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BUS TICKETING MOBILE APPLICATION

BY

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FACULTY OF BUSINESS

BACHELOR OF BUSINESS OF COMPUTING

A project report submitted to the faculty for the study leading to the fulfillment of the requirements for the degree of bachelor in business computing.

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DECLARATION

Naava N. Hedwig and **Tamale Peter** hereby declare this project report is original and has not been published or submitted for any other degree award to any other university before.

Approval

This project has been submitted for examination with the approval of the following supervisor.

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Dedication

We dedicate this report to the Almighty God without him we wouldn’t be here. We further dedicate this to our parents and guardians for their selfless support throughout our stay in this university.

Acknowledgement

We are deeply indebted to our project supervisor Mr.kisambira Paul for his unlimited support and inspirations for which have made this project a success. In a very special way, we thank him for every support he has rendered unto us to see we succeed in this challenging study.

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Abstract.

In this era of globalization, almost all people prefer to apply the technology to manage their work in their daily lives. The use of technology in everyday life becomes a choice because it is more efficient, easier, and it is proven to save the time and energy. Nowadays the use of public transport such as bus express is always in high demand from consumers because of the cheaper ticket prices and services offered include a trip to almost all cities in Uganda. However, the sold of bus ticket is still done. Manually which is customers who want to buy the bus ticket need to go to the counter and buy the bus ticket manually. Therefore, Bus Ticket Booking Mobile Application will be developed to facilitate the journey of a person. This application makes full use of the internet and can be used by all users who access the application. This application is expected to enable users to see the bus schedule provided, make a selection of seats and the price of the bus ticket. In addition, users can also purchase bus tickets and make online payments. The methodology which we chose for this system is the prototype model which is more suitable to be used in the actual situation of the development process to develop a system that capable to meet the user's needs. The architecture pattern which we chose is SDLC (software development life cycle) which is used in interactive applications that require flexible incorporation of human computer interfaces. Testing is done regularly and repeatedly on the system to accept the probability the result of the user input. The method used in testing is user acceptance testing and black box testing.

CHAPTER 1

Introduction

Trinity Bus Company started in 2014 and its headquarters are located in Kigali Rwanda.it started with 4 buses there it was convenient to book manually but now it has grown 13 buses which consist of 45,49 and 62 seaters going to different destinations. The staff of trinity is made up two tellers who are in charge of processing travel receipts and scheduling travelling bus schedules. The bus company has for long been using the manual ticketing system whereby a customer has to walk in to the reception and pay for bus ticket physically and they are given a receipt with their seat number. This process however has become tiring to the company itself and the clients hence there has been need to develop an online system. The staff a facing a challenge of increased paperwork, high costs and lack of security.

The use of trinity bus express is increasing, especially in the festive seasons and school holidays, and this has led to constant travelling especially those living in faraway places such as Mbale, Arua etc. And often face problems to get the bus ticket. In this current technology, rapidity in daily life place great emphasis to smoothen the time planning. Ease of the technologies such as mobile applications offer many advantages to the users. The transport schedules are given below.

Kampala to Kigali which costs 50,000ugx and sets off at 8pm,9pm,10pm ,1am and 9am daily.

Kampala to Juba costing 100,000ugx and sets off at 8 and 9pm.

Kampala to Ggoma costing 55000ugx and sets off at 9pm.

Kampala to Nairobi costing 70,000 and sets of at 8pm.

Almost all consumers prefer to apply the technology to manage their work in their daily lives. The use of technology in everyday life becomes a choice because it is more efficient, easier, and it is proven to save the time and energy. Thus the aim of this project is to develop the Bus Ticket Booking Mobile Application which aims to ease the process of buying the bus ticket in more efficiently way.

1.2 Background Study

Companies usually start small so they use manual methods like book tickets manually. As they grow these methods become problematic hence need automation to cope. Trinity Company started in 2014 with 4 buses there it was convenient to book manually. But it has grown to a large number of buses hence manual method is problematic in several ways.

1. The documents take up a lot of space,

2, the data is prone to being damaged and displaced due to the growth of the bus company.

3. It is hard to make changes for example making copies of a receipt if it is faulty the teller has to draw a new one.

4. Lack of security.

5. High cost in purchasing papers to make receipts.

On this day with the use of technology always advancing in our daily life, people tend to use technology more than the way they study in various aspects. Innovation is a fundamental piece of our lives today and few can envision living without. We accomplished a great deal with the assistance of innovation, for instance we have the likelihood to travel, stay in contact with family and friends on the opposite side of the earth .Furthermore we know that choices one individual takes are not really useful for the general public overall. This makes innovation as positive as workable for humankind and nature over the long haul. The innovation we make now makes the future and it ought to be for the general population and make things simpler and not more entangled.

1.3 problem statement

Currently, the selling of bus ticket is still done manually which is customers who want to buy the bus ticket need to go to the counter and buy the bus ticket manually. In addition, users also cannot buy the bus tickets over the phone and the phone line is always switched off. It brings a lot of inconvenience to the user since the manual system is slow. Users also need to go to the counter to get information or to inquire about the bus schedule, this is expensive since some of

them live very far from the city. This causes them to arrive early to the bus station.so that the bus ticket is not sold out. The other problems are the possibility to miss the bus tickets, bus tickets is stolen or left behind. This causes the user to go back to the bus station to buy a ticket. Furthermore, users have to pay cash when they buy a bus ticket, and sometimes people had to queue long to buy the bus tickets. The situation still cannot guarantee the seating to be obtained. Customers who live far from the bus station may also have trouble buying bus tickets, especially on certain days, for example during the festive season and school holidays. This scenario contributes to other shortcomings such as planning time to the counter in and paid parking spaces problem. The reason for us developing this online bus ticketing system for trinity bus services is because a remote based ticketing application will put an end to the problems they are facing with the manual system. The mobile system will enable users to book and pay for bus tickets online

1.3 Main objective

To develop an android mobile bus ticketing application

Scope of the study

The fundamental aim to carry out this project is to create and design an Android Mobile Application of Online Bus Booking System; in order to transfer all their routine operations into an Application, which will allow serving customers up to their satisfaction. The proposed system will serve and stand as a global network interaction Application for Uganda.

