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Patient Queue Management System

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ABSTRACT

In Patient Queue Management System, we are going to introduce a new token system which can successfully reduce waiting time of the patients in the hospitals. The main aim is to implement a model that initialize alert notification via SMS. It will minimize the queue of patients in the waiting area of hospital and also patient can book an appointment from anywhere at anytime. Patients can book an appointment via android application and accordingly patients can select a doctor with a particular specialization and also will provide navigation towards that nearest hospital.

Keywords: Android, Data Queuing , GSM Modem, Nearest Hospital ,PIC, Token system.

I. INTRODUCTION

Time is a quantity that should be efficiently managed. Standing in a long queue consumes a lot of time of patients and so, the Patient Queue Management System provides the solution for it. This Patient Queue Management System will reduce the burden of waiting in a long queue.Most hospitals and clinics try to improve their wait time by scheduling appointments. Appointments seem like a logical, clear-cut solution you register in advance and come at the agreed time. It does so through **relevant information** and **personalization**.

Hence we have come up with an idea of developing an GSM device and android application which will reduce the waiting time by providing alert notifications to the patients.

The patient will be able to choose the specific doctor for a specific treatment. Also the patient who are unaware about the hospitals location ,can easily use the android application which will provide the navigation to that hospital.
The patient would get simply registered by just giving a miss call and accordingly patient will get the alert notifications and details about its appointment which would include the token number.

II. LITERATURE SURVEY

The model which comprises of three platforms, GSM modem, Server PC and the Microcontroller. The GSM modem is the hardware link in the entire system. The overall working is controlled by a specially designed VB6 code. An embedded C code compiled with Keil compiler controls the functioning of the microcontroller. The microcontroller takes care of the display unit at the server end and the room power automation. The working of the entire system is based on specially designed VB6 based software, titled as 'Token Manager'.It receives messages from the GSM modem through RS232 port, decodes it, sends back an acknowledgment through the GSM modem and performs various tasks based on

the message received[9,10]. The software also sets up and maintains a database (using Data Access Object, a database provision available in VB itself) for data logging of the patients. The working of the system can be divided into the following steps that is Receiving messages from users , Decoding it and updating the queue database ,Sending acknowledgment to the user, Displaying tokens and sending messages to users in advance of 30 minutes of their turn, Flushing the queue[1]. The proposed Mobile Appointment Scheduling System (MASS) aims at enhancing appointment scheduling in hospitals by allowing patients to register for appointments through mobile phones at their own time wherever they are, and make an appointment on their desired slot of time. In order to enhance appointment scheduling, MASS displays a list of medical specialists and the patient need to select a desired specialist. Once the specialist is selected, the system will establish and display available time slots and the patient is required to select the available slots. The patient has to confirm once a slot is selected so that the system can assign the time slot to the patient and update the available slots and remove the selected slot. If the selected time slot is not confirmed, the system will notify other patients about the availability of the time slot.[2].

Appointment scheduling systems are utilized mainly by specialty care clinics to manage access to service providers as well as by hospitals to schedule patient appointments. When attending hospitals in Tanzania, patients experience challenges to see an appropriate specialist doctor because of service interval inconsistency. Timely availability of doctors is critical whenever a patient needs to see a specialist doctor for treatment and a serious bottleneck lies in the application of appropriate technology techniques to enhance appointment scheduling. In this paper, we present a mobile based application scheduling system for managing patient appointments. Furthermore, forthcoming opportunities for the innovative use of the mobile based application scheduling system are identified[3]. This paper defines the building blocks and derives basic queuing systems that provide some sort of services by moving customers in a particular order to a specific service according to the customer requirements and also integrated Alert Notification via SMS to be sent to customers updating them of the progress as they wait. The study focuses on the bank line system mostly on credit applications, the different queuing algorithms that are used in banks to serve the customers, and the average waiting time. The main aim of this research is to develop a Model that integrate Alert notification via SMS on credit applications during queuing system and analyze the queue status to decide on which customer to serve. The researcher adopted empirical approach to achieve his objectives[4]

III. WORKING PRINCIPLE

The working of the system can be divided into the following steps –

1. Firstly,a patient should have android app installed in his smart phone from which patient can book an appointment
2. A patient has to register his/her credentials via registration page.
3. For verification user has to login in by his username and password .
4. A hospital finder page appears through which it enable patient to find its current location.also can choose the specialist according to their requirement.
5. After that ,patient can add the doctor,which includes doctor's name,address,phone no,and category which will automatically get saved into the database.
6. Patient can place a call and navigate to the particular hospital with the help of gps which is the additional feature of this app.

