TITLE PAGE

BUSINESS MANAGEMENT SYSTEM SOFTWARE

BY

OGBONNA, UGOCHUKWU P.
PG/M.ENGR/08/49218

A PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF MASTER OF
ENGINEERING (M. Eng) DEGREE
IN THE DEPARTMENT OF ELECTRONIC ENGINEERING
UNIVERSITY OF NIGERIA
NSUKKA

JANUARY 15, 2014

APPROVAL PAGE

This is to certify that this project entitled õBusiness Management System Softwareö was approved and submitted to the Department of Electronic Engineering, University of Nigeria Nsukka, for the award of Degree of Master of Engineering, (M. Eng.) in Digital Systems and Computer Engineering by

íííííííííííííí   ííííííí..
OGBONNA, UGOCHUKWU PETER   **DATE**
(AUTHOR)

ííííííííííííííí   ííííííí..
ENGR. PROF. C. C. OSUAGWU   **DATE**
(SUPERVISOR)

ííííííííííííííí..   ííííííí..
PROF. C. I. ANI   **DATE**
(HEAD OF DEPARTMENT)

íííííííííííííííí..   ííííííí..
                                             DATE
(EXTERNAL EXAMINER)

DEDICATION

TO:

God Almighty, the source of all mercy and my beloved parents, Mr. and Mrs. G. O. Ogbonna, for teaching me that õimperfection is not an impediment to usefulness; one can still drink from a chipped cupö.

ACKNOWLEDGEMENTS

ABSTRACT

Businesses (Manufacturing, Merchandising or Service Delivery) have similar organizational structures like Administration, Human Resources, Marketing, Accounting and Customer Care/Public Relations. Stand alone software products have been developed to enhance operations in each of these business. The business management system software developed in this project is aimed at integrating these software products into a single system that will provide solution to different management challenges that each type of business encounters. The software was successfully developed using Hypertext Preprocessor (PHP), My Structured Query Language (MySQL), Hypertext Markup Language (HTML), Cascading Style Sheets (CSS) and Javascript programming languages to reside and run on any network topology and to enhance the efficiency and productivity of any business venture that will use it.

ABBREVIATIONS

AJAX	= Asynchronous Request/Response
ANSI	= American National Standards Institute
AOL	= America On-Line
ARPA	= Advanced Research Projects Agency
ARPANET	= Advanced Research Projects Agency Network
ASP	= Active Server Pages
BASIC	= Beginnersø All-Purpose Symbolic Instruction Code
BC	= Before Christ
BIOS	= Basic Input/Output System
CAN	= Campus Area Network
CD-ROM	= Compact Disc-ROM
CLI	= Command Line Interface
COBOL	= Common Business Oriented Language
CP/M	= Control Program for Microcomputers
CRM	= Customer Relations Management
CRT	= Cathode Ray Tube
CSS	= Cascading Style Sheets
CTR	= Computer-Tabulating-Recording Company
DB	= Database
DBMS	= Database Management System
DEC	= Digital Equipment Corporation
DOS	= Disk Operating System
DR-DOS	= An Operating System of the DOS family that was developed by Gary Kildall's Digital Research Incorporated
DRI	= Digital Research Incorporated
DSDM	= Dynamic Systems Development Method
DSSSL	= Document Style Semantics and Specification Language
DTE	= Data Terminal Equipment
ENIAC	= Electronic Numerical Integrator and Computer
FDDI	= Fibre Distributed Data Interface
FORTRAN	= Formula Translation
FOSI	= Formatting Output Specification Instance
FTC	= Federal Trade Commission
FTP	= File Transfer Protocol
GUI	= Graphical User Interface
HCM	= Human Capital Management
HR	= Human Resources
HRM	= Human Resources Management
HTML	= Hypertext Markup Language
HTTP	= Hypertext Transfer Protocol
IBM	= International Business Machines
ID	= Identification
IEEE	= Institution of Electrical and Electronics Engineering
Intel	= Integrated Electronics
IP	= Internet Protocol
IRC	= Internet Relay Chat
ISO	= International Organization for Standards
ISP	= Internet Service Provider
IT Management	= Information Technology Management
LAN	= Local Area Network

MAN	=	Metropolitan area network
MBA	=	Master of Business Administration degree
MIS	=	Management Information Systems
MIT	=	Massachusetts Institute of Technology
MP/M OS	=	Multi-Programming Monitor Control Program (An Operating System)
MS-DOS	=	Microsoft DOS
OS	=	Operating System
PARC	=	Palo Alto Research Center
PC	=	Personal Computer
PC-DOS	=	Personal Computer DOS
PHP	=	Hypertext Pre-Processor
PL/M	=	Programming Language for Microcomputers
PSTN	=	Public Switched Telephone Network
QDOS	=	Quick and Dirty Operating System
RAM	=	Random Access Memory
RDBMS	=	Relational Database Management System
ROM	=	Read only Memory
SAGE	=	Semi-Automatic Ground Environment
SDLC	=	Software Development Life Cycle
SGML	=	Standard Generalized Markup Language
SMTP	=	Simple Mail Transfer Protocol
SOL	=	Secure Operations Language
SQL	=	Structured Query Language
SVG	=	Scalable Vector Graphics
TCP/IP	=	Transmission Control Protocol/Internet Protocol
U.S.	=	United States
USA	=	United States of America
URL	=	Uniform Resource Locator
VoIP	=	Voice over Internet Protocol
W3C	=	World Wide Web Consortium
WAN	=	Wide Area Network
WWW	=	World Wide Web
XHTML	=	Extensible HyperText Markup Language
XML	=	Extensible Markup Language
XP	=	Extreme Programming
XUL	=	XML User Interface Language

LIST OF FIGURES

TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Beyond reasonable doubt, effective and efficient human existence is not possible without food, shelter and clothing. In order to provide these essential necessities, man involves himself in different activities. Such activities could generally be referred to as business.

Businesses have evolved over time since the creation of man. From fruit gathering through hunting to the present day 'white collar jobs', man strives to fulfil basic necessities required to sustain life. But as he tries to provide these necessities, he is faced with different business managerial challenges.

These business managerial challenges include accounting, human resources management, financial management, business operations management and customer resources management.

Because these business management challenges are human problems, engineers are faced with providing lasting solutions in order to make life better. Various attempts have been made to tackle these problems but there are areas that are either overlooked or tackled less unsatisfactorily. In This project, the researcher attempts to solve this problem using software development strategy.

This Business Management System Software is designed to provide effective Business management tool for individuals and corporate bodies. Specifically, the thesis targets small scale businesses. It will also include new features and innovation to existing business software packages.

1.2 STATEMENT OF THE PROBLEM

There are some challenges facing business establishments. These could be represented as requisitions, export, budget, operations, staff discipline, salary and emoluments, promotions, transfers etc.

- **Requisitions:** These represent what come into the establishment. They include employee recruitment, raw materials, customer requests etc. The challenges that are noticed at this point are over invoicing, insufficient materials, etc.
- **Export:** During service to customers, fraudulent sales staff gives excess goods to costumers they like thereby liquidating the company. Some even remove the company's property without due approval.

- **Budget:** Budget challenges are not always problematic since the excesses are usually carried forward to the next fiscal year while for deficits; supplementary budgets are made to take care of inadequacies.

- **Operations:** These challenges manifest more often with field work staff. Cases abound where they are paid lodging allowances more than three times the actual amount, some do not visit the work site on time. In the office, information flow, reaction or feedback of customers and members of staff are also problematic.

- **Staff Discipline:** In most establishments, staff punctuality have become a big problem. For example, staff that have the duty of opening offices by 0800 hours report for duty by 0900 hours. The challenge created here is that staff daily input is not adequate compared to their salary/wages.

- **Staff Salary and Emoluments:** Staff salary challenges are of different forms: 1. Omitted members of Staff; 2. Incorrect pay cheque; 3. Double salary for a staff for one duration; 4 Ghost workers, etc. Other problems include late or non payment of incentives, leave allowance, gratuity and pension for retired members of staff and death benefit for dead members of staff.

- **Promotion:** Problems with promotion include delayed promotion, favouritism in promotion etc.

- **Transfers:** Transfer of members of staff is carried out to meet up with lagging human resources in a particular section or department in the industry. The problem here is that some members of staff are transferred to areas where they do not have the knowledge to work efficiently. Some are either over or under qualified for the vacant position.

1.3   SIGNIFICANCE OF THE STUDY

It is expected that at the realisation of the Business Management System Software, it will be possible to counter these managerial challenges experienced in Business ventures by:

1. Increasing the profit margin of any company that makes use of the software.
2. Reducing operational cost for companies using the software.
3. Increasing the efficiency and productivity of both manpower and machinery.
4. Promoting discipline, loyalty and respect among employees and their employers.
5. Creating virtual office for employee and customer access anytime, anywhere.
6. Providing more conducive and enabling environment for higher turnover in any given business venture.

1.4   LIMITATION OF THE STUDY

The Business Management System Software is designed specifically for all business classes; whether small scale, medium scale or large scale. It is also expected to be applied in different forms of business like Manufacturing, Merchandising, Service Delivery and so on, but the researcher has limited it to small scale merchandising industry that is managed by about ten administrators, having between twenty to fifty members of staff, selling limited number of items and have about five branches.

1.5   CONTEXTUAL DEFINITION

1.5.1   **BUSINESS**

Business is an organized approach to providing customers with the goods and services they want. The word business also refers to an organization that provides these goods and services. Most businesses seek to make a profit – that is, they aim to achieve revenues that exceed the costs of operating the business. Prominent examples of for-profit businesses include Mitsubishi Group, Shoprite, Innoson Limited, Chitis Limited, General Motors Corporation, Ibeto Group, Microsoft Corporation, and Royal Dutch/Shell Group. However, some businesses only seek to earn enough to cover their operating costs. Commonly called nonprofits, these organizations are primarily non-governmental service providers. Examples of non-profit businesses include such organizations as social service agencies, foundations, advocacy groups, and many hospitals.

Business plays a vital role in the life and culture of countries with industrial and post-industrial (service- and information-based) free-market economies such as the United States and Nigeria. In free-market systems, prices and wages are primarily determined by competition, not by governments. In the United States, for example, 73 percent of the

people buy and sell goods and services as their primary occupations. In 2001 American companies sold in excess of $10 trillion worth of goods and services (Microsoft Encarta Premium, 2009). Businesses provide just about anything consumers want or need, including basic necessities such as food and housing, luxuries such as whirlpool baths and wide-screen televisions, and even personal services such as caring for children and finding companionship.

1.5.1.1 TYPES OF BUSINESSES

There are many types of businesses in a free-market economy. The three most common are (1) manufacturing firms, (2) merchandisers, and (3) service enterprises.

MANUFACTURING FIRMS

Manufacturing firms produce a wide range of products. Large manufacturers include producers of airplanes, cars, computers, and furniture. Many manufacturing firms construct only parts rather than complete, finished products. These suppliers are usually smaller manufacturing firms, which supply parts and components to larger firms. The larger firms then assemble final products to sell to consumers. For example, suppliers provide many of the components in personal computers, automobiles, and home appliances to large firms that create the finished or end products. These larger end-product manufacturers are often also responsible for marketing and distributing the products. The advantage that large businesses have in being able to efficiently and inexpensively control any parts of a production process is known as economies of scale. But small manufacturing firms may work best for producing certain types of finished products. Smaller end-product firms are common in the food industry and among artisan trades such as custom cabinetry.

MERCHANDISERS

Merchandisers are businesses that help move goods through a channel of distribution—that is, the route goods take in reaching the consumer. Merchandisers may be involved in wholesaling or retailing, or sometimes both.

A wholesaler is a merchandiser who purchases goods and then sells them to buyers, typically retailers, for the purpose of resale. A retailer is a merchandiser who sells goods to consumers. A wholesaler often purchases products in large quantities and then sells smaller quantities of each product to retailers who are unable to either buy or stock large amounts

of the product. Wholesalers operate somewhat like large, end-product manufacturing firms, benefiting from economies of scale. For example, a wholesaler might purchase 5,000 pairs of work gloves and then sell 100 pairs to 50 different retailers. Some large American discount chains, such as Kmart Corporation and Wal-Mart Stores, Inc., serve as their own wholesalers. These companies go directly to factories and other manufacturing outlets, buy in large amounts and then warehouse and ship the goods to their stores.

The division between retailing and wholesaling is now being blurred by new technologies that allow retailing to become an economy of scale. Telephone and computer communications allow retailers to serve far greater numbers of customers in a given span of time than is possible in face-to-face interactions between a consumer and a retail salesperson. Computer networks such as the Internet, because they do not require any physical communication between salespeople and customers, allow a nearly unlimited capacity for sales interactions known as 24/7—that is, the Internet site can be open for a transaction 24 hours a day, seven days a week and for as many transactions as the network can handle. For example, a typical transaction to purchase a pair of shoes at a shoe store may take a half-hour from browsing, to fitting, to the transaction with a cashier. But a customer can purchase a pair of shoes through a computer interface with a retailer in a matter of seconds.

Computer technology also provides retailers with another economy of scale through the ability to sell goods without opening any physical stores, often referred to as electronic commerce or e-commerce. Retailers that provide goods entirely through Internet transactions do not incur the expense of building so-called brick-and-mortar stores or the expense of maintaining them.

SERVICE ENTERPRISES

Service enterprises include many kinds of businesses. Examples include dry cleaners, shoe repair stores, barbershops, restaurants, ski resorts, hospitals, and hotels. In many cases, service enterprises are moderately small because they do not have mechanized services and limit service to only as many individuals as they can accommodate at one time. For example, a waiter may be able to provide good service to four tables at once, but with five or more tables, customer service will suffer.

In recent years the number of service enterprises in wealthier free-market economies has grown rapidly, and spending on services now accounts for a significant percentage of all spending. By the late 1990s, private services accounted for more than 21 percent of U.S.

spending (Microsoft Encarta Premium, 2009). Wealthier nations have developed post industrial economies, where entertainment and recreation businesses have become more important than most raw material extraction such as the mining of mineral ores and some manufacturing industries in terms of creating jobs and stimulating economic growth. Many of these extractive industries have moved to developing nations, especially with the rise of large multinational corporations. As post industrial economies have accumulated wealth, they have come to support systems of leisure, in which people are willing to pay others to do things for them. In the United States, vast numbers of people work rigid schedules for long hours in indoor offices, stores, and factories. Many employers pay high enough wages so that employees can afford to balance their work schedules with purchased recreation. People in the United States, for example, support thriving travel, theme park, resort, and recreational sport businesses.

1.5.1.2 **FORMS OF BUSINESS OWNERSHIP**

There are a number of different forms of business ownership. These include (1) sole proprietorships, (2) partnerships, (3) corporations, (4) joint ventures, and (5) syndicates.

SOLE PROPRIETORSHIP

The most common form of ownership is a sole proprietorship – that is, a business owned by one individual. At the beginning of the 21st century, there were more than 17 million sole proprietorships in the United States. These businesses have the advantage of being easy to set up and to dissolve because few laws exist to regulate them. Proprietors, as owners, also maintain direct control of their businesses and own all their profits. On the other hand, owners of proprietorships are personally responsible for all business debts and, because they are constrained by the limits of their personal financial resources, they may find it difficult to expand or increase their profits. For those reasons, sole proprietorships tend to be small, primarily service and retail businesses.

PARTNERSHIP

A partnership is an association of two or more people who operate a business as co-owners. There are different types of partners. A general partner is active in the operation of a business and is liable for all of its debts. In small businesses with only two or three owners, all typically will be general partners. A limited partner, by contrast, invests in a business but is not involved in its daily operations. Partnerships, like sole proprietorships, are relatively easy to establish. Furthermore, partners can pool financial resources to fund expansion and can divide their duties and responsibilities according to personal expertise and abilities. For

example, one partner may be very good at selling, while another has a knack for maintaining good financial records. As with sole proprietorships, however, partnerships may entail substantial financial risks, as all of the general partners are liable for the debts of the business. And unlike proprietorships, disagreements among partners can harm partnership businesses.

CORPORATION

A corporation is a legal entity that exists as distinct from the individuals who control and invest in it. As a result, a corporation can continue indefinitely through complete changes of ownership, leadership, and staffing. Current owners can sell their holdings to other individuals or, if they die, have their assets transferred to heirs. This is possible because a corporation creates shares of stock that are sold to investors. One strength of the corporate business structure is that stockholders have limited liability, as opposed to the unlimited liability of general partners, so they cannot lose more than their initial investment. Investors may also easily buy and sell stocks of public corporations through stock exchanges. By offering stock publicly, a corporation enables anyone with some money to buy the stock and become a part-owner of the company. As a result, corporations can more easily raise capital for business expansion than can sole proprietorships and most partnerships.

Investors control a corporation through the election of a managing body, known as a board of directors. In a large corporation, investors collectively decide who will oversee the operation of the enterprise. In turn, the board chooses a president, who decides on the key company personnel and helps formulate company strategy.

Many corporations are highly successful business organizations, with profits far exceeding those of many sole proprietorships and partnerships. However, they traditionally have higher tax burdens than other kinds of businesses. Also, the fees involved in creating and organizing a corporation can be very high.

JOINT VENTURES AND SYNDICATES

In joint ventures and syndicates, individuals or businesses cooperate to create a single product or service package. A joint venture is a partnership agreement in which two or more individual- or group-run businesses join together to carry out a single business project. For example, U.S.-based General Motors Corporation and Toyota Motor Corporation, based in Japan, have a joint venture called New United Motor Manufacturing, Inc., created for the purpose of producing cars in California.

A syndicate is an association of individuals or corporations formed to conduct a specific financial transaction such as buying a business. Quite often syndicates are created for the purpose of buying sports franchises. For example, the Miami Heat basketball team and the New York Yankees baseball team are each owned by syndicates of individuals. Each member of these syndicates is also involved in the operation of other businesses.

1.5.1.3 BUSINESS OPERATIONS

A variety of operations keep businesses, especially large corporations, running efficiently and effectively. Common business operation divisions include (1) production, (2) marketing, (3) finance, and (4) human resource management.

PRODUCTION

Production includes those activities involved in conceptualizing, designing, and creating products and services. In recent years there have been dramatic changes in the way goods are produced. Today, computers help monitor, control, and even perform work. Flexible, high-tech machines can do in minutes what it used to take people hours to accomplish. Another important development has been the trend toward just-in-time inventory. The word inventory refers to the amount of goods a business keeps available for wholesale or retail. In just-in-time inventory, the firm stocks only what it needs for the next day or two. Many businesses rely on fast, global computer communications to allow them to respond quickly to changes in consumer demand. Inventories are thus minimized and businesses can invest more in product research, development, and marketing.

MARKETING

Marketing is the process of identifying the goods and services that consumers need and want and providing those goods and services at the right price, place, and time. Businesses develop marketing strategies by conducting research to determine what products and services potential customers think they would like to be able to purchase. Firms also promote their products and services through such techniques as advertising and personalized sales, which serve to inform potential customers and motivate them to purchase. Firms that market products for which there is always some demand, such as foods and household goods, often advertise if they face competition from other firms marketing similar products. Such products rarely need to be sold face-to-face. On the other hand, firms that market products and services that buyers will want to see, use, or better understand before buying, often rely on personalized sales. Expensive and durable goods – such as

automobiles, electronics, or furniture – benefit from personalized sales, as do legal, financial, and accounting services.

FINANCE

Finance involves the management of money. All businesses must have enough capital on hand to pay their bills, and for-profit businesses seek extra capital to expand their operations. In some cases, they raise long-term capital by selling ownership in the company. Other common financial activities include granting, monitoring, and collecting on credit or loans and ensuring that customers pay bills on time. The financial division of any business must also establish a good working relationship with a bank. This is particularly important when a business wants to obtain a loan.

HUMAN RESOURCE MANAGEMENT

Businesses rely on effective human resource management (HRM) to ensure that they hire and keep good employees and that they are able to respond to conflicts between workers and management. HRM specialists initially determine the number and type of employees that a business will need over its first few years of operation. They are then responsible for recruiting new employees to replace those who leave and for filling newly created positions. A business's HRM division also trains or arranges for the training of its staff to encourage worker productivity, efficiency, and satisfaction, and to promote the overall success of the business. Finally, human resource managers create workers' compensation plans and benefit packages for employees.

