

## Implementation of GSM Technology and Cloud Computing Concepts on Various Organisations

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### Abstract

Today Cloud computing consist of every vertical market in all regions. Organizations are adopting innovative Cloud applications to support daily operations. To drive growth and innovation in the Banks, it is increasingly necessary to use IT and transformation of the Business Model for dramatic Leapfrog of competition. To bring the dramatic changes in Banks require new ways to maximize profitability and return. Cloud Technology offers secure deployment options which can help Banks to enable effective collaboration, improve speed to market and Develop New customer experience, while increasing IT efficiency. By taking the advantage of Cloud computing Banks are better to respond to the interconnected global financial Systems, economic uncertainty and also demanding Customers.

Cloud computing is also used in GSM operated System against automatic token for Banking. The time is not renewable and continuous quantity. Any process that saves time and space is considered essential in many applications. It is an important factor that needs to be managed efficiently. Wasting time in a row is always negotiable and that is what the current Queue Management System finds its meaning. This work has intelligent Queue Management System which removed the burden of waiting in a long Queue until it is visited. The System presented here keeps the long waiting time of a customer in a Queue for banking transactions.

**KEYWORDS:** Cloud Computing, Intelligent Queue Management System, GSM.

### 1. Introduction

Banks can use the Information to improve customer segmentation Techniques and to develop targeted services that are aligned with customer needs. Banks can optimize their investment in Channels and differ through customer service excellence. Access perceived cost savings, ease of sizing and scaling-out, time-to-market faster for the supply of Systems, enterprise data Virtualization as a service, the Company's Technology standardization and the possibility of data and applications anywhere entire display critical factors can lead to computing in financial services companies in the Cloud to take over. There are numerous ways for financial services companies to take advantage of Cloud computing by migrating number of applications in the Cloud. Non-core applications and Business processes such as recruitment, payroll and travel Management across the enterprise can and should easily move to the Cloud. A number of infrastructure projects such as datacentre Management, data Storage and disaster recovery, must move offers in a Cloud and document based on the flexibility of Cloud Providers in order after a thorough evaluation of several suppliers. Due to its advanced computing power and capacity of a Cloud can store Information about the

user's preferences, enable the customization of the product or service. Cloud computing variability guided by using the given context makes it possible for Banks to customize and personalize customer interactions to subtle changes, which leads to a focus on user experience.

Banks are migrating towards the use of cloud computing application for different Operations. A major obstacle to large investment in New Technology has always been requires the investment in infrastructure in advance. With Cloud computing different financial institutions have to budget for running costs and pay for the services they use. This makes it easy and cost effective for testing of new applications in the Cloud, prevails over Traditional infrastructure.

Cloud computing service Model is not for meet all technological requirements for any financial organization. Banks should develop an application portfolio and get consisting of both applications in the Cloud and ground. While endorsements in legacy Systems continue to Cloud-based services are ideal for the latest Business areas. Cloud-based services are expected to provide the minimum investment edge in the implementation of Business strategies and faster turnaround time for product performance and service.

## 2. Literature Review

An electronic voting, electronic voting Systems, also known as Personal Systems Response (PRS), Audience Response Systems (ARS) or Communication Class in Systems (CCS) to use Mobile phones as the sender, if the person is within range of the receiver or use the GSM Mobile Equipment (ME) answer from anywhere. In order to minimize the disadvantages of generic e-voting, we propose a method in which a voter, the certificate wireless issued in advance, uses its own GSM Mobile phone without a special register to vote. In this work, a GSM Mobile Technology voting scheme is taken as the simplest application of the personal response System based on GSM, a voter without the limitation of time and place their vote to play a simple and convenient way by integrating an electronic voting System with GSM infrastructure (Monali R.Dave).