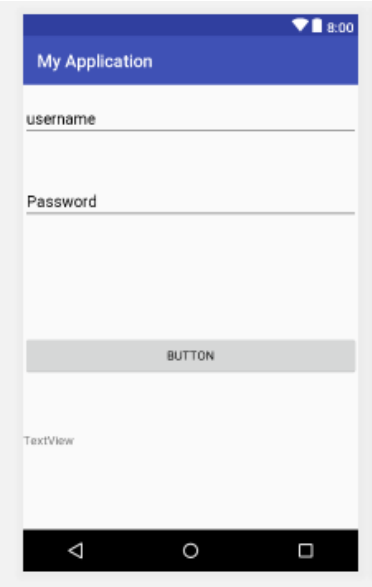

Figure 1. Login page

Figure 2. Hospital finder page

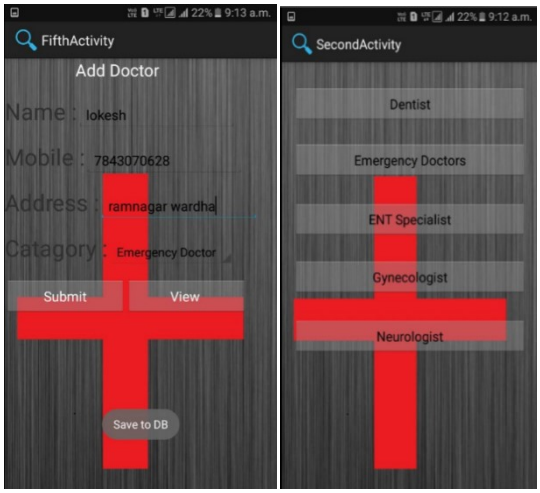

Figure 3. Add doctor page &Specialist page

Figure 4. Calling and Navigation page

IV. PROPOSED SYSTEM

K Nearest Neighbour

1 NN

- ✓ Predict the same value/class as the nearest instance in the training set
- ✓ k NN
- ✓ find the k closest training points (small kxi – x0k according to some metric, for ex. euclidean, manhattan, etc.)
- ✓ predicted class: majority vote
- ✓ predicted value: average weighted by inverse distance

Algorithm

Let m be the number of training data samples. Let p be an unknown point.

1. Store the training samples in an array of data points arr[]. This means each element of this array represents a tuple (x, y).
2. For i=0 to m:
3. Calculate Euclidean distance d(Arr[i],p)
4. Make set S of K smallest distances obtained. Each of these distances correspond to an already classified data point.
5. Return the majority label among S.

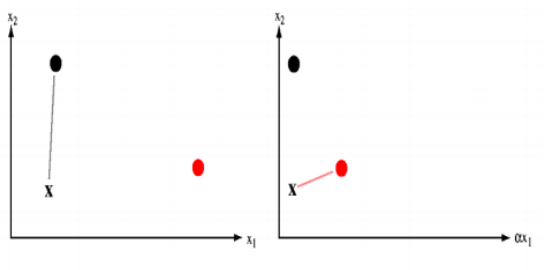

Figure 5. 1NN

The algorithm can be summarised as:

1. A positive integer k is specified, along with a new sample
2. We select the k entries in our database which are closest to the new sample
3. We find the most common classification of these entries
4. This is the classification we give to the new sample

FIFO(for storage)

type queue=empty_queue|addqElement_Type*queue
Operations:
front:queue->Element_type
addq:Element_type*queue->queue
popq:queue->queue
empty:queue->boolean
Rules:
front(addq(e,empty_queue))=e
front(addq(e,q)=front(q), if q not empty
front(empty_queue)=error
popq(addq(e,empty_queue))==empty_queue
popq(addq(e,q)=addq(e,popq(q)), if q not empty
popq(empty_queue)=error
empty(empty_queue)=true
empty(Addq(e,q)=false

V. HARDWARE METHODOLOGY

The below figure is the block diagram of the proposed system the figure consists of a microcontroller, LCS display, 7-segment display and a GSM model.