BUSINESS IN A FREE MARKET ECONOMY

The economy of the United States, Nigeria, as well as that of most developed nations, operates according to the principles of the free market. This differs from the economies of Socialist or Communist countries, where governments play a strong role in deciding what goods and services will be produced, how they will be distributed, and how much they will cost. Businesses in free-market economies benefit from certain fundamental rights or freedoms. All people in free-market societies have the right to own, use, buy, sell, or give away property, thus permitting them to own and operate their own businesses as private, profit-seeking enterprises. Business owners in free markets may choose to run their businesses however they like, within the limits of other, mostly non-business-oriented laws. This right gives businesses the authority to hire and fire employees, invest money, purchase machinery and equipment, and choose the markets where they want to operate. In doing

so, however, they may not violate or infringe on the rights of other businesses and people. Free-market businesses also have the right to keep or reinvest their profits.

All free-market economies, however, keep the rights of businesses in check to some degree through laws and regulations that monitor business activities. Such laws vary from country to country, but they generally encourage competition by protecting small businesses and consumers from being hurt by more powerful, large enterprises. For example, in the United States the Sherman Antitrust Act, enacted in 1890, and the Clayton Antitrust Act of 1914 forbid business agreements that impede interstate and most international commerce. The Clayton Antitrust Act also protects against unfair business practices aimed at creating monopolies and guarantees the rights of labour to challenge management practices perceived as unfair. The U.S. Federal Trade Commission Act of 1914 prohibits businesses from attempting to control the prices of its products or services, among other provisions. Other laws prohibit mergers that decrease competition within an industry and require large merging companies to notify the Federal Trade Commission (FTC) for approval [1].

1.5.2   MANAGEMENT

Management, in all business and organizational activities, is the art of getting people together to accomplish desired goals and objectives using available resources efficiently and effectively. Management comprises planning, organizing, staffing, leading or directing, and controlling an organization (a group of two or more people or entities) or effort for the purpose of accomplishing a goal. Resources encompass the deployment and manipulation of human resources, financial resources, technological resources and natural resources.

Because organizations can be viewed as systems, management can also be defined as human action, including design, to facilitate the production of useful outcomes from a system. This view opens the opportunity to 'manage' oneself, a pre-requisite to attempting to manage others.

The verb manage comes from the Italian maneggiare (to handle – especially tools), which in turn derives from the Latin manus (hand). The French word mesnagement (later ménagement) influenced the development in meaning of the English word management in the 15th and 16th centuries [2].

Other definitions of management are:

Organization and coordination of the activities of an enterprise in accordance with certain policies and in achievement of clearly defined objectives. Management is often included as a

factor of production along with machines, materials and money. According to the management guru Peter Drucker (1909–2005), the basic task of a management is twofold: marketing and innovation.

Directors and managers have the power and responsibility to make decisions to manage an enterprise. As a discipline, management comprises the interlocking functions of formulating corporate policy and organizing, planning, controlling, and directing the firm's resources to achieve the policy's objectives. The size of management can range from one person in a small firm to hundreds or thousands of managers in multinational companies. In large firms the board of directors formulates the policy which is implemented by the chief executive officer [3].

1.5.3 SYSTEM

System is any collection of component elements that work together to perform a task. In computer science, system is used in a variety of contexts. A computer is a hardware system consisting of a microprocessor and allied chips and circuitry, plus an input device (keyboard, mouse, disk drive), an output device (monitor, disk drive), and any peripheral devices (printer, modem). Within this hardware system is an operating system, often called system software, which is an essential set of programs that manage hardware and data files and work with application programs. External to the computer, system also refers to any collection or combination of programs, procedures, data, and equipment utilized in processing information: an accounting system, a billing system, a database management system [4].

1.5.4 SOFTWARE

Software is a set of instructions that tell a computer what to do. Software comprises the entire set of programs, procedures, and routines associated with the operation of a computer system. The term was coined to differentiate these instructions from hardware which is the physical components of a computer system. A set of instructions that directs a computer's hardware to perform a task is called a program, or software program.

The two main types of software are system software and application software. System software controls a computer's internal functioning, chiefly through an operating system, and also controls such peripherals as monitors, printers, and storage devices. Application software, by contrast, directs the computer to execute commands given by the user and

may be said to include any program that processes data for a user. Application software thus includes word processors, spreadsheets, database management, inventory and payroll programs, and many other applications. A third software category is that of network software, which coordinates communication between the computers linked in a network.

Software is typically stored on an external long-term memory device, such as a hard drive or magnetic diskette. When the program is in use, the computer reads it from the storage device and temporarily places the instructions in random access memory (RAM). The process of storing and then performing the instructions is called "running," or "executing," a program. By contrast, software programs and procedures that are permanently stored in a computer's memory using a read-only (ROM) technology are called firmware, or "hard software". Software which was once a mysterious sparkle in the hardware engineer's eye has now been democratized, and its applications in the modern digital world seem infinite [5].

1.6   PROJECT OVERVIEW

In the introductory chapter of this work, a background to the study was discussed as well as the problems were stated. Significance of the study together with the limitation of the study was also put forward. Finally, an elaborate definition of key terms as they apply to the study was carried out.

The second chapter offered the opportunity for the review of important literature in the study. The first section was for business management followed by software development while a review of existing business management softwares was done in the last section.

The different methods adopted to ensure the successful realisation of this study were discussed in the third chapter. This encompassed the research method, the design and the build methods.

Chapter four took care of the implementation of the Business Management System Software. The programming languages used were discussed in the first section. The second section explained the coding while the third section handled the graphical user interface. The server and the network concluded this chapter.

The concluding chapter enumerated the results emanating from testing the Business Management System Software and also the discussion of results. Summary, conclusion and suggestions for further work formed the final sections.

CHAPTER ONE: INTRODUCTION

1.1   BACKGROUND TO THE STUDY

Beyond reasonable doubt, effective and efficient human existence is not possible without food, shelter and clothing. In order to provide these essential necessities, man involves himself in different activities. Such activities could generally be referred to as business.

Businesses have evolved over time since the creation of man. From fruit gathering through hunting to the present day 'white collar jobs', man strives to fulfil basic necessities required to sustain life. But as he tries to provide these necessities, he is faced with different business managerial challenges.

These business managerial challenges include accounting, human resources management, financial management, business operations management and customer resources management.

Because these business management challenges are human problems, engineers are faced with providing lasting solutions in order to make life better. Various attempts have been made to tackle these problems but there are areas that are either overlooked or tackled less unsatisfactorily. In This project, the researcher attempts to solve this problem using software development strategy.

This Business Management System Software is designed to provide effective Business management tool for individuals and corporate bodies. Specifically, the thesis targets small scale businesses. It will also include new features and innovation to existing business software packages.

1.5   STATEMENT OF THE PROBLEM

There are some challenges facing business establishments. These could be represented as requisitions, export, budget, operations, staff discipline, salary and emoluments, promotions, transfers etc.

- **Requisitions:**   These represent what come into the establishment. They include employee recruitment, raw materials, customer requests etc. The challenges that are noticed at this point are over invoicing, insufficient materials, etc.
- **Export:** During service to customers, fraudulent sales staff gives excess goods to costumers they like thereby liquidating the company. Some even remove the company's property without due approval.

- **Budget:** Budget challenges are not always problematic since the excesses are usually carried forward to the next fiscal year while for deficits; supplementary budgets are made to take care of inadequacies.

- **Operations:** These challenges manifest more often with field work staff. Cases abound where they are paid lodging allowances more than three times the actual amount, some do not visit the work site on time. In the office, information flow, reaction or feedback of customers and members of staff are also problematic.

- **Staff Discipline:** In most establishments, staff punctuality have become a big problem. For example, staff that have the duty of opening offices by 0800 hours report for duty by 0900 hours. The challenge created here is that staff daily input is not adequate compared to their salary/wages.

- **Staff Salary and Emoluments:** Staff salary challenges are of different forms: 1. Omitted members of Staff; 2. Incorrect pay cheque; 3. Double salary for a staff for one duration; 4 Ghost workers, etc. Other problems include late or non payment of incentives, leave allowance, gratuity and pension for retired members of staff and death benefit for dead members of staff.

- **Promotion:**   Problems with promotion include delayed promotion, favouritism in promotion etc.

- **Transfers:**   Transfer of members of staff is carried out to meet up with lagging human resources in a particular section or department in the industry. The problem here is that some members of staff are transferred to areas where they do not have the knowledge to work efficiently. Some are either over or under qualified for the vacant position.

1.6   SIGNIFICANCE OF THE STUDY

It is expected that at the realisation of the Business Management System Software, it will be possible to counter these managerial challenges experienced in Business ventures by:

7. Increasing the profit margin of any company that makes use of the software.
8. Reducing operational cost for companies using the software.
9. Increasing the efficiency and productivity of both manpower and machinery.
10. Promoting discipline, loyalty and respect among employees and their employers.
11. Creating virtual office for employee and customer access anytime, anywhere.
12. Providing more conducive and enabling environment for higher turnover in any given business venture.

1.7   LIMITATION OF THE STUDY

The Business Management System Software is designed specifically for all business classes; whether small scale, medium scale or large scale. It is also expected to be applied in different forms of business like Manufacturing, Merchandising, Service Delivery and so on, but the researcher has limited it to small scale merchandising industry that is managed by about ten administrators, having between twenty to fifty members of staff, selling limited number of items and have about five branches.

1.5   CONTEXTUAL DEFINITION

1.5.1   **BUSINESS**

Business is an organized approach to providing customers with the goods and services they want. The word business also refers to an organization that provides these goods and services. Most businesses seek to make a profit – that is, they aim to achieve revenues that exceed the costs of operating the business. Prominent examples of for-profit businesses include Mitsubishi Group, Shoprite, Innoson Limited, Chitis Limited, General Motors Corporation, Ibeto Group, Microsoft Corporation, and Royal Dutch/Shell Group. However, some businesses only seek to earn enough to cover their operating costs. Commonly called nonprofits, these organizations are primarily non-governmental service providers. Examples of non-profit businesses include such organizations as social service agencies, foundations, advocacy groups, and many hospitals.

Business plays a vital role in the life and culture of countries with industrial and post-industrial (service- and information-based) free-market economies such as the United States and Nigeria. In free-market systems, prices and wages are primarily determined by competition, not by governments. In the United States, for example, 73 percent of the

people buy and sell goods and services as their primary occupations. In 2001 American companies sold in excess of $10 trillion worth of goods and services (Microsoft Encarta Premium, 2009). Businesses provide just about anything consumers want or need, including basic necessities such as food and housing, luxuries such as whirlpool baths and wide-screen televisions, and even personal services such as caring for children and finding companionship.

1.5.1.1 TYPES OF BUSINESSES

There are many types of businesses in a free-market economy. The three most common are (1) manufacturing firms, (2) merchandisers, and (3) service enterprises.

MANUFACTURING FIRMS

Manufacturing firms produce a wide range of products. Large manufacturers include producers of airplanes, cars, computers, and furniture. Many manufacturing firms construct only parts rather than complete, finished products. These suppliers are usually smaller manufacturing firms, which supply parts and components to larger firms. The larger firms then assemble final products to sell to consumers. For example, suppliers provide many of the components in personal computers, automobiles, and home appliances to large firms that create the finished or end products. These larger end-product manufacturers are often also responsible for marketing and distributing the products. The advantage that large businesses have in being able to efficiently and inexpensively control any parts of a production process is known as economies of scale. But small manufacturing firms may work best for producing certain types of finished products. Smaller end-product firms are common in the food industry and among artisan trades such as custom cabinetry.

MERCHANDISERS

Merchandisers are businesses that help move goods through a channel of distribution—that is, the route goods take in reaching the consumer. Merchandisers may be involved in wholesaling or retailing, or sometimes both.

A wholesaler is a merchandiser who purchases goods and then sells them to buyers, typically retailers, for the purpose of resale. A retailer is a merchandiser who sells goods to consumers. A wholesaler often purchases products in large quantities and then sells smaller quantities of each product to retailers who are unable to either buy or stock large amounts

of the product. Wholesalers operate somewhat like large, end-product manufacturing firms, benefiting from economies of scale. For example, a wholesaler might purchase 5,000 pairs of work gloves and then sell 100 pairs to 50 different retailers. Some large American discount chains, such as Kmart Corporation and Wal-Mart Stores, Inc., serve as their own wholesalers. These companies go directly to factories and other manufacturing outlets, buy in large amounts and then warehouse and ship the goods to their stores.

The division between retailing and wholesaling is now being blurred by new technologies that allow retailing to become an economy of scale. Telephone and computer communications allow retailers to serve far greater numbers of customers in a given span of time than is possible in face-to-face interactions between a consumer and a retail salesperson. Computer networks such as the Internet, because they do not require any physical communication between salespeople and customers, allow a nearly unlimited capacity for sales interactions known as 24/7—that is, the Internet site can be open for a transaction 24 hours a day, seven days a week and for as many transactions as the network can handle. For example, a typical transaction to purchase a pair of shoes at a shoe store may take a half-hour from browsing, to fitting, to the transaction with a cashier. But a customer can purchase a pair of shoes through a computer interface with a retailer in a matter of seconds.

Computer technology also provides retailers with another economy of scale through the ability to sell goods without opening any physical stores, often referred to as electronic commerce or e-commerce. Retailers that provide goods entirely through Internet transactions do not incur the expense of building so-called brick-and-mortar stores or the expense of maintaining them.

SERVICE ENTERPRISES

Service enterprises include many kinds of businesses. Examples include dry cleaners, shoe repair stores, barbershops, restaurants, ski resorts, hospitals, and hotels. In many cases, service enterprises are moderately small because they do not have mechanized services and limit service to only as many individuals as they can accommodate at one time. For example, a waiter may be able to provide good service to four tables at once, but with five or more tables, customer service will suffer.

In recent years the number of service enterprises in wealthier free-market economies has grown rapidly, and spending on services now accounts for a significant percentage of all spending. By the late 1990s, private services accounted for more than 21 percent of U.S.

spending (Microsoft Encarta Premium, 2009). Wealthier nations have developed post industrial economies, where entertainment and recreation businesses have become more important than most raw material extraction such as the mining of mineral ores and some manufacturing industries in terms of creating jobs and stimulating economic growth. Many of these extractive industries have moved to developing nations, especially with the rise of large multinational corporations. As post industrial economies have accumulated wealth, they have come to support systems of leisure, in which people are willing to pay others to do things for them. In the United States, vast numbers of people work rigid schedules for long hours in indoor offices, stores, and factories. Many employers pay high enough wages so that employees can afford to balance their work schedules with purchased recreation. People in the United States, for example, support thriving travel, theme park, resort, and recreational sport businesses.

1.5.1.2 **FORMS OF BUSINESS OWNERSHIP**

There are a number of different forms of business ownership. These include (1) sole proprietorships, (2) partnerships, (3) corporations, (4) joint ventures, and (5) syndicates.

SOLE PROPRIETORSHIP

The most common form of ownership is a sole proprietorship – that is, a business owned by one individual. At the beginning of the 21st century, there were more than 17 million sole proprietorships in the United States. These businesses have the advantage of being easy to set up and to dissolve because few laws exist to regulate them. Proprietors, as owners, also maintain direct control of their businesses and own all their profits. On the other hand, owners of proprietorships are personally responsible for all business debts and, because they are constrained by the limits of their personal financial resources, they may find it difficult to expand or increase their profits. For those reasons, sole proprietorships tend to be small, primarily service and retail businesses.

PARTNERSHIP

A partnership is an association of two or more people who operate a business as co-owners. There are different types of partners. A general partner is active in the operation of a business and is liable for all of its debts. In small businesses with only two or three owners, all typically will be general partners. A limited partner, by contrast, invests in a business but is not involved in its daily operations. Partnerships, like sole proprietorships, are relatively easy to establish. Furthermore, partners can pool financial resources to fund expansion and can divide their duties and responsibilities according to personal expertise and abilities. For

example, one partner may be very good at selling, while another has a knack for maintaining good financial records. As with sole proprietorships, however, partnerships may entail substantial financial risks, as all of the general partners are liable for the debts of the business. And unlike proprietorships, disagreements among partners can harm partnership businesses.

CORPORATION

A corporation is a legal entity that exists as distinct from the individuals who control and invest in it. As a result, a corporation can continue indefinitely through complete changes of ownership, leadership, and staffing. Current owners can sell their holdings to other individuals or, if they die, have their assets transferred to heirs. This is possible because a corporation creates shares of stock that are sold to investors. One strength of the corporate business structure is that stockholders have limited liability, as opposed to the unlimited liability of general partners, so they cannot lose more than their initial investment. Investors may also easily buy and sell stocks of public corporations through stock exchanges. By offering stock publicly, a corporation enables anyone with some money to buy the stock and become a part-owner of the company. As a result, corporations can more easily raise capital for business expansion than can sole proprietorships and most partnerships.

Investors control a corporation through the election of a managing body, known as a board of directors. In a large corporation, investors collectively decide who will oversee the operation of the enterprise. In turn, the board chooses a president, who decides on the key company personnel and helps formulate company strategy.

Many corporations are highly successful business organizations, with profits far exceeding those of many sole proprietorships and partnerships. However, they traditionally have higher tax burdens than other kinds of businesses. Also, the fees involved in creating and organizing a corporation can be very high.

JOINT VENTURES AND SYNDICATES

In joint ventures and syndicates, individuals or businesses cooperate to create a single product or service package. A joint venture is a partnership agreement in which two or more individual- or group-run businesses join together to carry out a single business project. For example, U.S.-based General Motors Corporation and Toyota Motor Corporation, based in Japan, have a joint venture called New United Motor Manufacturing, Inc., created for the purpose of producing cars in California.

A syndicate is an association of individuals or corporations formed to conduct a specific financial transaction such as buying a business. Quite often syndicates are created for the purpose of buying sports franchises. For example, the Miami Heat basketball team and the New York Yankees baseball team are each owned by syndicates of individuals. Each member of these syndicates is also involved in the operation of other businesses.

1.5.1.3 BUSINESS OPERATIONS

A variety of operations keep businesses, especially large corporations, running efficiently and effectively. Common business operation divisions include   (1) production, (2) marketing, (3) finance, and (4) human resource management.

PRODUCTION

Production includes those activities involved in conceptualizing, designing, and creating products and services. In recent years there have been dramatic changes in the way goods are produced. Today, computers help monitor, control, and even perform work. Flexible, high-tech machines can do in minutes what it used to take people hours to accomplish. Another important development has been the trend toward just-in-time inventory. The word inventory refers to the amount of goods a business keeps available for wholesale or retail. In just-in-time inventory, the firm stocks only what it needs for the next day or two. Many businesses rely on fast, global computer communications to allow them to respond quickly to changes in consumer demand. Inventories are thus minimized and businesses can invest more in product research, development, and marketing.

MARKETING

Marketing is the process of identifying the goods and services that consumers need and want and providing those goods and services at the right price, place, and time. Businesses develop marketing strategies by conducting research to determine what products and services potential customers think they would like to be able to purchase. Firms also promote their products and services through such techniques as advertising and personalized sales, which serve to inform potential customers and motivate them to purchase. Firms that market products for which there is always some demand, such as foods and household goods, often advertise if they face competition from other firms marketing similar products. Such products rarely need to be sold face-to-face. On the other hand, firms that market products and services that buyers will want to see, use, or better understand before buying, often rely on personalized sales. Expensive and durable goods – such as

automobiles, electronics, or furniture – benefit from personalized sales, as do legal, financial, and accounting services.

FINANCE

Finance involves the management of money. All businesses must have enough capital on hand to pay their bills, and for-profit businesses seek extra capital to expand their operations. In some cases, they raise long-term capital by selling ownership in the company. Other common financial activities include granting, monitoring, and collecting on credit or loans and ensuring that customers pay bills on time. The financial division of any business must also establish a good working relationship with a bank. This is particularly important when a business wants to obtain a loan.

HUMAN RESOURCE MANAGEMENT

Businesses rely on effective human resource management (HRM) to ensure that they hire and keep good employees and that they are able to respond to conflicts between workers and management. HRM specialists initially determine the number and type of employees that a business will need over its first few years of operation. They are then responsible for recruiting new employees to replace those who leave and for filling newly created positions. A business's HRM division also trains or arranges for the training of its staff to encourage worker productivity, efficiency, and satisfaction, and to promote the overall success of the business. Finally, human resource managers create workers' compensation plans and benefit packages for employees.