This document defines the building blocks and passes basic queuing Systems to move one type of service by Customers in a particular sequence to a particular service according to customer needs and integrated alarm notification also via SMS are being sent to Customers while they wait for the progress of the update. The study usually focuses on Bank Management System on credit applications, the various queuing algorithms that are used in Banks to serve Customers, and the average waiting time. The main objective of this research is to develop a Model of Integration of alert notification via SMS loan applications, while queuing and analyse the status of the Queue, to decide on which customer to serve. The researchers assumed empirical approach to achieving your goals. The target group includes mainly the Bank's Customers. The researchers applied to select a random sample technique interviewed. There were some interviews and questionnaires to Bank Customers took their satisfaction with the present System and the adoption of the proposed System for data acquisition, to find that allow easy analysis. The data were presented in a table and a graph for presentation purposes. The researchers used the study to design knowledge and develop a Model. The requirements for this Model were obtained from the answers that were the target audience. Some of the variables that loaded low than the

theoretical set input values were taken as those that are higher than the thresholds loaded were maintained. These are the ones that have been recorded in the last loaded Model built using AMOS Software (Peter Sungu Nyakomitta and Vincent N Omollo, Nov. 2014).

In this article, we will focus on the application of a Mobile time reservation System for dental care. The specific application allocates to cancel dentist times to New Customers and New Customers are looking for from a waiting list with the Global System for Mobile Communications (GSM) Short Message System (SMS). This article shows how the standard Technology, widely used - when used innovative - many advantages to many actors with reasonable costs and to bring changes in Business processes. We present and analyse the function of a booking appointment System SMS Message based dental service, which was implemented in Lahti, Finland. The analysis includes a description of the System operation and the evaluation of the success of the service provider and the customer's point of view. The Internet has opened new avenues for open communication with Customers, also for public services. However, there remains the issue that not all features and capabilities of the New Technology will be used to the maximum. Processes can be done faster with the new medium, but you should simplify. In this article, we focus on the use of a Mobile time reservation System for dental care. The specific application allocates to cancel dentist times to New Customers and New Customers are looking for a waiting list with the Global System for Mobile Communications (GSM) Short Message System (SMS). From the beginning, the new application - in conjunction with other methods - could limit the amount of time intervals to completely lost less than 10% cancellations. This article shows how the standard Technology, widely used - when used innovative - many advantages to many actors with reasonable costs and to bring changes in Business processes (Reima Suomi).

Cloud computing is a paradigm emerging Technology that a flexible and scalable IT infrastructure has to enable Business agility. Multiple vulnerabilities exist in Cloud computing and various Threats to Cloud computing. We have some real cases studied where Cloud companies were infiltrated by attacks. In this article, various types of attacks are discussed, real cases are investigated, and the solutions offered are Developed and presented (Chimere Barron, July 3 - 5, 2013).

### 3. Methodology and Working Principal

The flow of System is in four platforms, GSM Modem, PC Server, Cloud and Microcontroller. The GSM Modem is a Hardware link throughout the System. The total work is controlled by a specially designed controller code. A built-in C code compiler compiles MPLABIDE controls the operation of the Microcontroller. The Microcontroller takes the display unit on the Server side and space power automation.

The operation of the whole System is based on Clouding and special controller-based Developed Software, "Token Manager" as titled. It receives GSM Modem Messages via an RS232 interface, Decodes it, sends an acknowledgment back via GSM Modem and performs various tasks obtained from the Message (RS232) (MAX232). The Software also creates and maintains a database using Data Access Object, a database providing itself controller for user data record. The operation of the System can be divided into the following steps:

1. Receive Messages from users

2. 2 Decode and update the Queue database
3. Send a confirmation message to the user.
4. Sending a Message and displaying tokens to the user in advance of 30 minutes for the series.
5. Finally it flushes the Queue.

To sign up for a query, the user must send a Message to the Server number (GSM Modem on the Server side) in a fixed format. When you send a Message in the format agreed then it will be attached to the Queue (i.e., added to the database), and a confirmation Message with the token number is sent to him. If the Message format is not in accordance with the predetermined format, the user will be acknowledged with an error Message. The next step is to send Messages to users registered for the appointment. A user receives two Messages, before joining the series. First Message will inform the starting time of the Bank. For this to happen, the Bank will have to send a Message about their starting on the Server computer, and the format of the original Message to the Bank and the Server must reach at least 45 minutes before his / her arrival. Once the Server receives the starting time of the Bank, it is first, by sending an SMS, the first three users to draw attention to the database. A display System, the symbolic number shows that users perform to check and cross back your token number and then continue.