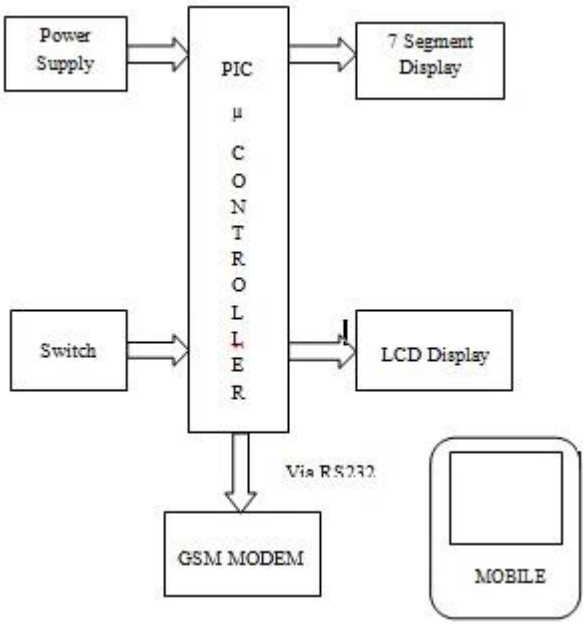

Figure 6. Block diagram of Proposed System

The software is designed in microcontroller and controls the total system flow. Here we are using AT command for SENDING and RECEIVING short message though GSM module. AT command not only can realize the setting of modules parameters but also can realize sending and RECEIVING of data, including controlling of SMS. GSM AT command has set three control modules for SENDING and RECEIVING short message. Block mode, text mode and PDU (protocol data unit) mode. Text mode is easy in sending and receiving short messages. Block mode is gradually replace by PDU for default mode. Therefore, when selecting GSM module AT command, the content of the message should code or decode according to PDU format.

VI. RESULT

The Hardware of proposed system is shown below figure 7 shows the power supply and relay circuit and figure 8 describes the seven segment display

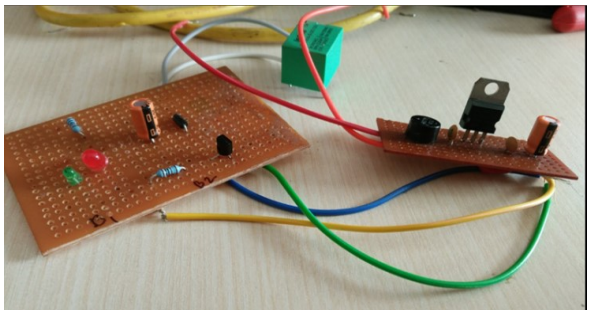

Figure 7. Power supply and relay circuit

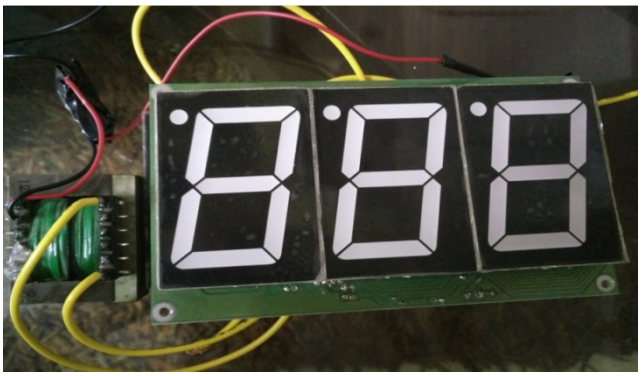

Figure 8. Seven segment display

VII. CONCLUSION

This system aims to implement digital scenario for smart and easy to operate healthcare portfolio.It will reduce the waiting time of patients in hospital.It will provide good service to the patients.It will minimize the over-crowding of patients in the waiting area of hospital.Patient can book an appointment from anywhere at anytime.It will enhance appointment scheduling in hospitals with the aim of simplifying patients and doctors' task.

VIII. REFERENCES

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