SMS banking using Cell phone

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ABSTRACT: SMS banking which is a technology enabled services to its customers, permitting them to operate selected banking services over their mobile phones. To implement this system, "SMS Banking Using Cell Phone" a GSM Phone is connected by a data cable to a computer. The system will receive SMS from customers via GSM phone. The received message will be saved into a table in the database automatically. The message is to be read and compare with the criteria to the database record and manipulate the desired result. Then the result is automatically sent to the customer Phone and the update record is saved to the database. With this system the customer can create an account, see the balance, transfer balance to another account and can take various help through SMS and much more. The proposed system will add a new convenience to online banking services. With the contributions of this work the customers remain connected with the bank more closely- anywhere and anytime, just sending SMS and receive all pull and push services instantly. The data transmission will be held using Mobile Phone Network. The mobile interfaces to the PC by the data cable through communication port. To develop the system we used Visual Basic and MS SQL server on the Windows Platform.

KEYWORDS: Information on demand services, GSM network, Mobile Banking, SMS system, Banking services.

1 INTRODUCTION

Now days of Information Technology the uses of Cellular Phone System have drastically changed our life. It has the facility of easy portability and voice or SMS command remotely [2]. The Advent of cell Phone has greatly extended our information processing capabilities like SMS Banking. Short Message Service (SMS) is the transmission of short text messages to and from a mobile phone, fax machine, and/or IP address. SMS is a relatively simple messaging system provided by the mobile phone networks. SMS messages are supported by GSM, TDMA and CDMA based mobile phone networks currently in use [3]. Cell Phone has influenced organization of all types and sizes to its speed, accuracy and information retrieved capabilities. SMS banking has power and speed to eliminate many formerly tedious operations and free our Banking System in the new horizon. The mobile banking system has potential to provide access or delivery of very specific and highly necessary information to customer as given in [4]. Growth in the Mobile Banking is driven by various facilities like the convenience of banking operations, greater reach to consumers and Integration of other m-commerce services with mobile banking. In Mobile banking there is no place restriction, it is high penetration coefficient as the growth of mobile phones is more than computers, it is fully personalized and private increasing transaction authenticity and is available all the time with users.

In the recent years, many programmers are trying to develop Software that includes Mobile Phone SMS (Short Message Service) command throughout the world. This task is partially done in Europe and America. The proposed work entitled as "SMS Banking Using Cell Phone" is a step to develop such system that will include SMS commands.

The system will be very important because the proposed system:

- Provides Banking System in the grief.
- Saves Money and time to take banking services.
- Provides human being a luxurious life.

- Enhances the working speed of the application users.
- Facilitates the physically disabled person to use computers.
- Provides low cost and high performance

2   PROPOSED SYSTEM

The proposed software would provide the following banking services using Short Message Service (SMS):
- Create an account through SMS
- Balance Enquiry(Check Balance)
- View list of linked accounts
- View account history-last 3 transactions
- Check request
- Statement request
- Stop check payment
- Balance Transfer to another account
- Show the Last Transaction
- Change Password
- Help Services

3   DESIGN & IMPLEMENTATION

3.1   INTRODUCTION

In accordance with the nature and scope of SMS Banking Using Cell Phone, several program modules are written to cover all the operations. They are

- Receiving SMS from customers
- Processing the SMS (Sectioning the SMS).
- Updating Database According to receiving SMS
- Sending reply to the customer

3.2   REQUIREMENTS

For implementation of the proposed system, the hardware and software requirements are as follows-