BUSINESS IN A FREE MARKET ECONOMY

The economy of the United States, Nigeria, as well as that of most developed nations, operates according to the principles of the free market. This differs from the economies of Socialist or Communist countries, where governments play a strong role in deciding what goods and services will be produced, how they will be distributed, and how much they will cost. Businesses in free-market economies benefit from certain fundamental rights or freedoms. All people in free-market societies have the right to own, use, buy, sell, or give away property, thus permitting them to own and operate their own businesses as private, profit-seeking enterprises. Business owners in free markets may choose to run their businesses however they like, within the limits of other, mostly non-business-oriented laws. This right gives businesses the authority to hire and fire employees, invest money, purchase machinery and equipment, and choose the markets where they want to operate. In doing

so, however, they may not violate or infringe on the rights of other businesses and people. Free-market businesses also have the right to keep or reinvest their profits.

All free-market economies, however, keep the rights of businesses in check to some degree through laws and regulations that monitor business activities. Such laws vary from country to country, but they generally encourage competition by protecting small businesses and consumers from being hurt by more powerful, large enterprises. For example, in the United States the Sherman Antitrust Act, enacted in 1890, and the Clayton Antitrust Act of 1914 forbid business agreements that impede interstate and most international commerce. The Clayton Antitrust Act also protects against unfair business practices aimed at creating monopolies and guarantees the rights of labour to challenge management practices perceived as unfair. The U.S. Federal Trade Commission Act of 1914 prohibits businesses from attempting to control the prices of its products or services, among other provisions. Other laws prohibit mergers that decrease competition within an industry and require large merging companies to notify the Federal Trade Commission (FTC) for approval [1].

1.5.3   MANAGEMENT

Management, in all business and organizational activities, is the art of getting people together to accomplish desired goals and objectives using available resources efficiently and effectively. Management comprises planning, organizing, staffing, leading or directing, and controlling an organization (a group of two or more people or entities) or effort for the purpose of accomplishing a goal. Resources encompass the deployment and manipulation of human resources, financial resources, technological resources and natural resources.

Because organizations can be viewed as systems, management can also be defined as human action, including design, to facilitate the production of useful outcomes from a system. This view opens the opportunity to 'manage' oneself, a pre-requisite to attempting to manage others.

The verb manage comes from the Italian maneggiare (to handle – especially tools), which in turn derives from the Latin manus (hand). The French word mesnagement (later ménagement) influenced the development in meaning of the English word management in the 15th and 16th centuries [2].

Other definitions of management are:

Organization and coordination of the activities of an enterprise in accordance with certain policies and in achievement of clearly defined objectives. Management is often included as a

factor of production along with machines, materials and money. According to the management guru Peter Drucker (1909–2005), the basic task of a management is twofold: marketing and innovation.

Directors and managers have the power and responsibility to make decisions to manage an enterprise. As a discipline, management comprises the interlocking functions of formulating corporate policy and organizing, planning, controlling, and directing the firm's resources to achieve the policy's objectives. The size of management can range from one person in a small firm to hundreds or thousands of managers in multinational companies. In large firms the board of directors formulates the policy which is implemented by the chief executive officer [3].

1.5.3   SYSTEM

System is any collection of component elements that work together to perform a task. In computer science, system is used in a variety of contexts. A computer is a hardware system consisting of a microprocessor and allied chips and circuitry, plus an input device (keyboard, mouse, disk drive), an output device (monitor, disk drive), and any peripheral devices (printer, modem). Within this hardware system is an operating system, often called system software, which is an essential set of programs that manage hardware and data files and work with application programs. External to the computer, system also refers to any collection or combination of programs, procedures, data, and equipment utilized in processing information: an accounting system, a billing system, a database management system [4].

1.5.5   SOFTWARE

Software is a set of instructions that tell a computer what to do. Software comprises the entire set of programs, procedures, and routines associated with the operation of a computer system. The term was coined to differentiate these instructions from hardware which is the physical components of a computer system. A set of instructions that directs a computer's hardware to perform a task is called a program, or software program.

The two main types of software are system software and application software. System software controls a computer's internal functioning, chiefly through an operating system, and also controls such peripherals as monitors, printers, and storage devices. Application software, by contrast, directs the computer to execute commands given by the user and

may be said to include any program that processes data for a user. Application software thus includes word processors, spreadsheets, database management, inventory and payroll programs, and many other applications. A third software category is that of network software, which coordinates communication between the computers linked in a network.

Software is typically stored on an external long-term memory device, such as a hard drive or magnetic diskette. When the program is in use, the computer reads it from the storage device and temporarily places the instructions in random access memory (RAM). The process of storing and then performing the instructions is called "running," or "executing," a program. By contrast, software programs and procedures that are permanently stored in a computer's memory using a read-only (ROM) technology are called firmware, or "hard software". Software which was once a mysterious sparkle in the hardware engineer's eye has now been democratized, and its applications in the modern digital world seem infinite [5].

1.6   PROJECT OVERVIEW

In the introductory chapter of this work, a background to the study was discussed as well as the problems were stated. Significance of the study together with the limitation of the study was also put forward. Finally, an elaborate definition of key terms as they apply to the study was carried out.

The second chapter offered the opportunity for the review of important literature in the study. The first section was for business management followed by software development while a review of existing business management softwares was done in the last section.

The different methods adopted to ensure the successful realisation of this study were discussed in the third chapter. This encompassed the research method, the design and the build methods.

Chapter four took care of the implementation of the Business Management System Software. The programming languages used were discussed in the first section. The second section explained the coding while the third section handled the graphical user interface. The server and the network concluded this chapter.

The concluding chapter enumerated the results emanating from testing the Business Management System Software and also the discussion of results. Summary, conclusion and suggestions for further work formed the final sections.

CHAPTER THREE: **METHODOLOGY**

3.1   RESEARCH METHOD

This Business Management System Software was achieved by:

a. Making use of the general library.

b. Consulting the Internet.

c. Making use of special libraries e.g. Business Management Library, IEEE Resource Library, etc.

d. Learning different software programming languages.

e. Meeting Experts in the field of Software Development and Business Management.

f. Meeting different cadre of staff in a given industry. Etc.

3.2   DESIGN METHOD

The methodology that was employed in the design of Business Management System Software is the evolutionary design method. This design method is used for systems that are not currently in existence and is done in stages and requires continuous iteration. First is the inception stage, where enumeration and collection of data required in building the system is made. The second stage requires the design parameters for the software and selection of the appropriate programming language(s). In the third stage, the programs are written, and then in the fourth stage, testing, debugging and confirmation is made that the program is running. At the final stage, the hardware are configured and tested. This method is represented in fig. 3.1.
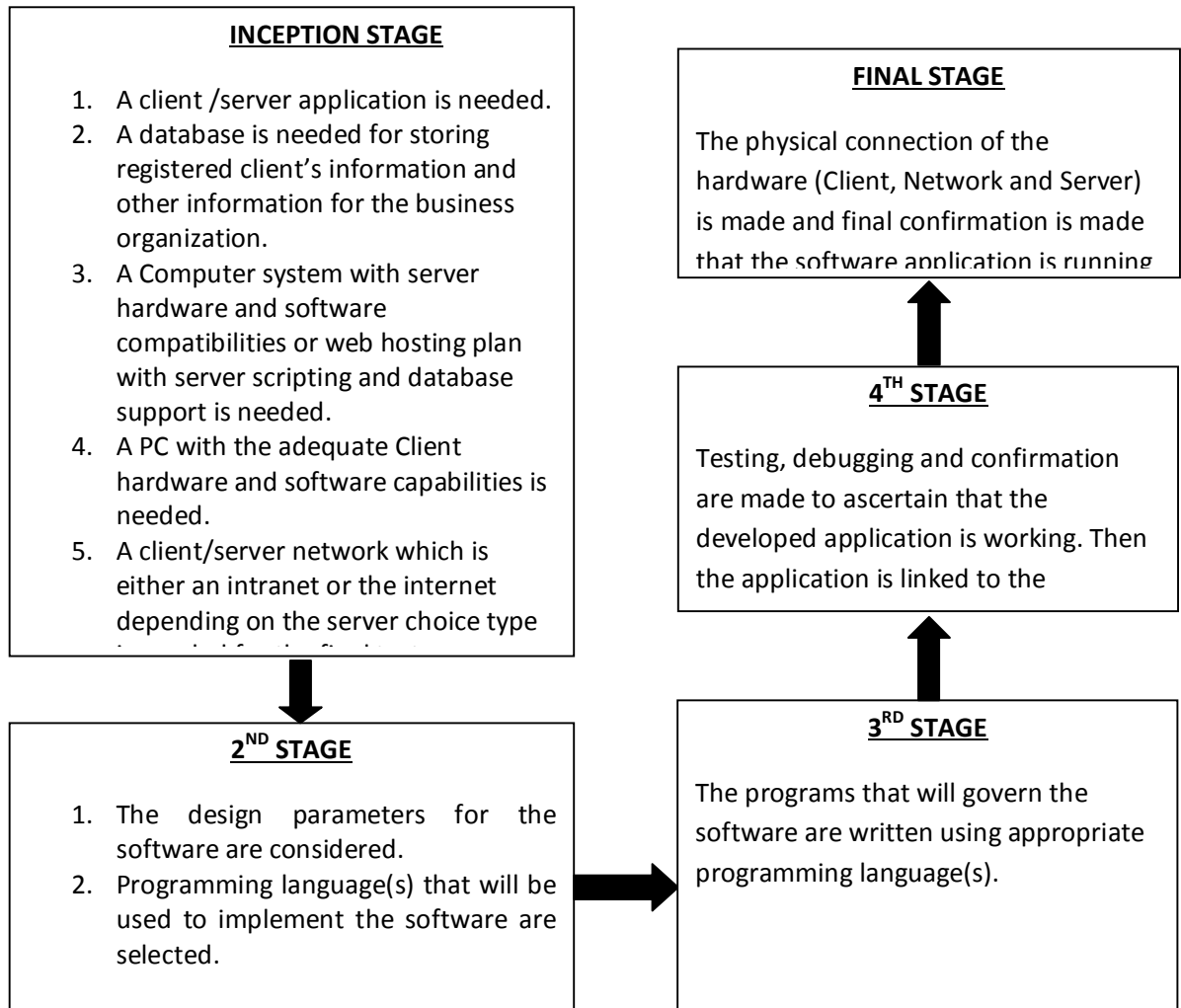
INCEPTION STAGE

1. A client /server application is needed.
2. A database is needed for storing registered client's information and other information for the business organization.
3. A Computer system with server hardware and software compatibilities or web hosting plan with server scripting and database support is needed.
4. A PC with the adequate Client hardware and software capabilities is needed.
5. A client/server network which is either an intranet or the internet depending on the server choice type

2ᴺᴰ STAGE

1. The design parameters for the software are considered.
2. Programming language(s) that will be used to implement the software are selected.

3ᴿᴰ STAGE

The programs that will govern the software are written using appropriate programming language(s).

4ᵀᴴ STAGE

Testing, debugging and confirmation are made to ascertain that the developed application is working. Then the application is linked to the

FINAL STAGE

The physical connection of the hardware (Client, Network and Server) is made and final confirmation is made that the software application is running

Fig 3.1 Diagram of the Evolutionary design method.

3.3   BUILD METHOD

For the user operations, a Personal Computer or Telephone that serves as the Data Terminal Equipment (DTE) with client hardware and software capabilities is connected directly or indirectly to the network where the server resides. Installed on the server would be the Business Management System Software application with server software to respond to and process the client/server requests. The server passively waits for request from the client PCs (the users). Once client/server request is initiated by the client, the request is received by the server which then passes it up to the application with the help of the server software capabilities. The application handles all the processing needed to be done for the transaction, such as user authentication, implementing the business rules, manipulating the user request, querying the database to retrieve the required information or to update the user information and determining the output for the request response. The application then passes down the output for the request response, with the aid of the server software capabilities, which reaches the user via the network.

3.3.1   THE SOFTWARE SYSTEM BLOCK DIAGRAM

Block diagram is a diagram of a system, in which the principal parts or functions are represented by blocks connected by lines that show the relationships of the blocks. They are heavily used in the engineering world in hardware design, electronic design, software design, and process flow diagrams.

The block diagram is typically used for a higher level, less detailed description aimed more at understanding the overall concepts and less at understanding the details of implementation. Directed lines are used to connect input variables to function inputs, function outputs to output variables, and function outputs to inputs of other functions. These blocks portray mathematical or logical operations that occur in time sequence. They do not represent the physical entities, such as processors or relays that perform those operations. Each block is therefore a black box.
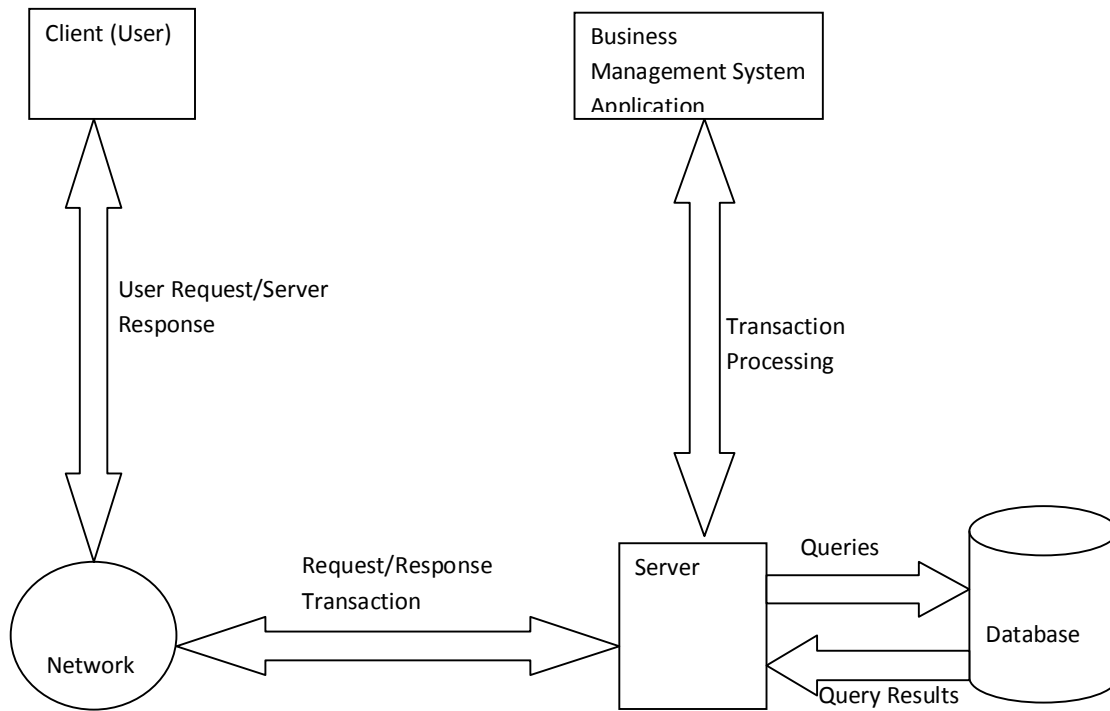
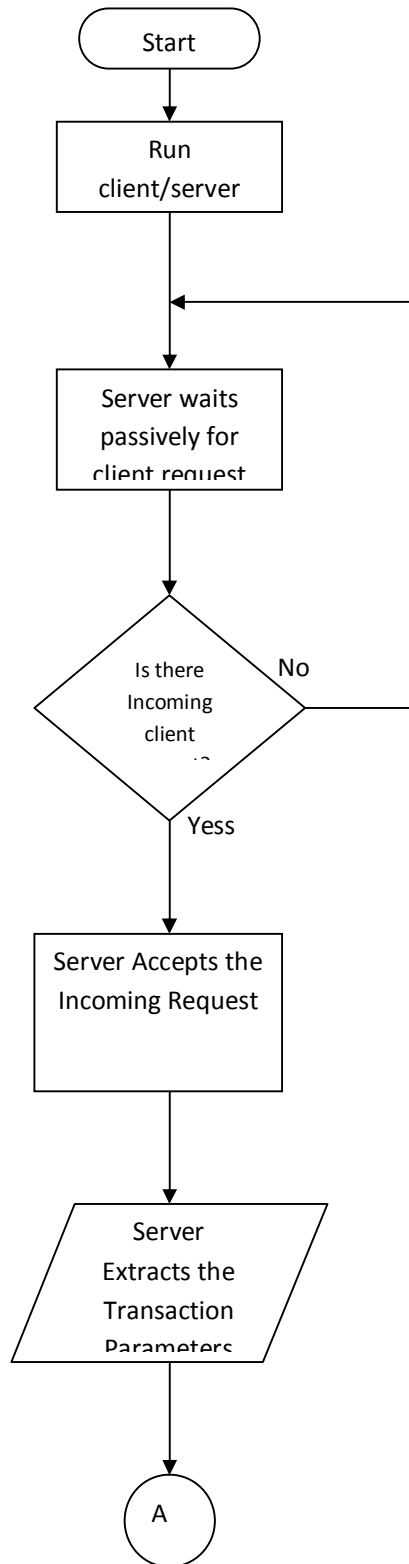**Fig 3.2**   Block diagram of the business management system

From the block diagram of the Business Management System Software represented in fig. 3.2, the arrows indicate how the client initiates requests through the network to the server. The server in turn processes the requests and grants access to the Business Management System for the client. The server equally sends queries to the database and retrieves query results for the client.

3.3.2   THE SOFTWARE SYSTEM FLOW CHART

A flowchart is a type of diagram that represents an algorithm or process, showing the steps as boxes of various kinds, and their order by connecting these with arrows. This diagrammatic representation can give a step-by-step solution to a given problem. Process operations are represented in these boxes, and arrows connecting them represent flow of control. Data flows are not typically represented in a flowchart, in contrast with data flow diagrams; rather, they are implied by the sequencing of operations. Flowcharts are used in analyzing, designing, documenting or managing a process or program in various fields.

Flowcharts are used in designing and documenting complex processes or programs. Like other types of diagram, they help visualize what is going on and thereby help the viewer to understand a process, and perhaps also find flaws, bottlenecks, and other less-obvious features within it. There are many types of flowcharts, and each type has its own collection of boxes and notational conventions. The two most common types of boxes in a flowchart are:

- a processing step, usually called activity, and denoted as a rectangular box, and
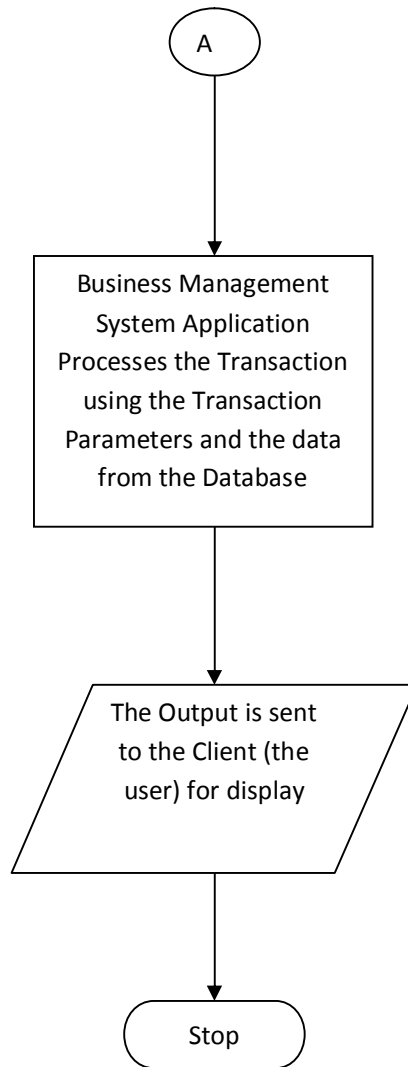- a decision, usually denoted as a diamond.

```
            ┌─────────┐
            │  Start  │
            └────┬────┘
                 │
          ┌──────▼──────┐
          │     Run     │
          │ client/server│
          └──────┬──────┘
                 │
                 │◄──────────────┐
          ┌──────▼──────┐        │
          │ Server waits │        │
          │ passively for│        │
          │ client request│       │
          └──────┬──────┘        │
                 │               │
               ◇─┴─◇    No       │
              ◇ Is there ◇───────┘
              ◇ Incoming ◇
              ◇  client  ◇
               ◇──┬──◇
                  │ Yess
          ┌───────▼───────┐
          │ Server Accepts the│
          │ Incoming Request │
          └───────┬───────┘
                  │
            ╱─────▼─────╲
            │  Server    │
            │ Extracts the│
            │ Transaction │
            │ Parameters  │
            ╲───────────╱
                  │
               ┌──▼──┐
               │  A  │
               └─────┘
```

Fig. 3.3 Flowchart of the business management system

The flowchart of fig. 3.3 shows how instructions and activities are serviced in the business management system software. Once the software is called up on the network, the client/server system is initiated. The server then waits for the client request. If a request is made, the server accepts the request provided that the request conforms to the specified and expected information. If the   request does not conform or that no request is made, the server remains in a passive wait state.   When   the   server   accepts   the incoming request, it extracts the proper transaction parameters. Immediately the parameters are extracted, the Business Management System Software application processes the transaction using the data that is available in the database. After the transaction is processed, the output is sent to the client (the user) for display and further necessary action.

