employee management system is to help the organization manage the information of staff. The functionality includes – adding new employees to the system, modifying stored information, searching for existing employee information and salary management.
- Passenger Management: The passenger module is used to store passenger information and to keep track of regular customers. Route Management: This module is to manage the routes of the buses apply. New routes can be assigned to the system; schedule can be made based on created routes and existing vehicles. This information can be updated and searched for.
- Expenditure/Purchase Management: It is used to record information about office supply and other procurements made by the organization.
- Report Generation: It is used by the manager to create daily and monthly reports about income, expenditures and the status of the various services and operations.

2.2 OBJECTIVES OF THE SYSTEM

The objective of the software is to develop a customized Transport Management System (TMS) for Cross Country Transport Accra Ghana.

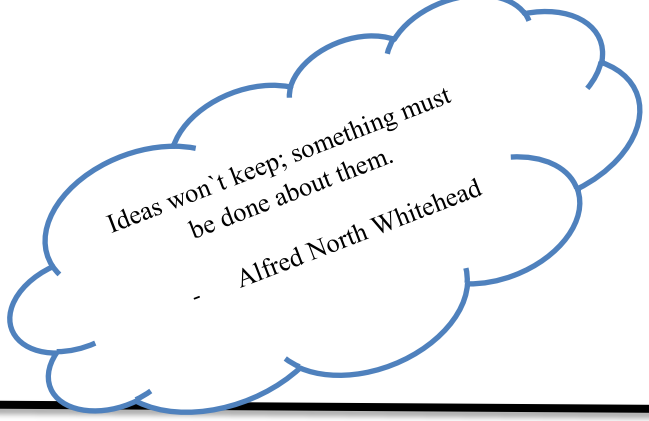
The project is to transform the manual existing system into a computerized system that would enable and ensure:

- Fast and easy storage and retrieval of information: the system would make it easy for specific information to be stored in an organized format and easily retrieved.
- Minimum data input: The system would reduce and eliminate task repetition as information written on the ticket is written on the several reports where they are needed manually. This system would ensure that there is minimal data entry.
- Easy generation of reports: Reports would be generated through simple processes.
- Customizable: This is the ability for the user to create and modify object definition without altering the software codes.
- Usability: The interface would be easy for the users to understand without much training.
- Make performing the daily operations of the organization more effective and efficient.

The system is to help the bus operators manage and control the transport company daily operations. It is to ease the management task by developing/creating a central storage and access to data and an easy-to-use attractive interface for data manipulation.

2.3 USER REQUIREMENT

- The requirements of the user the system are:
- Easy to user interface
- Forms for input that require minimal data from the user
- Automation of management task
- Easier to use and faster than the manual system
- Ease to retrieve specific data from the system
- Backup of the system information
- Ability to generate reports
- Security of the data in the system through authentication and verification.
- Flexibility in the system for users to be added, new fares updated and other administrative operations, and report definition setting.



CHAPTER 3

ANALYSIS AND DESIGN

ABSTRACT OF THE CHAPTER

This chapter presents the Transport Management software system to be design in different forms using the Unified Modeling Language (UML). It shows the work flow of the system; its interaction with the users; the various components and features and; the design of tables for the database.

Content

3.1 DATA FLOW DIAGRAM (DFD)

Data Flow Diagram is a logical model of the logic and data involved in the system. It depicts the external entities that initiate/receives result of processes that transform input and output results of the system.

It depicts how data flows through the system. It shows where data comes from; where it goes; and where it is stored.

Elements of the Data Flow Diagrams:

- External Entity: This is used to represent the user of the system; and it is external to system but uses/initiate/receives data from the system. It is denoted with a rectangle.
- Process: This is the function or action performed by the system on the data to transform and manipulate data. It is represented by curved-edged rectangle or circle.
- Data Store: This represents data storage. It is denoted by a right-opened rectangle.
- Data Flow: This represent the movement or flow of data/information in the system. It is denoted with arrow.

Figure 3.1: The Context DFD

This is the topmost data flow diagram. It depicts the system as a single process and the external components that interact with the system.

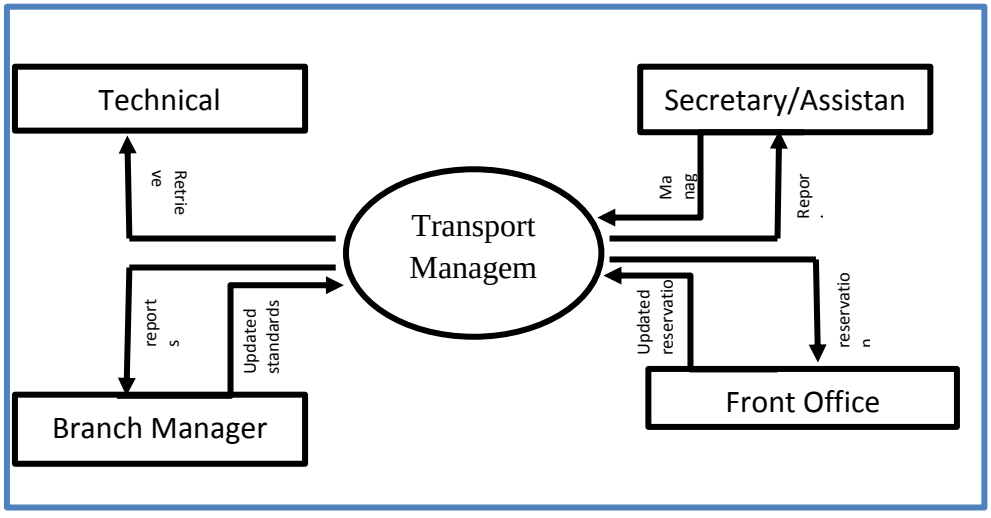


Figure 3.2: Level 1 DFD.

This diagram shows the system as a collection of subsystems (processes), the external entities and the data stores that are implemented by the system.

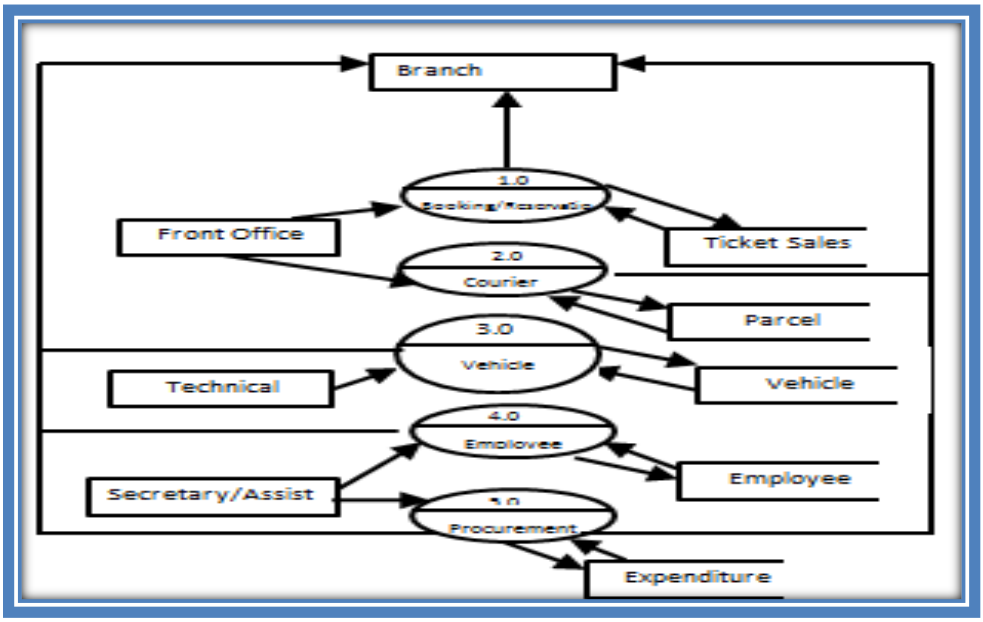


Figure 3.3: Level 2 DFD – Booking/Reservation

This is the breakdown of each of the subsystems showing their operations and how the various components – external entities, processes, and data stores relate with each other.

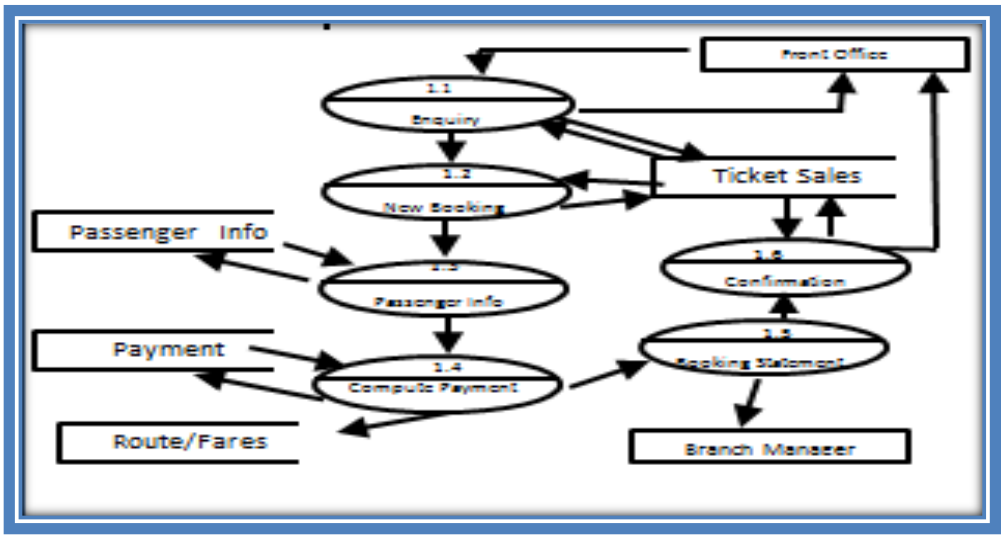


Figure 3.4: Level 2 DFD –Vehicle

It shows the vehicle subsystem and how data travels in and out of the system and some the various possible user interactions with the system.

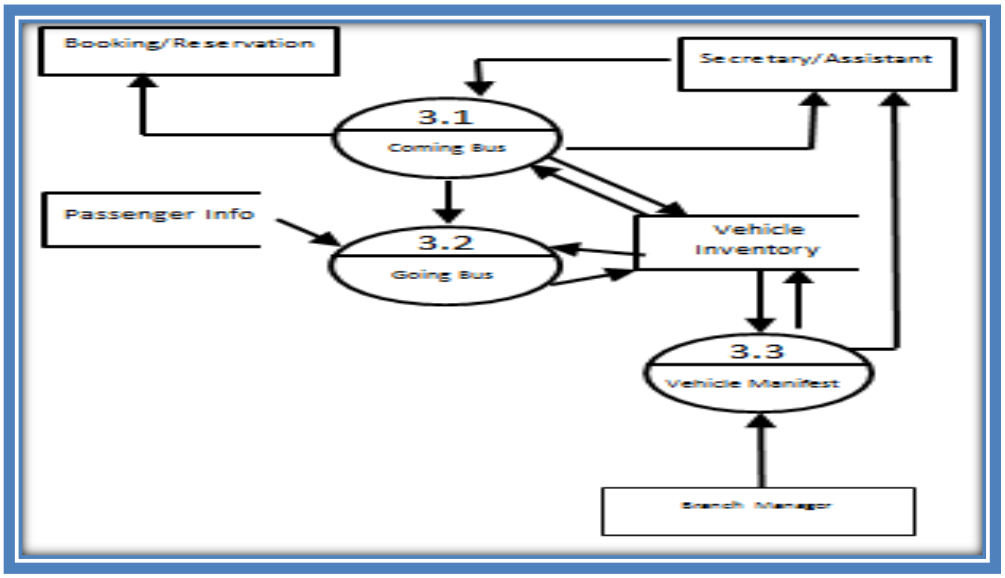


Figure 3.5: Level 2 DFD – Employees

It shows the employees subsystem and how data travels in and out of the system and some the various possible user interactions with the system.

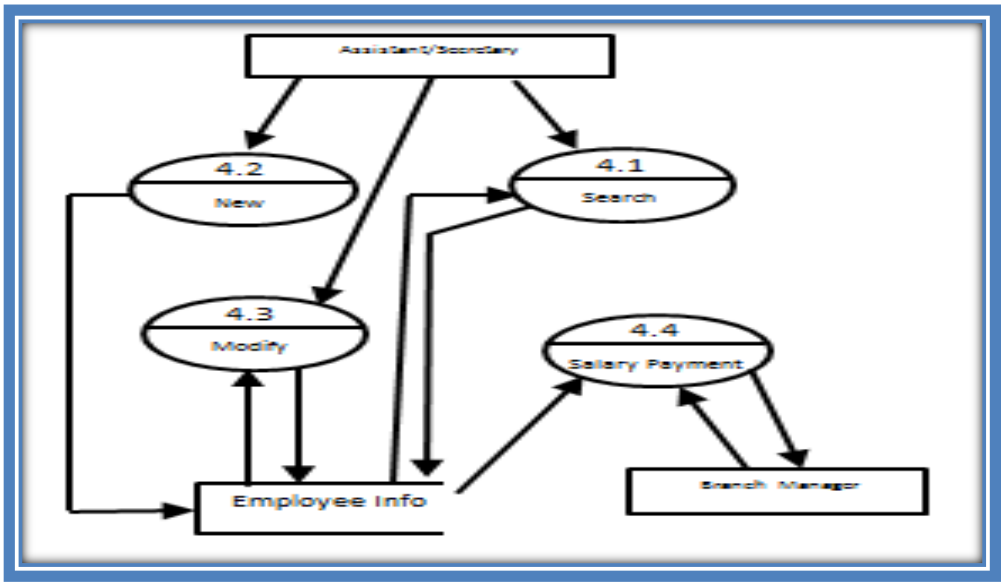
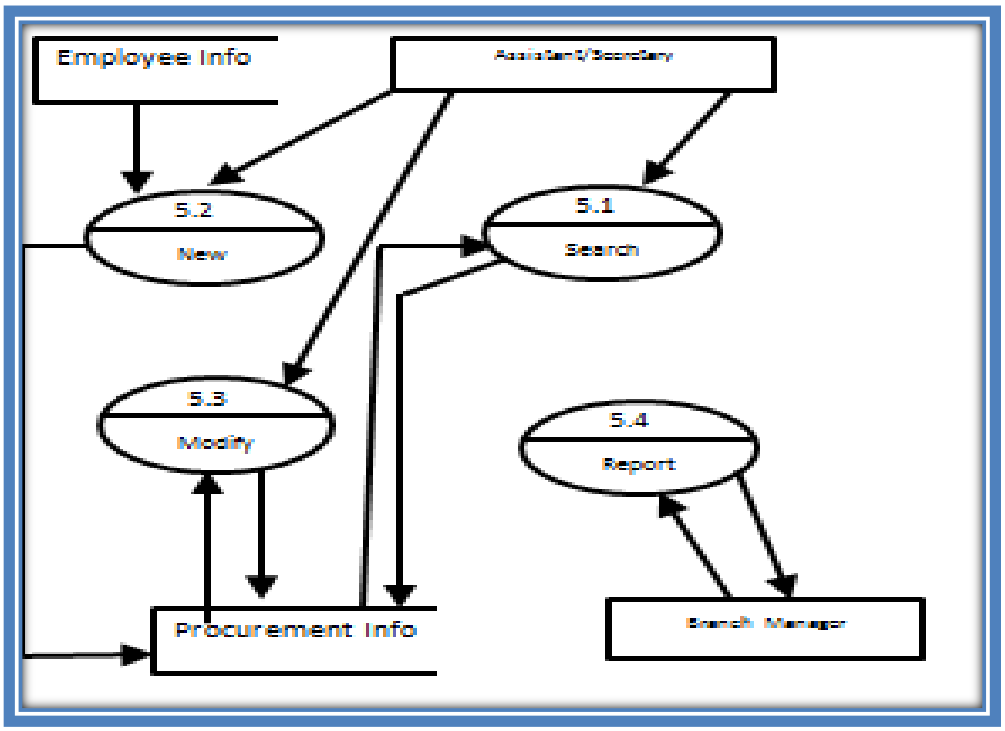


Figure 3.6: Level 2 DFD – Procurement/Expenditure

It shows the procurement subsystem and how data travels in and out of the system and some the various possible user interactions with the system.



3.2 FUNCTIONAL DECOMPOSITION DIAGRAM

This diagram is used to depict the business functions of the system. It does not show the data sources, input data, output data, processes or data stores.

