SMART REAL TIME PATIENT RECEPTION MANAGEMENT SYSTEM

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Abstract - *This paper describes a design and implementation of advanced patient reception management system using telecommunication system. The goal of this system is to improve the time management by using information and technology to improve the efficiency of service. The visionary of healthcare industry is to provide better healthcare to people anytime and anywhere in the world in a more economic and patient friendly manner. Therefore for increasing the patient care efficiency, there arises a need to improve the patient reception management system and make them more mobile.*

Key Words: Smart Phone, Global system monitoring (GSM), Short messaging system, MAX 232, 8051 Microcontroller.

1. INTRODUCTION

In traditional hospital reception management system, the patient takes Dr. appointment in hospital itself. This process is time consuming and we get so many efforts while taking appointment.
So, to overcome problem of patient reception management system we are going to implement GSM based Smart real time patient reception management system.

2. RESEARCH METHODOLOGY

2.1 Problem Identified

The main problem caused in case of reception is that it was required manual process for appointments. The hospital cannot take any responsibility for their solution. But patients are facing lot of problems due to this manual process. In this process data is randomly collected and sends to OPD, then called one by one patients. Due to this process sometimes patient may suffers from the problem of wastage of time. Another issue is that he didn't get appointment on that day.

2.2 Proposed Work

To overcome this problem of traditional reception system we are going to implement patient reception management system. In this system user have to take appointment from the same place where he present through the SMS. According to this system server sends return feedback to the user about appointment timing. When user can sends the SMS to hospital at closing time, then he get message about no appointment at present day on mobile phone. The information about user can verified by server and this information sends to the 8051 microcontroller for display case no. on LED board.

3. BLOCK DIAGRAM

The 230 volt AC supply is given to the step down transformer because 8051 microcontroller support to 5 volt only. After that AC voltage is controlled into DC voltage by using rectifier. Then fixed DC voltage is regulated by using voltage regulated. Here we get fixed 5 volt DC supply. This DC supply is given to the LED display, 8051 microcontroller and MAX 232 IC.
MAX 232 output is not directly is not directly connected to GSM modem hence, here we are using DB9 connector between 8051 microcontroller and MAX 232. GSM module is used for transmitting and receiving data message and it is connected to server.
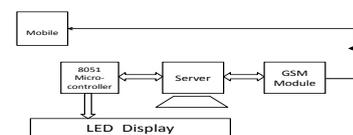
Microcontroller Interfacing
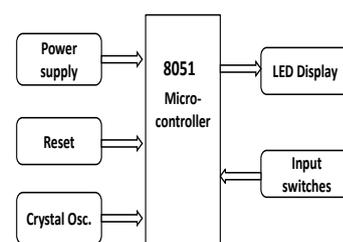
4. DESIGN OF SYSTEM

The 8051 microcontroller, a LED display, GSM module, GSM is worlds most popular technology, it was develop to solve the fragmentation problems of the first cellular system in Europe[10], MAX 232, USB DB9 connector, the VB.net server. In this, system is design using data base code and AT commands which control our GSM module by sending and receiving message to every user's mobile numbers and the receptionist takes data from the server. While the message is receiving this data is stored in data base server. In hospital, the GSM unit will receive collected data and fixed their appointments. The system design can be classified in two categories, Hardware implementation and Software implementation.

4.1 Hardware Implementation

In this system, power supply is used to provide the power to the whole circuitry like GSM module, transformer, resistors, capacitors are the main components used for designing the smart circuit. Power supply is also given to the server. In this proposed system, we have used 8051 microcontroller, The MAX 232 chip is used to interfacing the different component.

When power supply is given to the 8051 microcontroller is serially interface with LED display and it scroll output. For taking output on LED board the microcontroller is programmed using software interfacing with the help of keil software. When the GSM module is taken users data is stored and update in software. After receiving data in microcontroller is serially displayed on the LED display board. Real time clock is used to update time date information. Data base is used to store the data information in the server.
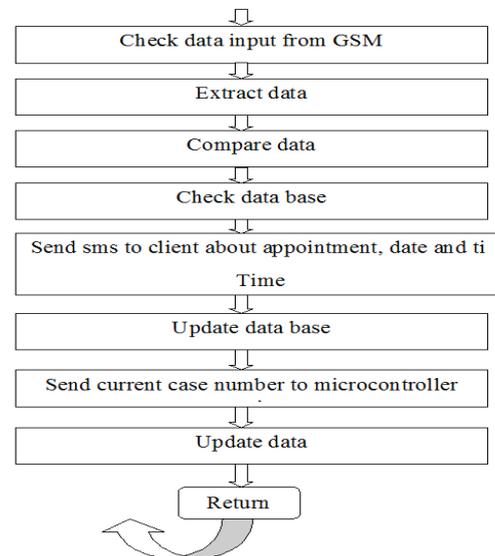
4.2 Software Implementation

For software implementation we have to used the software "Visual Basic Studio" and "Keil μVision". In software implementation, the main part is programming of the data base on VB.net server and also 8051 microcontroller interfacing with LED display board. Once the power supply is given to hardware circuit is get initialized. The server monitors the received data of user.

According to the server sends return feedback to the user about appointment timing. When user can sends the SMS to hospital at closing time, then he get message about no appointment at present day on mobile phone. The information about user can verified by server and this information sends to the 8051 microcontroller for display case no. on LED board.

4.3 Flow Chart

- **Server side:**

- **Microcontroller unit:**
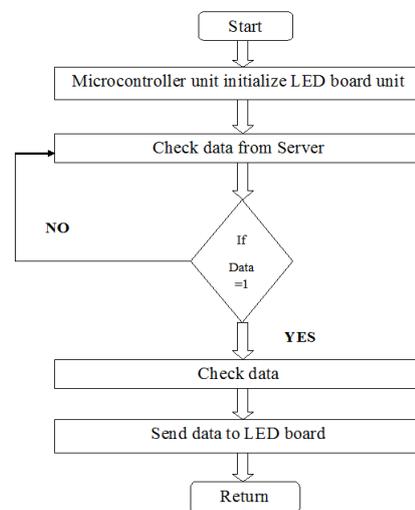
4.4 Components of Hardware in System

The components of Hardware implementation are as follows:

4.4.1 GSM module:

GSM system was developed as a digital system using TDMA, for communication purpose. Digital system has an ability to carry 64 kbps to 120 mbps of data rates.

4.4.2 Microcontroller

The Intel 8051 microcontroller is one of the most popular general purpose microcontroller. The 8051 is an 8-bit microcontroller which means that most available operations are limited to 8-bit.

4.4.3 Power Supply

Power supply is main component of the circuit. Power supply is provided to microcontroller and other device from direct AC line or from AC to DC adapter.

4.4.4 LED Display

LED display is a screen display technology that uses a panel of LEDs as the light source. Use LED display as a screen and as an interaction medium between the user and the system.

3. CONCLUSIONS

The Patient Monitoring System has great potential in improving problems in today's emergency response system. In emergency case patient can send own information via SMS to the indicated mobile number through GSM. The feature of information gathering, processing data and storing data from GSM that helped in monitoring of patients was studied. This technology can also be setup at the patient's own house with the assistance of the family. It reduces costs as well as time and increases the quality of Life saving of patients. As the modern life becomes more stressful and acute diseases appear, prolonged treatments become more necessary. The same occurs for the elderly or handicapped patients. It reduces the need of transporting patients between house and hospital. Recent studies conclude that early and specialized prehospital management contributes to emergency case survival. The only limitation that poses a problem with function of this setup is that the network may pose a problem during the sending of message with the GSM module.

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