The sphere labelled 'A' is inserted to provide continuity of the flowchart.

3.3.3   **SYSTEM REQUIREMENTS**

These requirements will be considered under two sub-headings namely:

- Hardware specification
- Software specification

3.3.3.1 HARDWARE SPECIFICATIONS

1. Any system with a Pentium II grade processor or above would be adequate for the client and the server respectively. Telephones that have internet browsing capability can also be used for the client.
2. The Client would require a 256MB of RAM and the server would require 1GB of RAM or above respectively.
3. This system would need a Client/Server network with the necessary TCP/IP protocols (HTTP, FTP, SMTP, etc) for a reliable request/response transaction.

3.3.3.2 SOFTWARE SPECIFICATIONS

1. The server must run on a Windows Operating System if WAMP server software is installed, or on a Linux Operating System if LAMP server software is installed or an operating system that supports a web plan with PHP/MYSQL capabilities.
2. The Client must run an internet browser that is compatible with the installed operating system (Microsoft Windows Explorer, Mozilla Firefox, etc).
3. The operating system of both the client and the server must be configured to enable TCP/IP protocols like HTTP, FTP, SMTP, etc.

CHAPTER FOUR: **IMPLEMENTATION**

4.1 THE PROGRAMMING LANGUAGES

The Business Management System Software was implemented using different programming languages. This is because the software product has different aspects: it is designed to reside and run on a network, must have database, server and client interaction. The major language used is hypertext pre-processor (PHP). Other languages include; Javascript, Cascading Style Sheets (CSS), and Hypertext Markup Language (HTML). These languages were provided as a bundle package for web based development kit by Macromedia Dreamweaver version 8.

The Database software ó Structured Query Language (SQL) provided as MySQL was the WAMP 5 server software version 1.7.0.

The implementation of the Business Management System Software was done using Hypertext Pre-processor (PHP) because of its convenience, because it can be hosted in the internet and is easy to deploy over other programming languages. Java, Microsoft .NET languages (VB.NET, C#, C++.NET, etc) and some general server scripting languages like ASP, Cold Fusion, Perl, Python, etc are also recommended for the request/response capability needed for the client/server application. Like most scripting languages, PHP is specific for implementing applications hosted on a HTTP site in a client/server network because most mobile devices run HTTP files.

PHP language was selected because of the various advantages it offers for building solutions to problems specified in this project. Some of these advantages are elaborated below.

Ease of function call and data type compatibility: Since scripting languages are loosely-typed (able to store any data in any variable), it is easy to manipulate data and make function call within a PHP program than in strongly-typed languages like java, VB.NET, C++.NET, C#, etc. This simply implies that data can be assigned to variables, parameter values supplied during function calls and properties of classes set or retrieved neglecting data type compatibility. Data structure simplicity is also a very important reason why PHP is best suited for session maintenance, data source handling, etc.

Portability and source code security: Most server technologies support PHP as a server scripting language. Therefore, as an interpreted language, it can be ported to any target machine as far as the server hardware and software requirements are met. PHP is also an

embedded scripting language enabling it to work within an HTML document (which integrates other documents like JavaScript, XML, and CSS) to confer to it the capacity of generating content on demand. This means that both the client and server aspect of the application are treated as one portable entity. The generated content excludes the PHP source code. This ensures source code security and protects the business rules.

Speed: The PHP scripting engine is well optimized for the response times needed on request/response applications; it can even be part of web server and database server integrated together improving the throughput even more. If it were only a matter of improving the speed of the scripts, then PHP will be one of many solutions.

The speed of information processing and database accesses in this application is an essential key. Some systems adopting this software may access the server remotely with the user on a separate machine. Since latency is involved due to the network and traffic in network, one can further appreciate the need for fast information fetching and processing which leaves us with no other alternative but PHP language.

Seamless Integration of Technologies of choice: The major technologies integrated in this project are AJAX (asynchronous request/response), MySQL (database) and Expat (XML) technologies for backend data connectivity. These technologies are implemented in various languages which can be source integrated with PHP. The choice of this language is strategic since it would then ease code integration.

4.2 THE CODING

4.2.1 BACKEND DATA CONNECTIVITY

AJAX: This is used for requesting the server for page updates without reloading the entire page. This is integrated in pages where some part of the page is updated independent of the other. The code responsible for this can be found as appendix 1 of this thesis.

4.2.2 USER IDENTIFICATION

To identify a user, at least, the user ID and the group ID are to be available during the request/response transaction. The stateless nature of HTTP transaction could have been a major setback. Passing cookies around at each successive HTTP request was considered but it was discovered that the application would malfunction if the user disables the client browser from accepting cookies. A better approach was to take advantage of session

maintenance feature of PHP. The code is included in any page where the user would be identified. This code is represented as appendix 2 of this thesis.

4.2.3   USER AUTHENTICATION

At each HTTP request, the server application detects the user type and would redirect the user to the appropriate page if need be. This code is included in any page where the user would be identified and authenticated. The code for this action is represented as appendix 3.

4.2.3   USER LOGIN

Whenever the user requests for information that is confidential to a certain group in the business organization, s/he is authenticated and may be redirected to the login page to supply his/her user identity in order to have the requested information. The code that handles the user login is represented as appendix 4 of this thesis.

4.2.4   USER REGISTRATION

Depending on the privileges granted to users by the administrator of the business organization, users may be allowed to register with the organization to have an account. This enables the users to procure user data needed for user login. This code for user registration is seen as appendix 5.

4.2.5   USER MEMBERSHIP

Users can be migrated from one user group to another depending on the requirements of the business organization. The department, the sector or the role of the user determines the user group. The code used to implement this migration is appendix 6.

4.2.6   USER GROUPS HIERARCHY

In order to create the functional structure of the business organization, user groups are ordered hierarchically. The child groups inherit all the features of the parent group and the ancestors. These features are passed down to the descendants in the hierarchy. Appendix 7 represents this code.

4.2.7   USER GROUPS ACCESS PRIVILEGES

These privileges define the functional features of a user group. The overall functional features of the business organization are defined by the collective features of the user groupsø access

privileges. These features are passed down the hierarchy. These access privileges determine the resources that can be accessed by a user group and how such resources are accessed. These resources include accounts, memos, news postings, forums, usersø data (profiles), pricelists, payments, Administrative tools, etc. This feature is represented in appendix 8.

Other features were also taken care of. They are included in the appendices as well.

4.3   THE GRAPHICS USER INTERFACE

The applicationøs user interface is based on GUI. This enhances user interactivity and offers a better experience for the user of the application.

The demonstrations in figures 4.1 ó 4.18 show the major characteristics of the Business Management Systems Software.
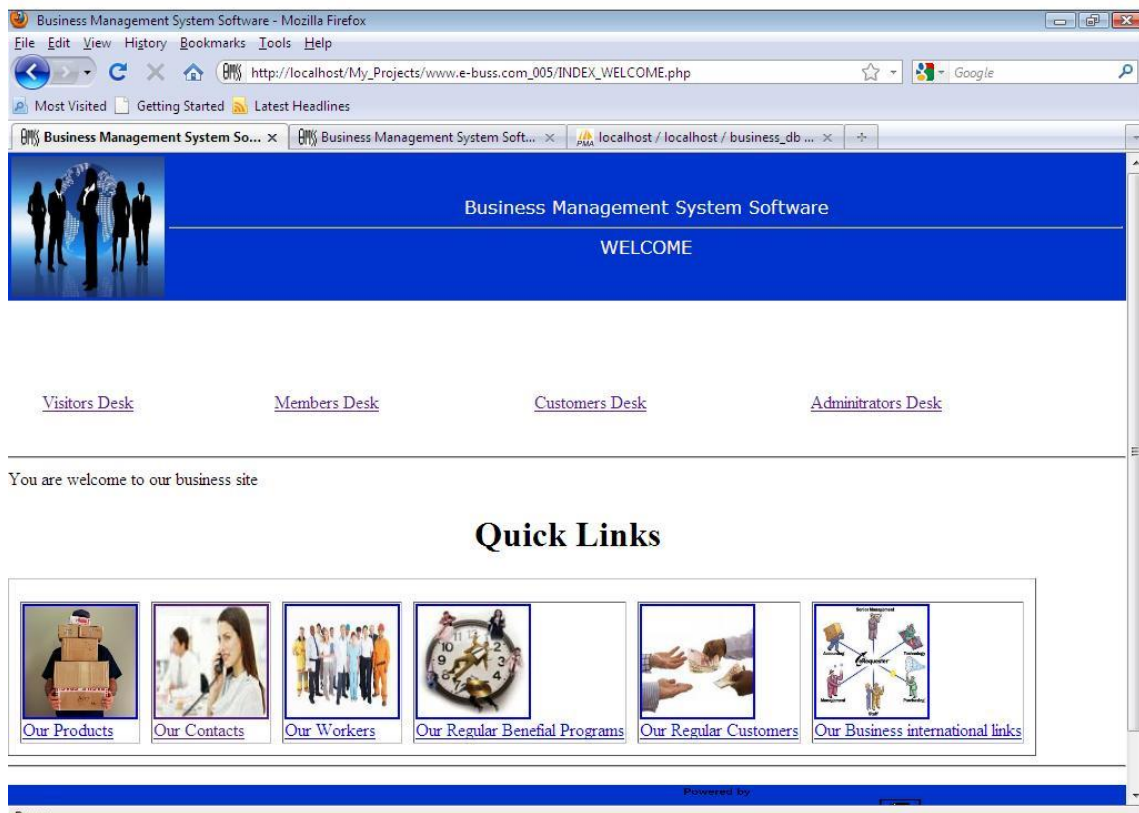
Fig 4.1   The Welcome page

The welcome page is the first page that appears when the address – www.e-buss.com_005 is input into the URL of a web browser like Microsoft internet explorer or Mozilla Firefox and the enter key pressed or the GO icon clicked. From this page, direct link to visitor's desk, Member's desk, Customer's desk and Administrator's desk are made. There is also direct link

to products, Contacts, Members of staff, Company's programs, Registered customers and International Branches' links.
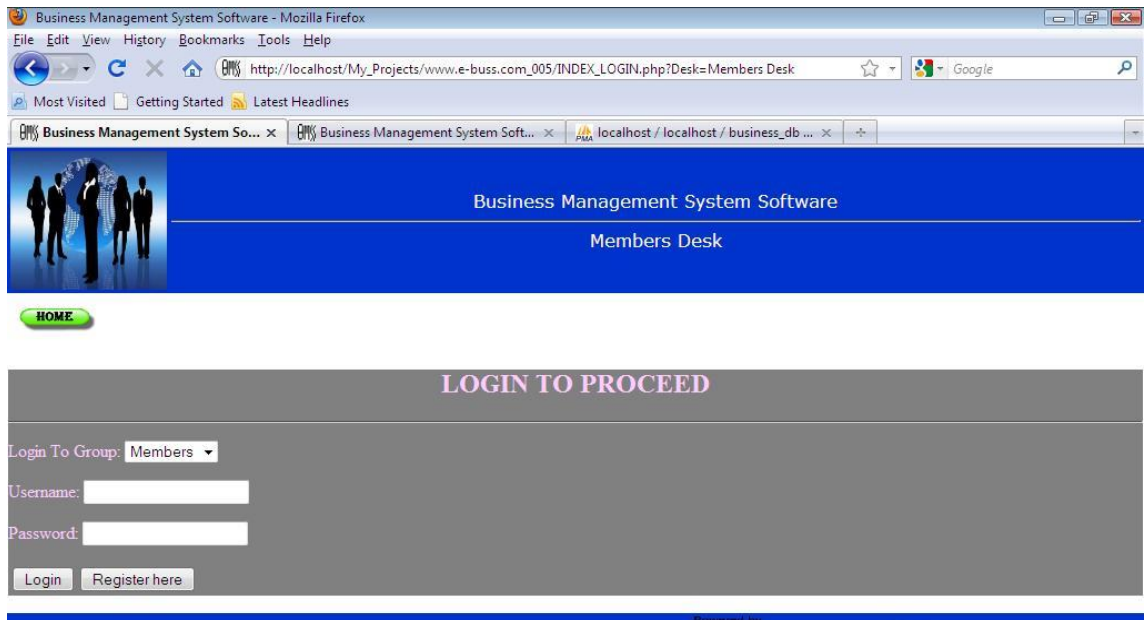
Fig 4.2   Login page

The login page is designed as a secure page that only those with approved username and passwords will be granted access to other sections of the software.
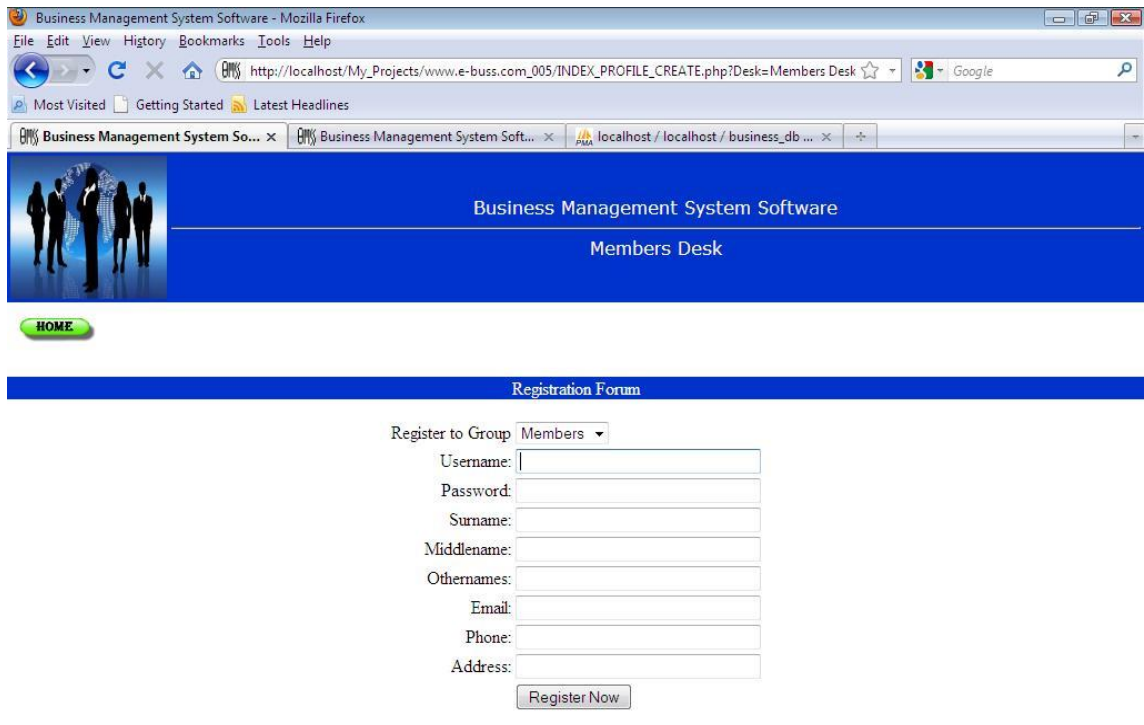

Fig 4.3   Registration Page

The registration page above is used by the Human Resources Department to register new members of staff as well as customers. The register to group icon is used to specify the class of membership an individual will be registered to. The default class is members after which

the member may be migrated to customers or administrator or any other department the company desires.
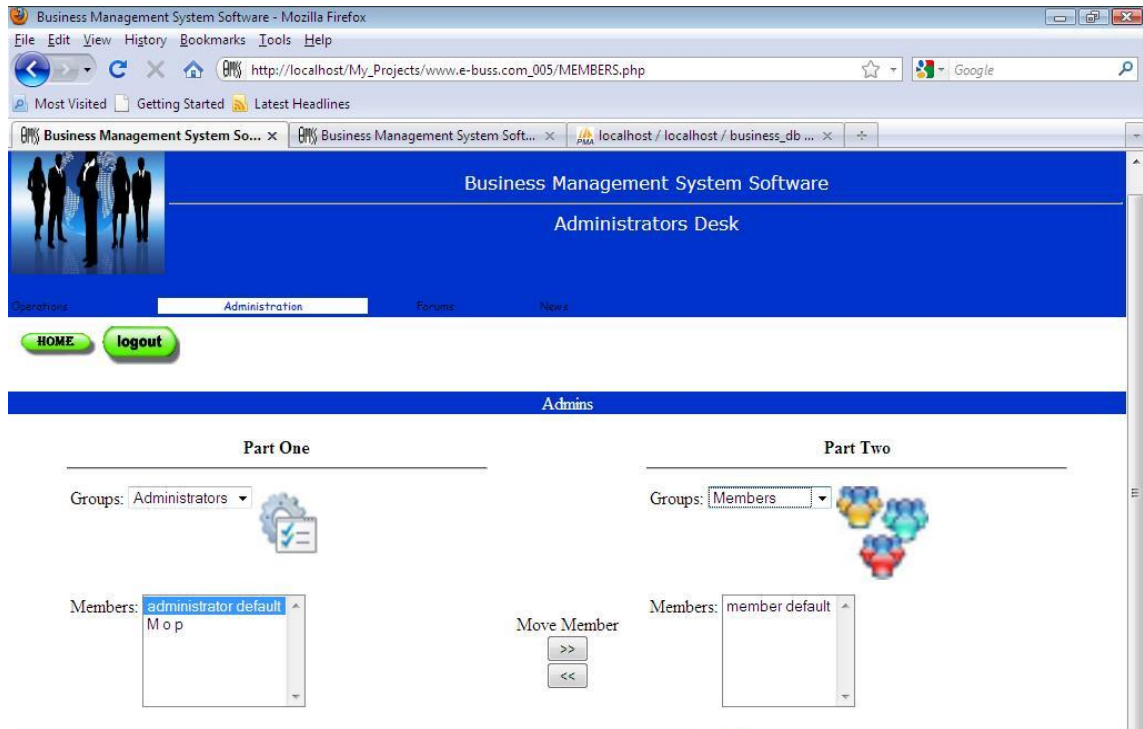

Fig 4.4   User Migration page

User migration page is also used by the Human resources department to carry out transfer of staff as and when due. Part one specifies the original location of the member to be transferred while part two specifies the target location for the member transferred. Transfer may also be done from part two to part one.
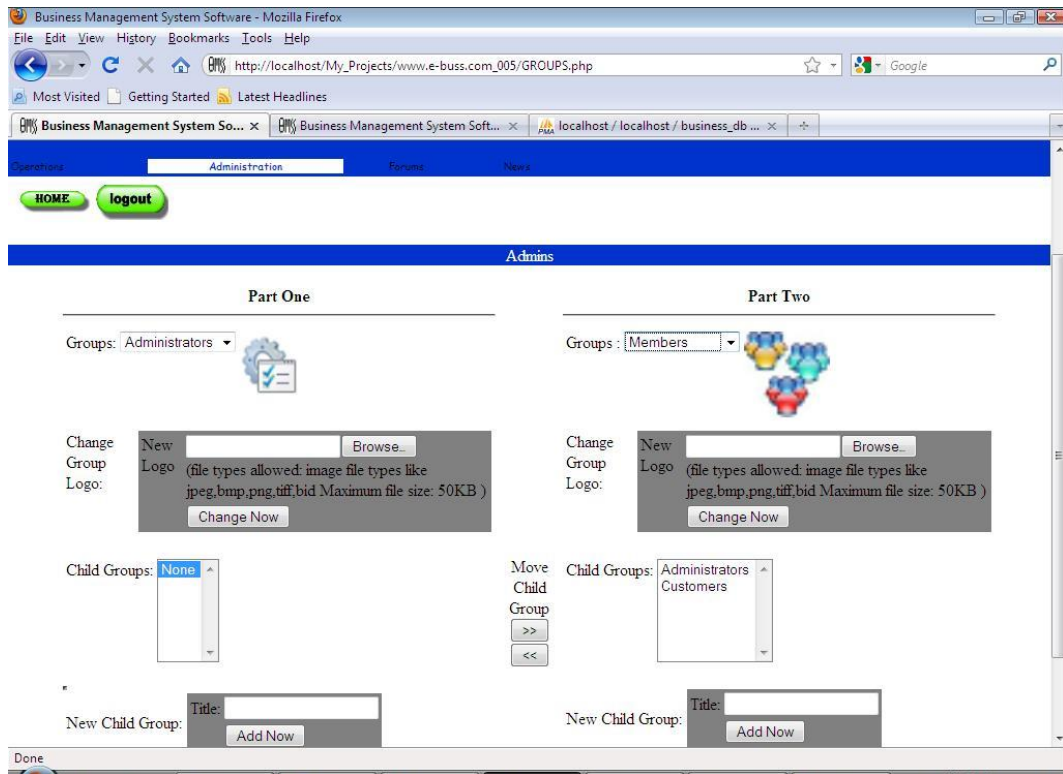
Fig 4.5   User Groups Hierarchy Page