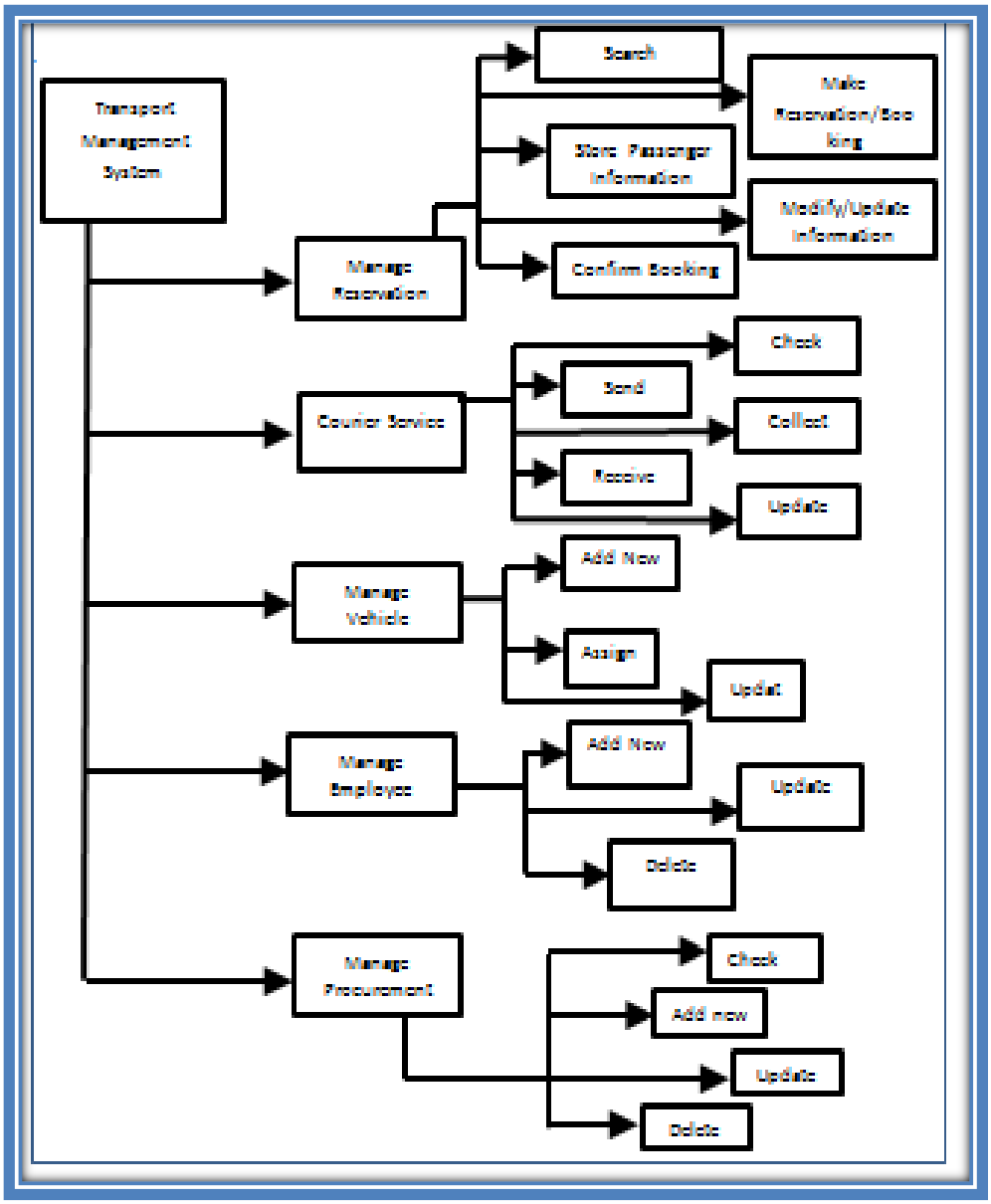
It depicts the system in a hierarchical structure. It shows a hierarchical decomposition or breakdown of the functionalities of the system.

Elements

- Functions: These are actions or processes the system would perform. It is represented with a rectangle.
- Relationship: This is used to show the level of decomposition and the flow of functions from the top to the lowest level. It is denoted with arrow.

Figure 3.7: Functional Decomposition Diagram

It shows a hierarchical decomposition or breakdown of the functionalities of the system.



3.3 ENTITY RELATIONSHIP DIAGRAM

It is a data model that is used to graphically describe the overall logical structure of the database.

It presents each of the objects/tables in the database with their attributes and the relationship they share with each other.

Elements

- Entity: This represents the tables/objects of the database. It is denoted with a rectangle.
- Attribute: It shows the structure of the data. It represents the features of the table. In the table design, it makes up the column of the table. It is denoted with oval.
- Relationship: this represents the relationship among the entity sets of the database. It is denoted with diamond.
- Connector: it used to connect entities with relationships. It is denoted with line.

The Entity Relationship Diagram of the software system is depicted on the next page.

Note: Due to lack of space, all the attributes of each entity set is not included in the diagram. For more details on the attributes of each or any of the entity, please refer to the data dictionary or the table design.

Figure 3.8: ER Diagram – Design View

It shows the tables as entities in rectangles and their attributes in oral with the relationship they have with each other in a diamond.

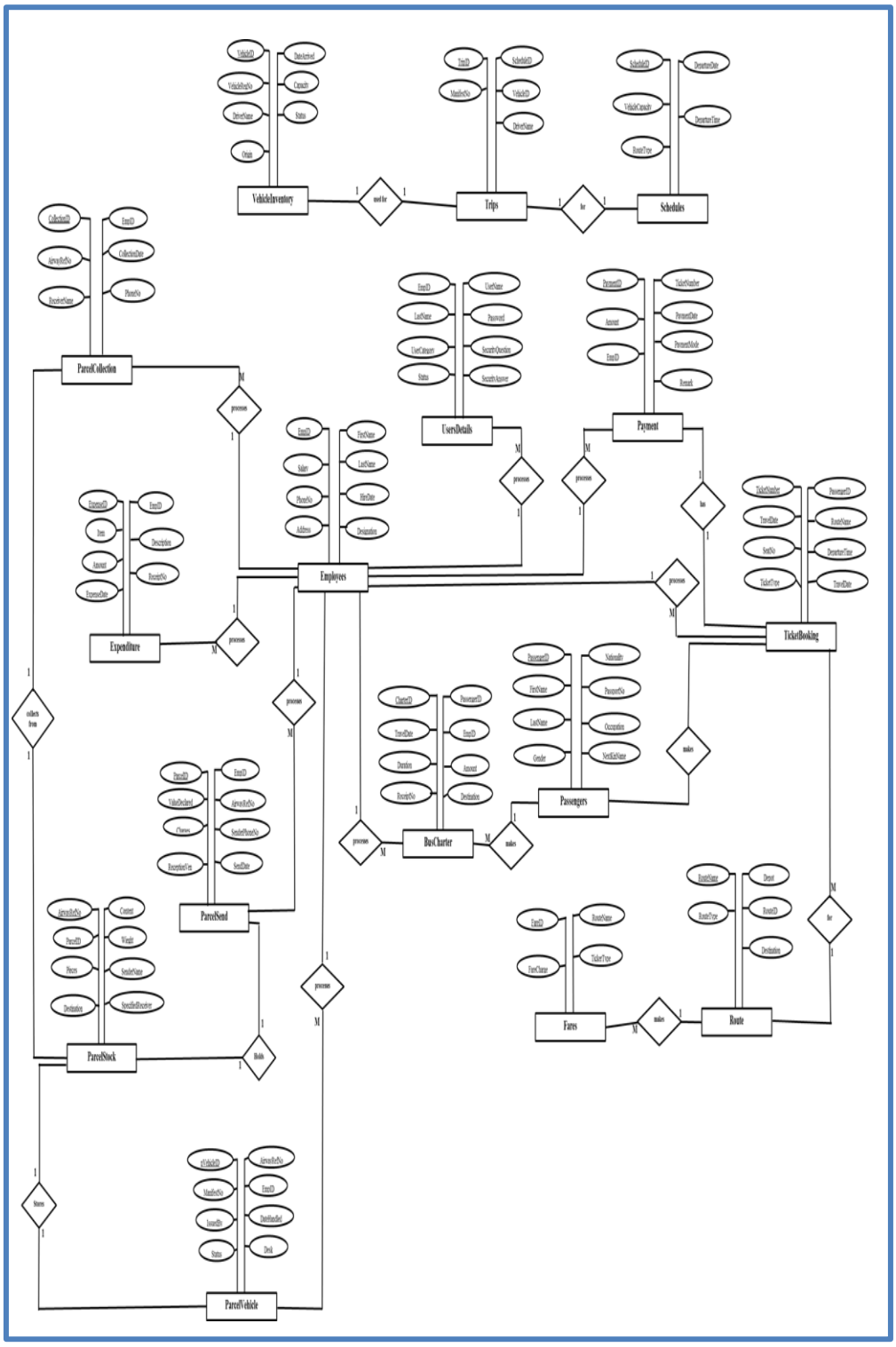
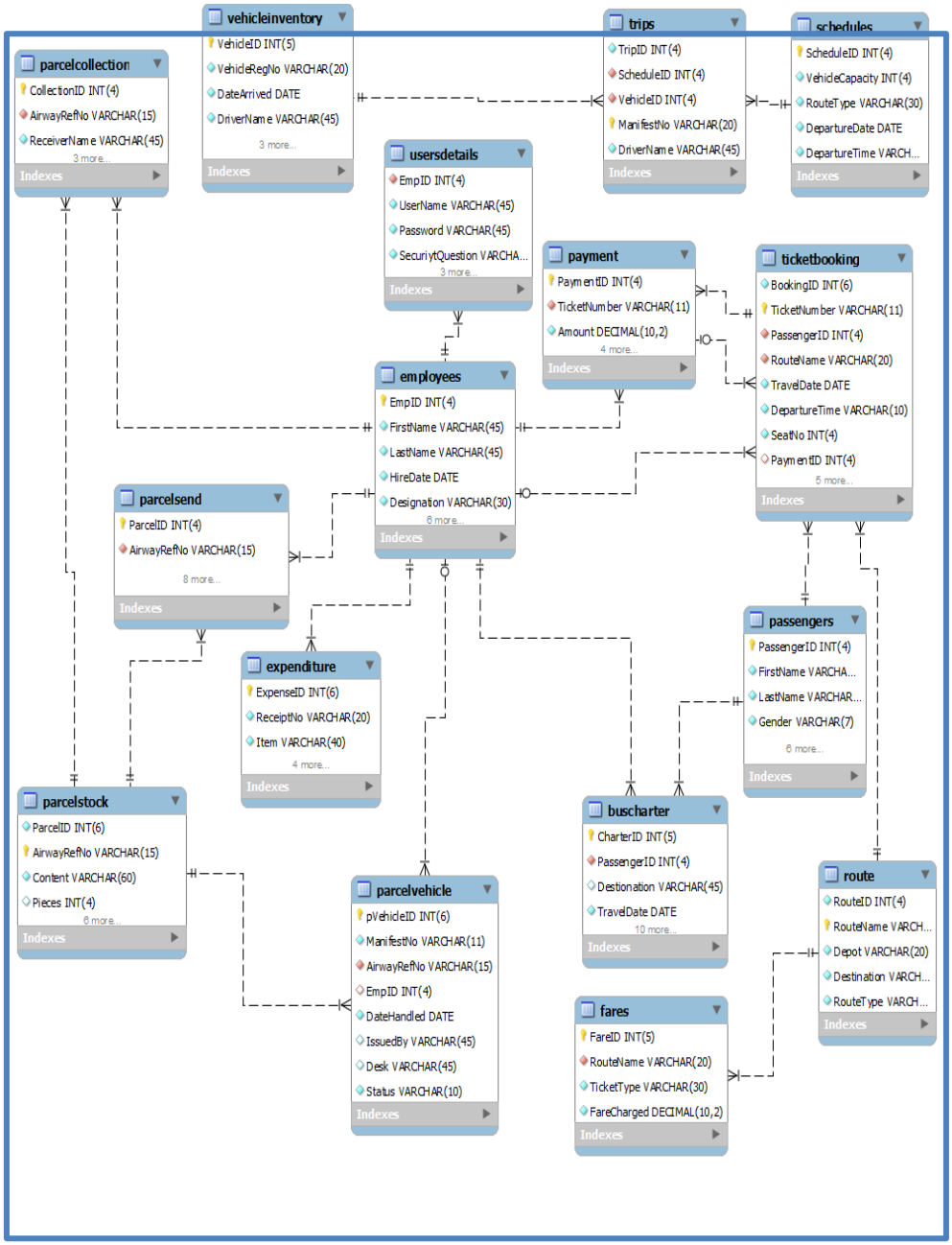


Figure 3.10: ER Diagram – Database View

It shows the database tables and the various relationships they have with each other.



3.4 DATA DICTIONARY

The data dictionary is a body of data that describes tables and objects in the database. It is a storehouse for collecting, and organizing detailed information about the database components.

The data dictionary is not manually created by the user, rather generated by the database from all database object creation, specification, update and usage.

Elements

- Data Element: it is the smallest unit of data which cannot be further decomposed.
- Data Structure: it is a group of related data elements.
- Data Flow and Data Store: Data Flow is the data structure in movement while the data store is the data structure at rest.

Table 1: DD – Data Structure

Data Structure	**Description**	**Size**
Passenger	It is used to store all information relating to the customers of the company	200 MB
TicketBooking	It is used to store information about ticket sales	200 MB
Route	It is used to store information about the various destinations	54 MB
Payment	It is the information about payment for a ticket	240 MB
Trips	It holds information about the trips went by buses	54 MB
VehicleInventory	It is used to store information about coming vehicles	125 MB
ParcelStock	It is used to store all information about the stock of the courier service	200 MB
PaecelSend	It is used to store information about sent parcel	48 MB
ParceVehicle	It is used to store specific information about parcel that are delivered and sent out of the company via bus.	48 MB
ParceCollection	It is used to store information about collected parcels	152 MB
Employees	It is used to store information relating to all the employees of the company	100 MB
Procurement	It is used to record all expenditure of the organization	200 MB
BusCharter	It is used to store all information about the bus charter service.	154 MB

Schedules	It is used to store information relating to vehicles schedules for a date and time	72 MB

Table 2: DD – Data Elements

Data Elements	Description	Type	Length	Alais	Range	Data Stores
PassengerID	It is the uniquely identifies each record on the table	VARCHAR2	6	PassID	000001 – 999999	Passenger Table
FirstName	It is the first name of a passenger	VARCHAR2	30	Fnm		Passenger Table
LastName	It is the surname of the passenger	VARCHAR2	30	Lnm		Passenger Table
Gender	The sex of passenger; either male/female.	VARCHAR2	8	Sex	00000001 - 99999999	Passenger Table
Nationality	It is the country of nationality or origin of the passenger	VARCHAR	20	Natnal		Passenger Table
PassportNo	The international Passport Number of the passenger	NUMBER	12	passNO	000000000001 - 999999999999	Passenger Table
Occupation	It states the job of passenger. Specify student for students	VARCHAR2	20	Occptn		Passenger Table
PhoneNo	It is the phone contact of passenger	VARCHAR2	13	Phn		Passenger Table
KinName	The name of the next of kin of the passenger	VARCHAR2	50	Knm		Passenger Table

TicketNo	It is the uniquely identifies each record on the table	VARCHAR2	6	tNo	000001 - 999999	Ticket_Booking table
SeatNo	It is the seat number of a passenger	VARCHAR2	4	sNo	0001 - 9999	Ticket_Booking table
Destination	It is the destination of the passenger	VARCHAR	30	Destn		Ticket_Booking table
Date	Date of trip	DATE		bDate		Ticket_Booking table
TicketType	This is the type of ticket. One-way regular virgin, One-way non-passport, One-way with ID, Return regular, return	VARCHAR2	20	ttype		Ticket_Booking table
Payment ID	It is the uniquely identifies each record on the table	VARCHAR2	6	payID	000001 - 999999	Payment table
Amount	Total cost of the service	DOUBLE	10	amt	0000000001 - 99999999	Payment table
Paid	Amount paid	DOUBLE	10	paid	0000000001 - 99999999	Payment table
Date_Paid	What date did you pay	DATE		dPaid		Payment table
Route ID	It is the uniquely identifies each record on the table	VARCHAR2	6			Route table
Depot	Location the route starts from	VARCHAR2	15			Route table

Destination	Where is the vehicle going	VARCHAR2	-	destn		Route table
FareID	How much is to be paid to that destination	DOUBLE	20			Route table
TripID	It is the uniquely identifies each record on the table	VARCHAR2	6			Trip table
Date	The date for a trip or journey to start.	DATE				Trip table
ManifestNo	Manifest number. The number of receipt given to the driver.	NUMBER	10			Trip table
RouteID	Route identification	VARCHAR2	6			Trip table
DriverName	The driver that drove the bus in	VARCHAR2	30			Vehicle_Inventory table
Date	The date of arrival	DATE				Vehicle_Inventory table

3.5 TABLE DESIGN

This is the design specification for all the tables in the database. It shows their attributes as columns; their data type and constraints on them.

