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The Design and Implementation of Bank Management System

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***Abstract*—Banking management systems are most commonly used in banks and credit cards but they can also be found in retail stores, government offices, and other institutions which offer financial services. They are designed to make bank transactions easier by providing a single, comprehensive interface for users to access all their accounts through one website. The technology behind these systems has undergone consequential expansion over time, with many modern implementations consisting of web-based software running on cloud servers hosted by third-party service providers. The banking management system is what you use to manage your bank account. It is the tool that allows you to check your balance, transfer money and so much more. This paper will explore the different uses of a banking management system and how it helps users in their everyday life. We are providing online banking services along with self as well as another account transactions in these management systems which is coded in C programing language.**

***Index Terms*— C Programming, Bank, Management, Transaction, Computerization.**

I. INTRODUCTION

A project titled “Bank Account Management System” could be a computer communication device with financial institution clients who have access to financial services in a public manner without the need for a personal secretary or long-term banker[8]. As we all know that if the number of users goes up, we need more banks and more employees means more employees and, putting more money in the bank is more risky and less secure. When we develop a high-quality computer-based industry. Therefore, there is no need to open additional branches otherwise the capacity is reduced and high data is automatically stored on the bank server.[1]

The “Bank Account Management System” project is an online banking model. This site allows customers to perform basic banking services by staying in their offices or at home with a PC or laptop. The system gives the client access to create an account, add / withdraw money from his account, and view reports for all accounts [4]. Customers can log on to the bank's website to view their account details and perform account operations according to their needs. With online banking, the brick-and-mortar construction of traditional banks is transformed into a click and a site model, thus giving the visual banking concept a realistic feel. Therefore, today's bank is no longer closed to branches. E-banking facilitates banking and customer transactions around the world around the world[9].

The computer-based management system is intended to manage all the initial information required to calculate the monthly customer account statements including the monthly statement for each month. A separate website is maintained to handle all the important points needed to calculate the appropriate statement and practice[12]. This

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project aims to introduce more user-friendly relationships between various functions such as record keeping, editing, and search. Similarly, record keeping and updating can be accomplished using an account number where all key points are automatically generated.[7].

Searching the record has been made much easier as all important customer points are usually obtained by entering the ID number or account number of that customer. This system provides fast, efficient, reliable and easy-to-use and free banking communications. the possibility of data loss while processing user data i.e., customer account transactions.[10] This software provides a reputable computer program which means that a user of basic computer knowledge can use this application. It also reduces accountant accounting effort and reduces real-time accounting burden. This software enables instant transactions such as new account creation, account withdrawals, account deposit, account holder bank account and whether or not there is a large amount of data within the system website[13].

II. LITERATURE REVIEW

Dr. Gita Sharma, Online Banking Survey in India, International Journal of Management and Technology Research discussed the role and benefits of online banking in the Indian banking sector. We also discuss online banking statements, online transfers, online payment services, online applications, Demat account consultations, and care. Geeta Sharma, Online Survey of Indian banks, International Journal of Technology Management and Research discussed the role and benefits of online banking in the Indian banking sector. We also discuss online banking statements, online transfers, online payment services, online applications, consultation, and maintenance of your Demit account[8].

Ebubeogu Amarachukwu Felix, Bank Customer Management System Analyses and identifies banking channels and service options for multiple banking systems, and evaluates factors influencing the purpose of accepting or maintaining existing banking transactions between users and non-users. Internet banking users. As the banking sector evolves, customer management systems will continue to be effectively used as an effective complementary tool to improve customer relationships and trust and generate stable income[9].