The Server PC in the Bank room is equipped with a controller, acting as a front-end interface. It will show all the details of the user according to the user's Message to get used to. The Bank can also use a digital printing pad and give print copy same for the user. The same data will be stored on the Server PC as a file in the user's folder that is automatically created when the user communicating with the Bank. The controller is also equipped with a search function, so that Bank staff to ignore all data usual routine.

The PIC Microcontroller controls the automation of cabin room display area and power. He receives a symbolic number PC Server and displays them. Here they are both the GSM Modem and the Microcontroller use the same line of Server PC transmission. Switching between the two is performed by means of a demultiplexer, which in turn are controlled by the Server computer to select a two-channel demultiplexer since a channel to the GSM Modem and the other is connected to the Microcontroller. This is achieved by the DTR line RS232 and this line is again controlled by the controller code.

The energy automation deals with light power and the car cooling System. Once the key is clicked on the GUI, the lighting and the cooling System is activated by means of relays which are connected to the respective terminals. Also data files are closed, clicking "Bank Out" button. It also sends signals to the Microcontroller to turn off the illumination and cooling System of the cabin. Thus, a complete power Management is also possible.

#### **4. Hardware Methodology**

##### **4.1 Pic16f Microcontroller**

The PIC16 is a low power, high performance CMOS 8-bit Microcontroller with 8K bytes of programmable flash memory in System. The device is manufactured using

the high density non-volatile memory Technology of Atmel and is compatible with the industry standard 80C51 instruction set and Pinout.

#### 4.2 RS 232 Converter (Max 232n) Serial Port

This is the device that is used to convert, TTL / RS 232 vice versa. RS-232 pins for IBM-compatible computer are shown below. There are two configurations which are usually used: one for a 9-pin connector and the other by a 25-pin connector. The MAX220-MAX249 contains four sections: dual charge pump converter DC-DC voltage, RS-232 driver, RS-232 receiver and receiver and transmitter control inputs enable.

#### 4.3 GSM

The GSM Modem can accept and act as a Mobile phone with its own phone number with any SIM card GSM Network operator. Advantage of this Modem will be used; you can use its RS232 interface to Develop and communicate embedded applications. Applications such as SMS control, data transmission, remote control and documentation can be easily developed.

The Modem can be connected directly to any Microcontroller or PC serial port

It can be used to send and receive SMS Messages or make / receive calls. It can also be used in GPRS mode, connect to the Internet and many applications to do for data acquisition and control. In GPRS mode, you can also connect to any remote FTP Server and upload data logging files.

The GSM Modem is a highly flexible plug and quad band GSM Modem for direct and easy Integration to RS232 applications. It supports functions such as voice, SMS, data / fax, GPRS and TCP / IP Integration.



Figure: GSM Modem

#### Quick Start

- **Insert the SIM card:** Press yellow pin to remove the tray from the SIM card holder. After correctly inserting the SIM card in slot, Place the tray in the slot provided.
- **Connect the antenna:** Screw RF antenna when there is no connection.
- **RS232 connection cable for PC / MCU:** (RS232 communication cable is supplied)

- Default baud rate is 115,200 with 8-N-1, there is no Hardware handshake.
- **Connect the power supply** (12V): power input on board. The polarity should focus +ve and -ve External DC power outlet.
- **Network LED:** displays different status of the GSM modules for example. Power On, the Network registration and GPRS connectivity.
- After the Modem registers Network, LED flashes in step of 3 seconds. At this stage, you can start with a Modem for your application.
- The AT commands can be sent to control the GSM Modem

### GSM Modem with PC

- If you are using GSM Modem with PC, then connect a serial cable to the PC and switch it on.
- Use the serial cable to connect to PC serial port. Use HyperTerminal Software or use different terminal Software with the following settings in Windows XP.
- Data rate: 115200 Data bits: 8 Parity: None Stop Bits: 1 Flow Control: None