It outlines all the field names; their data types, size, key attributes, null attributes and description of what they are.

Table 3: Table Designs

All the tables used in the creation of the database used by the application.

Table Name:	Passenger		Number of Columns	10	
FIELD NAME	**Data Type**	**Size**	**Key**	**Null**	**Description**
PassengerID	INT	4	Primary Key	NOT NULL	It is the uniquely identifies each record on the table
FirstName	VARCHAR	45	-	NOT NULL	It is the first name of a passenger
Last_Name	VARCHAR	45	-	NOT NULL	It is the surname of the passenger
Gender	VARCHAR	7	-	NOT NULL	The sex of passenger; either male/female.
Nationality	VARCHAR	45	-	NOT NULL	It is the country of nationality or origin of the passenger
PassportNo	VARCHAR	20	-	NULL	The international Passport Number of the passenger
Occupation	VARCHAR	30	-	NULL	It states the job of passenger. Specify student for students
PhoneNo	VARCHAR	20	-	NULL	It is the phone contact of passenger
NextKinName	VARCHAR	45	-	NOT NULL	The name of the next of kin of the passenger
NextKinPhone	VARCHAR	20	-	NOT NULL	The phone contact of the next of kin.

Table Name:	TicketBooking		Number of Columns	12	
FIELD NAME	**Data Type**	**Size**	**Key**	**Null**	**Description**
BookingNo	INT	6	UNIQUE	NOT NULL	A unique identifier of each record
TicketNumber	VARCHAR	11	Primary Key	NOT NULL	It is the uniquely identifies each record on the table

SeatNo	VARCHAR	4	-	NOT NULL	It is the seat number of a passenger
PassengerID	INT	4	Foreign Key	NOT NULL	It is the identification of the passenger
PaymentID	INT	4	Foreign Key	NULL	It is the payment identification of the passenger
RouteName	VARCHAR	20	Foreign Key	NOT NULL	It is the destination of the passenger
TravelDate	DATE		-	NOT NULL	Date of travelling
TicketType	VARCHAR	30	-	NOT NULL	This is the type of ticket. One-way regular virgin, One-way non-passport, One-way with ID, or Returns
DepartureTime	VARCHAR	10	-	NOT NULL	Schedule time to start journey
IssueDate	DATE		-	NOT NULL	Date ticket is booked
RouteType	VARCHAR	30		NOT NULL	The final destination of the vehicle.
Status	VARCHAR	10	-	NOT NULL	

Table Name: Payment Number of Columns 7

FIELD NAME	Data Type	Size	Key	Null	Description
PaymentID	INT	4	Primary Key	NOT NULL	It is the uniquely identifies each record on the table
TicketNumber	VARCHAR	11	Foreign Key, Unique	NOT NULL	It is the number on the ticket of a passenger
Amount	Decimal	10,2	-	NOT NULL	Total cost of the service
PaymentDate	DATE		-	NOT NULL	What date did you pay
PaymentMode	VARCHAR	10	-	NOT NULL	Means of payment (bank/cash)
Remark	VARCHAR	60	-	NULL	Special note or comment
EmpID	INT	4	Foreign Key	NOT NULL	Who received payment

Table Name: Route Number of Columns 5

FIELD NAME	Data Type	Size	Key	Null	Description
RouteID	INT	4	Unique	NOT NULL	It is the uniquely identifies each record on the table
RouteName	VARCHAR	20	Primary	NOT NULL	Name of the route
Destination	VARCHAR	20	-	NOT NULL	Where is the vehicle going

Depot	VARCHAR	20	-	NOT NULL	Where the journey would start
RouteType	VARCHAR	30	-	NOT NULL	The final destination of the vehicle for that route

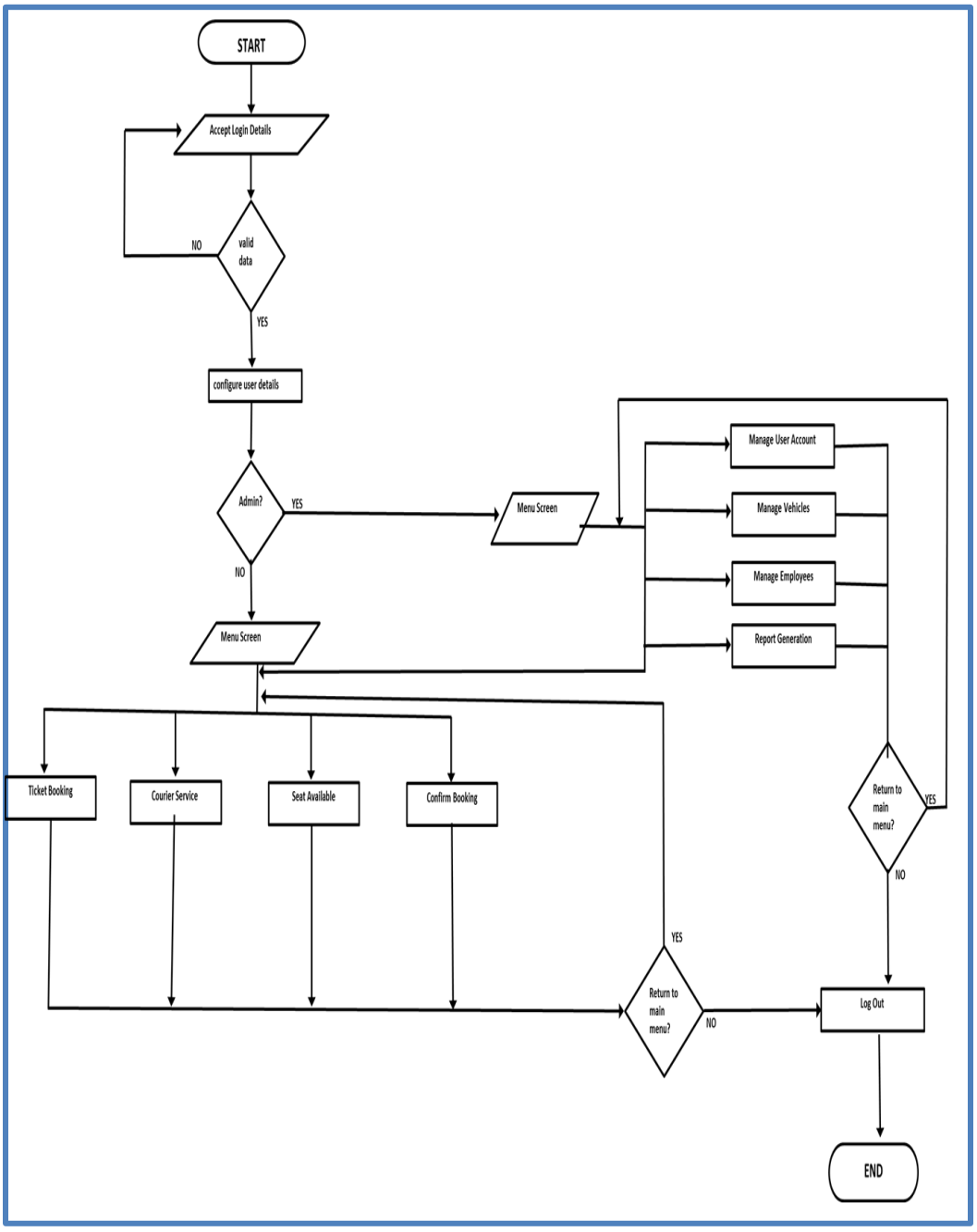
Table Name:	**Trips**	**Number of Columns**	**5**

FIELD NAME	**Data Type**	**Size**	**Key**	**Null**	**Description**
TripID	INT	4	Unique	NOT NULL	It is the uniquely identifies each record on the table
ScheduleID	INT	4	Foreign	NOT NULL	The schedule the trip is arranged for
ManifestNo	VARCHAR	20	-	NOT NULL	Manifest number. The number of receipt given to the driver.
DriverName	VARCHAR	45	-	NOT NULL	Vehicle drivers name
VehicleID	INT	4	Foreign Key	Not NULL	The number assigned to the vehicle when it came in.

3.6 CODE DESIGN

This is the design of the logic of the software system. It depicts the flow of activities performed by the system. It is the plan to be followed for writing the program.

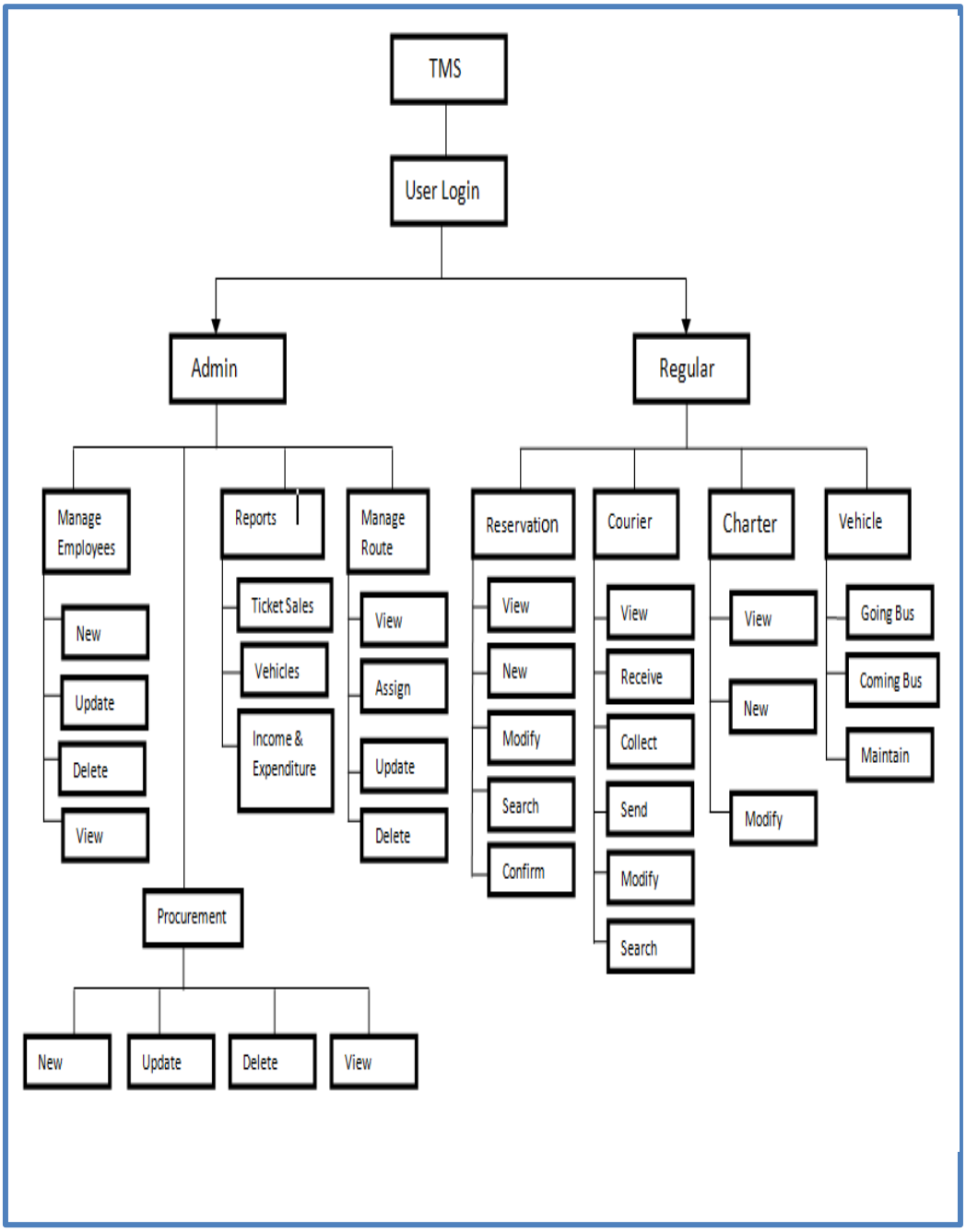
Figure 3.10: Code Design



3.7 MENU TREE

It is used to show the various menus in the system that would be used by the users of the system. It is simply a navigation path to explore all the user interactions with the system.

Figure 3.11: Menu Tree



3.8 MENU SCREEN

The menu is a graphical representation of the functionalities of the system. It contains options that on selection using the mouse clicks or keyboard shortcut; to access its functionalities. Most of the menu on the program is iconic.

Figure 3.12: Main Menu (Administrator)

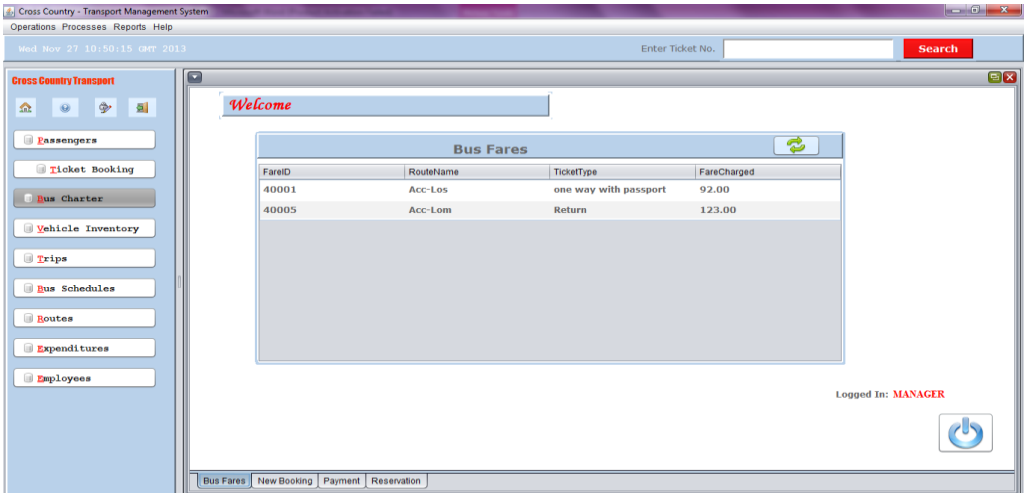
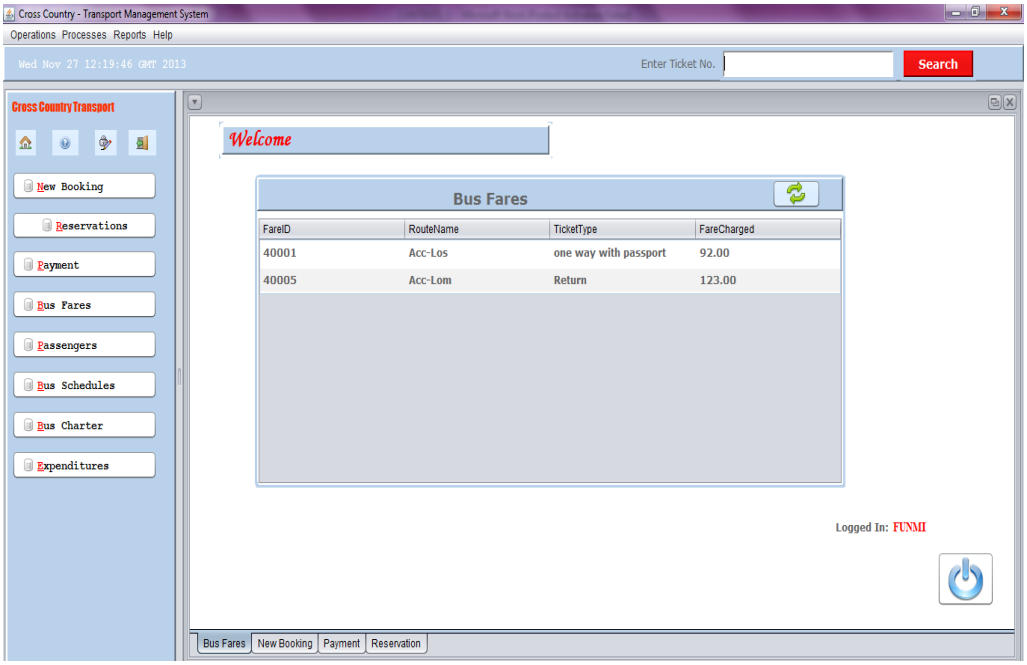


Figure 3.13: Main Menu (Standard)



3.9 INPUT SCREENS

These are the interaction interface for accepting input data and information to perform a process. They are presented as forms.