The objectives of this project are as follows:

To investigate and analyze the problems on the existing systems and provide a solution to the customer and management by having under stable system that individual will enable to operate within short period of time.

To identify the relevant features of various components and methods needed for the Android Mobile Application of Online Bus Booking System and also to give power of choice to consumers to choose which bus operator’s services to use based on standard rating derived from consumer polling, traffic summonses obtained, and sales performance.

To assist bus operators' operations and marketing decision through timely decision making via Management Information System through the deployment of an Android Mobile Application of Online Bus Booking System.

Some basic components of an android mobile application of Online Bus Booking System that provides enhanced service to the bus operators and customers consist of:

Capture of customer information such as name, address, phone number and e-mail.

Price list.

Bus operators rating

Seating chart.

Loyalty Points/Redemption.

Search engine.

Payment information

1.4 Scope of the project

The scope of the project is narrow to online bus ticketing system which integrates database that consists of bus operators in mobile apps. This apps is targeted for youths which most probably owning a smartphone and having a hard time to browse one bus to another to buy bus tickets. This mobile application can greatly enhance the efficiency of current online bus ticketing system in Uganda.

1.5 Significant of the project

We chose this project based on the personal experience with the existing bus ticketing system. Many problems and difficulties has been faced by us, traveling from Kampala to Kigali .We faced many problems regarding the system of manual bus ticketing. All the problems are related to complicated procedure, hard to find destination and inefficient system. It encouraged us to develop system to solve all issues for better use for the community in Uganda. In this project, we are to replace the existing manual system which integrates all bus operations at trinity Services and compare in term of price, routes, availability, times and specialty. The project

would probability help the community in Uganda and promotes people to use Bus transportation

1.6 Time scope

The project is expected to be developed in a duration of 5 months

CHAPTER 2 LTERATURE REVIEW

2.0 Introduction

According to Journal of Interaction Science (2013), advances in mobile technology promote variety of application to be used by people in current technological era. Many people use mobile phones these days. It is a trend now to use mobile phone. Mobile apps are software programs that you can download using your mobile devices such as mobile phone and tablet. Mobile application is easy to use and download. Most of the mobile applications are free. They took profit from advertising, upgrade features and promotion. The usefulness of mobile devices has increased tremendously in a past few years that can allow people to perform task in a mobile context.

Mobile application ease the people in daily life and problem. Mobile apps are internet application designed to operate on smartphones and tablets. Mobile apps can be categorized by many categories including entertainment, communication, education, transport, travel, lifestyle, medical and finance. Mobile basically means portable and flexible like a mobile phone. According to WebWise Team, apps is abbreviated for application software. Mobile apps usually helps user by connecting them to the internet services without using a common device like laptop and desktop for much easier usage.

Based on Wikipedia, mobile apps were created basically for general productivity and information retrieval, including email, calendar, contacts, stock market and weather information. However, demand from the people enhance high expansion into other categories, such automation, GPS mapping and location-based services, banking, networking and file transfer, education, video streaming, order tracking, ticket purchases and recently mobile medical apps. According to Daniel Walters, approximately over five billion of mobile subscribers that consists of 77% of the world's population are online.

2.1 online bus ticketing system

Nowadays, a lot of people are busy with their work. Most of the time they spend In front their phones. Phones are the most important thing in our life. Every family in the world have their own internet because it will be more easier for them to do some research, e-payment, e-banking, e-shop or any online booking to do a ticket reservation or an accommodation reservation. Online

ticket booking is one of the largest and fastest growing of electronic commerce (e-commerce). They might be in scope of travel reservation, hotel, movies and flight.

According to Simon Lenoir (2013) from, online ticketing systems makes customers life easier. When the company is available for 24/7, they will never miss customers. Most of the travel companies are operating limited within their business hours. It provides flexibility to the customers to book their ticket without any restriction and problem. Customers can instantly check availability of the ticket through computer or smartphones rather than check over the ticket counter and phone. The customers also can check without having a staff to confirm the tickets. They can still make reservation anytime and anywhere.

Online booking reservation allows customers to see availability of the ticket in brief time. It will make them easier to plan their trip and schedule. According to Simon Lenoir, more than 60 percent of travelers and passengers book their entire trip online. Online booking system can minimize workload of customers and bus operators. Online booking system can reduce the amount of paperwork by doing manually. Automatic system is more efficient and systematic than manual system.

2.2 E-commerce

E-commerce is also known as electronic commerce is trading of product or services using computer networks. E-commerce refers to the purchase of goods and services via electronic medium such as Internet and mobile phone. According to Katherine Arline, E-commerce was introduced in 1960’s through electronic data interchange (EDI) on value-added networks (VANs). E-commerce start to grow in the 1990s and early 2000s with the availability of internet access on that years. E- Commerce is conducted using a variety of applications, such as email, fax, online

This is business-to-business, with some companies attempting to use email and fax for unsolicited ads to consumers and other business prospects, as well as to send out e- newsletters to subscribers. Bus ticketing system using the same concept of e-commerce.

The user pays the services by using online transaction exchange with the online ticket boarding pass to use bus services. Electronic commerce has expanded rapidly over the past five years and is predicted to continue at this rate, or even accelerate. In the near future the boundaries between conventional and electronic commerce will become increasingly blurred as more and more businesses move sections of their operations onto the Internet. Based on Wikipedia.org, there are three types of e- commerce.

1. Business to consumers (B2C)

2. Business to business (B2B)

3. Consumers to business (C2B)

4. Consumers to consumers (C2C)

2.4 E-ticket

Electronic ticket is a digital ticket that use as a boarding pass for online customers. It is also used in ticketing in the entertainment industry. An electronic ticket system is an efficient method of ticket entry for cinema, flight and bus. An e- ticket allows your entire travel experience to be easy and safe because all of your booking and ticket details are held electronically. E-ticket give more benefits than paper style ticket.