Richard Baskerville, Marco Cavallari, Christian Hjort Madsen, Jan Pris Hey, Scalable Architecture Maddalena Sorrentino: Bank Design, Prevention and Improvement of Unused Zones. Learn about an Italian company that has made big mistakes in the past compared to top banks. These "parameters" will be updated automatically when legitimate use is voided. Breaking the law can therefore be risky as it encourages bank users not to borrow too much, which calls into question the value of current banking relationships.[2]

Muhammad Abdus Satar Titu and physician. Azizur Rahman, Online Banking System, Other Private Commercial Banks Opportunities in Bangladesh describes the acquisition, its key components, the basics of online banking, customer satisfaction, and the main challenges they face. Internet. Banking Services Bangladesh Bank.[11]

The Article “Online Banking Mistakes” Found Posted on News-wise, Retrieved July 23, 2008. This paper tells How to Avoid and Fix Faulty Circuits. Learn about an Italian company that has made big mistakes in the past compared to top banks. This "optional" value is incremented by default if legal usage is weak. As a result, abuse of the law can be dangerous as it encourages bank users to default on a variety of debts, which could call into question the value of current banking relationships.[7]

In these article “Computer Giants Provide Good Improvement in Additional Use of Corporate Videotex” Information and Communication Technology (ICT) has helped to improve global competitiveness. We also use SOA architecture to provide a reliable and trustworthy service to learn about SOA architecture to know how to implement the implementation process in our project using Service Oriented Architectures (SOA). Information about Scandinavian bank and Swiss bank These two banks operate based on service-based institutions to provide customer service. SOA provides strength to the organization’s greater speed (and thus more competition)[6].

Palani and Yasodha P. (Apr 2012) The take a look at paper makes a specialty of patron perceptions of cellular banking furnished with the aid of using India's far flung monetary middle and is mainly powerful inside numerous cellular banking clients. The consequences have proven that gender, training, and patron may also have a widespread effect on cellular telecall smartphone banking. A lot of studies have cantered at the reputation of cellular banking due to the fact customer training is now not a terrific component that humans have completed. A famous take a look at is if the abilities may be advanced with the aid of using the variety of clients there can be extra dedication at a part of the clients concerning using a cellular bank. Other elements including protection are consistent, gender, training, religion, and rate must have a small impact on customer belief for the duration of cellular banking as compared to different elements.[15]

Thakur, Rakhi; Srivastava, Mala (2013). The paper researches factors that it perceived usefulness, the ease of use and the social impact are found to be the major determinants of the readiness period to be used in the mobile business while the practical conditions are now not yet great. This paper suggests that security and privacy issues are important in preventing clients from using the mobile phone business. This study examines an integrated model of ethical purpose in the direction of economic development. the real implications of this we look at one of the few proven studies that have investigated the adoption of mobile phone trade in India, which is considered one of the fastest growing countries in terms of cell use. It provides a solid basis on which mobile phone companies and banks can support their mobile credit advertising and marketing strategy.[16]

Mood Shah, "E-Banking Management: Issues, Solutions, and Strategies", (2009). The research was conducted to determine the skills offered by all mobile banking and mobile stores and Benefits of it. Following the second look at the record reveals a framework for highly developed processes based entirely on critical evaluation of collaborative models. Banks and cell phone retailers have been searching for water out of fear, and the next one has called banks and mobile phone stores and much less than communicating with their customers. this newsletter removes the sophisticated compliance style that organizations come up with in their approach to increasing mobile usage and unveiling the keys to new partnerships[9].

Bahman Saeidipour, Hojat Ranjbar and Saeed Ranjbar's, "Adoption of Online banking", In this paper investigates factors that influence customer satisfaction for mobile banking users. Customer satisfaction is one of the key marketing issues in the last three decades. This study focused on respondents who use banking services managed by their service provider. In the study 100 respondents were identified. Respondents came from private and public sector banks in Udaipur, Rajasthan. Respondents' opinions were collected using a systematic questionnaire. The data collected has been analysed using tools such as feature analysis, chi-square and correlation analysis. In the analysis of the feature varimax rotation is used and a link matrix is used to identify the relationship between service quality, visual value, flexibility, innovation, product vision, strategic authorization and effective banking service performance for customer satisfaction.[12]

Laukkanen and Tommie (2007). The motive of this paper is to assess and examine on-line purchaser fee thoughts and cell banking. The effects display that purchaser fee thoughts for banking methods range among the net and cell channels. The findings propose that efficiency, consolation and protection are essential in figuring out variations in purchaser fee perceptions among the net and cell banking. By knowledge how one-of-a-kind carrier channels offer and what kind of fee to clients Service carriers are empowered to carry out moves to enhance net and cell banking. The paper donation is in the process of achieving a deeper understanding of online consumer value ideas and mobile banking[3].