Figure 3.14: Login Screen

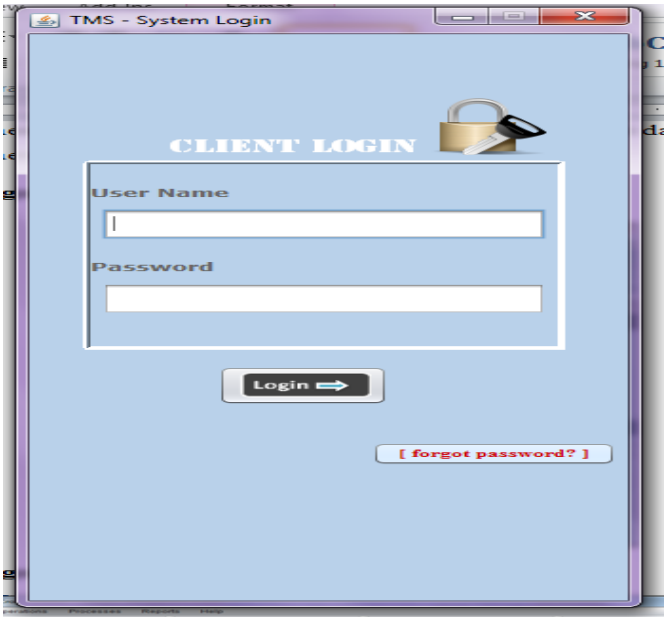
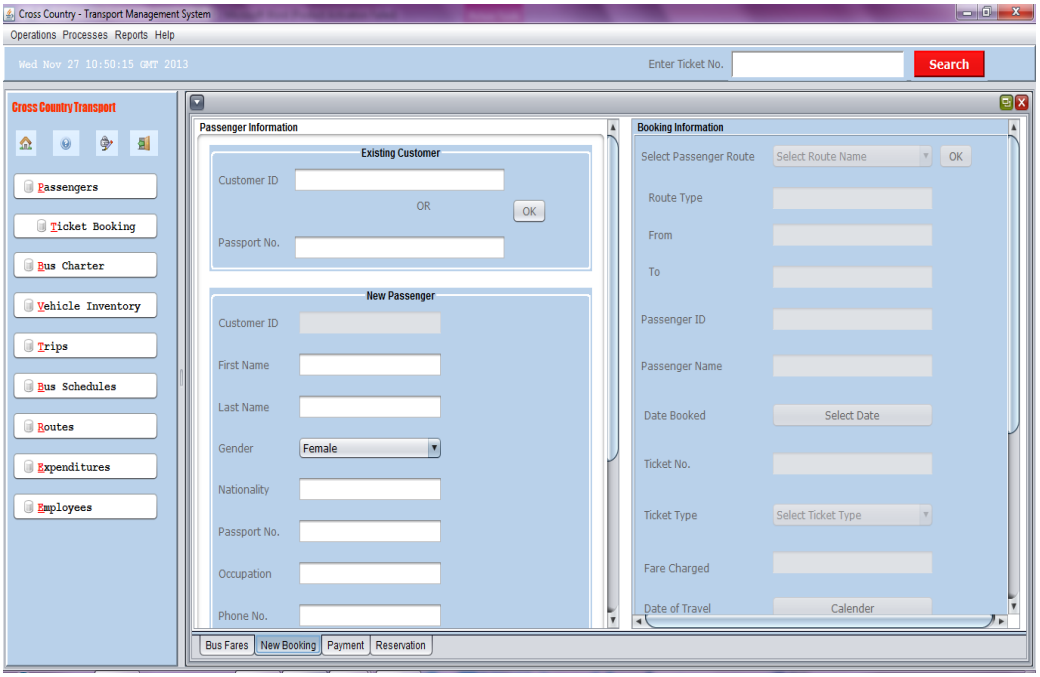


Figure 3.15: Ticket Booking Screen



3.10 REPORT FORMAT

The reports are used to provide summarized detail about the activities of the company based on all the data entered into the system. The report would be used by the manager to make decisions for controlling and managing the company.

Figure 16: Expenditure Report

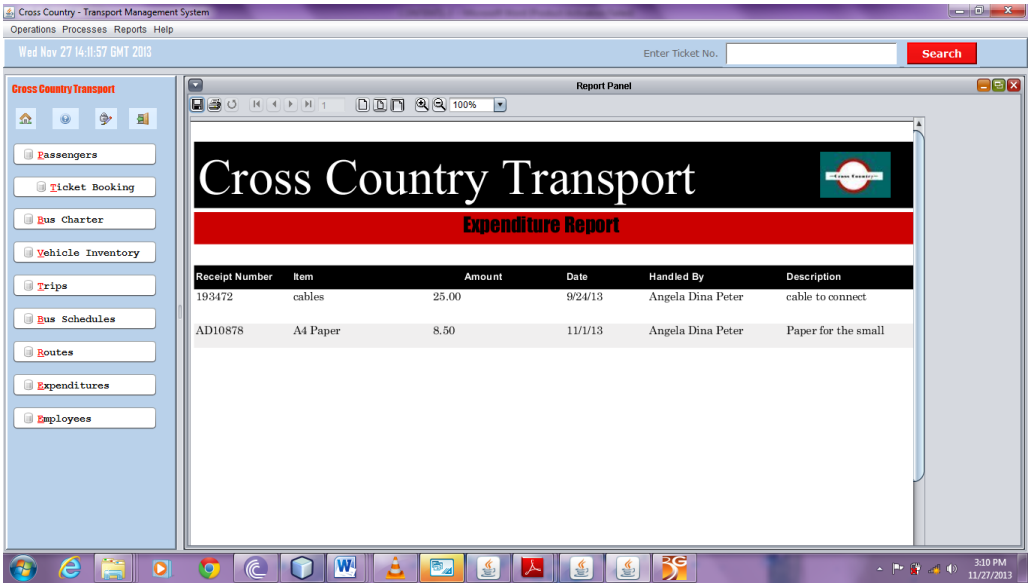
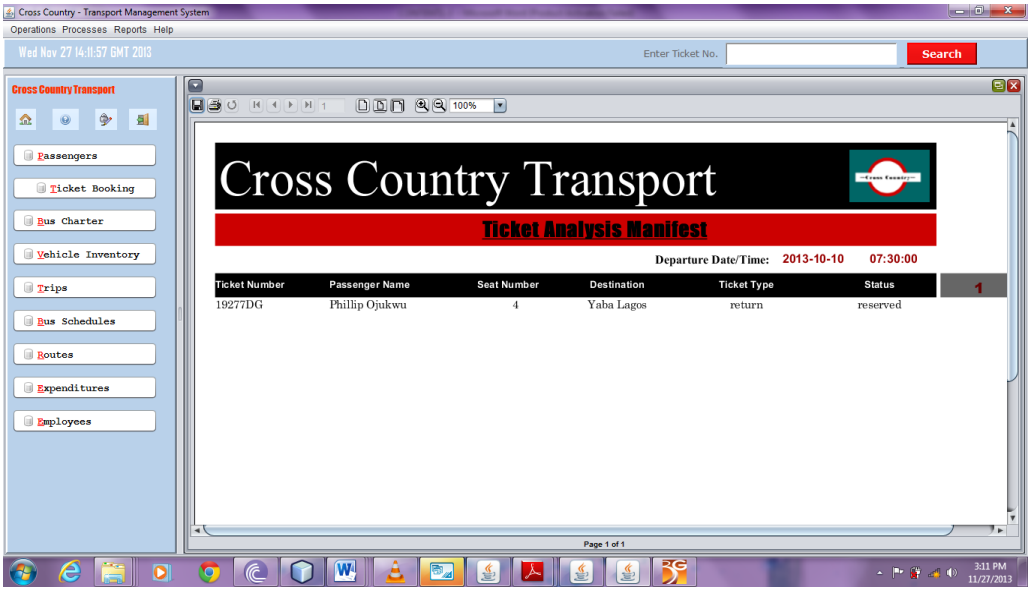


Figure 17: Ticket Analysis Report



CHAPTER 4

USER MANUAL

INTRODUCTION

The Cross Country Transport Management System – TMS – as it would be referred to throughout this manual is a complete software system design specifically for to meet the needs of Cross Country Transport Ghana Limited.

It is a software system is designed to automate the everyday operations of the organization and to enable and stressful storage, access and manipulations of both the company personnel and customer information.

This manual provides a step by step guide on how to use the software application and its features.

As you use the software, should you have any need for more information and suggestions; please contact the developer at:

Phone Number: +233542734789

Email: adjosho@rocketmail.com

For Free Support – Monday to Friday, 10am to 5pm GMT

PREPARING YOUR SYSTEM

SYSTEM PRE-REQUISITE

- MySQL Database Management System
- Java Run Time Environment

INSTALLATION

To install any of the above software go to their website for information on how to download and install them.

GETTING STARTED

To get started with the system, click on the software icon to launch the system.

LOGGING ON

To logon to the system you need to have a username, password and login type. Meet with the system technician or your manager to assign you one.

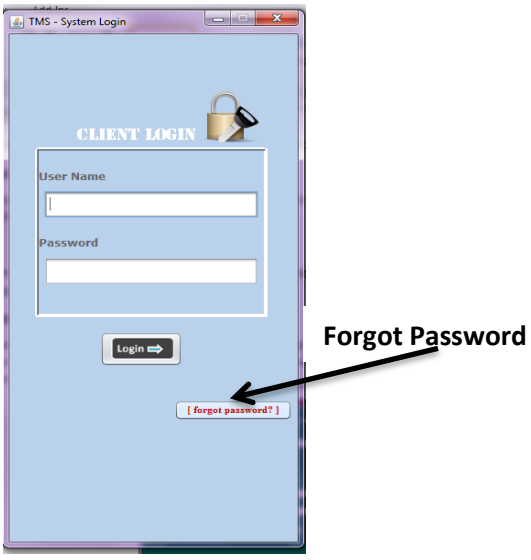


Figure 4.1 Login Screen

Enter the assigned username, password and select your login type; then click on the login button to start using the system.

FORGOT PASSWORD

If you cannot remember your password, click on the "forgot password" button to reset your login information. You would need the security question you used to create the account to perform this operation.

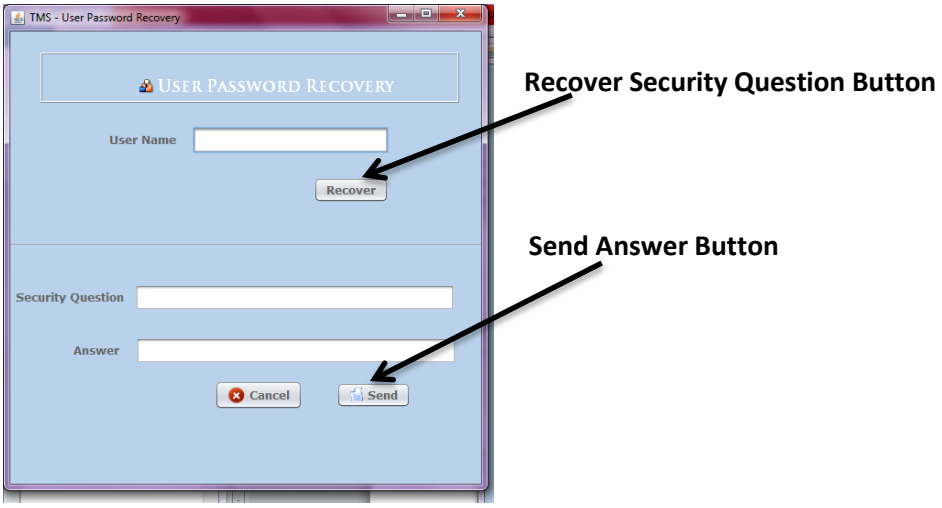


Figure 4.2 Password Recovery Screen

To recover your login details:

1. Enter your user name
2. Click on Recover button (It generates your security question)
3. Enter the answer you provided during account creation
4. Click on Send button to continue (or cancel to stop)
5. If it is not correct; it stops the process by notifying you that the password is wrong

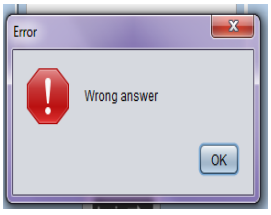


Figure 4.3 Wrong Answer Screen

6. If it is correct; It prompts you to Enter a new password

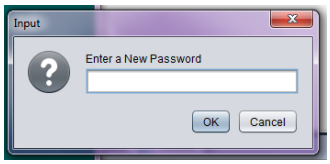


Figure 4.4 New Password Screen

7. Re-enter the new password

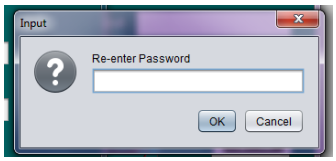


Figure 4.5 Re-enter New Password Screen

8. If the password matches, your account would be updated and you can login with your new details.

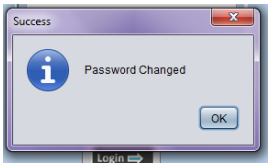
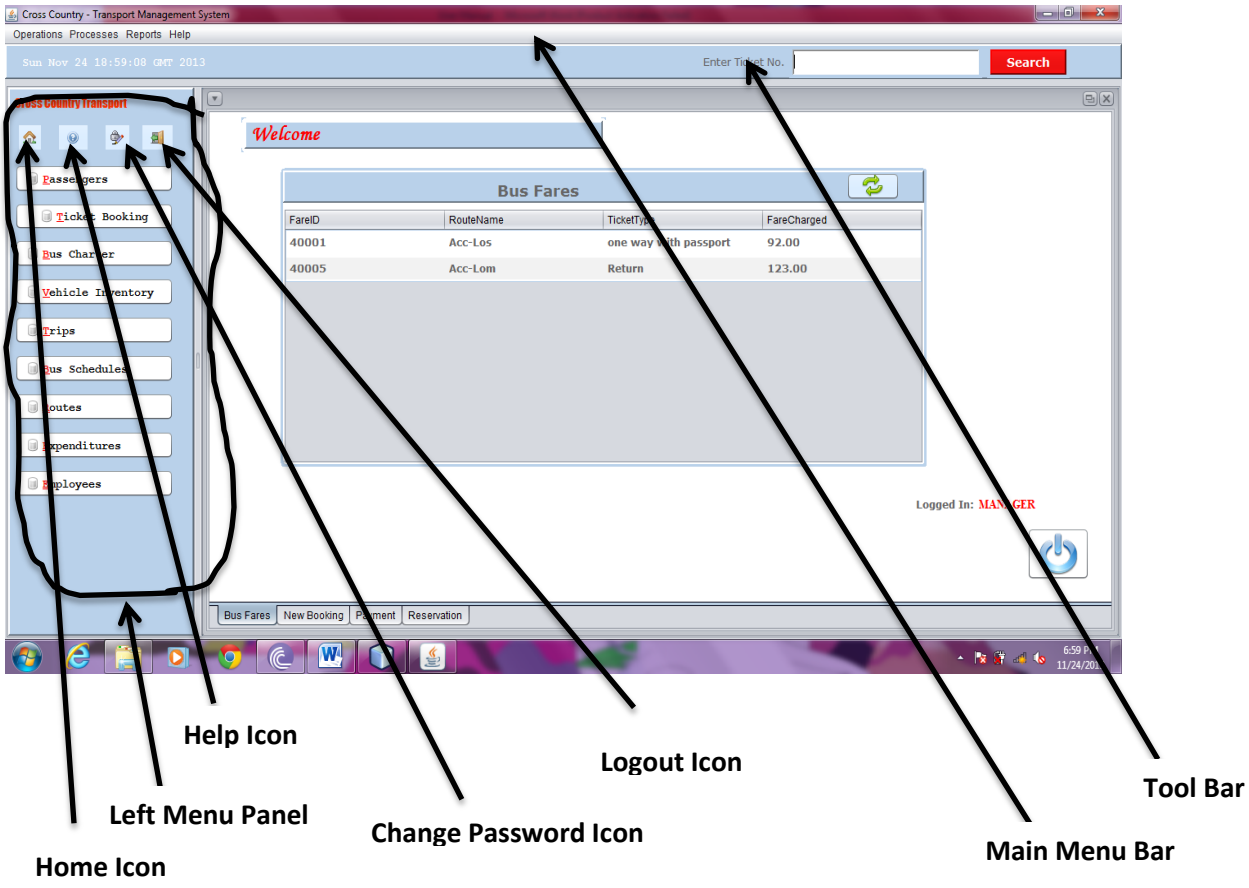


Figure 4.6 Success Screen

SYSTEM MENU

After logging into the system, the next screen that gets displayed is the main screen with the various system menus.