Users retrieve the e-tickets by purchasing them from a web server, or simply receiving from a vendor, or from another user who previously acquired them. E- Tickets can be stored in desktop computers or personal digital assistants for future use. For some cases, like e-tickets nontransferable example e-ticket airline, it has to be validated to prevent duplication, and ensure authenticity and integrity. The validation process of e-ticket is the most important thing in online booking system. The validation process is to avoid duplication of e-ticket by the same or different users. There is a possibility of failure when server crashed during the transaction.

Chapter 3 METHODOLGY

3.1 System Development Methodology

The prototype methodology is chosen as the methodology for this system development. Prototype model allows the development of application systems in stages which involve four important phases namely analysis, design, development and implementation phase. In analysis phase, a literature review was conducted for understanding the problems faced by the user in obtaining bus tickets and how the system will be developed can be applied. The studies of the hardware, software and technology that can be used are also being conducted. The design phase where the process of designing the proposed system will be initiated in this phase where the solutions have been proposed in the model based on the information that has been obtained.

Using case diagram, class diagram, the actual situation in the system operation that is developed can be established clearly. This phase also involves the design of the modules involved, interface design and database design .In the development phase of the prototype, the coding system will be carried out. This phase also involves documentation of the program in which it is important to facilitate the understanding and future reference. The development of this prototype will go through several iterations that will engage users and initial prototype. The prototype that is ready to be evaluated by the user if there are any changes, the prototype will be changed according to user feedback. This process will be repeated until the user is satisfied. Further development of the entire system will be generated. For coding on the mobile device which is the application on mobile phone, the system uses a programming language JavaScript using react native

1. Questionnaires

The questionnaires are distributed to the customers who use current online ticket bus system. Questionnaires are distributed to the class, social media and hostel room to get a feedback from the users. The purpose of questionnaires is to collect information and requirements what the users want in bus ticket apps. The questionnaires will be covered about improvement of current system and problem of the current ticket system. The questionnaires are consists of question based on demographic background.

The project methodology that been used in development of system is System Development Life Cycle (SDLC).

The waterfall model is linear approach to software development which development is a flowing downwards just like a waterfall through a several phases.

Illustration

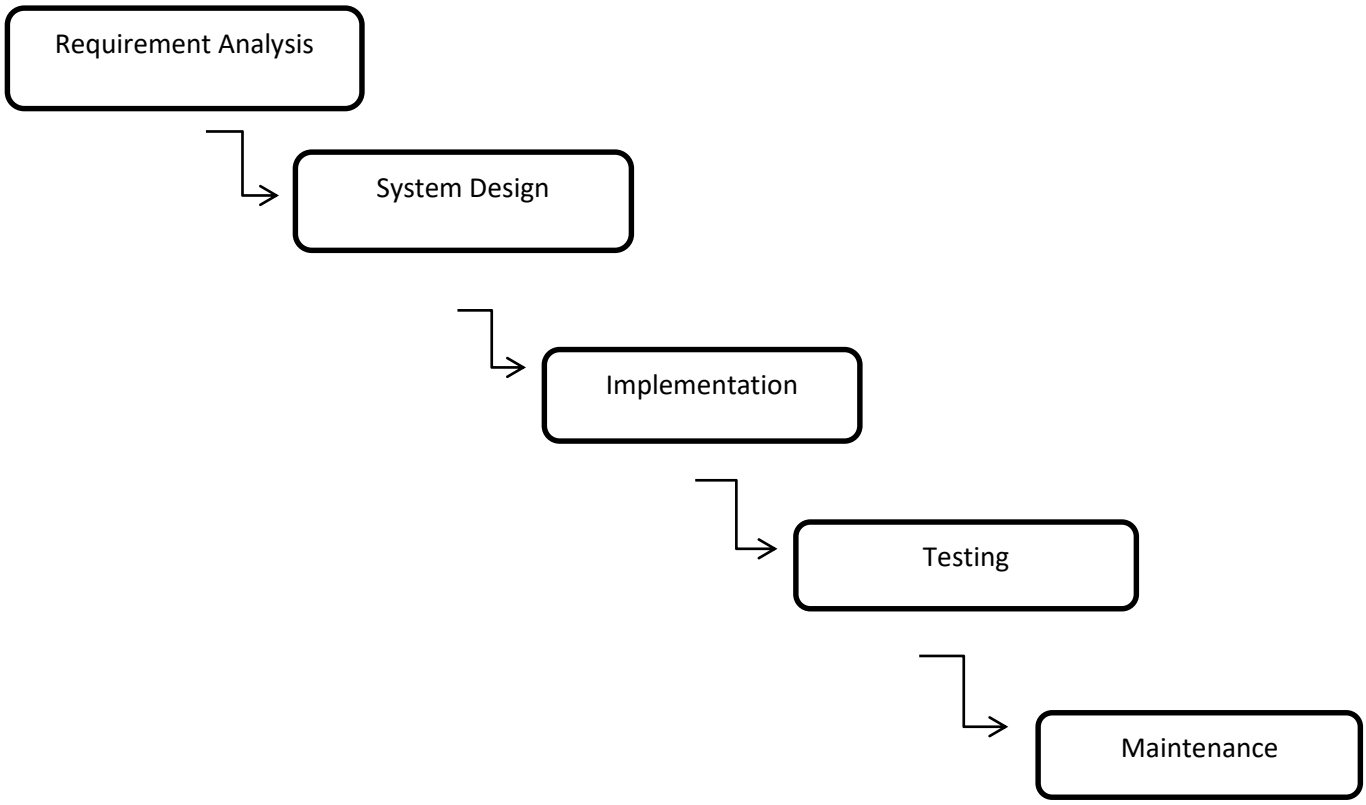

Figure a system development methodology

2. Observation

Observing the current online ticket bus applications and web based sites to develop a better ticket bus application system. .it was observed some of the mobile application on android. We also observed the https://www.ugabus.com/ http://256bus.com/index.php and https://tiketi.com/. To analyze all the problem faced by the users. After all the observations were recorded, we created analysis about all the problem faced by them and try to come out with solution and idea to improve current online ticket bus system. We listed out all the advantages and disadvantages of the current related systems. Individual observation by us in the nearest bus ticket counter. Most

of the customers are frustrated when they need to queue especially in festive and busy days that can queue about 10-20 people.