User groups' hierarchy page is used to effect promotions in the company. The child groups define the cadre of office a particular staff is on. For instance, a manager may be on level 13 step 05 while another manager may be on level 13 step 08.
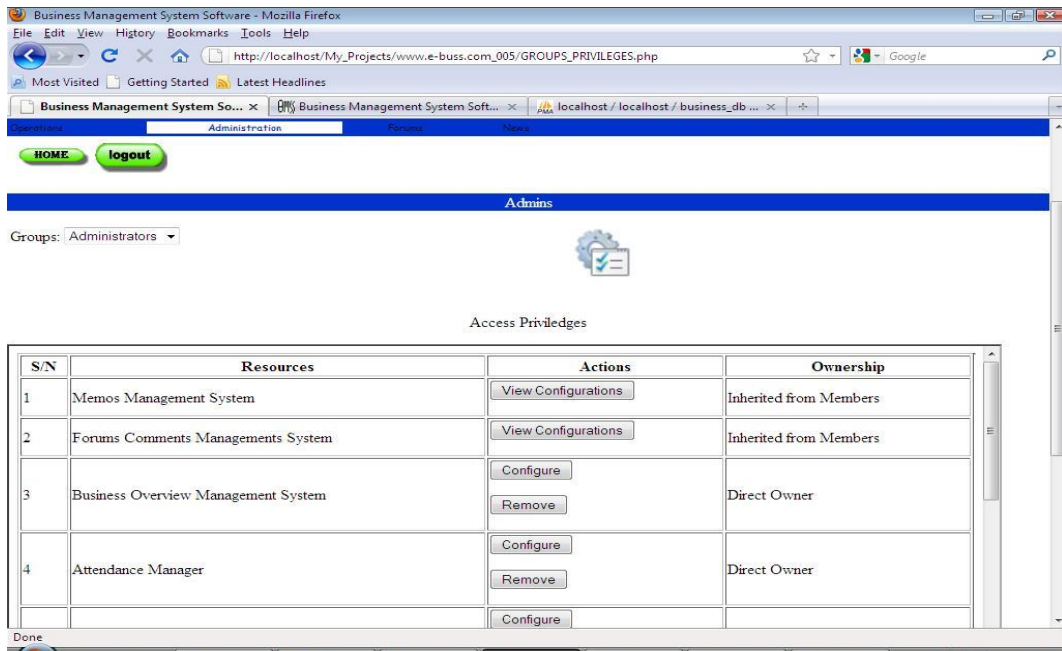
Fig 4.6   Groups Access Privilege page

The groups access privilege page is used to define what is available to a particular group of staff. Administrators have access to all the sections of the software, Members and customers have limited sections they can access while visitors can only access few sections.
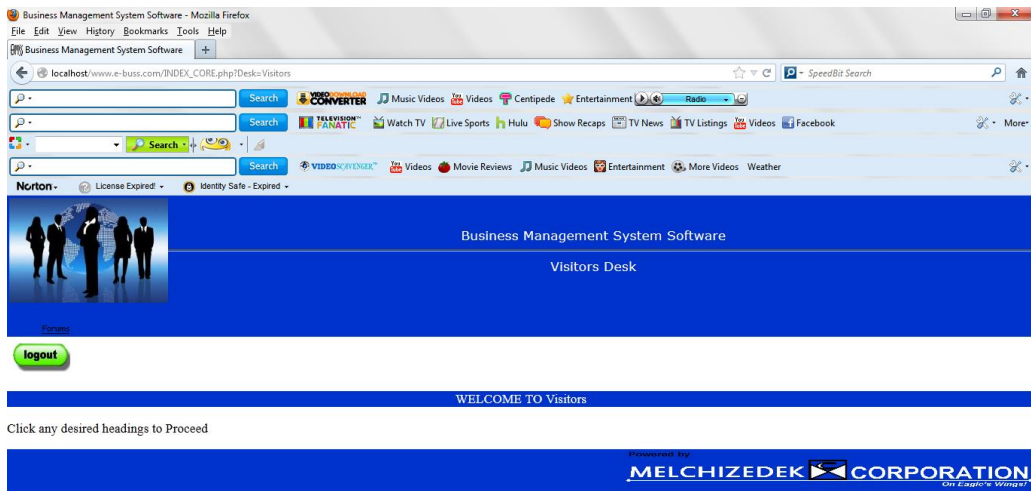

Fig 4.7   Visitors Desk

The visitor to the company can only access the forums section. He can read what is on the forums page.
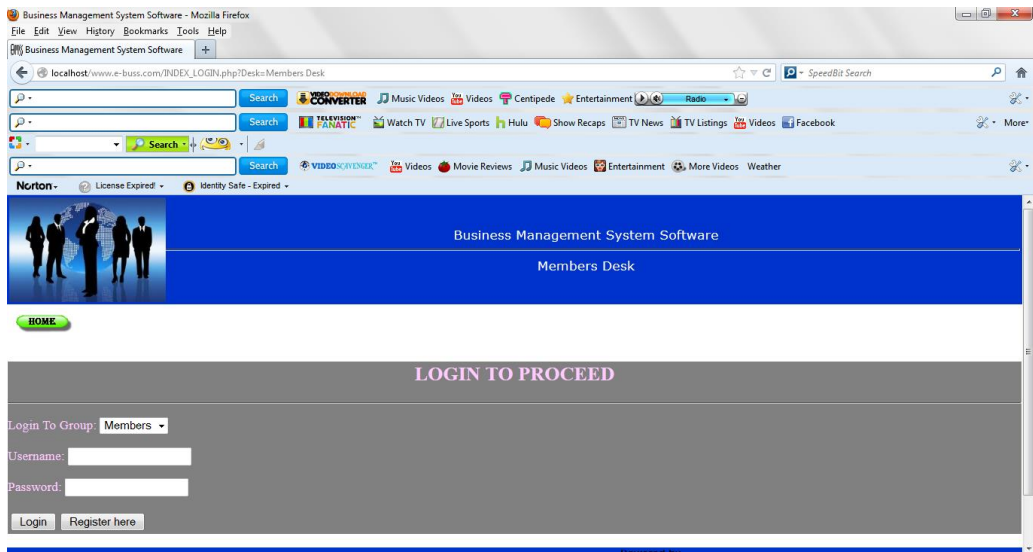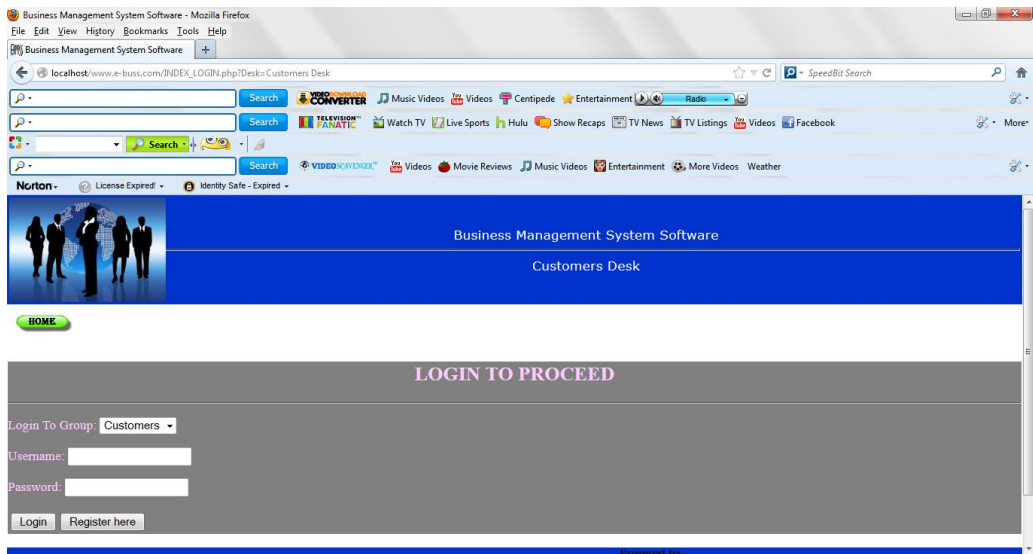
Fig 4.8   Members Desk
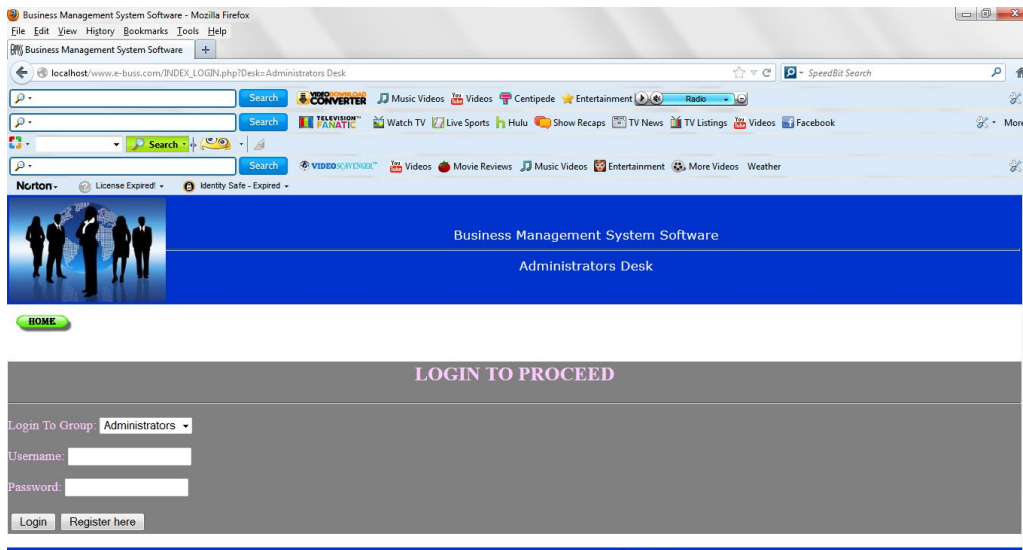

Fig 4.9   Customers Desk

Fig 4.10   Administrators Desk

Members, Customers and Administrators desk provide direct access to their sections after they have input username and password adequately.
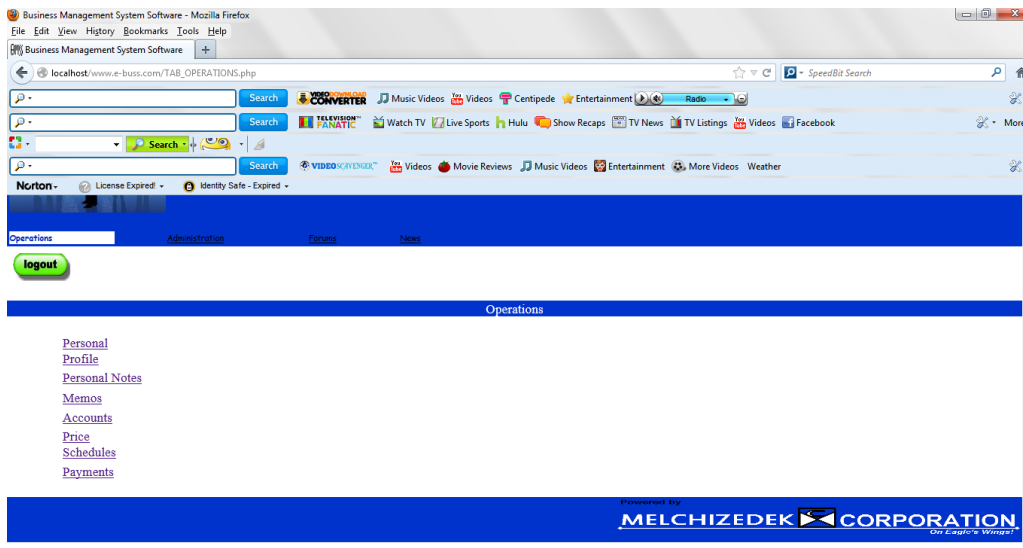
Fig 4.11   Operations Page

The operations page is available to Administrators only and provides access to pages for personal profile, personal notes, memos, accounts, price schedules and payments.
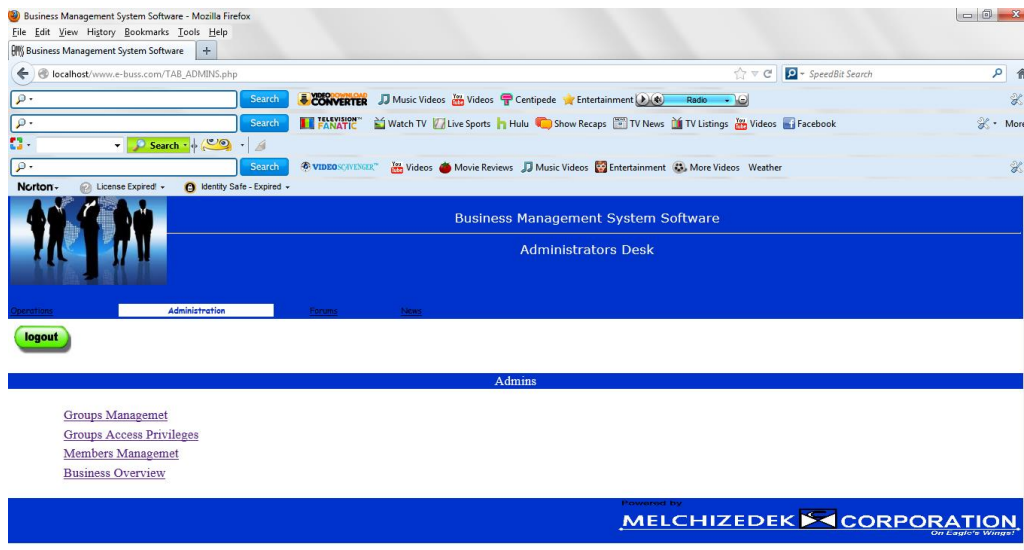
Fig 4.12   Administration Page

The administrations page provides access to groups management, groups access privileges, members management and business overview.
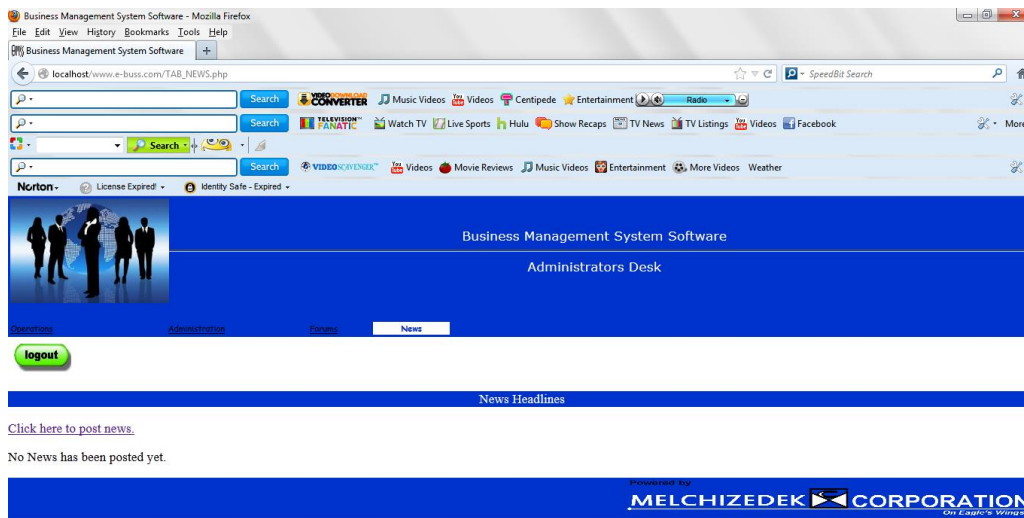
Fig 4.13   News Page

The news page is used to report events in the company. Administrators and Members have access to read the news and post comments.
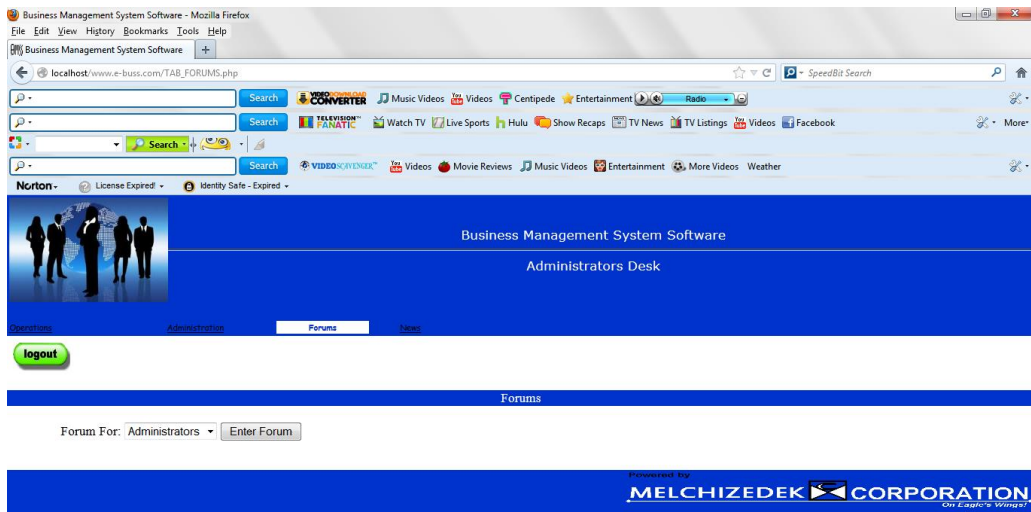
Fig 4.14   Forums Page

The forums page provides avenue for interaction between the company and other individuals.
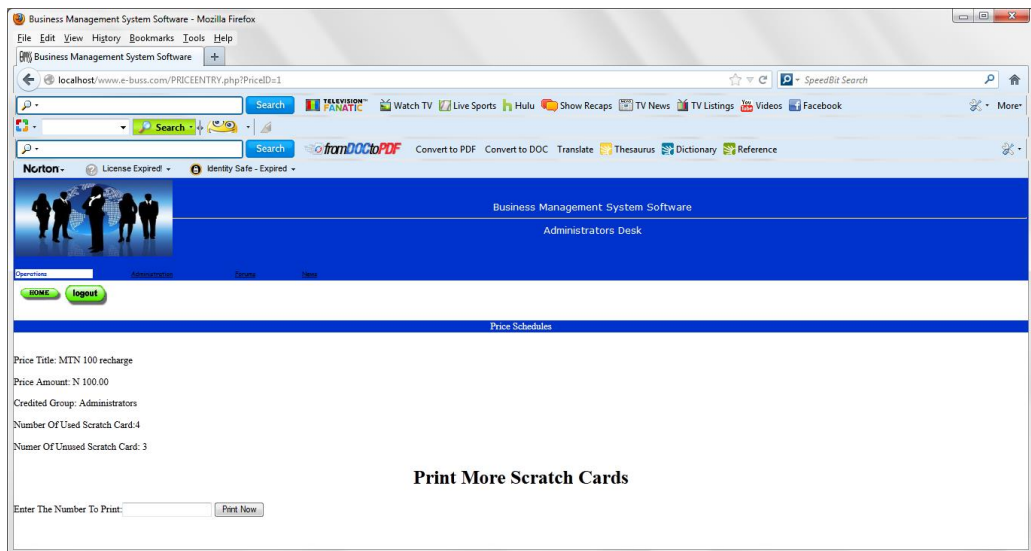
Fig 4.15   Price schedule page