Figure 4.7 Administrator User Main Screen



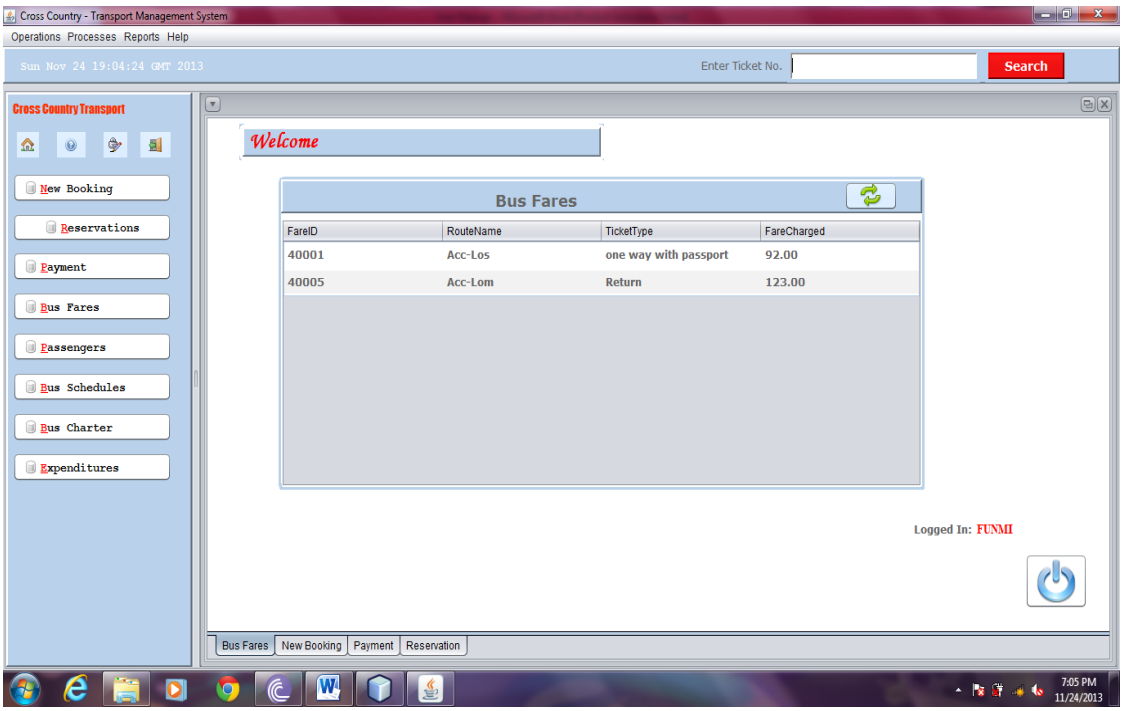


Figure 4.8 Standard User Main Screen

CHANGE PASSWORD

To change your login password do the following from your system menus.

i. Go to Operations > Change Password or

ii. Click on the Change Password Icon on the left menu panel in order to access the change user password form.

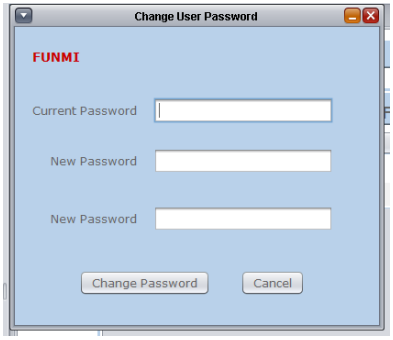


Figure 4.9 Change User Password Screen

QUICKLY SEARCH FOR A TICKET DETAIL

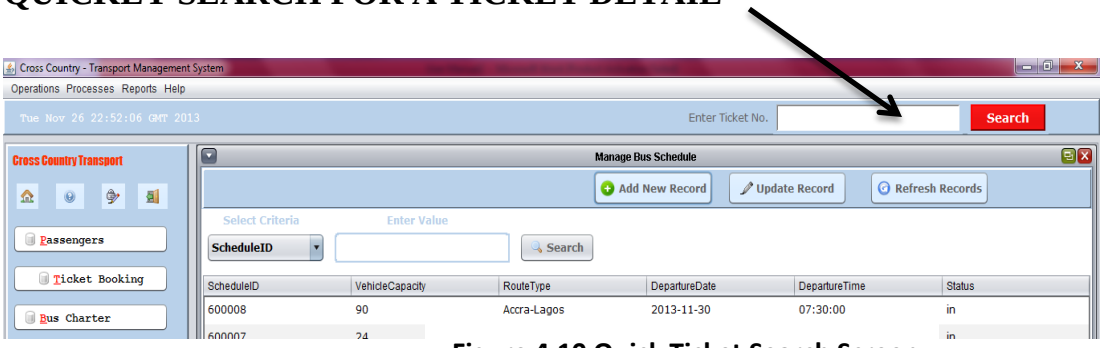


Figure 4.10 Quick Ticket Search Screen

i. It is located on the status bar

ii. Enter the ticket number you want to search for

iii. Click on the Search Button

iv. If it exist the system would return the values in a table as shown below:

v. If the Status is reserved, you can Click on the “Pay” button (circled below). It would generate the payment form with all the payment details

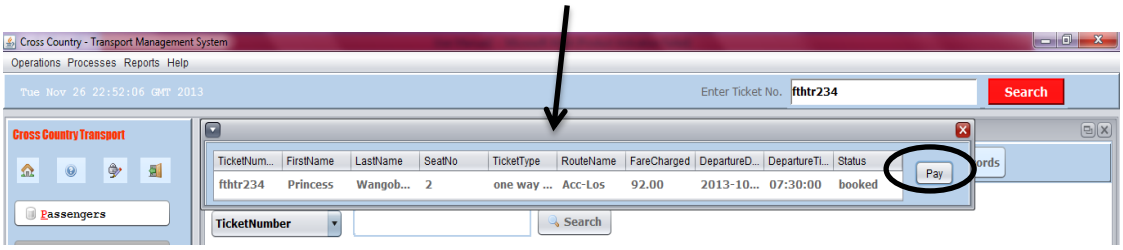


Figure 4.11 Quick Ticket Search Result Screen

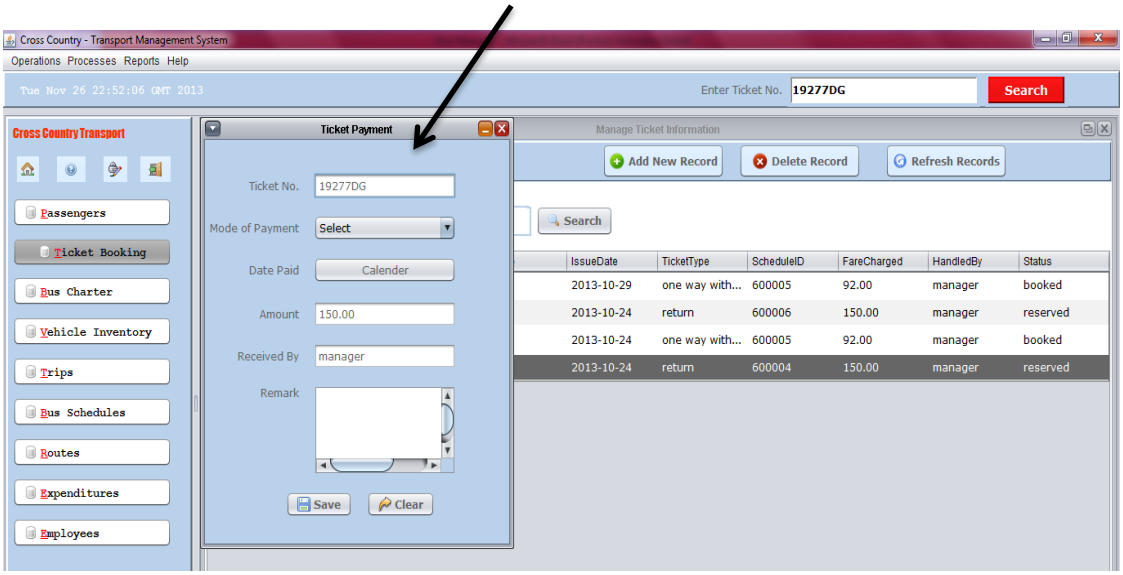


Figure 4.12 Ticket Payment Screen

TO LOGOUT

i. Click on the Logout button on the left menu panel.

ii. When you logout, you are taken to the login page**.**

TO EXIT

i. Select the Operations > Exit menu on the menu bar or

ii. Click on the "Shutdown" button on the Bus Fares Panel or

iii. Click on the "Close" (indicated with a red "X") window icon of the frame.

USING THE SYSTEM

HOW TO BOOK A TICKET

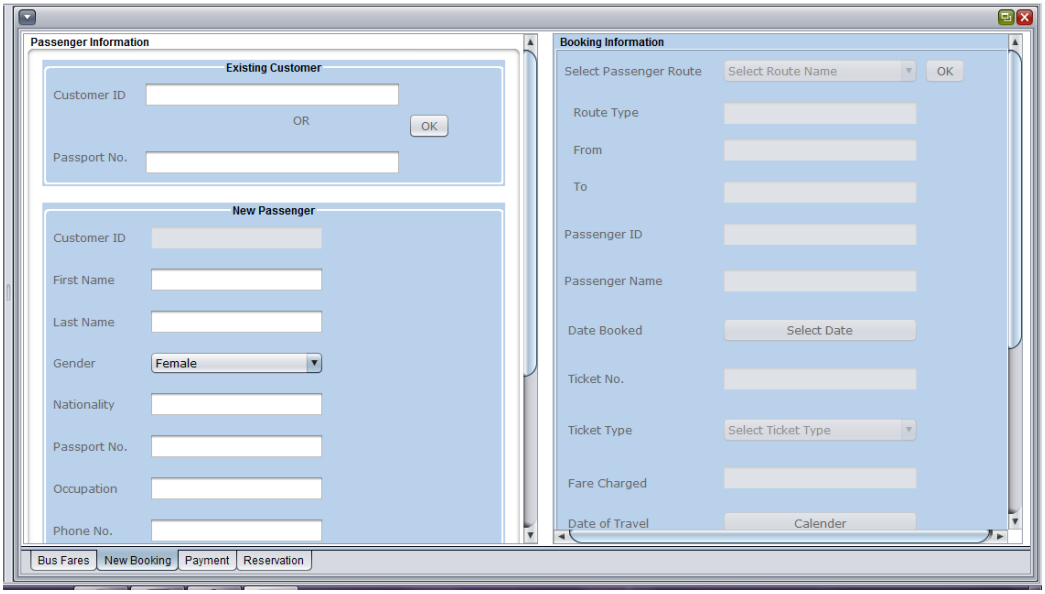


Figure 4.13 New Ticket Booking Screen

Steps to make a new booking

i. If the customer has not travelled with the company before and does not have his/her information stored in the system then, you would need to store their information using the New Passenger form panel before you can proceed.

ii. If the passenger information has been stored; Enter the customer ID (You can get this from the Passengers Table) or his/her Passport Number.

iii. If the Passport or Customer ID is valid stored information, then the new booking panel on the right is enabled with the Passenger ID and Passenger Name already set.

iv. Select a Route Name the booking is for on the right new booking panel and Click on the OK button at the front of it.

v. It would retrieve the Route Type (Which specifies the origin and final destination of the bus), from and to field values automatically after the click of the OK button.

vi. Click on the Select Date Button to set the Date of Booking.

vii. Enter the ticket number that would be given to the customer in the Ticket No. field.

viii. Select a Ticket Type from the list of Ticket Types in the Ticket Type Combo box. (Note: If this combo is empty, it means that there are no available tickets for the route name selected.)

ix. On selection of a Ticket Type, the Fare Charged would be set automatically.

x. Click on the Calendar Button to set the Date of Travel

xi. Based on the Date selected above the system would generate all available schedules. (Note: If the Bus Schedule Combo is empty, it means no schedule has been made for that route name on the specified date of travel. You can set a new schedule from the Schedules Menu – See how to work with schedules)

xii. Select a Bus Schedule.

xiii. Enter the seat number the user would prefer. (Note: The user checks the availability of entered seat number; if it has been booked/reserved it notifies you and shows a list of all unavailable seat numbers.)

xiv. Enter an available seat number.

xv. Click on the reserve button to reserve the seat

xvi. Or Click on the Pay Button to proceed to accept payment for the ticket.

xvii. Or Click on the Cancel Button to terminate the process

HOW TO CHECK RESERVATIONS

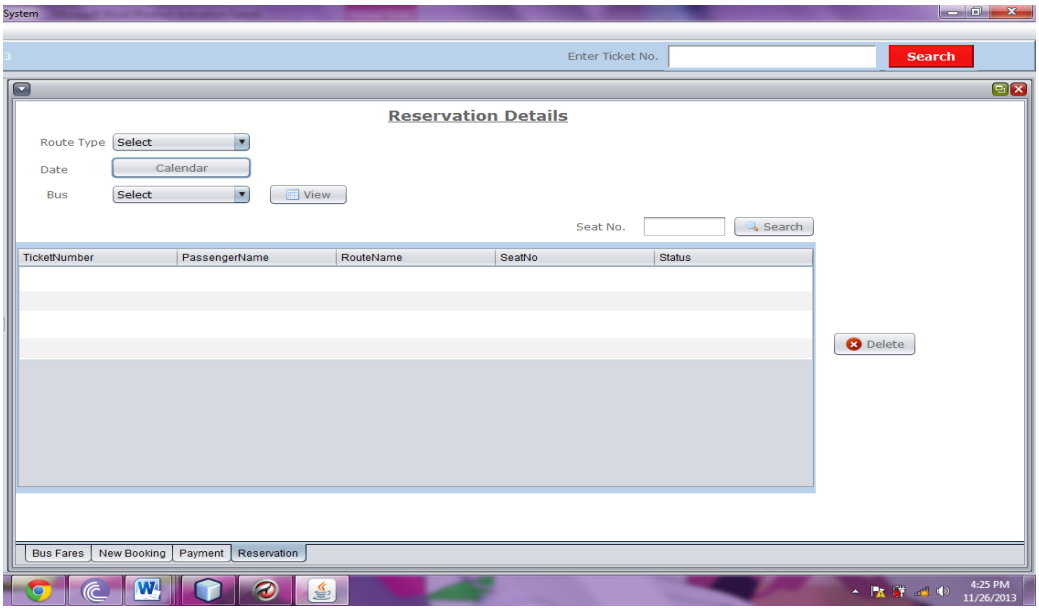


Figure 4.14 Ticket Reservation Screen

i. Select a Route Type (this specifies the travelling route start and end location) from the Routes Combo box

ii. Select the Date the trip would be done by clicking on the Calendar Button

iii. Select a Bus Schedule Time By clicking on the Bus combo box.

iv. Click on the View Button to generate the list of reservations on the table

v. If no record is shown it means there are no reservations for that route type on that date at that time.

vi. To sort the display, Enter a Seat Number and click search to find a particular information

vii. Select a row of data and click on the delete button to delete the reservation

HOW TO ENTER PAYMENT INFORMATION

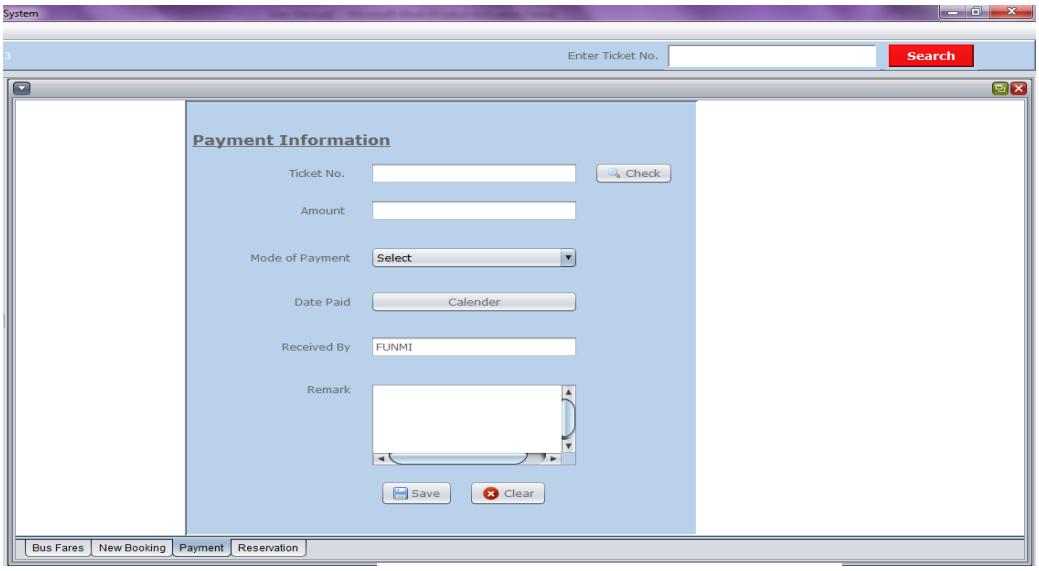


Figure 4.15 Ticket Payment Screen

i. Open the payment form

   i. Enter the ticket number and click on the check button (it validates the ticket number and generates the amount charged on the ticket).