CHAPTER 4 SYSTEM ANALYSIS AND DESIGN

4.1.1 Results and Discussion

There was a 85 percent response rate to the questionnaires. Most of the respondents were from university students who always going back to their hometown.it can clearly be seen from the results that most people have been involved in travelling. Various questions were responded as stipulated below.

1. What is your gender?

55% of the respondents (22 respondents) were Male.

45% of the respondents (18 respondents) were Female.

2. What is your age?

90% of the respondents (36 respondents) are between 21 to 30.

10% of the respondents (4 respondents) are between 31 to 40 .

3. How often do you travel by bus?

2.5 % of the respondent (1 respondent) travel using bus every week

17.5% of the respondents (7 respondents) travel using bus every month

22.5% of the respondents (9 respondents) travel using bus every two months

27.5% of the respondents (11 respondents) travel using bus every four months

15% of the respondents (6 respondents) don’t travel using bus

15% of the respondents (6 respondents) travel using bus in emergency case.

4. Do you know about online bus ticketing in Uganda?

Most of the respondents knew about online bus ticketing. 82.5% of the respondents (33 respondents. Only 17.5 of the respondents (7 respondents) didn't know about online bus ticketing in Uganda.

4.1.2 Use case diagram

It shows interaction between the system and its stakeholders.