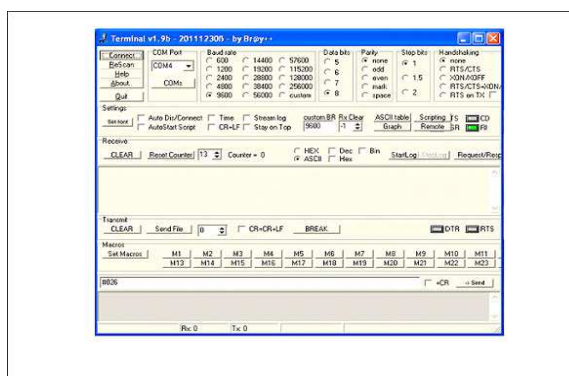


Figure: Terminal Software Interface

## 5. Software Methodology

### 5.1 System Architecture

Integrated Mobile phone with the Microcontroller is (PIC16F873A), receiving SMS Message from the user's phone and sends to control the option to turn on or off the output of a command to the controller. The Mobile phone also sends status Messages to the user with regard to Banks. The System uses a low-cost Microcontroller, which is currently available in the market. The Development of this device includes Hardware and Software to provide preferred results. The System structure works with the following steps:

- The remote user sends text Messages (SMS), including the authentication Information and commands to the receiver.
- GSM receiver receives send Messages from users' cell phone or smart phone and transmits it.
- GSM receiver decodes the sent Message, and sends commands to the Microcontroller.
- The Microcontroller issues commands to devices



v) Microcontrollers issues commands to the devices and equipment connected will turn on / off.

vi) The Microcontroller checks the completion status and applies to operate electrical equipment

vii) GSM receiver reports send in the form of another text Message to remote users on the result of their application for a status completion Message back to the remote users. A System using the following Technologies:

A. Mobile phone, Networks and communication protocols

The widely available Networks based on GSM. provides the Network of a large area coverage and offers better value (Dual Tone Multi Frequency), SMS, etc. are used for this System and communication protocols that are DTMF, SMS is the most Efficient means of communication. Cellular device or Mobile is required to create a text Message.

B. I / O interface between the Microcontroller and equipment:

Serial or parallel I / O will be taken into account in order to connect to the GSM receiver and Microcontroller. Use of the Microcontroller, a control circuit may be implemented to control the actuators.

## **5.2 Development Tools for Microcontroller**

### **5.2.1 MPLAB IDE**

The MPLAB IDE Software brings an unprecedented Software Development facility in the Microcontroller market 8/16-bit. The MPLAB IDE is a Windows-based application that contains:

- An interface to debugging tools
  - A. Simulator
  - B. Programmer
  - C. Emulator
  - D. In-Circuit Debugger
- A fully functional editor with the context coded by color
- A multiple project manager
- Customizable data windows with direct editing of content
- high-level source code debugging
- mouse over variable inspection
- extensive online help

MPLAB IDE supports multiple debugging tools in a single Development paradigm, from low cost simulators, through low-cost in-circuit debugger for emulators in full operation. This eliminates the learning curve when they upgrade to tools with more flexibility and power.

### **5.2.2 MPASM Assembler**

The MPASM Assembler is a macro assembler universal full-featured for all PIC micro MCUs.

The MPASM assembler generates re-locatable object files to the linker MPLINK object, standard HEX files Intel, MAP files to detail memory usage and symbol reference, absolute LST files, the lines of code and generated machine code and COFF files included for debugging.

MPASM assembler features include:

- Integration projects MPLAB IDE
- optimize macro custom assembler code
- Conditional assembly for multi-purpose source files
- guidelines that allow Complete control over the assembly process

### 5.2.3 MPLINK Object Linker

The MPLINK linker object combines re-locatable objects created by the MPASM Assembler and the MPLAB C17 and MPLAB C18 C compiler. It can be used to link re-locatable objects from precompiled libraries using directives linker script. The librarian object MPLIB manages the creation and modification of precompiled code library files. When a routine called from a library is from a source file, only the modules that will contain the routine are connected with the application. This allows large libraries to be used in various applications effectively.