   ii. Select the mode in which the payment was made. If it is bank, in the Remark, specify the bank information and teller number.

   iii. Click on Calendar to select the date the payment is being made.

   iv. Enter any other comment on the remark textbox

   v. Click the save button to save the information.

   vi. If you made a mistake and would like to restart the process, click on the Clear button

HOW TO WORK ON PASSENGERS INFORMATION

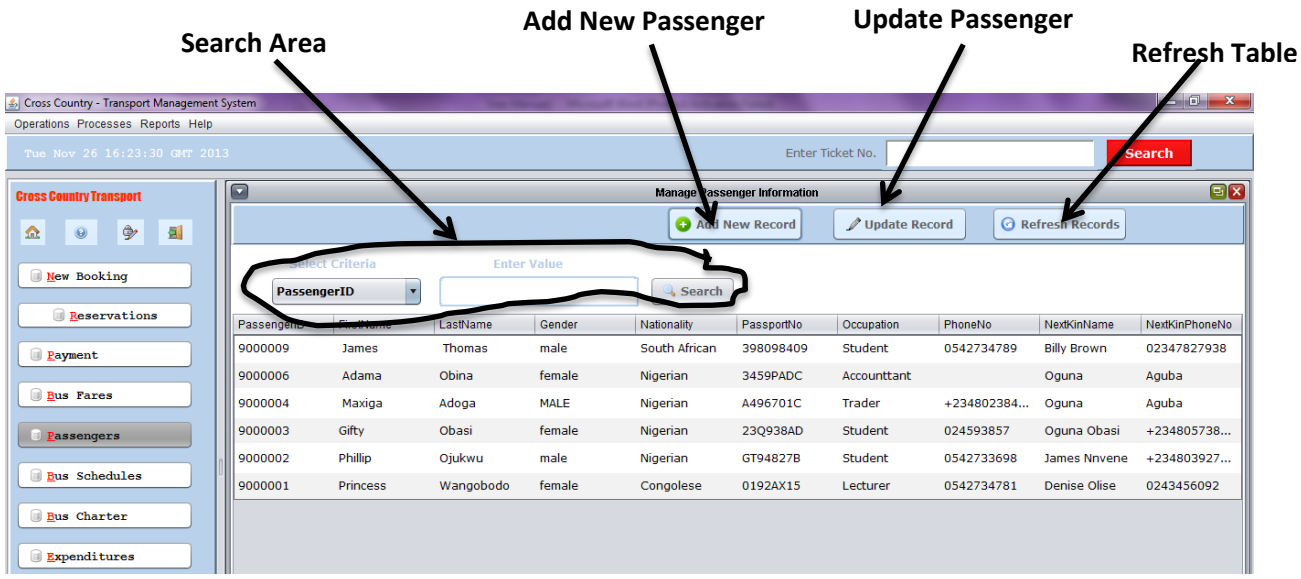


Figure 4.16 Passengers Panel Screen

TO VIEW PASSENGER DETAILS TABLE

i. Click on the Passengers button on the left menu panel OR

ii. Click on Processes > Passengers on the Menu Bar

TO ADD NEW PASSENGER

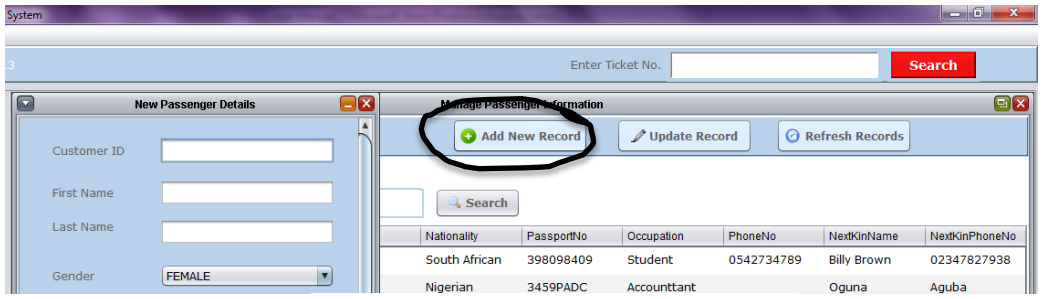


Figure 4.17 New Passengers Form

i.

i. Open the Passengers frame

ii. Click on the "Add New Record" button on the opened "Manage Passenger Information" frame.

iii. The Customer ID is automatically generated by the system.

iv. Enter the Passenger Information the Text Fields as indicated by their labels.

v. The fields that are labeled with red color are not required and can be left blank but the others cannot.

vi. Click on the save button to save or the clear button to empty all fields and start all over.

TO UPDATE A PASSENGER INFORMATION

i. Select the row with the information on the table

ii. Click on the “Update Record Button”

iii. It opens the Passenger Form with the selected Passenger Information

iv. Edit all the information you would want to update and click on the save button to save the records.

v. Or click select to enter new information for that customer ID

vi. (NOTE: The Customer ID cannot be edited).

TO SEARCH THE PASSENGER TABLE

i. Go to the “Search Area” as circled in Figure 4.16

ii. Select a Criteria from the Combo to base the search

iii. Enter the search value

iv. Click on the search button to filter the table content

HOW TO WORK ON EXPENDITURE INFORMATION

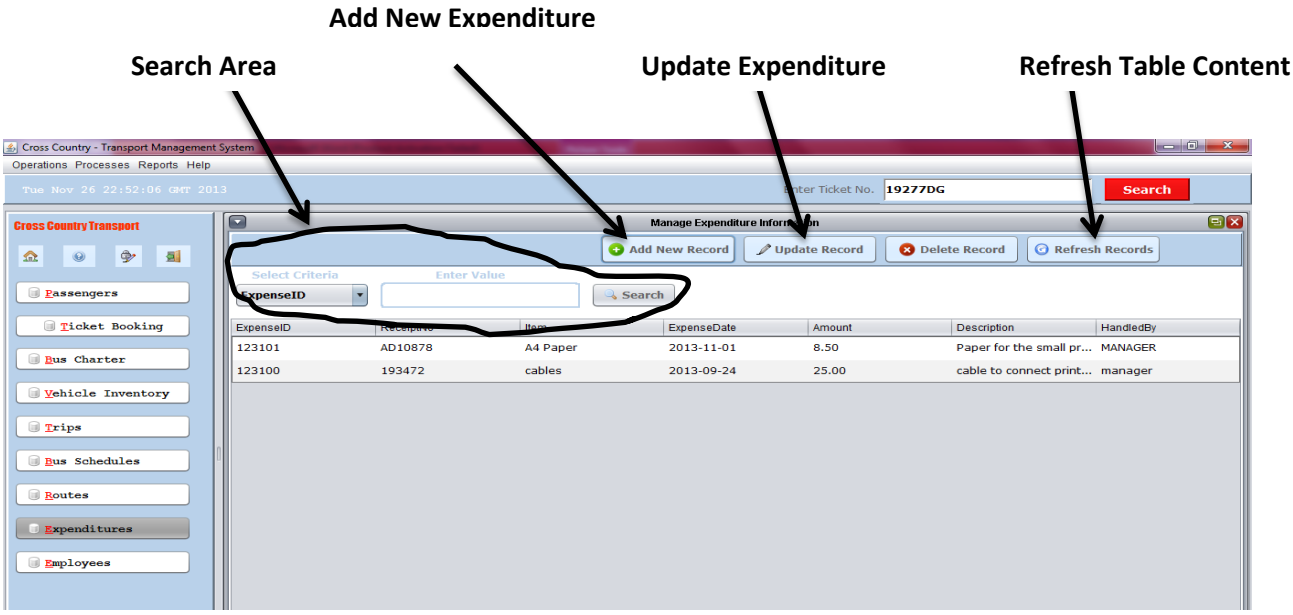


Figure 4.18 Expenditure Panel Screen

TO VIEW EXPENDITURE TABLE

i. Click on the Expenditure Button on the left menu panel or

ii. Select Processes > Expenditures

TO INSERT NEW EXPENDITURE DETAILS

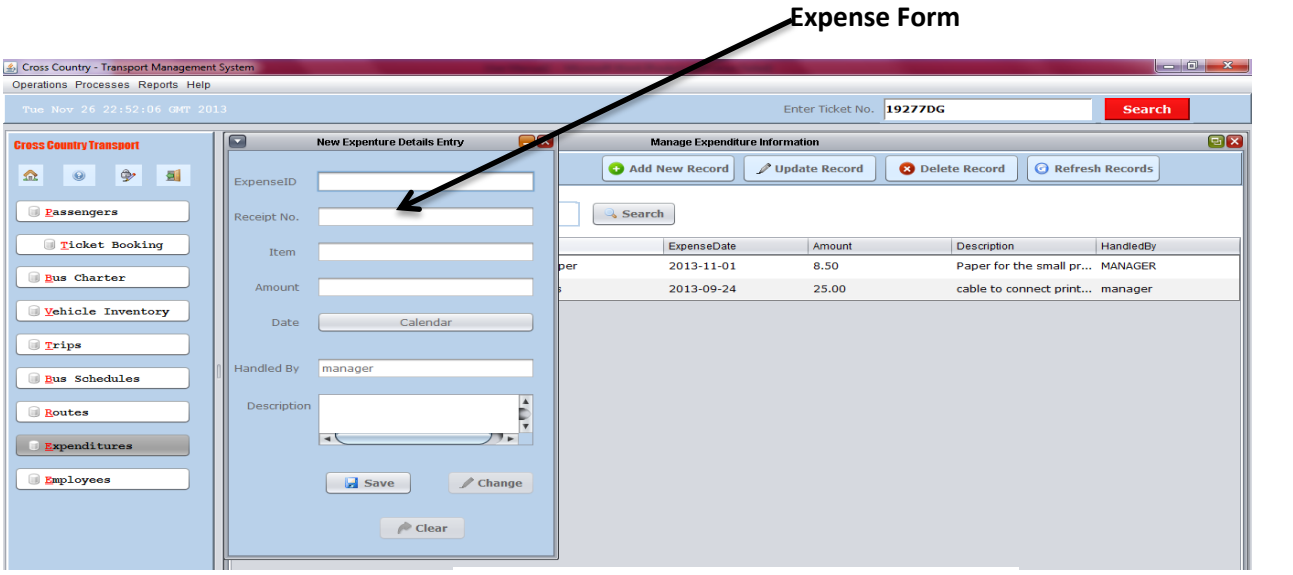


Figure 4.19 Expense Form Screen

i. Click on the “Add New Record” Button on the “Manage Expenditure Panel”

ii. The ExpenseID is automatically generated after you save it.

iii. Enter the receipt number for the sale or purchase and enter internal for items without receipt

iv. Enter each record according to the label that describes it

v. (NOTE: All the fields are required).

vi. Click on “SAVE” button to save the information on the system

vii. Click the clear button to restart

TO UPDATE AN EXPENSE DETAILS

i. Select the Row with the Details to update by clicking on it

ii. Click on the Update Record Button on the “Manage Expenditure Panel”

iii. It opens the Expenditure form the values

iv. You can edit them as desired and click the Change Button to Store the changes.

HOW TO WORK ON BUS SCHEDULES INFORMATION

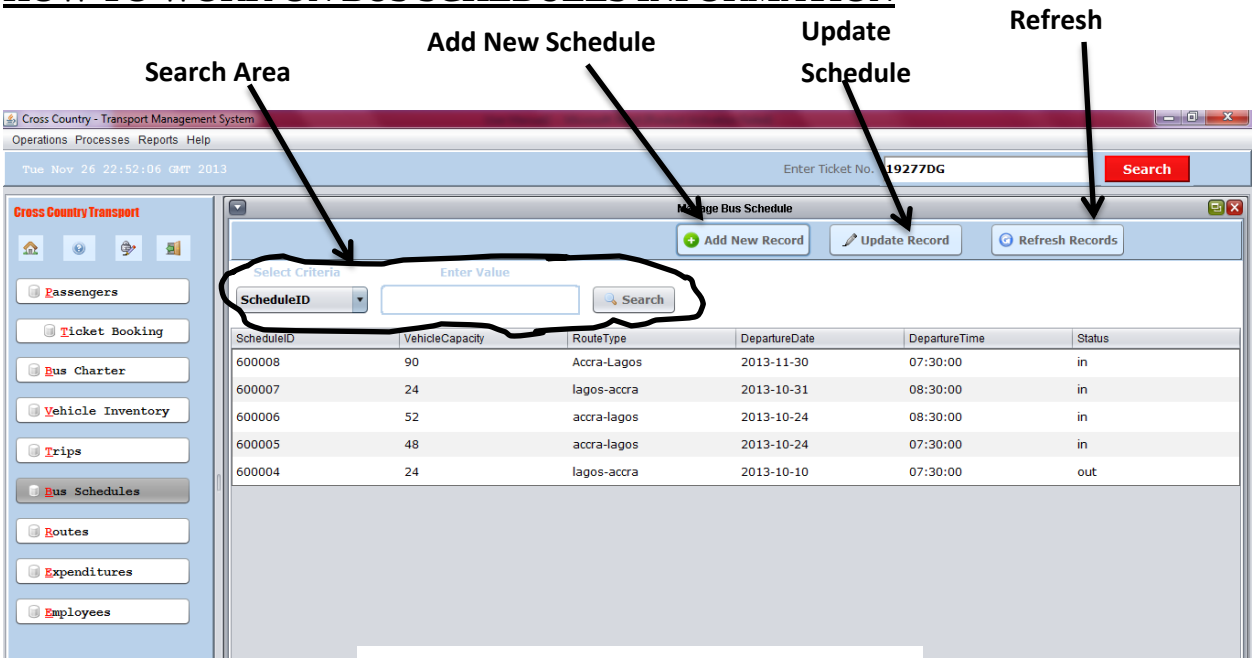


Figure 4.20 Bus Schedules Panel Screen

TO VIEW BUS SCHEDULE INFORMATION TABLE

i. Click the Bus Schedule Button on the left menu panel or

ii. Select Processes > Vehicle Management > Bus Schedule from the Menu Bar.

TO ADD A NEW BUS SCHEDULE

i. Click on the "Add New Record" Button on the Manage Bus Schedule to open the new record form.

ii. Schedule No. is automatically generated by the application for each record at submission

iii. Enter the Bus Capacity as a number values

iv. Select the Route Type from the combo box. If the desired route type is not there then it means that the route type has not been created. (NOTE: Contact the manager)

v. Click on the Calendar to enter the date for which the schedule is being made.

vi. Enter the time in hours and minutes as numbers.

vii. Click "Save" Button to save the information or

viii. Clear button to restart

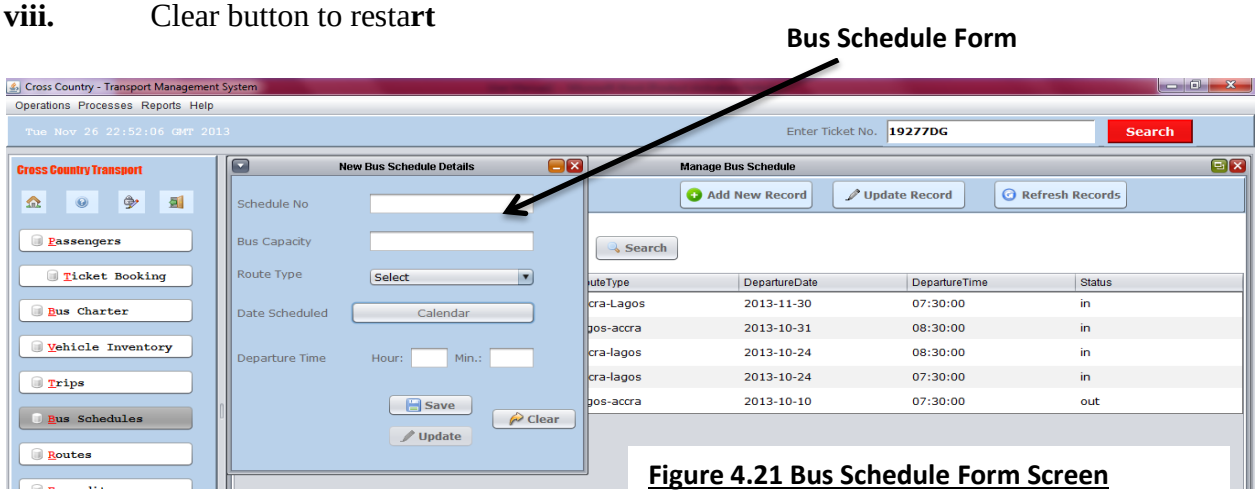


Figure 4.21 Bus Schedule Form Screen

TO UPDATE A SCHEDULE INFORMATION

i. Select the row with the information you want to update by clicking on it

ii. Click the Update Record button on the Manage Bus Schedule Panel

iii. It opens the Bus Schedule Form with the values selected filled in the form

iv. Edit the values as desired and

v. Click on the Update Button to save changes

vi. NOTE: The Schedule No. cannot be changed.