III. Methodology / Experimental

In this bank management system, for the code, the concept of data structures for the different variables, functions for the different parts of the code, file handling for storing and monitoring all the records that is the accounts. Now, first and most important part is the authentication which was done by setting up a password only known to the user without which the system cannot be used. The main parts or headings that contributed in the system were first to open a bank account, update the information about the existing account, transactions to carry out if any, checking the details of a current account, remov\e account in case of any discomfort, view customers list for the owner to check the accounts and keep the transactions clear to avoid any fraud, online banking to transfer money into someone else account and exit to go out of the system. The detailed description of them explained below.

First is to open an account which the primary thing to use the bank services. It is coded in the void new account method which is then invoked in the main function to run it first in the function. In the function file handling process is initiated and the file is open to record any new entities. Then all the important details necessary for opening the account are asked like name, identity proof, birth date, address so on, then stored in the respective variables using the data structure with a final message account created successfully with updating the record in the file created. Second is to update the account where the customer is told to enter the account number generated by them which has to be kept secret to avoid any fraud then they can change anything they want which will be updated in the record file ,after which transferring them to the main menu. Third one is transactions where the person can deposit money in their account or withdraw using the function transact which only opens when they enter the proper account number after which it has two options withdraw and deposit in the fixed account service provided .It further asks the amount for both the options and then deposits the money in the respective account or withdraws the given sum from the account which is stored in the amt variable and with data structures it specifies which part amount to be added or deducted. At the begging all the account start with

0 rupees until there is no money deposited and in case of person getting bankrupt a certain message is being sent that no money is left so no more amount can be withdrawn.
The next service provided is of checking the details of existing account where the user by entering their account number can view all of their personal details, the money left in the account to kept them updated and to check the interest being added every month with the amount of money deposited according to the account type. This is executed in the see function which first opens the file ,then displays all the results after corresponding account number is mentioned. It then displays the interest using the if else ladder method which has provisions for the account type like fixed 1, 2 ,3 and savings account. This helps the customer to keep a record if they want to change the account type based on their choice of interest. Fifth part is to remove the account carried out in the erase method where person enters account number and the account is deleted from the database by elf command which deletes any data required from the file and shows the message to user accounted successfully deleted.
Sixth part is of the main menu contains view costumers list executed using view list function which is for the owner to check the details of all their customers by opening the whole database file to completely monitor their accounts and help them with any queries they have .It also allows the user to talk about any new schemes available in the system that can be beneficial to the user. Seventh part is the online banking system done using ATM function to help users transfer money from one account to another. Here they have to create a new account and then will transfer money to account of another person by entering their phone number and then the amount to be transferred. The last part is to exit the code don by close function ending the code with the owner’s name and an acknowledgment of thanking the customers to use the system.

IV. Objectives and Purities

Banking has always been an industry that is difficult to deal with. With the large number of transactions that are processed on a daily basis, it can be hard to manage without the right tools. This is why many banks are now using the banking management system, which helps them keep track of every transaction and customer account. The software provides valuable data on customer's preferences, spending habits, and more. This information can be used by banks to tailor services to different segments of their clientele or provide targeted offers for specific needs. The system's goals include providing the right services to the right customers at the right time, avoiding fraud, providing reports to managers and investors, and recovering from both normal and unexpected failures. In order to address these goals, banks need to be able to accurately assess their risks in a timely manner. They need management information systems that can provide a snapshot of a bank's entire enterprise at any given moment in time. However, there are several risks associated with this system. For example, it can be hacked or there can be security breaches due to faulty programming or coding errors. This will result in an increase in frauds which will result in losses for the bank and customers alike. But We are aiming to develop a good security system which consist of Login system with the Password Encryptions.