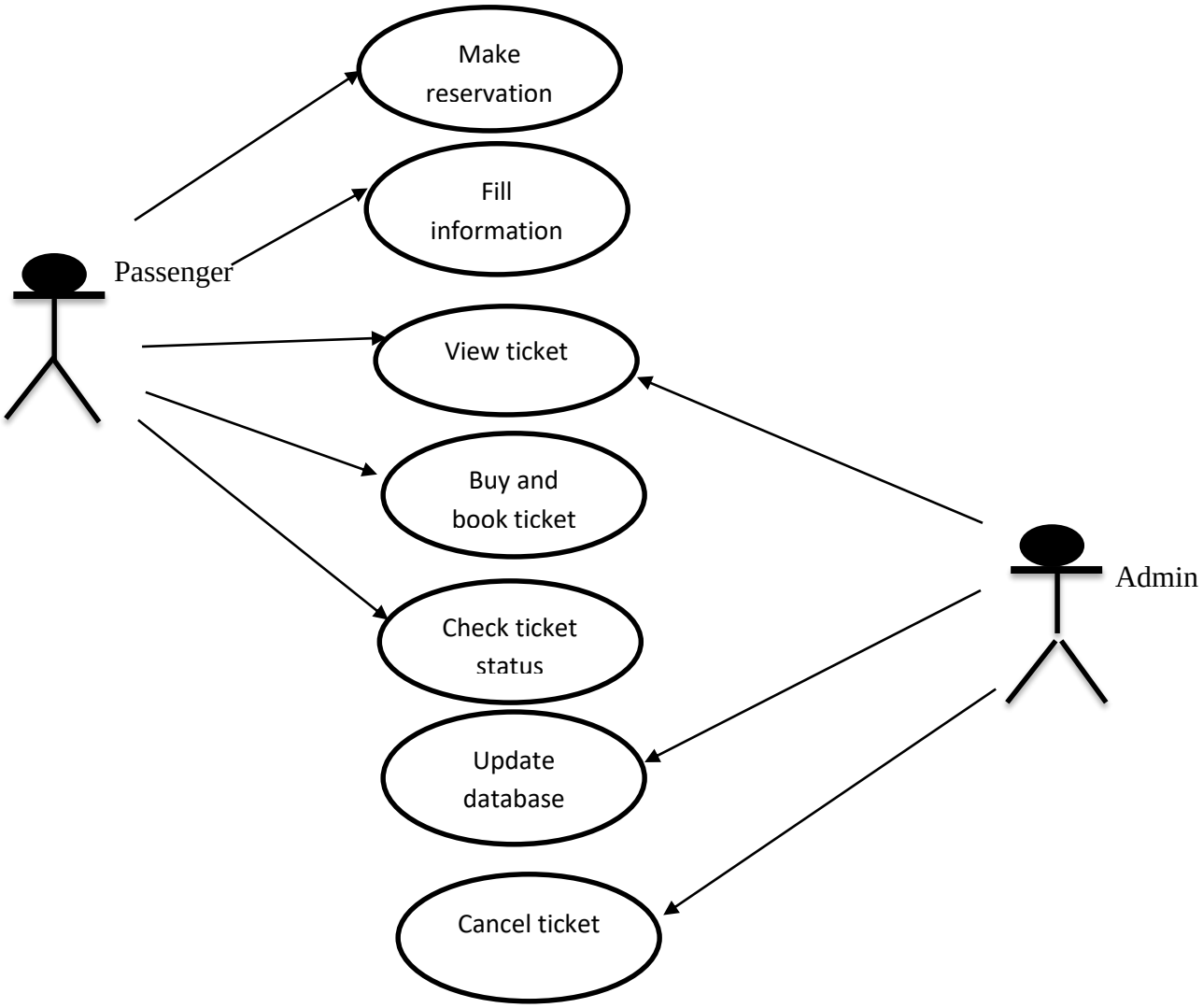

Figure b user case diagram

4.1.3 Activity diagram.

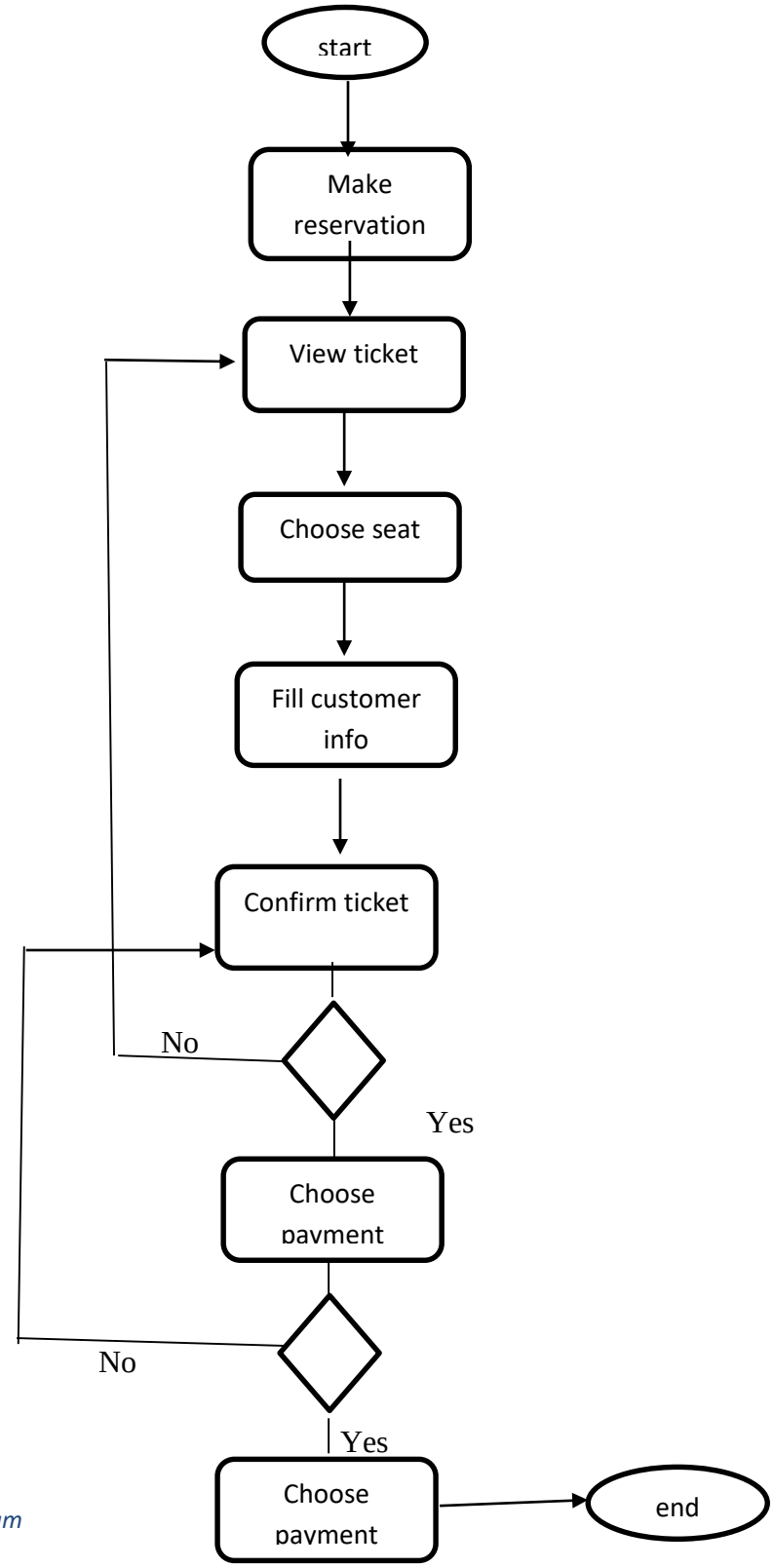

Figure c activity diagram

4.1.3 Entity relationship diagram

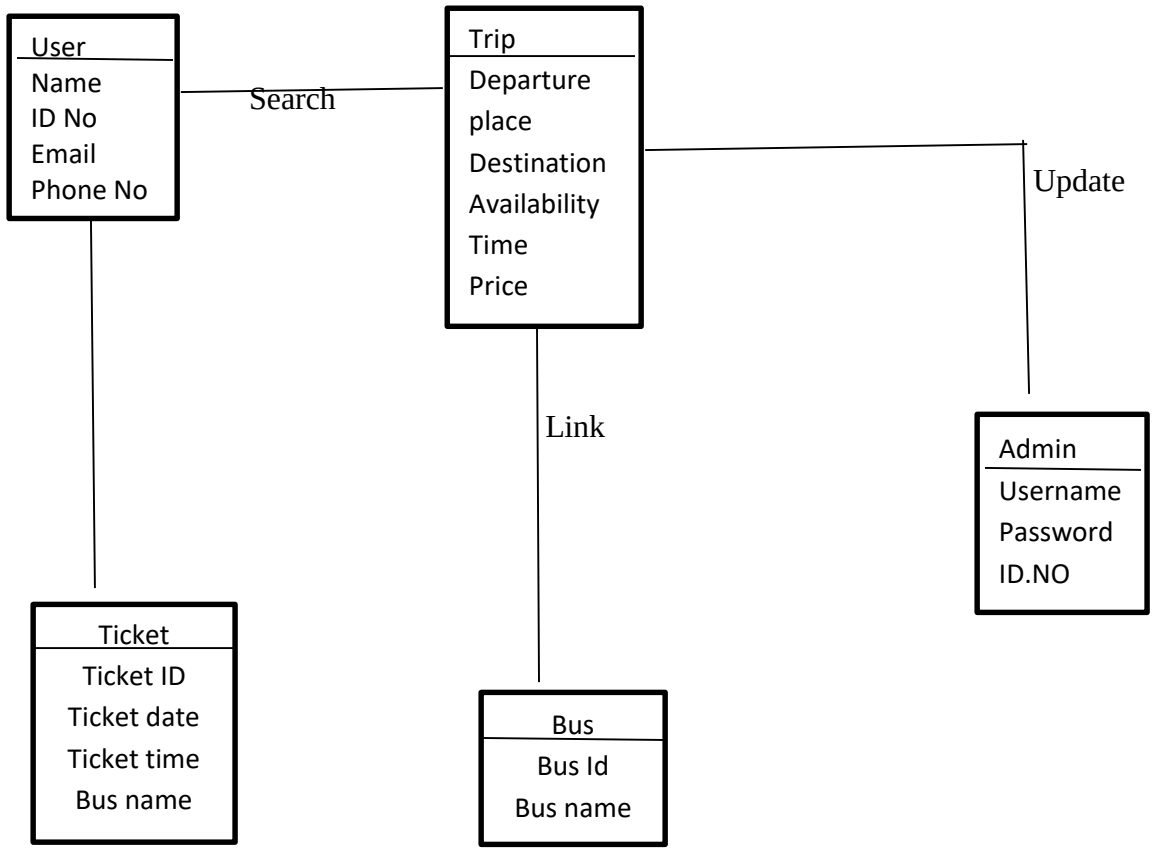

Figure d entity relationship diagram

4.2 System Architecture

A system architecture is basically the conceptual model on how the system work and structure of the system. For online ticket bus comparison apps, its architecture consist of a server that holds database and comparing all data in database before give information to the users. The users search for selected location of origin and destination of the users. The database consists of all data from bus operators. We chose two bus operators for a prototyping purpose.

4.2.1 System design

System designs was based on requirement analysis. Where we designed the interface of the system .The design was the prototype of the system design where all the functional requirement

were satisfied. The system design met all the requirement and objectives of the ticket bus broker system.

4.3 Data search (single trip)

The user must choose the origin and destination. The user also needs to specify the exact date for the ticket. The user needs to choose how many passengers they want to book. They also need to specify whether child or adult. Child and adult have different prices.

3. Choose seat by customers

Interface page where user choose their seat for the selected bus. The interface shows availability of the seat. The user clicks on selected seat and press Confirm button.

5. Fill in customer information

Users need to fill in important information before buying the ticket to ensure legal people and avoid scam.

6. Proceed with payment

Proceed with payment methods. The users need to choose from various choices to complete online transaction

7. The app notifies the successful of online booking and ticket information.