- GSM modem.
- GSM phone.
- SMS and Pager Toolkit (ActiveXperts [1]) for receiving messages, sending messages.
- Visual Basic Programming Language.
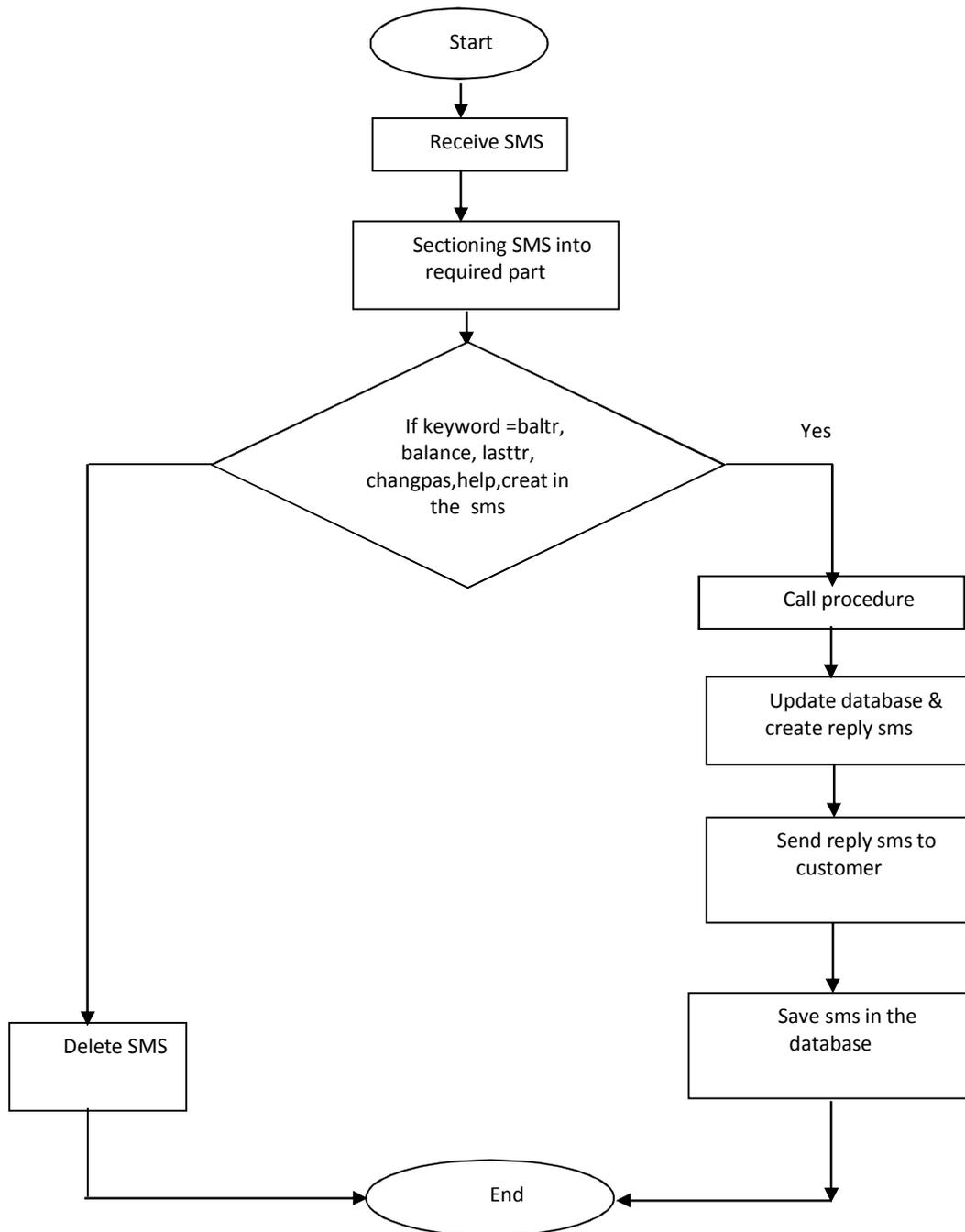- Microsoft SQL server for creating/updating databases.