A. *Key Goals*

- ✓ Our main aim is to make maximum Banking services available at home in just one click. These will also save Time, Money and Energy of the Customer. Basically, it will give relief to people and make their life easier.
- ✓ In this regard, our main goal is customer satisfaction in view of the current situation fast in the world.

B. *User’s Pleasure*

- ✓ The Customer or user can perform their respective work in a very fluent and Efficient manner.
- ✓ Our software will meet to the customers requirement and make Banking services easier.

C. *User’s Protection*

- ✓ We provide the ultimate Security for the user in various money involving process in the program. We have also included a secured login system in it.

D. *Money Transfers*

- ✓ Assist the client by transferring money and / or to another bank or country

V. Software Development Lifecycle (SDLC)

SDLC or the software improvement lifestyles Cycle is a manner that produces software programs with the best usage and lowest price in the shortest time possible. SDLC offers a well-established flow of stages that help any

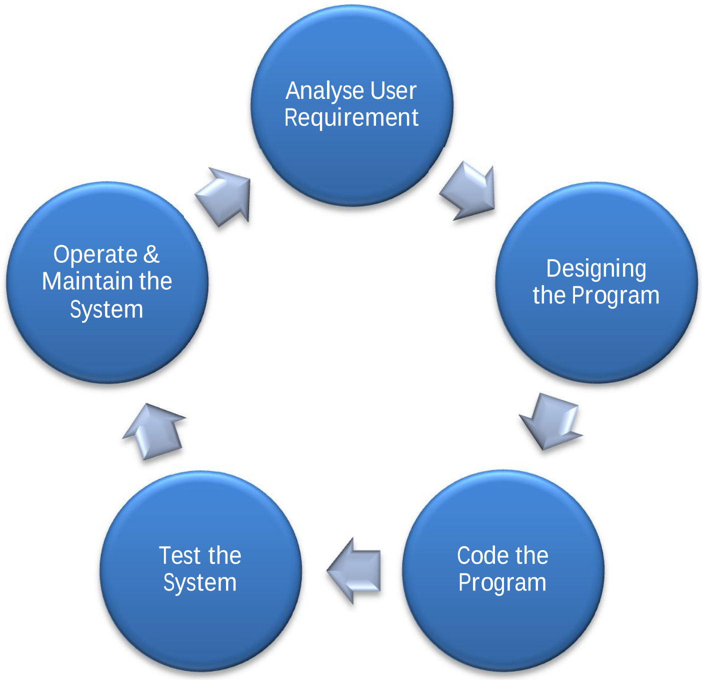

Figure.1 SDLC CYCLE

project be it our website or anything to speedily produce the output that's properly tested and prepared for our use. The flow of stages of SLDC cycle is showed in Fig. 1. It is basically a procedure followed for making any software project. It consists of précised description about the development ,maintaining and making changes to enhance our work. The cycle defines the method of improving the quality of our work with these processes SDLC consists of following parts and how they are implemented in my code is also mentioned. A machine improvement lifestyles cycle is a logical system with the aid of using which machine analysts, software program engineers, programmers, and quit customers construct records structures and laptop programs to clear up enterprise issues and needs. The most important levels worried withinside the MIS improvement system are known as machine improvement lifestyles cycle. Each section of the improvement system needs to have nicely described goals and on the quilt of every section and development closer to assembly the goals need to be evaluated. The improvement system has to know no longer maintain till the goals of all previous levels had been met. System improvement lifestyles cycle is a phased method to evaluation and layout to make certain that structures are satisfactory developed. These tests are then used as part of the final evaluation of the system prototype.