After the payment is completed, user will get notification on successful transaction and information about e-ticket. The user needs to display this receipt to the bus conductor before boarding the bus.

Chapter 5

SYSTEM IMPLEMETATION AND VALIDATION

5.1 Hardware

5.1.1 Personal Computer or Laptop

Personal Computer or Laptop will be used during the development of the mobile apps. Coding and designing are done by using laptop. React native should be installed on laptop. It is easy to use laptop for mobile purposes. The requirements for laptop or personal computer to develop this application are:-

Operating system: Microsoft Windows 2003/Vista/7/8

32 or 64 bit

RAM: 2GB RAM minimum

Recommended: 4GB RAM

Disk space: 500 MB disk space

Minimum screen resolution: 1280 x 800

5.1.2 Android Smartphone

After the coding and designing are completed, the mobile application will be tested using Android smartphone. We tested the application on android smartphone only. Android smartphone is much cheaper than IOS. It doesn't need a license to create an application.

5.2 Implementation

Implementation phase where all the software code is created. During this phase, the process of coding of software code based on system design and requirement analysis. The process of coding including the comparison of all prices in database and display information to users. The implementation is the hardest part of this project. The implementation phase will be developed by using

5.2.1 REACTJS

Since react native crashed when we are using it we decided to use reactjs.it is an open source, frontend, JavaScript library for building user interfaces.

5.2.2 PHP

It is a server scripted language.it was used to process and abstract the interaction between the client and the database since it is open source and stable.

You can easily connect to database easily using, since many mobile applications require database for their functionality to be efficient, this has largely reduced the development of mobile application.