The price schedules page is used by the accounts and marketing to specify the price for any of the company's products and services.
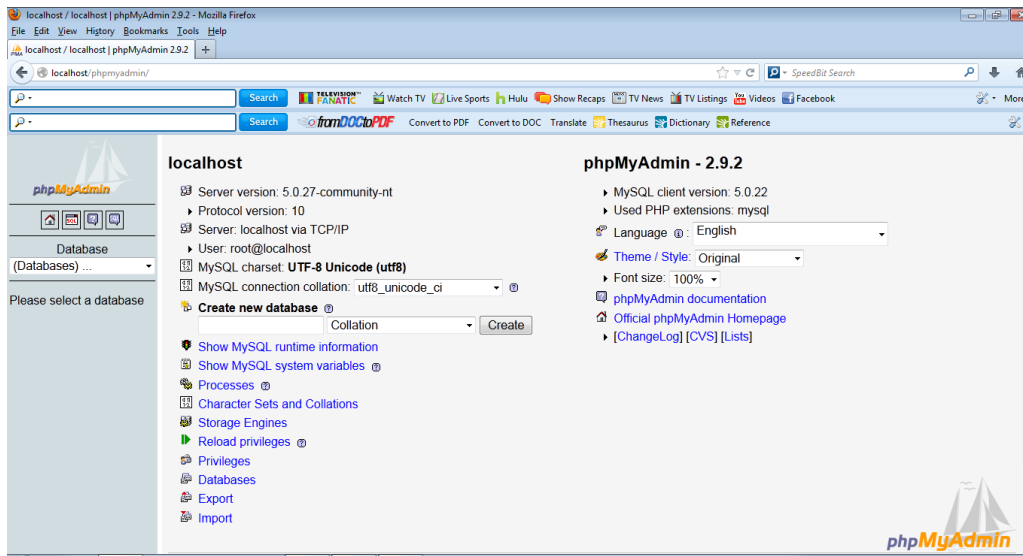
Fig 4.16   Localhost page for Database

In order to access the database, the localhost Page here must be opened. Thereafter, the required section of the database could be accessed. This is usually done off line (when the server is not connected to the internet or any other network).
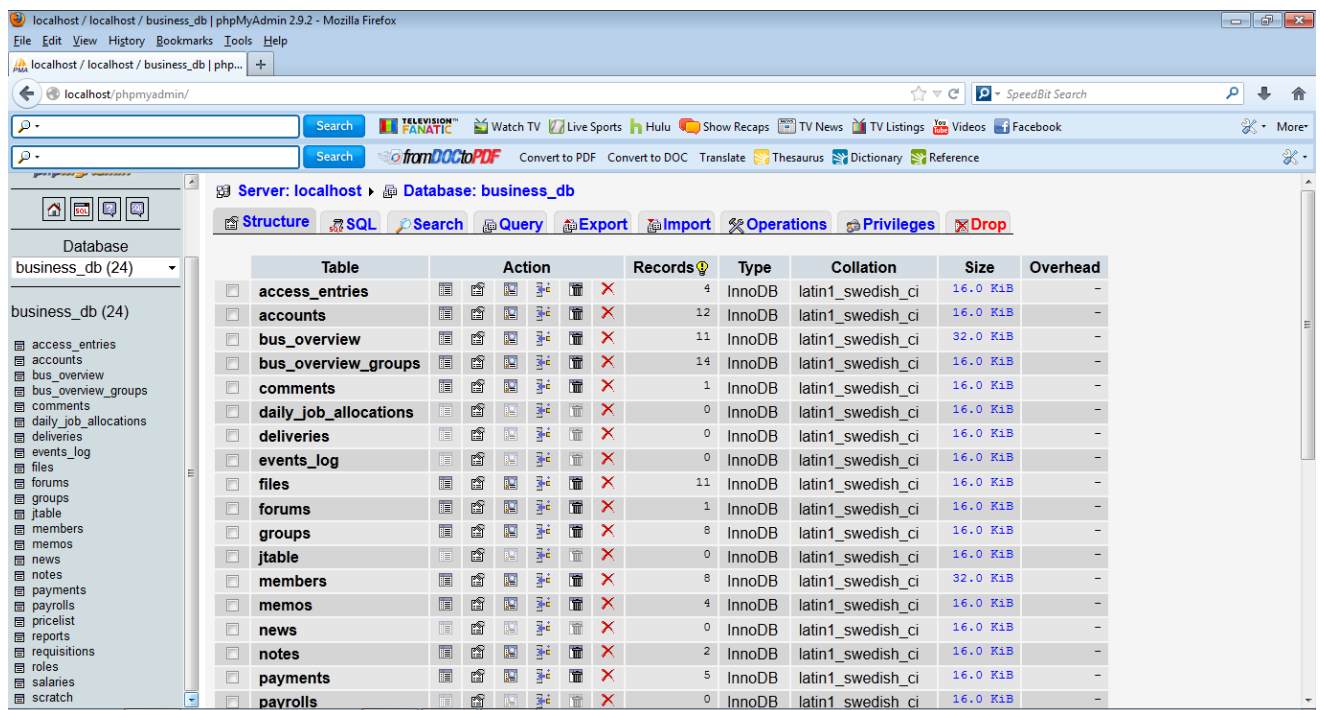
Fig 4.17   Database (a)
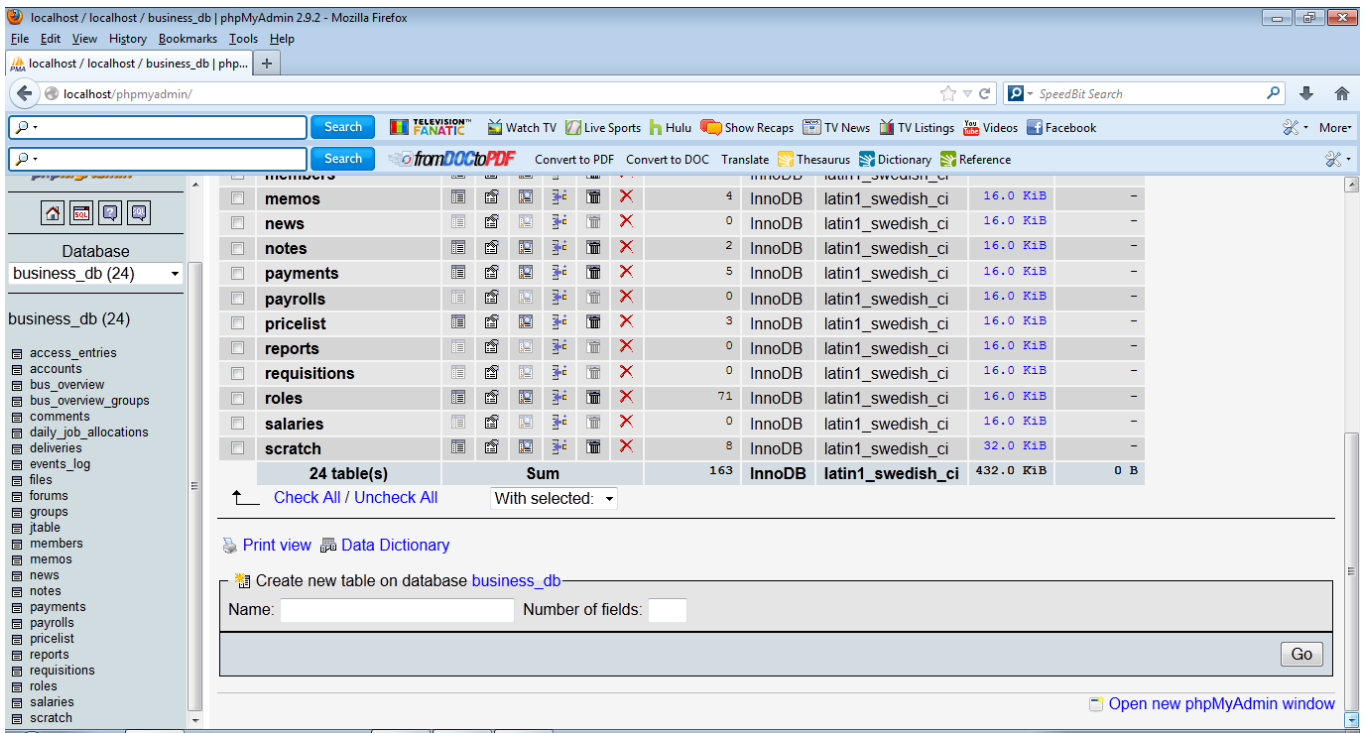
Fig 4.18   Database (b)

This page (partitioned into two) shows a list of the resources of the business management system software. It is usually the Business owner that has access to the database.

4.4 THE SERVER

This application has two set of servers: HTTP server and Database server. Since the function of the application is central in the sense that it is a multi-user application, it has to be hosted on a HTTP server. This enables it to be available to the users across the network. The Database server is for the backend data connectivity. The Database server is queried on demand by the application during execution.

At the HTTP server, the application runs on a native server module called Apache Server Module. This server module provides an optimum security needed for the application. Although a new engine to deliver better performance, greater reliability and scalability, support other than Apache is now available. This new engine is only compatible with the application when it is deployed on PHP 4.0 or higher.

For backend data connectivity, the application uses MYSQL database server. This server offers the services required for the data store. It is also the most suitable server for the application since MYSQL is synonymous with PHP and they share a lot of features. One of these features is portability. Moreover, MYSQL, RDBMS features including sub queries, transactions, and referential integrity makes it competent enough as database server of choice.

4.5 THE NETWORK

As a multi-user application that plays a central role in the day-to-day business management of a business organization, the software operates in client/server network architecture. The advantage of the client/server architecture over other architectures is that the client and server machines work together to accomplish the goals of the application. Not only does this increase the processing power available, but it also uses power more efficiently. This is built on TCP/IP backbone for reliable data transmission. This backbone supports such protocol as HTTP which is needed for the application to work. Consequently, the client portion of the application is then typically optimized for user interaction and can communicate with the server portion that provides the centralized, multi-user functionality. This makes the application suitable for intranet or internet platform, irrespective of the network topology.

CHAPTER FIVE: **CONCLUSION**

5.1   RESULTS

The requirements of businesses for improved efficiency, increased flexibility, reduced operating costs, efficient communication, and improved business processes have been the driving force for the adoption of network based softwares. The Business Management System Software developed encompasses three application areas. These are:

- Access to on-line business information,
- E-commerce and
- On-line business applications like communication.

The essence is to provide the above mentioned requirements through the internet. Employees and customers who are remotely located, can access (and enjoy the benefits in much the same way as if they are located in the company's headquarters) the company's web pages through the internet using an appropriate DTE.

The problem of lateness to work or absence from the office would then be a thing of the past except when the staff is ill and cannot operate the DTE. Virtual office technology provided by the network have also contributed to the success of the Business Management System Software in reducing the cost in setting up 'brick and mortar' offices, though, there must be a Corporate Headquarters, Branch Offices, Warehouse and a fulfilment of all the Legal Requirements of the State for any company using this software.

Through the Business Management System Software's database, the General Manager will be able to monitor the company's stock to be very sure that requisitions made are for required materials and/or machines. This automatically takes care of fraudulent requisitions and improper export of company's property and goods.

With on-line business enquiries, company managers and administrators can survey and know what is obtainable in the areas where they have field operations. This will assist immensely during budgeting and remuneration of field workers.

With the Forums feature inculcated into the Business Management System Software, customers can make suggestions and even lay complaint(s) to the management. The Memos feature assists the company to communicate internally. Email and telephone communication is also possible through this software but is limited to Administrators and Managers.

Staff transfers are achieved through the User Migration feature of the Business Management System Software while User Groups Hierarchy feature takes care of the different cadre of staff as designed by the industry. To successfully promote a member of staff, this feature is used to move the staff from a lower cadre to a higher one.

Accounting and Payroll features are also included in the Business Management System software. Customers pay for their goods and services using the prepaid scratch card system while staff salary and emoluments are paid using on-line Banking system through the company's Banker.

5.2   DISCUSSION OF RESULTS

Having researched and developed the Business Management System Software, test and debug the software product, it would useful to list the expected contributions of the software to business.

1. Through web based business, the constraint of 'brick and mortar' offices have become a thing of the past because business owners and operators can transact with their customers through the internet in the comfort of their homes. This becomes an avenue to cut costs in setting up and managing a business. Communication channels through the network are becoming cheaper everyday as well as reduced usage of stationery and other office equipment. By reducing cost, increasing profit margin, the business owners have more gains to smile to the Bank with.

2. The software also provides communication channels through which customers can make requests, suggestions or complaints to the business management. Customer satisfaction is thus enhanced.

3. Accountability is also achieved through the software as payments are made on-line. Members of staff only handle money when it is absolutely necessary and impossible to transact using the software. This method hence, promotes discipline, loyalty and respect among customers, members of staff and their administrators.

4. The application of network based business software not only creates virtual office for the business owner but also makes him available for his customers anytime, any day, anywhere. Therefore, distance is no longer a hindering factor in reaching out to customers.

5. Working from the comfort of the home will definitely provide the much advocated loyalty between company staff and management. Respect and loyalty between family members of the employee will also enhance the loyalty the company management enjoys from her subjects.

6. Because the members of staff have no geographical limitation in carrying out their assigned duties, productivity increases. When this happens, greater turnover follows and this leads to higher profit. The company will then be able to contribute her quota to the development of the society as a corporate responsibility.

7. The fact that members of staff now work form the comfort of their homes, traffic congestion, air pollution, noise pollution, road accidents and obstructions caused during office hour traffic will definitely and greatly reduce along the highways.

5.3   SUMMARY

From the foregoing, it has been possible to survey the importance of business in the society. Challenges encountered by businesses were also discovered. Computer and Software technology provided the much needed solutions to Business Management challenges as exemplified by this Business Management System Software.

5.4   CONCLUSION

'It is not how far but how well' had been an adage which found its application suitable in the course of this study. The Business Management System Software successfully exposed the researcher to different spheres of learning that he may not have come across. The Evolutionary Development methodology for software development had been of immense value as well as the theory of Business Management and Software Development. It is expected that proper deployment and usage of the Business Management System Software by any company will definitely prove that the efforts spent in this research are worth it.

5.5   SUGGESTIONS FOR FURTHER WORK

The researcher recognises the fact that scientific developments are subjects to improvements as researches continues. In this study, the researcher wishes to make the

following recommendations in the event of future work or research on this subject. They are:

1. The Business Management System Software may be deployed on the internet.

2. The limitation of this study may be modified to comprise medium and large scale enterprises, manufacturing and service delivery businesses including multinational corporations.

3. The software payment system may be improved to take care of smart card payments like debit cards and mobile money transactions.

4. Communication using the software may also be improved through the addition of E-mail and chat servers.

It is expected that in future, all businesses will be done on-line using this Business Management System Software.

REFERENCES

1. Business - Microsoft® Encarta® 2009 [DVD]. Redmond, WA: Microsoft Corporation, 2008.

2. Management - Wikipedia, the free encyclopaedia http://en.wikipedia.org

3. J. Scott Armstrong (1978). "The Manager's Dilemma: Role Conflict in Marketing". pp. 78–89. http://marketing.wharton.upenn.edu/ideas/pdf/armstrong2/Managers-Dilemma.pdf.

4. System - Microsoft® Encarta® 2009 [DVD]. Redmond, WA: Microsoft Corporation, 2008.

5. Software - Encyclopædia Britannica. Encyclopaedia Britannica Student and Home Edition. Chicago: Encyclopædia Britannica, 2010.

6. J. Scott Armstrong (1977). "Social Irresponsibility in Management". pp. 185–213. http://marketing.wharton.upenn.edu/ideas/pdf/armstrong2/social.pdf.

7. Gomez-Mejia, Luis R.; David B. Balkin and Robert L. Cardy (2008). *Management: People, Performance, Change, 3rd edition*. New York, New York USA: McGraw-Hill. pp. 19.

8. Gomez-Mejia, Luis R.; David B. Balkin and Robert L. Cardy (2008). *Management: People, Performance, Change, 3rd edition*. New York, New York USA: McGraw-Hill. pp. 20.

9. Human resource management - Wikipedia, the free encyclopaedia http://en.wikipedia.org

10. U.S. Department of Education Institute of Education Sciences: Classification of Instructional Programs (CIP)

11. Nag, R.; Hambrick, D. C.; Chen, M.-J,*What is strategic management, really? Inductive derivation of a consensus definition of the field*. Strategic Management Journal. Volume 28, Issue 9, pages 935–955, September 2007.

12. Joshi, Rakesh Mohan, (2005) International Marketing, Oxford University Press, New Delhi

13. Philip Kotler, Philip and Kevin Lane Keller (2006). *Marketing Management, 12th ed.* Pearson Prentice Hall

14. Clancy, Kevin J.; Peter C. Kriegafsd (2000). *Counter intuitive Marketing*. The Free Press.

15. http://tutor2u.net/business/accounts/finance_management_intro.htm

16. McNurlin, Barbara, et. al. (2009). "Information Systems Management in Practice (8th ed.)". Prentice Hall.

17. O'Brien, J (1999). *Management Information Systems – Managing Information Technology in the Internetworked Enterprise*. Boston: Irwin McGraw-Hill.

18. Bird, M. (2010). Modern Management Guide to Information Technology.

19. Craig, S. (2009, January 29). Merrill Bonus Case Widens as Deal Struggles. *Wall Street Journal*.

20. Manfred F. R. Kets de Vries. The Dark Side of Leadership - Business Strategy Review 14(3), Autumn Page 26 (2003).

21. Glass, Robert L. 1998. *In the Beginning: Recollections of Software Pioneers.* Los Alamitos, CA: IEEE Computer Society Press.

22. Evans, Harold. 2004. *They Made America.* New York, NY: Little, Brown and Company.

23. Yost, Jeffrey R. 2005. *The Computer Industry.* Westport, CT: Greenwood Press.

24. Software. Dictionary.com. *American Heritage New Dictionary of Cultural Literacy, Third Edition.* Houghton Mifflin Company, 2005.

25. A History of Software http://www.randomhistory.com/css/historystyle.css

26. Ralph, P., and Wand, Y. A Proposal for a Formal Definition of the Design Concept. In, Lyytinen, K., Loucopoulos, P., Mylopoulos, J., and Robinson, W., (eds.), Design Requirements Engineering: A Ten-Year Perspective: Springer-Verlag, 2009, pp. 103-136

27. ieeecomputersociety.org

28. Kent Beck, Extreme Programming, 2000

29. Schwaber, Ken (February 2004). *Agile Project Management with Scrum*. Microsoft Press

30. Sprint, Planning (January–February 2009). *Sprint Planning Rules*. Retrieved April 30, 2013.

31. Schwaber, Ken (February 2004). *Agile Project Management with Scrum*. Microsoft Press.

32. Sutherland, Jeff (2004-10). "Agile Development: Lessons learned from the first Scrum" (PDF). Retrieved April 30, 2013.

33. www.dsdm.org

34. http://en.wikipedia.org/w/index.php?title=Dynamic_systems_development_method&oldid=553847262

35. Ralph, P., and Wand, Y. A Proposal for a Formal Definition of the Design Concept. In, Lyytinen, K., Loucopoulos, P., Mylopoulos, J., and Robinson, W., (eds.), Design Requirements Engineering: A Ten-Year Perspective: Springer-Verlag, 2009, pp. 103-136

36. Elaine L. May and Barbara A. Zimmer – The Evolutionary Development Model for Software. Hewlett-Packard Journal. August 1996

37. Bruce R. Maxim Cleanroom software Engineering. UM-Dearborn.

38. Mills, H.; M. Dyer and R. Linger (September 1987). "Cleanroom Software Engineering". *IEEE Software* 4 (5): 19–25.

39. Foreman, John (2005). "Cleanroom Software Engineering Reference". *Software Technology Roadmap*. Software Engineering Institute (SEI). http://www.sei.cmu.edu/library/abstracts/reports/96tr022.cfm.

40. Lerdorf, Rasmus (2007-04-26). "PHP on Hormones – history of PHP presentation by Rasmus Lerdorf given at the MySQL Conference in Santa Clara, California"

41. Beaulieu, Alan (April 2009). Mary E Treseler. ed. *Learning SQL* (2nd ed.). Sebastapol, CA, USA: O'Reilly.

42. Codd, Edgar F (June 1970). "A Relational Model of Data for Large Shared Data Banks". *Communications of the ACM* (Association for Computing Machinery) **13** (6): 377–87. http://www.acm.org/classics/nov95/toc.html.

43. Chapple, Mike. "SQL Fundamentals". *Databases*. About.com. http://databases.about.com/od/sql/a/sqlfundamentals.htm.

44. Berners-Lee, Tim. "HyperText Transfer Protocol". World Wide Web Consortium. http://www.w3.org/History/19921103-hypertext/hypertext/WWW/Protocols/HTTP.html

45. "What is CSS?" World Wide Web Consortium. http://www.w3.org/standards/webdesign/htmlcss#whatcss.

46. Douglas Crockford. *Douglas Crockford on Functional JavaScript* (Tech talk). blinkx. http://www.blinkx.com/video/douglas-crockford-on-functional-javascript/xscZz8XhfuNQ_aaVuyUB2A.