A. Analyse User Requirement

Requirement analysis is one of the most important and basic stage in SDLC. By reading the research papers I got to know about the requirement of my system. we have to understand the theory regarding all the requirements to make the project work properly. For my project I defined all the requirements by learning the concepts like file handling, data structures, function call, and so on to make my code productive, logical and understandable to someone else. User need very simple and easy interface to access the all services provided by us including fund transfers and many more facilities.

B. Designing the program

In this process, based on the requirements, the program is designed to start the further processes of coding Here, the design was kept to 8 parts creating an account, updating details, transactions, view list, delete account, online banking, close.

C. Code the Program

In this stage the actual development begins and code is built. If the code is built in a detailed and organized process then the code execution is completed without much trouble. In my system whole code was done using c language only and it was very easy and reliable programming language.

D. Test the System

This stage is involving to complete the code with all my requirements and check for any bugs or problems which if found have to be tracked, fixed with the code being reset until the program reaches to its maximum quality. This was the second last stage of my program and the output was properly displayed as I wanted with all the primary features that can be used by the customer in a bank management system.

E. Operate & Maintain the System

This is the last stage where all things are done now it's the time to show the output to the dignitaries and how the system works along with any suggestion from their side and to keep open for any normal individual to use and work on it. Also keep maintaining the system as it will definitely help to show the work done by self in future and give the chance to some future thoughts for upgrading and modifying the system to go on the higher-level.

VI. Proposed System

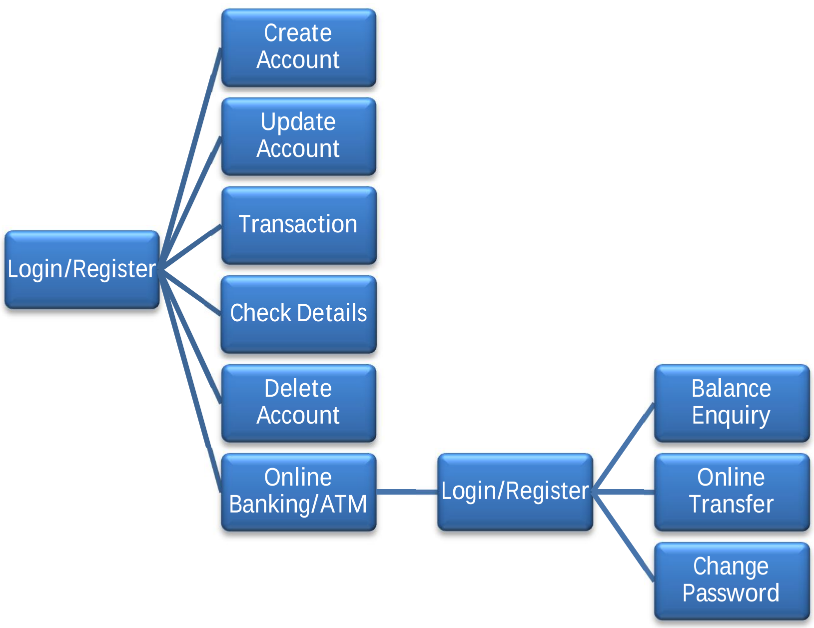

Figure 2. System Architecture

The proposed gadget is an excellent automation their information related to user accounts can be overprotected accuracy that even minimizes system and human damage. You have made mistakes and this current device works very well to provide first class donations to customers and the financial institution as it stands has the right to a friendly consumer access in a very short time compare daily bank gadget. while statistics are included it will check its suitability. Appropriate massage is given at the time required for the buyer now will not be corn right there. The access to information screen is designed in such a way that each has its own numbers deception can be accomplished, and it provides a file view resources. Our project is progressing in line with the figures below. Below Fig.2 this action is found in an online banking, person you can register first and then sign in. when the user logged in successfully, they will perform various functions like withdrawing money, cash change, deposit, Aadhar link and personal account, change account in one place to any other place and so on. The administrator has full authority to deal with the entire user account at once chain transactions to avoid unauthorized access. The buyer may update his details such as address, touch variability and so on. In a financial institution management machine, we have used n-tier architecture which is useful for managing different bonds smoothly as well sequential order.