3.3   IMPLEMENTATION

The Program consists of several parts. The system design block diagram and flowchart are given below:

| Personal computer | ⟷ | Connected mobile phone | ⟷ | Base station | ⟷ | Customer mobile phone |
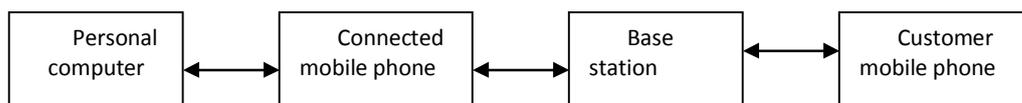
Fig. 1. System block diagram

The system implementation Flowchart given below:

Fig. 2. Flowchart of the system

3.4 SMS RECEIVING METHOD

In the complete developed system any customer can know his account balance by sending SMS to the computer connected mobile number and within a short time he will get back a message about his balance. This reply message may be produced either manually or automatically. For this purpose we proposed a way of interfacing the computer and cell phone.

Base station

Developed system with connected phone

Customer
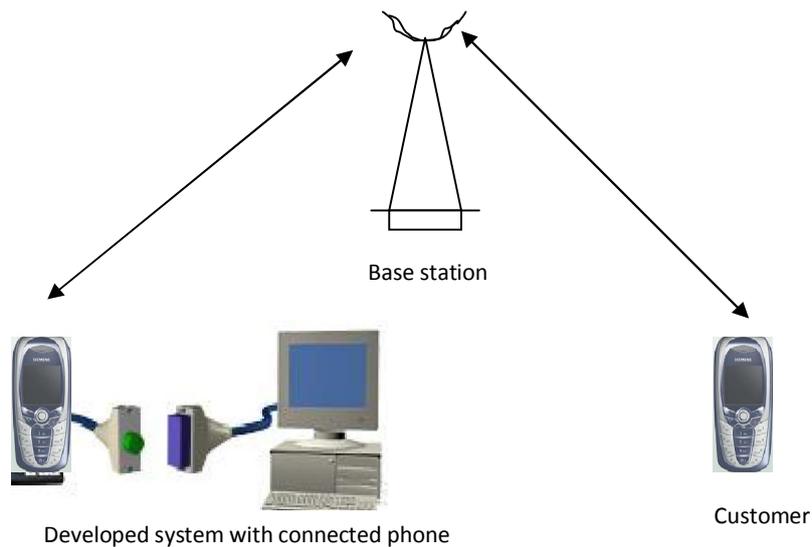
Fig. 3. Data transmission system

We connected a mobile phone in the one side of the data cable and the other side is connected to the computer main board USB port (COM3). This hardware is now combined with different software and the system will do proper work. When any customer sends SMS, the SMS received by the developed system via computer connected phone directly for processing.

The following sample demonstrates how to receive an SMS message using a GSM modem (or modem-capable GSM phone):

```
Set objGsmIn = CreateObject("ActiveXperts.GsmIn")

Set objConstants = CreateObject("ActiveXperts.SmsConstants")

objGsmIn.Device = "COM3"

objGsmIn.EnterPin ("1234")

' SIM cards PIN number

objGsmIn.Storage = objConstants.asSTORAGE_DEVICE

objGsmIn.DeleteAfterReceive = True

'message deleted after receive

objGsmIn.Receive

' receiving message

objGsmIn.GetFirstMessage

        While (objGsmIn.LastError = 0)

            objGsmIn.GetNextMessage

        While end

Text1.Text = objGsmIn.MessageData

' incoming mesaage directly come to text1

Text2.Text = objGsmIn.MessageSender

' customer phone number to text2
```

3.5   Sms manipulation & data processing

The received SMS manipulation and Data processing will do in the following steps:

1. The SMS is received in the text1 in the main form.

2. The SMS sectioned under some criteria as under:

    If the word "balance" in the incoming SMS

    Then the SMS will section into 2 parts

    If the word "baltr" in the incoming SMS

    Then the SMS will section into 5 parts

    If the word "creat" in the incoming SMS

    Then the SMS will section into 10 parts

    If the word "help" in the incoming SMS

    Then the SMS will save without sectioning

3. For Balance the SMS sectioned into two parts: balance and account no. and search with the account number, then send a back SMS to the customer.