5.3 System Implementation Screenshot

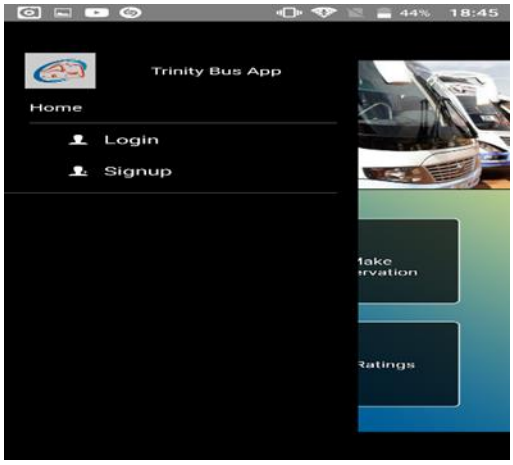

Figure 1 signup/login*Figure e*

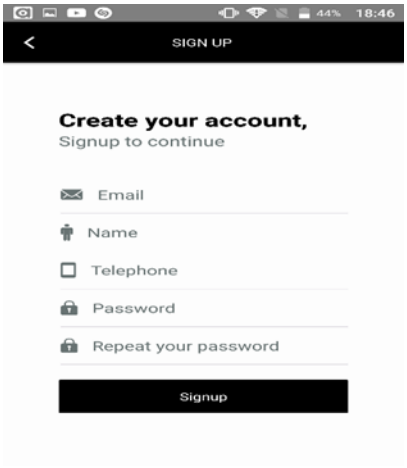

Figure f **Create account**

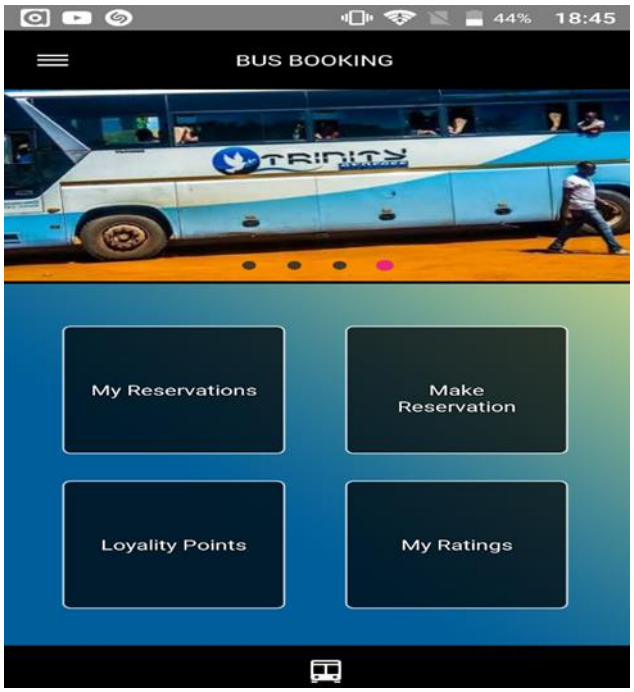

Figure g **app dashboard**

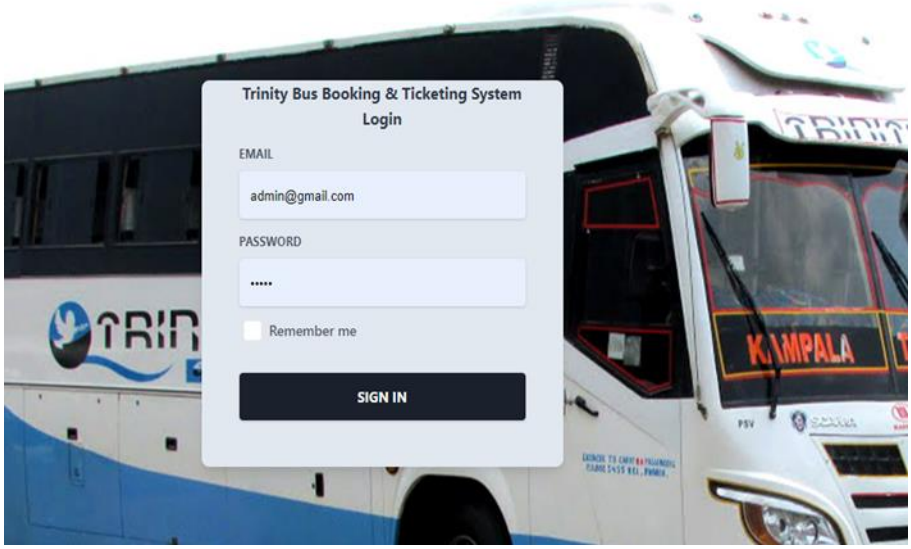

Figure h **admin login page**

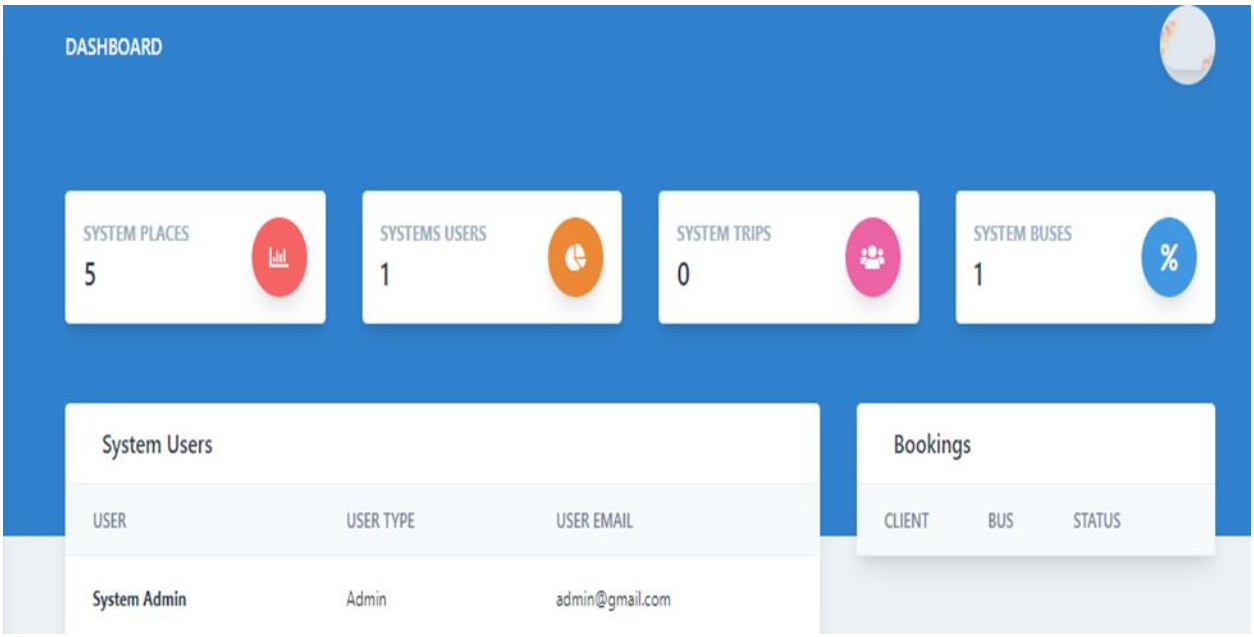

*Figure i***admin dashboard**

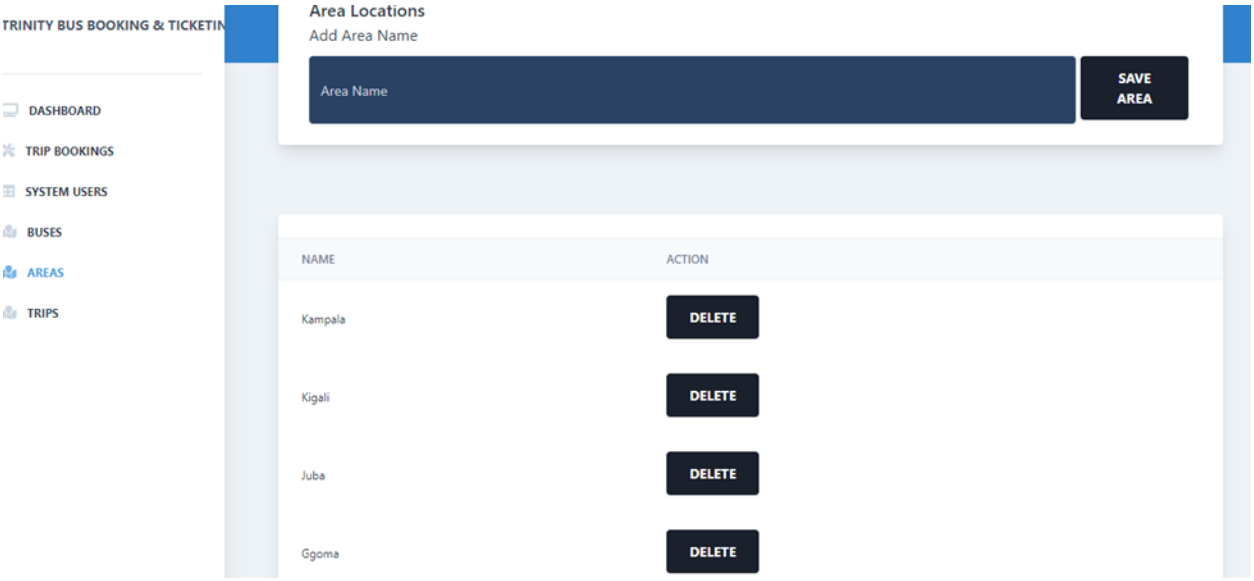

*Figure j***admin dashboard cont..**

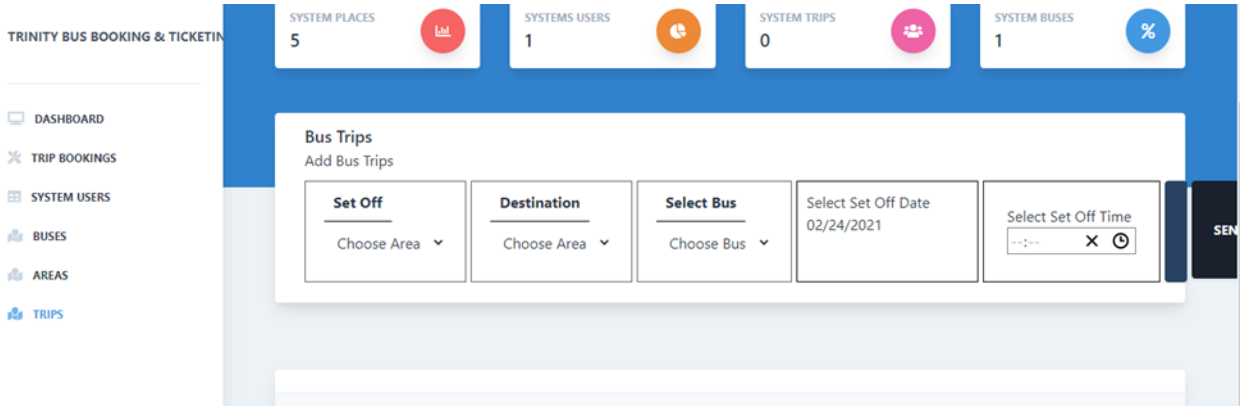

*Figure k***admin dashboard**

5.4 User Acceptance Testing

System validation is important in order to evaluate the system‘s compliance with the specified requirements. All the respondents are students at Uganda Christian University and familiar with mobile application. Test participants are aged around 18-24. They will be expected to have experience with using computer and mobile technology and don’t have problems using mobile applications. We shall also gather their demographic information. We developed a paper based questionnaire to be used by the test participants during the study session. After testing, we shall distribute the questionnaires to the respondents.

The questions are

1. Does the mobile apps easy to use?
2. Does the mobile apps help you to buy bus tickets?
3. How you rate the efficiency of the apps?
4. Is it user friendly?
5. How do you rate functionality of the application in terms of performance?
6. Rating for each section

i). Search section

ii).Information display section

iii).Seat selection section

v) .Customer information section

CHAPTER 6 CONCLUSION AND RECOMMENDATION

5.1 Conclusion