A. Advantages of Proposed System

The device is quite simple in layout and to implement. The device calls for very low device assets and the device will paintings in nearly all configurations. It has been given following capabilities Security of information.

- ✓ Ensure the accuracy of the information.
- ✓ Proper management of the best officials.
- ✓ Reduce mechanical damage.
- ✓ Minimize the entry of guide information.
- ✓ Minimum time required for maximum processing.
- ✓ Very efficient.
- ✓ Better service.
- ✓ User friendliness and interaction.

VII. MODULES DESCRIPTION

Here, is the Description of the Modules used in Bank Account Management System project module. These modules will be coded in C programming language where we have used File Handling in C as a Backend for the project. A module is a software component or program component that contains one or more components. One or more independently developed modules make the program. A simple user can access his account and can add / withdraw money from his account. The user can also transfer funds from his or her account to any other bank account. The user can see the activity report and balance check and There are other features and actions that can be done on the back account but otherwise we will only look at all bank accounts to get the basics, thus avoiding overreaction to make the task harder. A business-level software program can contain several different modules, and each module uses different and different business functions. Modules make the editor's task easier by allowing the editor to focus on only one application area. Modules are usually integrated into the system (software) using links. Following are the modules that we have used while programming the code.

A. Create a New Account

A customer with a global account can create a virtual / online bank account with this module. This module obtains customer profile information and bank account details with proof of bank account ownership.

B. Virtual/Online Account

Following approval for the creation of a new account, the customer provided a unique identifiable account number to conduct online financial transactions. The module looks at the details of the virtual client account installed.

C. Login

Virtual account administrators can access the system using this module. So, this is a secure customer entry page.

D. Bank Accounts

The customer may have more than one bank account at various banks. In this case, the customer is asked to determine which bank account will appear on the bank account or the amount of the loan. For these activities customers can add their bank accounts here and they will be approved by system administrators.

E. Payment Transfer

This is a visible transfer module in a bank account. holders or transfers of a bank account manager transfer from a specific customer account to another specified bank account.

F. Beneficiary

The beneficiary is the person who receives the money. Here the customer can add beneficiaries to make future transfers.

G. Transactions

This module shows the transactions made by the customer at a specific date with the details of the transaction.

H. Management

This module contains similar administrative functions view all virtual accounts, transactions, authorize bank accounts, authorize virtual accounts etc.