HOW TO WORK WITH BUS CHARTER

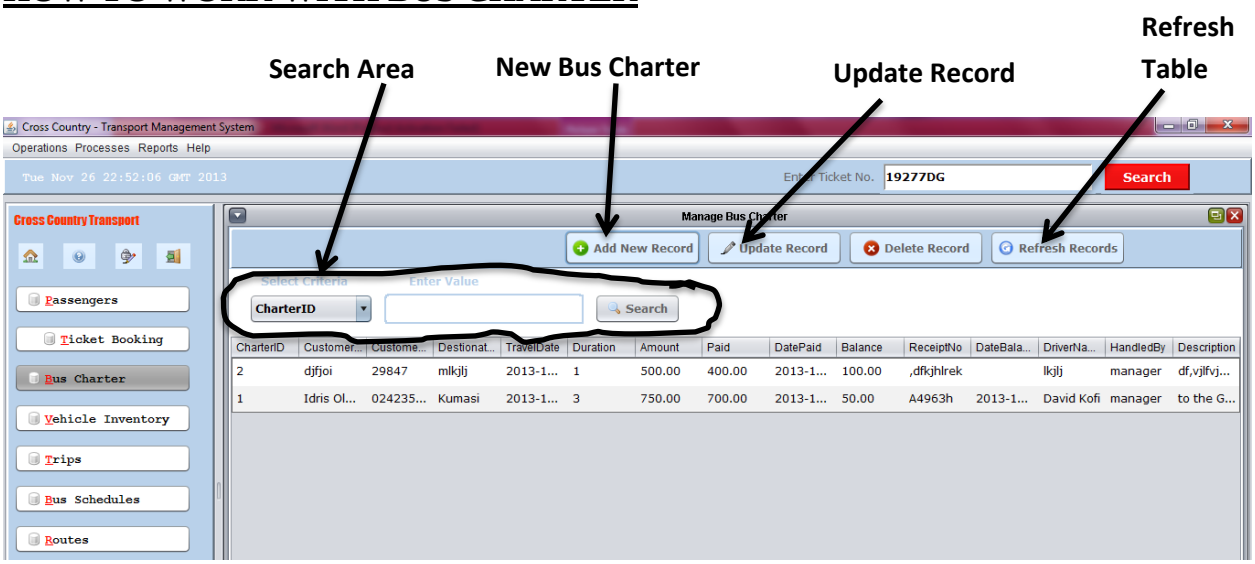


Figure 4.22 Bus Charter Panel Screen

TO VIEW BUS CHARTER TABLE

i. Click on the "Bus Charter" Button on the left menu panel or

ii. Select Processes >Booking/Reservation Management > Bus Charter from the Menu Bar

TO SEARCH FOR INFORMATION

i. Go to the Search Area in the Manage Bus Charter Panel

ii. Select a criteria from the criteria combo box

iii. Enter a value to search for and Click on the search button

TO ADD A NEW BUS CHARTER

i. Click on the "Add New Record" Button on the "Manage Bus Charter" Panel

ii. The CharterID is automatically created when the form data is being stored by the application

iii. Enter each of the information as their label indicates.

iv. Scroll to the right to access more parts of the form and click on the save button to store the information.

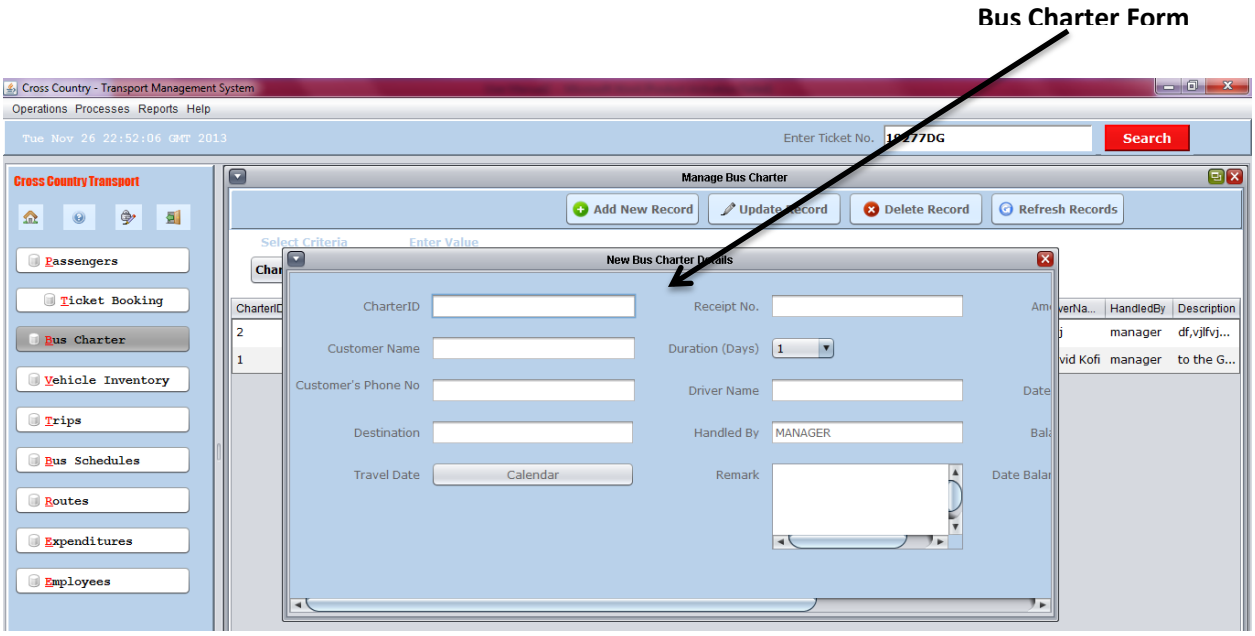


Figure 4.23 Bus Charter Form Screen

TO UPDATE BUS CHARTER INFORMATION

i. Select the row with the information you want to update by clicking on it

ii. Click on the Update Record Button to open the Bus Charter Form with the values

iii. Edit the values as desired and click on the Update Button to save changes

HOW TO WORK WITH VEHICLE INVENTORY INFORMATION

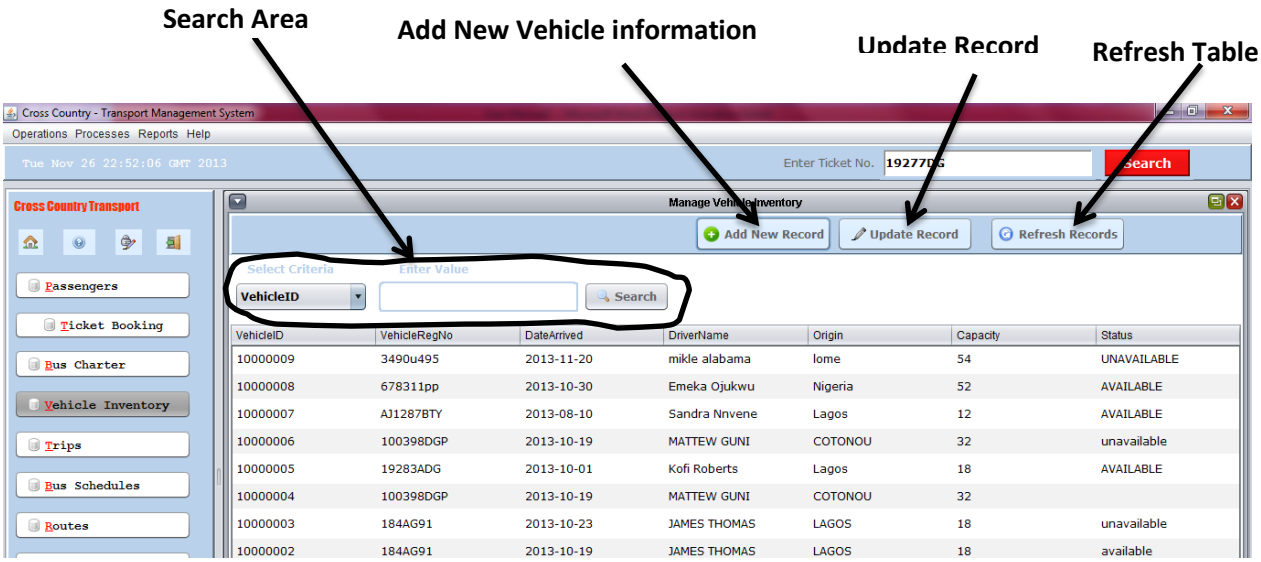


Figure 4.24 Vehicle Inventory Panel Screen

TO VIEW VEHICLE INFORMATION TABLE

i. Click on Vehicle Inventory on the left menu panel or

ii. Select Processes > Vehicle Management > Vehicle Inventory on the Menu Bar

TO ADD NEW VEHICLE INFORMATION

i. Click on the Add New Record button on the Manage Vehicle Inventory Panel

ii. It will open the Vehicle Inventory Form to enter new Record

iii. Enter the Vehicle Registration No. and fill the form with as labeled.

iv. Note: The Vehicle ID cannot be filled, it is automatically generated.

v. Click on the Add Record button to submit.

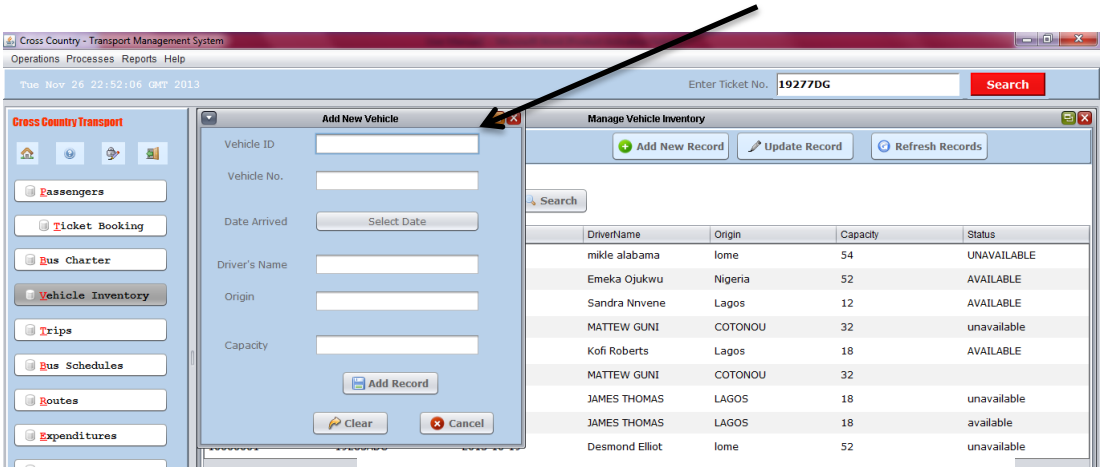


Figure 4.25 Vehicle Inventory Form Screen

TO UPDATE A VEHICLE INVENTORY INFORMATION

i. Select the row with the information you want to update by clicking on it

ii. Click on the Update Record Button to open the Vehicle Inventory Form with the values

iii. Edit the values as desired and click on the Add Record Button to save changes

HOW TO WORK ON THE TRIPS

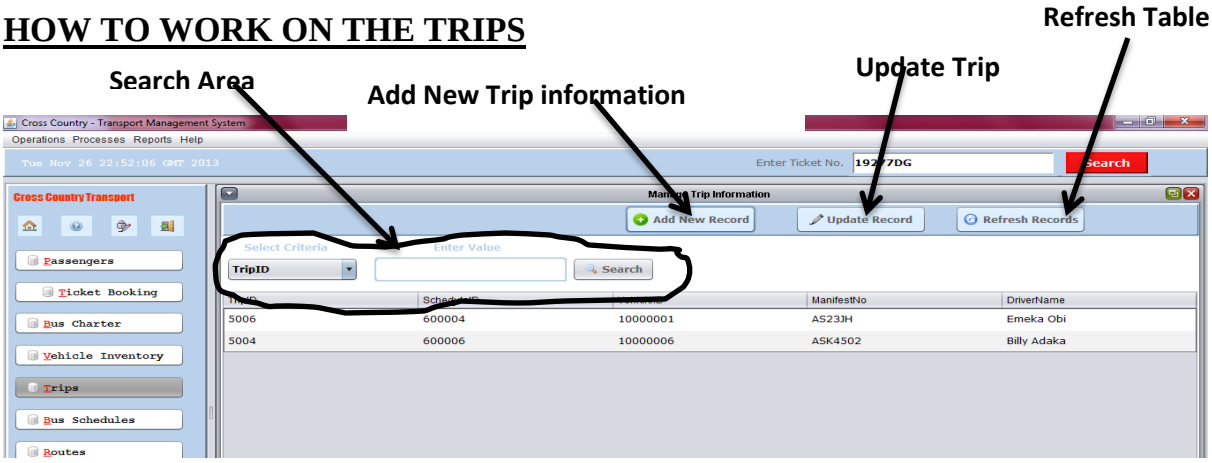


Figure 4.26 Trips Panel

TO VIEW TRIPS TABLE

i. Click on the “Trips” Button on the left menu panel or

ii. Select Processes > Vehicle Management > Trips from the Menu Bar

TO CREATE A NEW TRIP

i. Click on the Add New Record button on the Manage Trip Information Panel

ii. It will open an empty Trip Form

iii. Fill in the information as indicated by the label

iv. Click on the Save button to save the information

TO UPDATE A TRIP INFORMATION

i. Select the row with the information to update by clicking on it

ii. Click on the Update Record button on the Manage Trips Information Panel

iii. It will generate the Trip form with the selected information as values

iv. Edit the values as desired and click on the Change button to save changes.

HOW TO WORK ON THE EMPLOYEES INFORMATION

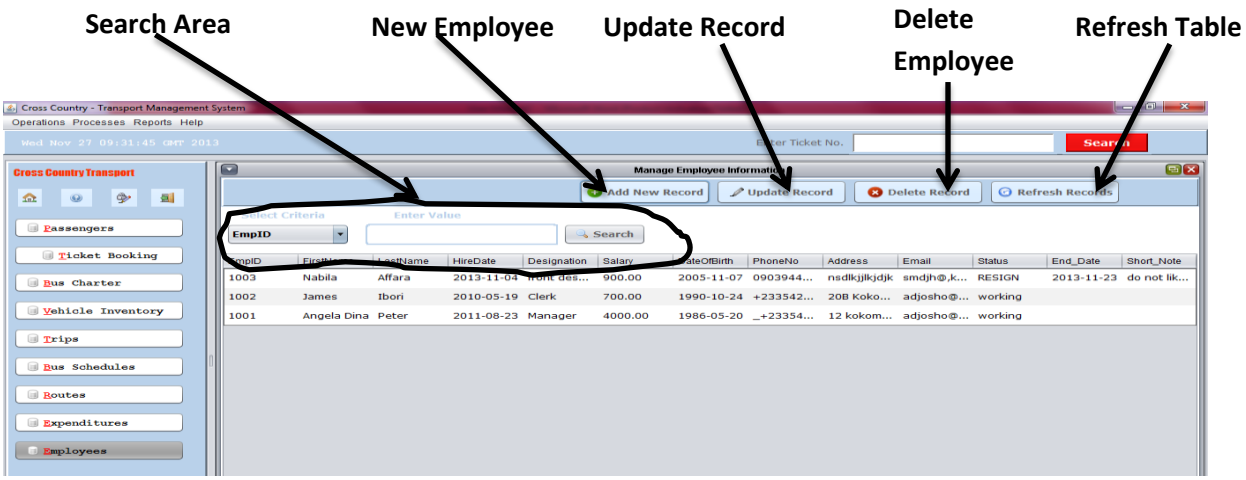


Figure 4.27 Employee Information Panel

TO VIEW EMPLOYEE TABLE

i. Click on Employees Button on the left menu panel

ii. Select Processes > Employees Management on the Menu Bar

TO ADD NEW EMPLOYEE INFORMATION

i. Click on the Add New Record button on the Manage Employee Information Panel. It will open an empty Employee Form

ii. Enter each record/information as indicated by the label. (Note: Do scroll to the right to see more of the form and the save button)

iii. The Employee ID is automatically generated by the application.