We found that ticketing application systems is a huge market in Uganda because no mobile application in Uganda that provide of tickets among trinity bus operator in Uganda. This system is very significant to be developed as the current system is acts as individual business. There is only one mobile application in Uganda that offer online ticket bus. We hope that this project will be going bigger. This new system could revolutionize the current online bus ticketing system. This bus ticketing application can go further because it benefits most of the passengers who want to book ticket easily without going to the counter. E-ticket is a popular issue especially in developed country like Uganda. Ticket Bus Comparison can save money by comparing prices among all bus operators in Uganda. The user can make a wise decision buying the lowest price. This application also can create a competition to all bus operators to provide a reasonable price and good services to customers. This application can be the best tourist apps to tourist in Uganda. Most of the places in Uganda can be reached by bus. Bus is the cheapest public transportation in Uganda for a long distance destination.

5.2 Recommendation

In the future, we want to have collaboration with all trinity bus operators to develop this application for real. The profits are to come from commission of the sale. The application acts as a middleman that brings buyers and sellers by promoting their services in the application. We also want to create a mobile application for Jaguar bus services.it is one of the largest integrated transport terminal built by Jaguar Management and Services. The disadvantages of Jaguar bus services is they didn’t offer a destination trip to north of Rwanda such as kicukiro, masaka . However Jaguar bus services are one of the popular bus terminals because of the strategic places. They don’t have a mobile application. They already have website system that can buy ticket like other bus operators. They can have more customers if they develop mobile apps.

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