47. Database. http://www.webopedia.com/TERM/D/database.html

48. Database Services. http://www.ctg2k.com/solutions_db.html

49. pradeep, Servers. http://www.go4expert.com/forums/showthread.php?t=325

50. Server Types. http://www.wifinotes.com/computer-networks/server-types.html

51. Lee, James; Brent Ware (December 2002). *Open Source Web Development with LAMP: Using Linux, Apache, MySQL, Perl, and PHP*. Addison Wesley.

52. Dale Dougherty (January 2001). "LAMP: The Open Source Web Platform". *ONLamp*. http://www.onlamp.com/pub/a/onlamp/2001/01/25/lamp.html.

53. WAMP. Wikipedia, the free encyclopedia http://en.wikipedia.org

54. Computer network definition, http://www.atis.org/glossary/definition.aspx?id=6555

55. Michael A. Banks (2008). On the way to the web: the secret history of the internet and its founders. http://books.google.com/books.

56. Chris Sutton. "Internet Began 35 Years Ago at UCLA with First Message Ever Sent Between Two Computers". *UCLA*. http://www.engineer.ucla.edu/stories/2004/Internet35.htm.

57. IEEE P802.3ba 40Gb/s and 100Gb/s Ethernet Task Force, http://www.ieee802.org/3/ba.

58. Bradley Mitchell. Introduction to Client Server Networks about.com

59. The Linux Information Project. (2004). GUI Definition. www.linfo.org

60. Accounting software. (2012) SoftwareComparison.com.

61. 2012 Best Accounting Software Comparisons and Reviews. (2012) TechMediaNetwork.com

62. CRM software review. (2012) TechMediaNetwork.com.

63. Human Resources (HR) Software. Software Advice. 2012 Software Advice, Inc.

APPENDIX 1

BACKEND DATA CONNECTIVITY

```php
<?php function
embed_ajax($identifier,$arguments,$server_url,$target,$post_actions)

    {//this PHP function embeds the JavaScript implementation of
AJAX on the client side

    $ajax_link="xmlhttplink_ajax_".$identifier;

?>

<script  type="text/javascript">

function <?php  echo sprintf("ajax_%s (%s)\n",
$identifier,$arguments); ?>

{


if (window.XMLHttpRequest)

  {// code for IE7+, Firefox, Chrome, Opera, Safari

    <?php echo $ajax_link;?>=new XMLHttpRequest();

  }

else

  {// code for IE6, IE5

  <?php echo $ajax_link;?>=new ActiveXObject("Microsoft.XMLHTTP");

  }

<?php echo $ajax_link;?>.onreadystatechange=function()

  {

  if (<?php echo $ajax_link;?>.readyState==4 && <?php echo
$ajax_link;?>.status==200)

    {

      document.getElementById("<?php echo $target;
?>").innerHTML=<?php echo $ajax_link;?>.responseText;

      <?php if(isset($post_actions))

              {
```

```php
                        foreach($post_actions as $a_post_action)

                        {

        ?>

<?php echo $a_post_action;?>;

        <?php

                        }

                }

        ?>

    }

  }

 <?php $url= "\"".$server_url."\"";

 $url_encoded="";

 $parameters=explode(",",$arguments);

  if (count($parameters)>0)

     {

            $url_encoded.=
sprintf("+\"?%s=\"+%s",$parameters[0],$parameters[0]);

            for ($i=1;$i<count($parameters);$i++)

            {

                $url_encoded.=
sprintf("+\"&%s=\"+%s",$parameters[$i],$parameters[$i]);

            }

     }

 ?>

<?php echo $ajax_link;?>.open("GET",<?php echo $url;echo
$url_encoded; ?>,true);

<?php echo $ajax_link;?>.send();

}

</script>

<?php } ?>
```

```php
<?php function call_ajax($identifier,$parameter_values)

{// This PHP function returns a javascript implementation of the
call to an embedded ajax

?>

<?php return sprintf("ajax_%s(%s)",$identifier,$parameter_values);


        } ?>
```

B) MSQL: This interfacing is needed for backend database connectivity. Below is the code.

```php
<?php

$hostname_database = "localhost";//here the database server is
integrated with the web server

$database_database = "business_db";

$username_database = "root";

$password_database = "";

$database = MySQL_pconnect($hostname_database, $username_database,
$password_database) or trigger_error(MySQL_error(),E_USER_ERROR);

?>
```

APPENDIX 2

USER IDENTIFICATION

```php
<?php if(!isset($_SESSION)) session_start();//loading the
session environment

    if(isset($_SESSION['OnSession'])) //checking if the user
is logged on

    {

    //collecting the user data

    $my_group_id=$_SESSION['GroupID'];//retrieves the user
group ID

    $my_group_title=$_SESSION['GroupTitle'];

    $my_member_id=$_SESSION['MemberID'];//retrieves the user
ID

    $on_session=$_SESSION['OnSession'];

    }

?>
```

APPENDIX 3

USER AUTHENTICATION

```php
<?php if(!isset($_SESSION)) session_start();//loading the
session environment?>

<?php if(!$_SESSION['OnSession']) //when the user is not
logged on

        {

                if(!$_SESSION['onVisitors']){// at the first visit
to the web site

                        $_SESSION['onVisitors']=true;

                        $_SESSION['GroupID']='0';//sets the user
group ID as visitors

                        $_SESSION['MemberID']='0';sets the user as
visitor

                        $_SESSION['GroupTitle']="Visitors";

        header("location:INDEX_WELCOME.php");//redirects to

                        exit();// Index_welcome.php page

                }

                $on_visitors=true;

        }

        Else //when the user is logged on

        {

                $on_session=true;

                include_once('INDEX_LOGOUT_ACTION.php');//needed at
logout

        }

        require_once('Connections/client.php');//loads user
identity

        ?>
```

APPENDIX 4

USER LOGIN

```php
<?php //----------------------Server Side------------------------
-----------------//?>

<?php require_once('Client_Authentication.php');//authenticates the
user on page request?>

<?php require_once('connections/database.php'); //establishes
database backend connection?>

<?php require_once('INDEX_LOGIN_ACTION.php');//completes the login
process ?>

<?php

if(!isset($_POST['ToLogin'])){//initializes the login process

        $colname_eligible_groups = "-1";

        if (isset($_GET['Desk'])) {

          $colname_eligible_groups = $_GET['Desk'];

        }

        MySQL_select_db($database_database, $database);

        $query_eligible_groups = sprintf("SELECT
groups.Title,groups.GroupID FROM bus_overview_groups INNER JOIN
groups ON groups.GroupID=bus_overview_groups.GroupID INNER JOIN
bus_overview ON
bus_overview.OverviewID=bus_overview_groups.OverviewID WHERE
bus_overview.TextLink='%s'", $colname_eligible_groups);

        $eligible_groups = MySQL_query($query_eligible_groups,
$database) or die(MySQL_error());//queries the database for the
appropriate available groups

        $row_eligible_groups = MySQL_fetch_assoc($eligible_groups);

        $totalRows_eligible_groups = MySQL_num_rows($eligible_groups);

        if($totalRows_eligible_groups==0 ){

                header("location:INDEX_WELCOME.php");

                exit();

        }

        if($totalRows_eligible_groups==1 &&
$row_eligible_groups['Title']=="Visitors"){
```

```php
            $_SESSION['OnSession']=true;

            header("Location:INDEX.php");

            exit();

        }

}

?>
```

```html
<-- -------------------------------Client Side--------------------
--------------------- -->

<html >

<head>

<title>Business Management System Software</title>

<link rel="shortcut icon" href="images/B_ICON.ico" type="image/x-
icon" />

<link href="styles/pg_theme.css" rel="stylesheet" type="text/css" />

<link href="styles/menu_theme.css" rel="stylesheet" type="text/css"
/>

</head>


<body>

<?php $home="INDEX_WELCOME.php";require_once('PARTS_HEADER.php'); ?>

<div class="form"  align="center" >

<h2 align="center">LOGIN TO PROCEED </h2>

<hr/>

<?php if(isset($_GET['incorrect']))

            {

?>

<font color='#FF0000'><p>Authentication Report: incorrect Username
or Password</p></font>

<?php  } ?>

<form ACTION="<?php echo $loginFormAction; ?>"  method="post"
name="login_form" target="_parent" id="login_form"     >
```

```
  <p align="left">Login To Group:

    <select name="groupid" >

      <?php

do {

?>

      <option value="<?php echo
$row_eligible_groups['GroupID']?>"><?php echo
$row_eligible_groups['Title']?></option>

      <?php

} while ($row_eligible_groups =
MySQL_fetch_assoc($eligible_groups));

  $rows = MySQL_num_rows($eligible_groups);

  if($rows > 0) {

     MySQL_data_seek($eligible_groups, 0);

       $row_eligible_groups = MySQL_fetch_assoc($eligible_groups);

  }

?>

    </select>

  </p>

  <p align="left">Username:

      <input name="username" value="<?php echo $_GET['Username'];?>"
type="text" id="UserName"/>

  </p>

  <p align="left">Password:

    <input name="password" value="<?php echo $_GET['Password'];?>"
type="password" id="Password"/>

    <input name="ToLogin" type="hidden" id="ToLogin" value="true">

  </p>

  <p align="left">

 <table>

 <tr>
```

```
  <input type="hidden" name="Desk" value="<?php echo
$_GET['Desk'];?>">

    <td>

  <input type="submit" value="Login" />

    </td>

    <td>

    <input type="button" value="Register here"
onClick="window.location.href='INDEX_PROFILE_CREATE.php?Desk=<?php
echo $_GET['Desk'];?>'" />

    </td>

</tr>

</table>

  </p>

</form>


</div>

<?php require_once('PARTS_FOOTER.php'); ?>

</body>

</html>
```

APPENDIX 5

USER REGISTRATION

```php
<?php //-------------------Server Side-------------------------
//?>

<?php require_once ('Client_Authentication.php'); //authenticate
user on page request?>

<?php require_once ('connections/database.php'); //established
database backend connection?>

<?php require_once ('server_routines.php'); ?>

<?php require_once ('scripts/validation_construct.php'); //enables
user input validation?>

<?php require_once ('scripts/ajax_construct.php'); //enables
asynchronous request/responce?>

<?php

$colname_eligible_groups = "-1";

if (isset($_GET['Desk'])) {

    $colname_eligible_groups = (get_magic_quotes_gpc()) ?
$_GET['Desk'] : addslashes($_GET['Desk']);

}

MySQL_select_db($database_database, $database);

$query_eligible_groups = sprintf("SELECT
Title,bus_overview_groups.GroupID FROM bus_overview_groups INNER
JOIN groups ON groups.GroupID=bus_overview_groups.GroupID INNER JOIN
bus_overview ON
bus_overview.OverviewID=bus_overview_groups.OverviewID WHERE
bus_overview_groups.GroupID IN (bus_overview_groups.GroupID) AND
bus_overview.TextLink='%s'",

    $colname_eligible_groups);

$eligible_groups = MySQL_query($query_eligible_groups, $database) or
die(MySQL_error

    ());//queries the database for the appropriate group to register
to

$row_eligible_groups = MySQL_fetch_assoc($eligible_groups);

$totalRows_eligible_groups = MySQL_num_rows($eligible_groups);

$editFormAction = $_SERVER['PHP_SELF'];
```

```php
if (isset($_SERVER['QUERY_STRING'])) {

    $editFormAction .= "?" . htmlentities($_SERVER['QUERY_STRING']);

}


if ((isset($_POST["MM_insert"])) && ($_POST["MM_insert"] ==
"form1")) {

    $group_id = $_POST['GroupID'];

    $username = $_POST['Username'];

    $password = $_POST['Password'];

    $surname = $_POST['Surname'];

    $middlename = $_POST['Middlename'];

    $othernames = $_POST['Othernames'];

    $email = $_POST['Email'];

    $phone = $_POST['Phone'];

    $address = $_POST['Address'];


    $duplicatate_checkSQL = "SELECT Username FROM members where
Username=" .

        getFormValue($username, "text");

    MySQL_select_db($database_database, $database);

    $duplicate_checkResult = MySQL_query($duplicatate_checkSQL,
$database) or die(MySQL_error

        ());

    if (MySQL_num_rows($duplicate_checkResult) != 0) {

        $redirect =
sprintf("%s?not_availabe=1&Desk=%s,Username=%s&Password=%s&Surname=%
s&Middlename=%s&Othernames=%s&Email=%s&Phone=%s&Address=%s",

            $_SERVER['PHP_SELF'], $_POST['Desk'], $username,
$password, $surname, $middlename,

            $othernames, $email, $phone, $address);

        $insertGoTo = $redirect;

    } else {
```

```php
        $insertSQL = sprintf("INSERT INTO members (GroupID,Username,
Password, Surname, Middlename, Othername, Email, Phone, Address)
VALUES (%s,%s, %s, %s, %s, %s, %s, %s, %s)",

            getFormValue($group_id, "int"), getFormValue($username,
"text"), getFormValue($password,

            "text"), getFormValue($password, "text"),
getFormValue($middlename, "text"),

            getFormValue($othernames, "text"), getFormValue($email,
"text"), getFormValue($phone,

            "text"), getFormValue($address, "text"));


        MySQL_select_db($database_database, $database);

        $Result1 = MySQL_query($insertSQL, $database) or
die(MySQL_error());


        $insertGoTo = sprintf("INDEX_LOGIN.php?Desk=%s",
$_POST['Desk']);

        if (isset($_SERVER['QUERY_STRING'])) {

            $insertGoTo .= (strpos($insertGoTo, '?')) ? "&" : "?";

            $insertGoTo .= $_SERVER['QUERY_STRING'];

        }

    }

    header(sprintf("Location: %s", $insertGoTo));

}

?>

<?php $username_validation = new_validation("check_Username");

$username_invalide_condition =
sprintf("(document.Profile.Username.value.indexOf(%s %s) !=-1)",

    "\"", "\"");

$username_invalide_decision =
sprintf("document.getElementById(%stxtHint%s).innerHTML+=%s" .

    sprintf($validation_report, "Username should not contain
spaces") . "%s", "\"",
```

```
            "\"", "\"", "\"");

add_validation_rule($username_validation,
$username_invalide_condition, $username_invalide_decision);

$username_invalide_condition =
"(document.Profile.Username.value.length==0)";

$username_invalide_decision =
sprintf("document.getElementById(%stxtHint%s).innerHTML+=%s" .

    sprintf($validation_report, "Username should not be empty") .
"%s", "\"", "\"",

    "\"", "\"");

add_validation_rule($username_validation,
$username_invalide_condition, $username_invalide_decision);


$surname_validation = new_validation("check_Surname");

$surname_invalide_condition =
"(document.Profile.Surname.value.length==0)";

$surname_invalide_decision =
sprintf("document.getElementById(%stxtHint%s).innerHTML+=%s" .

    sprintf($validation_report, "Surname should not be empty") .
"%s", "\"", "\"", "\"",

    "\"");

add_validation_rule($surname_validation,
$surname_invalide_condition, $surname_invalide_decision);


$middlename_validation = new_validation("check_Middlename");

$middlename_invalide_condition =
"(document.Profile.Middlename.value.length==0)";

$middlename_invalide_decision =
sprintf("document.getElementById(%stxtHint%s).innerHTML+=%s" .

    sprintf($validation_report, "Middlename should not be empty") .
"%s", "\"", "\"",

    "\"", "\"");

add_validation_rule($middlename_validation,
$middlename_invalide_condition, $middlename_invalide_decision);
```

```php
$email_validation = new_validation("check_Email");

$email_invalide_condition =
"(document.Profile.Email.value.length==0)";

$email_invalide_decision =
sprintf("document.getElementById(%stxtHint%s).innerHTML+=%s" .

    sprintf($validation_report, "Email should not be empty") . "%s",
"\"", "\"", "\"",

    "\"");

add_validation_rule($email_validation, $email_invalide_condition,
$email_invalide_decision);



?>
```

```html
<-- --------------------------------Client Side-------------------
---------------------- -->

<html >

<head>


<title>Business Management System Software</title>

<link rel="shortcut icon" href="images/B_ICON.ico" type="image/x-
icon" />

<?php embed_validation($username_validation); ?>

<?php embed_validation($surname_validation); ?>

<?php embed_validation($middlename_validation); ?>

<?php embed_validation($email_validation); ?>

<?php embed_validations("ajax_check", $username_validation,
"txtHint"); ?>

<?php embed_validations("profile_check", sprintf("%s,%s,%s,%s",
$username_validation,

$surname_validation, $middlename_validation, $email_validation),
"txtHint"); ?>

<?php embed_ajax("check", "Username",
"INDEX_PROFILE_DUPLICATE_CHECK.php",
```

```
"txtHint", $post_actions); ?>

<link href="styles/pg_theme.css" rel="stylesheet" type="text/css" />

<link href="styles/menu_theme.css" rel="stylesheet" type="text/css"
/>

</head>


<body>

<?php $on_desk = true;

$home = "INDEX_WELCOME.php";

require_once ('PARTS_HEADER.php'); ?>

<div class="heading" >

<p align="center"> Registration Forum </p>

</div>

<span id="txtHint" align="center" >

<?php if (isset($_GET['not_availabe'])) {

?>

    <font color='#FF0000'><p>Validation Report: username is not
availabe </p></font>

<?php }

?>

</span>

<form method="post" name="Profile" action="<?php echo
$editFormAction; ?>">

  <table align="center">

    <tr valign="baseline">

      <td nowrap align="right">Register to Group </td>

      <td><select name="GroupID" >

     <?php

do {

?>
```

```php
      <option value="<?php echo $row_eligible_groups['GroupID']
?>"><?php echo $row_eligible_groups['Title'] ?></option>

      <?php

} while ($row_eligible_groups =
MySQL_fetch_assoc($eligible_groups));

$rows = MySQL_num_rows($eligible_groups);

if ($rows > 0) {

    MySQL_data_seek($eligible_groups, 0);

    $row_eligible_groups = MySQL_fetch_assoc($eligible_groups);

}

?>

  </select></td>

  </tr>

  <tr valign="baseline">

    <td nowrap align="right">Username:</td>

    <td><input type="text" name="Username" id="Username"
value="<?php echo $_GET["Username"]; ?>" size="32"  onBlur="<?php
echo

validations_tunnel("ajax_check");

echo call_ajax("check", "this.value"); ?>"/>       </td>

  </tr>

  <tr valign="baseline">

    <td nowrap align="right">Password:</td>

    <td><input type="text" name="Password" value="<?php echo
$_GET["Password"]; ?>" size="32" /></td>

  </tr>

  <tr valign="baseline">

    <td nowrap align="right">Surname:</td>

    <td><input type="text" name="Surname" value="<?php echo
$_GET["Surname"]; ?>" size="32" /></td>

  </tr>

  <tr valign="baseline">
```

```html
    <td nowrap align="right">Middlename:</td>

    <td><input type="text" name="Middlename" value="<?php echo
$_GET["Middlename"]; ?>" size="32" /></td>

  </tr>

  <tr valign="baseline">

    <td nowrap align="right">Othernames:</td>

    <td><input type="text" name="Othernames" value="<?php echo
$_GET["Othernames"]; ?>" size="32" /></td>

  </tr>

  <tr valign="baseline">

    <td nowrap align="right">Email :< /td>

    <td><input type="text" name="Email" value="<?php echo
$_GET["Email"]; ?>" size="32" /></td>

  </tr>

  <tr valign="baseline">

    <td nowrap align="right">Phone :< /td>

    <td><input type="text" name="Phone" value="<?php echo
$_GET["Phone"]; ?>" size="32" /></td>

  </tr>

  <tr valign="baseline">

    <td nowrap align="right">Address :< /td>

    <td><input type="text" name="Address" value="<?php echo
$_GET["Address"]; ?>" size="32" /></td>

  </tr>

  <tr valign="baseline">

    <td nowrap align="right"> </td>

    <td><input type="submit" value="Register Now"  onClick="<?php
echo

validations_tunnel("profile_check"); ?>"/></td>

  </tr>

  </table>

  <input type="hidden" name="MM_insert" value="form1" />
```

```
    <input type="hidden" name="Desk" value="<?php echo $_GET['Desk'];
?>">

</form>

<?php require_once ('PARTS_FOOTER.php'); ?>

</body>

</html>
```