### 5.2.4 MPLAB SIM Software Simulator

The MPLAB SIM Software Simulator allows code Development in a hosted-PC Environment simulated by the series of Microcontrollers in a level of PIC instruction. In any instruction, data areas can be checked or modified and can press a key stimulus file or user defined are applied around each pin. The implementation can be performed in a single step, run until Break mode or trace mode. The MPLAB SIM simulator support symbolic test using MPLAB C17 and MPLAB C18 C compiler and assembler MPASM. The Software simulator offers the flexibility to Develop and debug code outside of the laboratory Environment, making it an outstanding economical Software Development tool.

### 5.2.5 Embedded C

Embedded C is a set of language extensions to the C programming language, the C Standards Committee for common questions that exist for different embedded Systems between extensions C. Historically, requires embedded C programming extensions to non-standard C language to support exotic features such as fixed-point arithmetic, several Banks of different memory and basic operations E / S.

## 6. Result

In the following table we are taking an example of 7 customers and their Processing Time and Memory Utilization is showing that how memory and time saved using Queuing and without Queuing methods and their respective graph.

Sr. No.	Without Queuing		Queuing	
	Process Timing	Memory	Process Timing	Memory



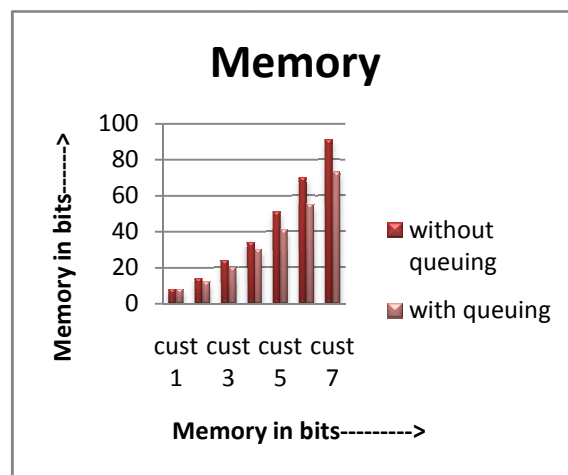
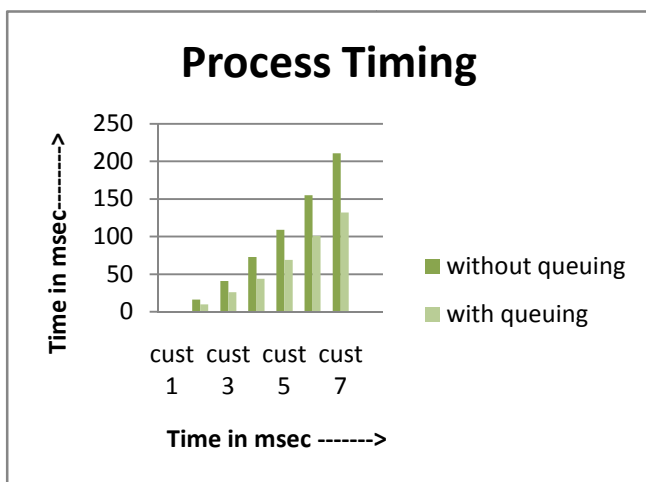
	(ms)		(ms)	
1	0	8	0	8
2	16	14	10	12
3	41	24	26	20
4	73	34	44	30
5	109	51	69	41
6	155	70	101	55
7	211	91	132	73

### 7. Conclusion

This work is a small step towards to make life easier. The entire waiting headache for those who turn in a long Queue to get could easily be overcome by this work. Mobile phones gave a new dimension to the remote access mode of the communication System. This work uses the complete equipment for Short Message Service (SMS) and cloud computing, so, it builds a strong Reliable communication link between the user and the Server. This work, thus, ensures the efficient synchronization between man and machine and a much lighter step than existing Technology.

### 8. Future Scope

A GPRS connection can be connected to the system to track exact location/distance between user and server. The system can coin exact time making system most intelligent one.



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