4. For balances transfer the SMS sectioned into five parts: baltr, customers account no, customer password, accounts no to be transfer, and amount. First check customers account. No. if found, then check password, then check amount to be transfer. If everything is right then update the database and send back SMS to the customer.

5. If any wring in the SMS such as keyword, account no., password, amount, and the system will send a SMS to customer with the information about the wrong.

3.6   Sms sending method

After processing and updated database with accordance of the customer's demand, the sending message is created and sends to the customer.

The following sample demonstrates how to send an SMS message using a GSM modem (or modem-capable GSM phone):

```
Set objGsmIn = CreateObject("ActiveXperts.GsmIn")

Set objConstants = CreateObject("ActiveXperts.SmsConstants")

Set objGsmOut  = CreateObject( "ActiveXperts.GsmOut" )

ObjGsmOut.Device = "COM3"

 objGsmOut.MessageRecipient = "cell phone number"

' Recipient's mobile number

objGsmOut.MessageData = "Hello, world!"

' SMS message text

objGsmOut.RequestStatusReport = False

' No request for status report

objGsmOut.ValidityPeriod = 0

' Use GSM operator's default retry time

  objGsmOut.EnterPin ( "1234" )

' SIM card's PIN code

objGsmOut.Send()

If objGsmOut.LastError = 0 Then
```

```
            Wscript.Echo "Message successfully delivered."

                    Else

            Wscript.Echo "Error: " & objGsmOut.LastError

        End If
```

4   RESULT AND DISCUSSION

4.1   EXPERIMENTAL RESULTS AND DISCUSSION

This work was aimed to develop a short message service (SMS) based Banking system. The system was tested with several SMS (six of which are given below) sending to a specific phone number which was connected to the computer and within few second the reply was received by the customer phone, and then the database was updated within that time. The percentage of accuracy rate of getting a reply and updating database has been calculated using the following equations:

$$\text{Percent of accuracy} = \frac{\text{No. Of reply}}{\text{No. Of Receiving SMS}}$$

Table 1. Receiving & sending SMS with SMS format

No	Services	Receiving Message	Sending Message
1	For balance show	<keyword><space><acc no>Balance 1113	Nane: Rofiq acc: 1113 BL:5000
2	For balance transfer	<keyword><sp><acc><sp><pass> <sp><acc to ransfer><amount> Blatr 1113 333333 1112 100	Tk. 100 Successfully transfer to 1112
3	For last transaction	<keyword><sp><acc> Lasttr 1113	Withdraw tk. 100 to 1112
4	For deposit	<keyword><sp><acc><card no> Deposit 1113 3333333333333	Updated acc addinh tk.5000
5	Change password	<keyw><sp><acc><sp><old pass><sp><new pass> Changepass 1113 333333 666666	Password change to 666666
6	For help	<key><sp><question> Help <question>	Call to a specific mobile number.

4.2   LIMITATIONS OF THIS SYSTEM

- The message must be according to the instruction of the system
- Only for help customer can send message willingly but must be within 160 characters.
- Data cable connections are very sensitive.
- Due to congestion the reply may be delayed.
- If a battery has no charge receiving and sending message is stopped.
- Mobile network surrounded in limited zone, so out of network this system failed to serve customers.

4.3   CONCLUSION AND FUTURE WORK

Most of the people are involved in the banking system for money transactions, so it is extremely important for banking section to provide effective and timely services to the customers concerning general banking. This paper introduces an approach for implementing such services quickly through a low cost computer application. The application uses the Short Message Service (SMS) feature that is widely available on every mobile phone, which makes it one of the most efficient methods of communication.

Actually the developed system gives an introductory idea about SMS Banking. As the field of mobile communication is a rapidly increasing field several improvements and investigations can be made in this field of Banking in the fast and secured manner. By studying this work it is possible to give more services in the banking sector.

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