VIII. RESULT AND DISCUSSION

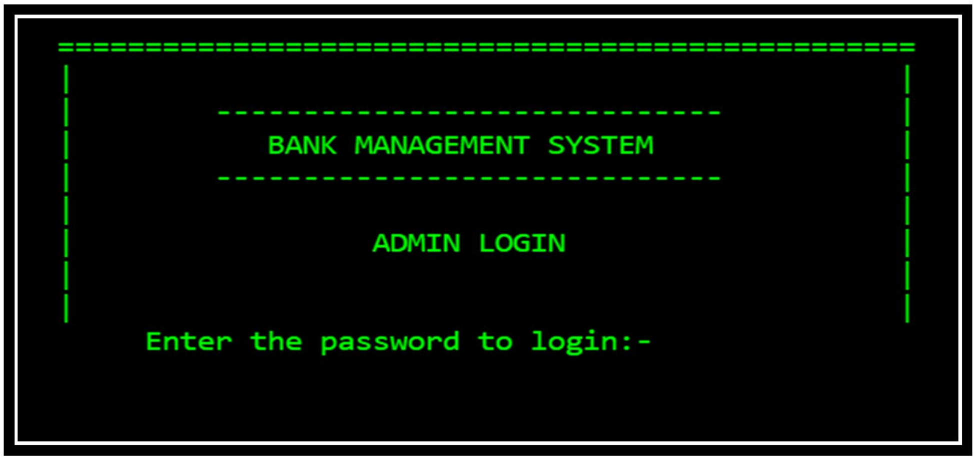

Figure.3 Login Page

A successful bank management system c program has been built with a safe and sound login system where all the data is kept only in one place. Then a main menu displaying all the features provided to the customer starting from creating a bank account which will require all the details like name, date of birth, Aadhar card for verification and so on. This account will be visible to the creator all the time and there will be no place for any hacking. The customer can make changes anytime he/she wants with the next option that is update information in the existing account with the persons account number as well as remove the account with the option remove existing account in case of any problem and the account will be removed from the database. Then one of the major parts of any banking system is the transaction part where you can remove or deposit money from your account using the account number and the details will be reflected for you to check in the details of existing account option finally with the exit option to end the program. In Fig (3) we have showed login page of our project. There are many aspects of a bank management system that can be assessed to see if it is successful. One aspect is the level of customer satisfaction, measured through interviews with customers. Another aspect is the level of employee satisfaction, which can be measured by surveying the employees. In below figure (8.2) we have showed the main menu section.

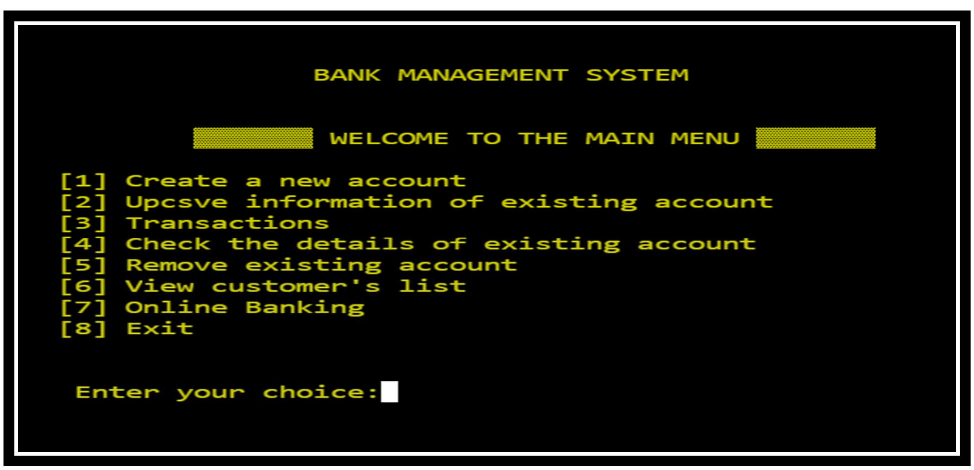

Figure.4 Main Menu

IX. Conclusion and Scope

The scope of this activity is limited to some of the functions of the banking system operating unit including account opening cash deposit withdrawals transfers from one account to another and updating personal information this app does not focus on other online services such as online shopping loan application etc. I have successfully designed developed and implemented this bank customer management system which provides a highly secure way to manage banking customer information and strengthen relationships between banks and their customers by providing appropriate application solutions multi-level security to improve customer satisfaction. I therefore urge other developers of the same app to think twice about how they can better develop a more secure system that will meet the challenges we face today especially in the banking sector etc. based on the research work we have successfully designed the internet banking system to find out what the future of online banking looks like it is probably worth considering now that online banking is not new when you think of online banking you are probably thinking of a computer either a desktop or a laptop three or four security steps and an interface that lets you view your various balance accounts and credit cards while allowing you to transfer money and pay bills the most important future looks below:

- ✓ Many bank branches, almost international, which means more ATM machines outside.
- ✓ Development of customer problems based on their needs, so the help desk will be able to meet their needs and is easy to use.
- ✓ To Build a Mobile Banking app which help users to get their work done without having to visit bank for any type of work. In near future all work in Bank has to be completely Paperless.

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