iv. When you are done, click on the Save Button

TO UPDATE AN EMPLOYEE INFORMATION

i. Select the row with the information you want to change by clicking on it

ii. Click on the Update Record Button to generate the Employee Form with the values

iii. Edit the opened form values as desired and click on the Change Button to save changes

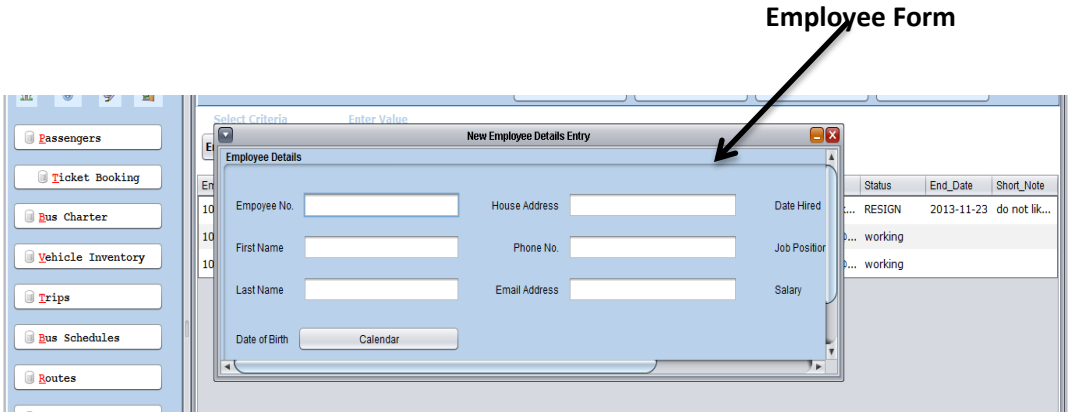


Figure 4.28 Employee Form Screen

TO DELETE AN EMPLOYEE INFORMATION

i. Select the row with the employee information you want to delete by clicking on it on the table.

ii. Click on the Delete Record Button on the Manage Employee Information Panel

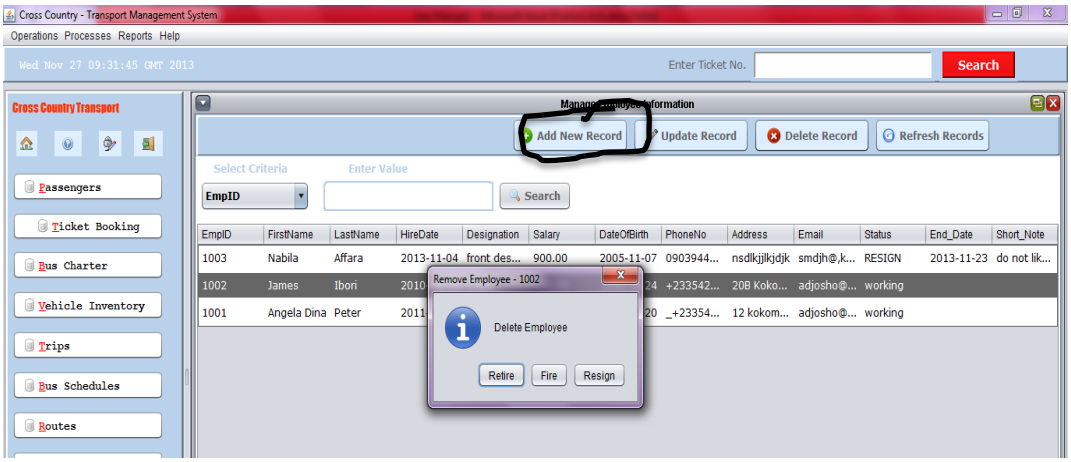


Figure 4.29 Remove Employee Screen

iii. The Remove Employee Option box is displayed. Click on the option that applies to the employee. It would generate the Delete Employee form as below:

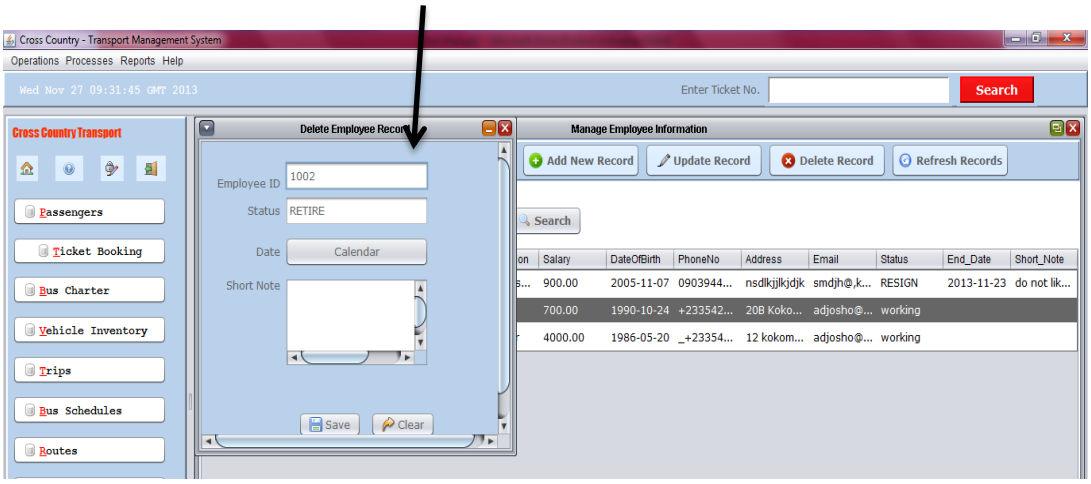


Figure 4.30 Delete Employee Form

iv. Select the date by clicking on the Calendar Button

v. Enter short note to describe the reason and

vi. Click on the Save button to save the information

HOW TO WORK WITH REPORTS

TO VIEW TRIP MANIFEST REPORT

i. Select Reports > Trip Manifest from the Main Menu. It will prompt you for the Schedule ID assigned to the trip you want to view, as shown below

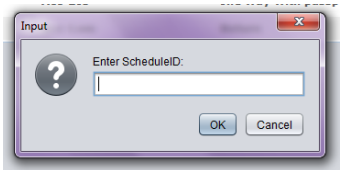


Figure 4.31 Schedule ID Collection Form

i. Enter a valid Schedule ID (Note: Use the schedules table)

ii. It will display the report as shown below

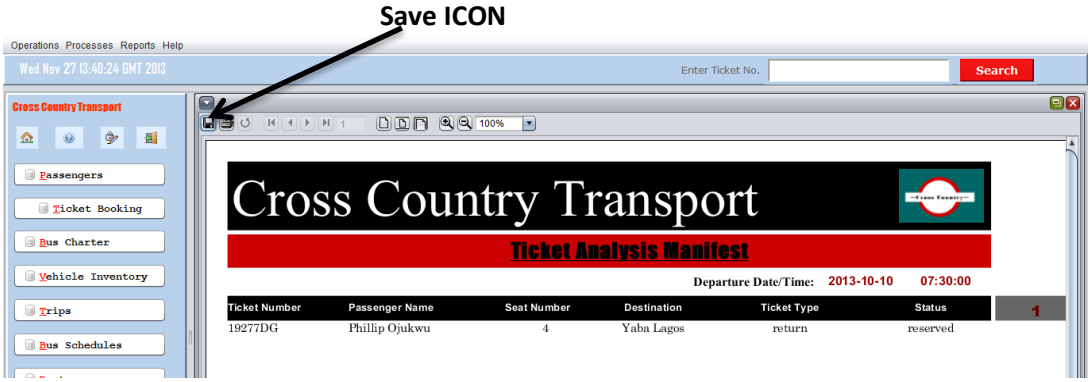


Figure 4.32 Ticket Manifest Report Screen

TO SAVE A REPORT

i. Locate the Save Icon on the report and click on it

ii. A save as option window would be display as shown below

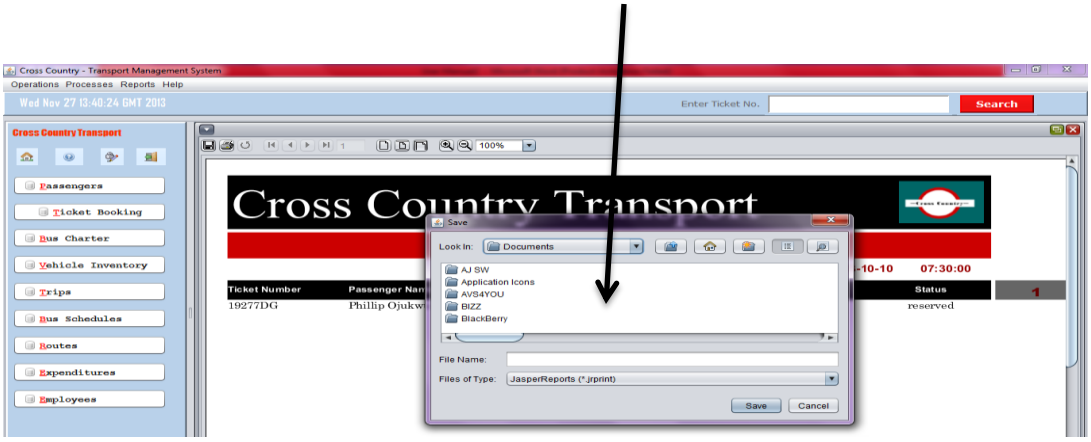


Figure 4.33 Saving a Report Screen

iii. Select the location to sa

iv. Enter the name of the file and

v. Select the format to save it

a. To save as PDF

i. Click on the Files of Type Combo box and Select PDF as shown below:

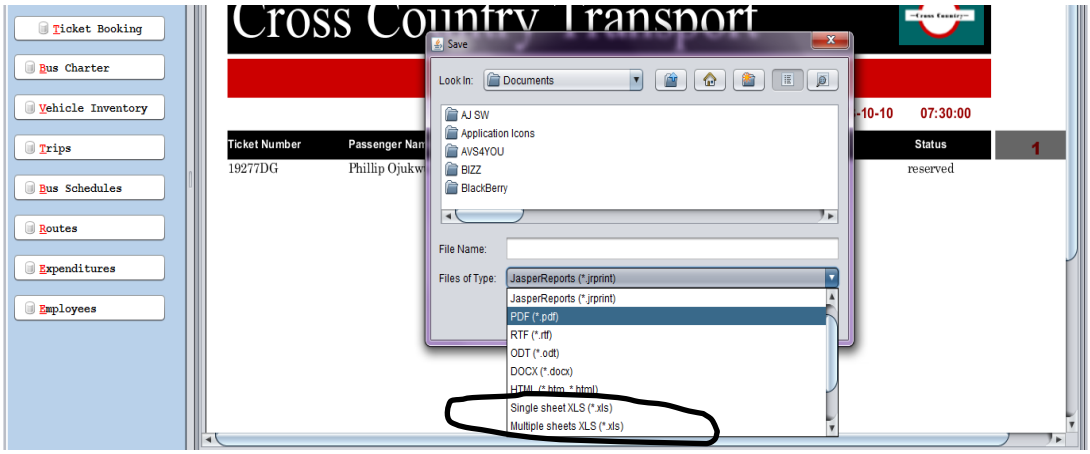


Figure 4.34 Reports Save Type Screen

b. To save as Excel File

i. Click on the File of Type Combo box and Select either Single Sheet XLS or Multiple Sheets XLS (indicated with the circle in the image above**)**

Go to the location you saved it, click on the file and it will open in the format you saved it in.

To View Buses Report

i. Select Reports > Buses from the Main Menu

ii. It will display a report of all the vehicles in the company as show below:

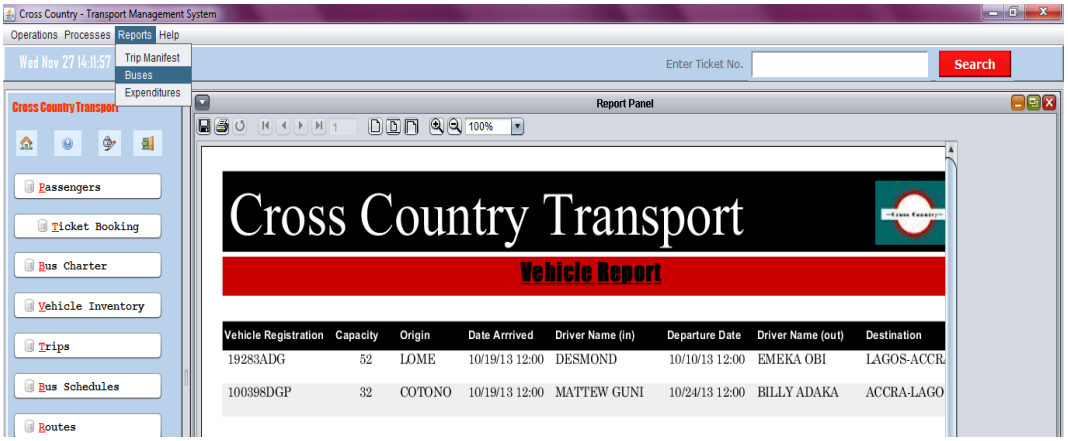


Figure 4.35 Vehicle/Bus Report Screen

Note: Please follow the steps to save a report to save this report

TO VIEW THE EXPENDITURE REPORT

i. Select Reports > Expenditures from the Main Menu

ii. It will display the form to select the duration from which date and till when you want to the report to be based as shown below:

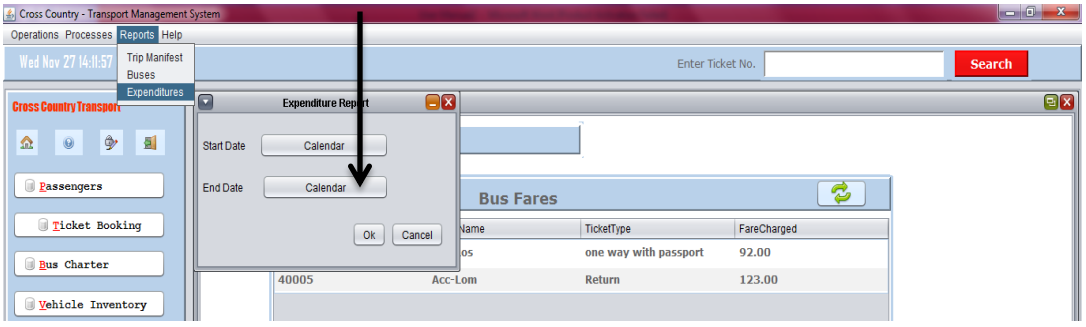


Figure 4.36 Expenditure Report Duration Screen

iii. Select the dates and click on the OK button to view the report.

CONCLUSION AND FUTURE SCOPE

In conclusion, Transport Management System (TMS) with no doubt would savage the problems that were foreseen in the manual system that was being implemented by the Transport Company (Cross Country Transport).

I would also like say that the problems that existed before the advent of the TMS would no longer

DRAWBACKS OR LIMMITATIONS

The time frame for the project work was short and as such some of the initially planned concepts were dropped.

Some of such is the courier management section of the software application.

FUTURE SCOPE

This version of the software is created to introduce the company to computerization of her process. It is planned that rapid changes and update would be made to the system as it is being used.

BIBLIOGRAPHY

1. Dr. Jain and Pillai (2006). *Systems Analysis Design and Management Information Technology*. New Delhi: BPB Publications.
2. James (1998). *A Brief History of the Green Project.* Retrieved from www.insider .net. April 2013.
3. Project Management Institute. *A Guide to Project Management Body of Knowledge* (third and fourth editions). Pennsylvania.
4. Cross Country (2013). The Company Information. Accra: Cross Country.
5. Cross Country (2013). The Company Information. Retrieved from www.crosscountry.com.ng
6. Anonymous. *Writing a Scope Statement*. Retrieved from http://www.brighthubpm.com/templates-forms/2491-writing-a-scope-statement/
7. Politecnico di Milano.(2011 -2012).*Planning and Managing Software Project*. Retrieved from http://emanueledellavalle.org,
8. *10 Strategies for Software Requirement Gathering*. Retrieved from http://www.evalperiod.com/services/10-strategies-for-sofware-requirements-gathering/
9. *Netbeans Tutorials*. Retrieved from http://www.netbeans.org
10. Oracle Cooperations (1995). *Oracle Java Tutorials.* Retrieved from http://docs.oracle.com/javase/tutorial/
11. Oracle. Why Java? Retrieved from http://www.oracle.com/us/technologies/java/overview/index.html
12. www.java.com
13. Object-oriented programming "The History of Java Technology". *Sun Developer Network*. ca. 1995. Retrieved 2010-04-30.
14. Oracle (1999). The Java Language Environment - *Design Goals of the Java™ Programming Language* (1.2). Retrieved from http://www.oracle.com/technetwork/java/intro-141325.html