APPENDIX 6

USER MEMBERSHIP

```php
<?php //----------------------------------Server Side------------
-------------------------?>

<?php require_once('Client_Authentication.php'); ?>

<?php require_once('scripts/ajax_construct.php'); ?>

<?php // ---------------------------------Client Side-----------
----------------------------?>

<html >

<head>

<title>Business Management System Software</title>

<link rel="shortcut icon" href="images/B_ICON.ico" type="image/x-
icon" />

<link href="styles/pg_theme.css" rel="stylesheet" type="text/css" />

<link href="styles/menu_theme.css" rel="stylesheet" type="text/css"
/>

<?php
embed_ajax("get_group_identity1","GroupID,ajax","GROUP_IDENTITY.php"
,"GroupIdentity1",$post_actions); ?>

<?php
embed_ajax("get_group_identity2","GroupID,ajax","GROUP_IDENTITY.php"
,"GroupIdentity2",$post_actions); ?>

<?php
$post_actions[]="document.getElementById('MemberDataArea1').innerHTM
L=''";?>

<?php
embed_ajax("get_members1","GroupID,ajax,no_every_member","MEMBERS_LI
ST.php","Members1",$post_actions); unset($post_actions);?>

<?php
$post_actions[]="document.getElementById('MemberDataArea2').innerHTM
L=''";?>

<?php
embed_ajax("get_members2","GroupID,ajax,no_every_member","MEMBERS_LI
ST.php","Members2",$post_actions);unset($post_actions); ?>
```

```php
<?php
embed_ajax("get_member_data1","MemberID,ajax","MEMBER_IDENTITY.php",
"MemberDataArea1",$post_actions); ?>

<?php
embed_ajax("get_member_data2","MemberID,ajax","MEMBER_IDENTITY.php",
"MemberDataArea2",$post_actions); ?>

<?php

$post_actions[]=call_ajax("get_members1","document.getElementById('G
roups1').value,true,true");

$post_actions[]=call_ajax("get_members2","document.getElementById('G
roups2').value,true,true");

?>

<?php
embed_ajax("move_member_to_right","GroupID,MemberID","MEMBER_MOVE.ph
p","MemberMoveReport",$post_actions); ?>

<?php
embed_ajax("move_member_to_left","GroupID,MemberID","MEMBER_MOVE.php
","MemberMoveReport",$post_actions); ?>


<script language="JavaScript" type="text/javascript">

function move_member_to_right()

{

        document.getElementById("MemberMoveReport").innerHTML="";

        <?php echo
call_ajax("move_member_to_right","document.getElementById('Groups2')
.value,document.getElementById('Members1').value");?>;

}

</script>

<script language="JavaScript" type="text/javascript">

function move_member_to_left()

{

        document.getElementById("MemberMoveReport").innerHTML="";

        <?php echo
call_ajax("move_member_to_left","document.getElementById('Groups1').
value,document.getElementById('Members2').value");?>;
```

```
}

</script>

<script language="JavaScript" type="text/javascript">

function initialize_page()

{

        <?php echo
call_ajax("get_group_identity1","$my_group_id,true");?>;

        <?php echo
call_ajax("get_members1","$my_group_id,true,true");?>;

        <?php echo
call_ajax("get_group_identity2","$my_group_id,true");?>;

        <?php echo
call_ajax("get_members2","$my_group_id,true,true");?>;

}

</script>

</head>

<body onLoad="initialize_page()">

<?php
$on_admins=true;$home="TAB_ADMINS.php";require_once('PARTS_HEADER.ph
p'); ?>

<div class="heading">

<p align="center">Admins </p>

</div>


<table width="90%"  align="center">

  <tr>

    <th>Part One <hr/></th>

    <th> </th>

    <th>Part Two <hr/></th>

  </tr>

  <tr valign="top">

    <td><table>
```

```
        <tr valign="top">

          <td height="62">Groups:</td>

          <td><select id="Groups1" onChange="<?php echo
call_ajax("get_group_identity1","this.value,true");?>;<?php echo
call_ajax("get_members1","this.value,true,true");?>">

            <?php include('GROUPS_LIST.php'); ?>

          </select></td>

          <td><div id="GroupIdentity1"></div></td>

        </tr>

      </table>

      </td>

      <td align="center"> </td>

      <td><table>

        <tr valign="top">

          <td>Groups:</td>

          <td><select name="select"  id="Groups2" onChange="<?php echo
call_ajax("get_group_identity2","this.value,true");?>;<?php echo
call_ajax("get_members2","this.value,true,true");?>">

            <?php include('GROUPS_LIST.php'); ?>

          </select></td>

          <td><div id="GroupIdentity2"></div></td>

        </tr>

      </table>

    </tr>

    <tr>

      <td><table>

        <tr valign="top">

          <td>Members:</td>

          <td><select  size="6" id="Members1" onChange="<?php echo
call_ajax("get_member_data1","this.value,true");?>">

          </select></td>
```

```
        <td><div id="MemberDataArea1"></div></td>

      </tr>

    </table></td>

    <td align="center" valign="middle">Move  Member<br/>

      <button onClick="move_member_to_right()">&gt;&gt;</button>

      <br/>

      <button onClick="move_member_to_left()">&lt;&lt;</button>

      <br/>

      <div id="MemberMoveReport"></div></td>

    <td><table>

      <tr valign="top">

        <td>Members:</td>

        <td><select  size="6" id="Members2" onChange="<?php echo
call_ajax("get_member_data2","this.value,true");?>">

        </select></td>

        <td><div id="MemberDataArea2"></div></td>

      </tr>

    </table></td>

  </tr>

</table>

<?php require_once('PARTS_FOOTER.php'); ?>

</body>

</html>
```

APPENDIX 7

VISITORS DESK

```php
<?php require_once('Client_Authentication.php'); ?>

<html >

<head>

<title>Business Management System Software</title>

<link rel="shortcut icon" href="images/B_ICON.ico" type="image/x-
icon" />

<link href="styles/pg_theme.css" rel="stylesheet" type="text/css" />

<link href="styles/menu_theme.css" rel="stylesheet" type="text/css"
/>

</head>

<body>

<?php require_once('PARTS_HEADER.php'); ?>

<div class="heading" >

<p align="center"> WELCOME TO <?php echo $_GET['Desk'];?></p>

</div>

 Click any desired headings to Proceed


<?php require_once('PARTS_FOOTER.php'); ?>

</body>


</html>
```

APPENDIX 8

MEMBERS, CUSTOMERS, ADMINISTRATORS DESK

```php
<?php require_once('Client_Authentication.php');?>

<?php require_once('connections/database.php'); ?>

<?php require_once('INDEX_LOGIN_ACTION.php'); ?>

<?php

if(!isset($_POST['ToLogin'])){

      $colname_eligible_groups = "-1";

      if (isset($_GET['Desk'])) {

        $colname_eligible_groups = $_GET['Desk'];

      }

      mysql_select_db($database_database, $database);

      $query_eligible_groups = sprintf("SELECT
groups.Title,groups.GroupID FROM bus_overview_groups INNER JOIN
groups ON groups.GroupID=bus_overview_groups.GroupID INNER JOIN
bus_overview ON
bus_overview.OverviewID=bus_overview_groups.OverviewID WHERE
bus_overview.TextLink='%s'", $colname_eligible_groups);

      $eligible_groups = mysql_query($query_eligible_groups,
$database) or die(mysql_error());

      $row_eligible_groups = mysql_fetch_assoc($eligible_groups);

      $totalRows_eligible_groups = mysql_num_rows($eligible_groups);

      if($totalRows_eligible_groups==0 ){

            header("location:INDEX_WELCOME.php");

            exit();

      }

      if($totalRows_eligible_groups==1 &&
$row_eligible_groups['Title']=="Visitors"){

            $_SESSION['OnSession']=true;

            header("Location:INDEX.php");

            exit();

      }

}

?>

<html >
```

```php
<head>

<title>Business Management System Software</title>

<link rel="shortcut icon" href="images/B_ICON.ico" type="image/x-icon" />

<link href="styles/pg_theme.css" rel="stylesheet" type="text/css" />

<link href="styles/menu_theme.css" rel="stylesheet" type="text/css" />

</head>


<body>

<?php $home="INDEX_WELCOME.php";require_once('PARTS_HEADER.php'); ?>

<div class="form"  align="center" >

<h2 align="center">LOGIN TO PROCEED </h2>

<hr/>

<?php if(isset($_GET['incorrect']))

            {
?>

<font color='#FF0000'><p>Authentication Report: incorrect Username or Password</p></font>

<?php  } ?>

<form ACTION="<?php echo $loginFormAction; ?>"  method="post"
name="login_form" target="_parent" id="login_form"    >

 <p align="left">Login To Group:

   <select name="groupid" >

     <?php

do {

?>

     <option value="<?php echo
$row_eligible_groups['GroupID']?>"><?php echo
$row_eligible_groups['Title']?></option>

     <?php

} while ($row_eligible_groups =
mysql_fetch_assoc($eligible_groups));

  $rows = mysql_num_rows($eligible_groups);

  if($rows > 0) {

      mysql_data_seek($eligible_groups, 0);

        $row_eligible_groups = mysql_fetch_assoc($eligible_groups);
```

```php
	}
?>

    </select>

  </p>

  <p align="left">Username:

      <input name="username" value="<?php echo $_GET['Username'];?>"
type="text" id="UserName"/>

  </p>

  <p align="left">Password:

    <input name="password" value="<?php echo $_GET['Password'];?>"
type="password" id="Password"/>

    <input name="ToLogin" type="hidden" id="ToLogin" value="true">

  </p>

  <p align="left">

 <table>

 <tr>

 <input type="hidden" name="Desk" value="<?php echo
$_GET['Desk'];?>">

      <td>

    <input type="submit" value="Login" />

      </td>

      <td>

      <input type="button" value="Register here"
onClick="window.location.href='INDEX_PROFILE_CREATE.php?Desk=<?php
echo $_GET['Desk'];?>'" />

      </td>

</tr>

</table>

   </p>

</form>


</div>

<?php require_once('PARTS_FOOTER.php'); ?>

</body>

</html>
```

APPENDIX 9

OPERATIONS PAGE

```php
<?php require_once('Client_Authentication.php'); ?>

<?php require_once('Connections/database.php');?>

<?php require_once('page_access_info_routines.php');?>

<?php require_once('group_access_routines.php');?>


<html >
<head>


<title>Business Management System Software</title>

<link rel="shortcut icon" href="images/B_ICON.ico" type="image/x-icon" />

<link href="styles/pg_theme.css" rel="stylesheet" type="text/css" />

<link href="styles/menu_theme.css" rel="stylesheet" type="text/css" />

</head>


<body>

<?php $on_operations=true;require_once('PARTS_HEADER.php'); ?>

<div class="heading">

<p align="center">Operations </p>

</div>

<table width="90%"  align="center">

  <tr>

    <td width="23%" align="left" valign="top">

      <table width="107" name="resources">

      <?php
if(isGuaranteedAccessList($my_group_access_list,getCheckAccessList("INDEX_PROFILE_VIEW.php","load_page"))){?>

              <tr>

                  <td width="99"> <a href="INDEX_PROFILE_VIEW.php" target="_self">Personal Profile</a></td>

  </tr>
```

```php
    <?php }?>

    <?php
if(isGuaranteedAccessList($my_group_access_list,getCheckAccessList("
NOTE_LIST.php","load_page"))){?>

            <tr>

                <td><a href="NOTE_LIST.php">Personal Notes
</a></td>

            </tr>

<?php }?>

<?php
if(isGuaranteedAccessList($my_group_access_list,getCheckAccessList("
MEMOS.php","load_page"))){?>

            <tr>

            <tr>

                <td><a href="MEMOS.php">Memos</a></td>

        </tr>

<?php }?>

<?php
if(isGuaranteedAccessList($my_group_access_list,getCheckAccessList("
ACCOUNTS.php","load_page"))){?>

            <tr>

                <td><a href="ACCOUNTS.php">Accounts</a></td>

        </tr>

    <?php }?>

<?php
if(isGuaranteedAccessList($my_group_access_list,getCheckAccessList("
PRICELIST.php","load_page"))){?>

            <tr>

                <td><a href="PRICELIST.php">Price Schedules</a></td>

        </tr>

<?php }?>

<?php
if(isGuaranteedAccessList($my_group_access_list,getCheckAccessList("
PAYMENTS.php","load_page"))){?>

            <tr>

                <td><a href="PAYMENTS.php">Payments</a></td>

        </tr>

<?php }?>

    </table>
```

```
</td>

<?php
if(isGuaranteedAccessList($my_group_access_list,getCheckAccessList("
MEMOS.php","view_notice"))){?>

<td width="77%" align="center"  valign="baseline" name="others">

<?php require_once('MEMOS_LIST_UNREAD_NOTICE.php'); ?>

</td>

<?php }?>

</tr>

</table>

<?php require_once('PARTS_FOOTER.php'); ?>

</body>

</html>
```

APPENDIX 10

ADMINISTRATIONS PAGE

```php
<?php require_once('Client_Authentication.php'); ?>

<?php $requested_page=basename($_SERVER['PHP_SELF'])?>

<?php //require_once('access_privilege_authentication.php');?>

<?php require_once('Connections/database.php');?>

<?php require_once('page_access_info_routines.php');?>

<?php require_once('group_access_routines.php');?>

<html >

<head>

<title>Business Management System Software</title>

<link rel="shortcut icon" href="images/B_ICON.ico" type="image/x-
icon" />

<link href="styles/pg_theme.css" rel="stylesheet" type="text/css" />

<link href="styles/menu_theme.css" rel="stylesheet" type="text/css"
/>

</head>

<body>

<?php $on_admins=true;require_once('PARTS_HEADER.php'); ?>

<div class="heading">

<p align="center">Admins </p>

</div>


<table width="90%"  align="center">

  <tr>

    <td valign="top" align="left">

      <table width="179" name="resources">

<?php
if(isGuaranteedAccessList($my_group_access_list,getCheckAccessList("
GROUPS.php","load_page"))){?>

      <tr>

        <td><a href="GROUPS.php">Groups Managemet</a></td>

      </tr>

 <?php }?>
```

```php
  <?php
if(isGuaranteedAccessList($my_group_access_list,getCheckAccessList("
GROUPS_PRIVILEGES.php","load_page"))){?>

      <tr>

        <td><a href="GROUPS_PRIVILEGES.php">Groups Access Privileges
</a></td>

      </tr>

 <?php }?>
 <?php
if(isGuaranteedAccessList($my_group_access_list,getCheckAccessList("
MEMBERS.php","load_page"))){?>

      <tr>

        <td><a href="MEMBERS.php">Members Managemet</a></td>

      </tr>

        <?php }?>
<?php
if(isGuaranteedAccessList($my_group_access_list,getCheckAccessList("
BUSINESSOVERVIEW.php","load_page"))){?>

      <tr>

        <td><a href="BUSINESSOVERVIEW.php">Business Overview
</a></td>

      </tr>

<?php }?>
    </table></td>

    <td name="others"  valign="baseline" align="center">

    </td>

  </tr>

</table>

<?php require_once('PARTS_FOOTER.php'); ?>

</body>

</html>
```

APPENDIX 11

NEWS PAGE

```php
<?php require_once('Client_Authentication.php'); ?>
```

```php
<?php require_once('Connections/database.php');?>

<?php require_once('page_access_info_routines.php');?>

<?php require_once('group_access_routines.php');?>


<html >

<head>


<title>Business Management System Software</title>

<link rel="shortcut icon" href="images/B_ICON.ico" type="image/x-icon" />

<link href="styles/pg_theme.css" rel="stylesheet" type="text/css" />

<link href="styles/menu_theme.css" rel="stylesheet" type="text/css" />

</head>

<body>

<?php $on_news=true;require_once('PARTS_HEADER.php'); ?>

<div class="heading" >

<p align="center"> News Headlines </p>

</div>

<?php
if(isGuaranteedAccessList($my_group_access_list,getCheckAccessList("TAB_NEWS.php","post_news")))

{?>

<p><a href="NEWS_POST.php">Click here to post news.</a> </p>

<?php } ?>

<?php require_once('NEWS_LIST.php');  ?>

<?php require_once('PARTS_FOOTER.php'); ?>

</body>

</html>
```

APPENDIX 12

FORUMS PAGE

```php
<?php require_once('Client_Authentication.php');?>

<html >

<head>


<title>Business Management System Software</title>

<link rel="shortcut icon" href="images/B_ICON.ico" type="image/x-
icon" />

<link href="styles/pg_theme.css" rel="stylesheet" type="text/css" />

<link href="styles/menu_theme.css" rel="stylesheet" type="text/css"
/>

</head>

<body>

<?php $on_forums=true;require_once('PARTS_HEADER.php'); ?>

<div class="heading">

<p align="center"> Forums </p>

</div>

<?php require_once('FORUMS_LIST.php'); ?>

<?php require_once('PARTS_FOOTER.php'); ?>

</body>

</html>
```

APPENDIX 13

PRICE SCHEDULE PAGE

```php
<?php require_once('Client_Authentication.php'); ?>

<?php require_once('Connections/database.php'); ?>

<?php require_once('group_access_routines.php')?>

<?php require_once('page_access_info_routines.php')?>


<?php

$colname_price_entry = "-1";

if (isset($_GET['PriceID'])) {

  $colname_price_entry = (get_magic_quotes_gpc()) ? $_GET['PriceID']
: addslashes($_GET['PriceID']);

}

mysql_select_db($database_database, $database);

$query_price_entry = sprintf("SELECT pricelist.Amount,
pricelist.Title, groups.Title AS CreditedGroup FROM pricelist INNER
JOIN groups ON groups.GroupID=CreditedGroupID WHERE PriceID = %s",
$colname_price_entry);

$price_entry = mysql_query($query_price_entry, $database) or
die(mysql_error());

$row_price_entry = mysql_fetch_assoc($price_entry);

$totalRows_price_entry = mysql_num_rows($price_entry);


$colname_used_scratch = "-1";

if (isset($_GET['PriceID'])) {

  $colname_used_scratch = (get_magic_quotes_gpc()) ?
$_GET['PriceID'] : addslashes($_GET['PriceID']);

}

mysql_select_db($database_database, $database);

$query_used_scratch = sprintf("SELECT COUNT(ScratchID) AS Total FROM
scratch WHERE PaymentID>0 AND PriceID = %s", $colname_used_scratch);

$used_scratch = mysql_query($query_used_scratch, $database) or
die(mysql_error());

$row_used_scratch = mysql_fetch_assoc($used_scratch);

$totalRows_used_scratch = mysql_num_rows($used_scratch);


$colname_unused_scratch = "-1";
```

```php
if (isset($_GET['PriceID'])) {

  $colname_unused_scratch = (get_magic_quotes_gpc()) ?
$_GET['PriceID'] : addslashes($_GET['PriceID']);

}

mysql_select_db($database_database, $database);

$query_unused_scratch = sprintf("SELECT COUNT(ScratchID) AS Total
FROM scratch WHERE PaymentID=0 AND PriceID = %s",
$colname_unused_scratch);

$unused_scratch = mysql_query($query_unused_scratch, $database) or
die(mysql_error());

$row_unused_scratch = mysql_fetch_assoc($unused_scratch);

$totalRows_unused_scratch = mysql_num_rows($unused_scratch);

mysql_free_result($price_entry);


mysql_free_result($used_scratch);


mysql_free_result($unused_scratch);

?>

<html >

<head>

<title>Business Management System Software</title>

<link rel="shortcut icon" href="images/B_ICON.ico" type="image/x-
icon" />

<link href="styles/pg_theme.css" rel="stylesheet" type="text/css" />

<link href="styles/menu_theme.css" rel="stylesheet" type="text/css"
/>

</head>

<body>

<?php
$on_operations=true;$home="TAB_OPERATIONS.php";require_once('PARTS_H
EADER.php'); ?>

<div class="heading">

<p align="center"> Price Schedules </p>

</div>

<p><br/>

  Price Title: <?php echo $row_price_entry['Title']; ?></p>

<p>Price Amount: N <?php echo $row_price_entry['Amount']; ?> </p>
```

```
<p>Credited Group: <?php echo $row_price_entry['CreditedGroup'];
?></p>

<p>Number Of Used Scratch Card:<?php echo
$row_used_scratch['Total']; ?></p>

<p>Numer Of Unused Scratch Card: <?php echo
$row_unused_scratch['Total']; ?></p>

<h1 align="center"> Print More Scratch Cards </h1>

<form action="SCRATCHS_PRINT.php" method="post" target="_blank">

Enter The Number To Print:<input name="ScratchNum" type="text"/>

<input name="" type="submit" value="Print Now">

<input type="hidden" name="PriceID" value="<?php echo
$_GET['PriceID'];?>">

</form>
```