

A Methodology for an Architecture of Smart Patient Que Managing System to Health Units

Remya Joshy

Assistant Professor

*Department of Computer Science & Engineering
Adi Shankara Institute of Engineering & Technology, Vidya
Bharati Nagar, Kalady - 683574*

Maneesh Mohan

Student

*Department of Computer Science & Engineering
Adi Shankara Institute of Engineering & Technology, Vidya
Bharati Nagar, Kalady - 683574*

Praveen P R

Student

*Department of Computer Science & Engineering
Adi Shankara Institute of Engineering & Technology, Vidya
Bharati Nagar, Kalady - 683574*

Sanish K S

Student

*Department of Computer Science & Engineering
Adi Shankara Institute of Engineering & Technology, Vidya
Bharati Nagar, Kalady - 683574*

Abstract

Race of human beings behind technology and knowledge changed his life style to that of present days. Today we consume fast food, fast transport, fast communication and fast living too. Only one factor that makes us stop in between this race is Health and it is the only one that is mostly affected. A large number of humans are being affected by many diseases and so queue in the hospital grows and delay the patients in attendance. To solve this problem, we must utilize the technology itself via efficient implementation of a system that may include a mobile processing unit. In this paper, we present such a system using smart phone based on a website. We used the concepts of Android programming to provide the information anytime and where ever the user is. Every bit of this information is stored on Web server through website.

Keywords: Android, Webserver

I. INTRODUCTION

Life is busy nowadays .When we check a common family, we find that every member is busy with some or other work .Father is busy at job .Mother will be at the kitchen and housekeeping .Younger ones will be at the school .This has become their daily routine and no can change it as each of them have their own responsibilities. But we are made to spare this schedule and find some time when we get attacked by severe health disorders .Then , there we find enough time in between this schedule to consult a Doctor .But real fact is that , we will need a day for it .The reason is that more and more people are getting affected by diseases widely .As a result, there will be a long queue waiting for us in front of the doctors door step .Here, through our project , we propose a solution for this , so that this waiting time could be saved.

II. EXISTING SYSTEM

A. *Booking Tokens via Telephone:*

The most common method used for booking a seat before doctor at a hospital is this. Here, the system needs an officer to respond to entire huge sum of calls. Moreover efficient recording of these tokens is another important factor.

B. *Booking by Direct Contact:*

This is another method. Patients need to visit the same hospital officer directly and then book his token. The officer in both systems uses books for storing the token information. Most modern hospitals use their own alternative for the same.

C. *Disadvantages of Existing System:*

- 1) Time consuming for registering process.
- 2) Tedious work for hospital officer as he has to carry the books of record all the time.
- 3) Verification of token holder versus patient that arrived is not reliable.
- 4) For the second method, it is time consuming and not a cost effective method.
- 5) Wastage of time till our token number is called.

III. PROPOSED SYSTEM

The proposed system contains two main ends. They are described as follows.

A. Android Application on Android Based Smartphone:

Android application is to be developed. Android based smartphone connects entire public to the system. The main users are patients to the hospital. The primary use is to hire a token for a doctor. There are certain conditions where patient can't afford smart phone for consulting a doctor. In such a case, he can do the same from someone who have it or from the hospital itself. For the same, required hospital officials should maintain an Android based smartphone. As soon as the patient books token, a secret key is send to his mobile number that is randomly generated. This is used for security purposes.

B. By using Website:

The main path to the system is by website. The actors using the website are Administrator who is actually compounder here, and doctor. Later new actor like pharmacist can be added. The Administrator has privileges for maintaining the patient consultation queue that exist virtually. The administrator cross checks the print out of the passwords of tokens under that doctor with that of patients. If a match is found, administrator verifies him as the right token holder to system. Along with, he will be notified in the queue status as Present^[3] when common public view the same through Android application. The Doctors utilize website for generating, storing, modifying patient consultation details like prescription, diagnosis result. Moreover, the website can be easily accessed by all of them through hospital LAN connection.

C. Automatic Mail Reply on Absence of Administrator:

Here, our system incorporates an automatic mail reply system. Thus administrator can turn the corresponding switch on, initiating the system. This gives more freedom and power to administrator.

D. Patient Prescription Is Stored As Pdf File:

The prescriptions created by doctor are instantaneously stored as pdf files with filename as patient id, time, and date. Later, it can be checked by doctor. This is used when the same patient arrives to hospital for another disease. This centralized concept of document storage is indeed useful to all parts of the hospital for effective diagnosis.

E. Problem Definition:

The proposed system consists of algorithm with three main divisions. The entire three sections^[2] are implemented depending upon time at which a patient finishes his consultation at the doctor. In the three, there will be a queue of randomly selected number of tokens in ascending order. Each token will be assigned with a predefined amount of time with enough time gaps in between, as soon as doctor invokes the system. Also the algorithm starts running by assuming that first three patients have reported at the hospital. The system always run the following steps for every patient consulted.

- At first, current system time is taken.
- Here the system time is taken from the website server.
- Along with, the ending time for that particular patient is also retrieved from the database.
- Both of them are compared.
- If a positive value is returned, go to case 3.
- Else if negative value is returned, go to case 2.
- Else if zero, go to case 1.

1) Every Token Held Patient Takes Correct Predefined Amount Of Time For Consultation:

This is considered as a normal case. Here every patient takes the correct amount of time that they are allotted with. As a result no time updating is necessary. This is considered as an ideal case and this never happen.

2) A Patient That Finishes Consulting Within The Time Allotted:

This case is rare where a patient needed only little time less than that of the allotted time^[1]. As a result, the left back time is to be utilized efficiently. Here, we utilize it by making the administrator to assign certain works to the doctor like accident case report study, medical representative meeting. This facility is included in our system through website. Along with, there can be a provision for notifying the administrator about the time left back. As soon as he is notified, corresponding action can be taken. The above told steps can be ordered as follows:

- Notify the administrator with amount of time left back.
- Inform him/her about the pending works such as Accident case reports for Insurance Claim, Medical Representative Meetings.
- Accept the input from administrator and perform it.
- Go back to the main algorithm for next patient.

3) A Patient Consulting With More Time Than Allotted:

This is a regular case. Here we find out how much is the difference between current time and allotted time is. Thereafter, the entire queue is updated with new allotted time got by

New allotted time=allotted time + difference

The system also includes facility for informing every fourth patient regarding the time change. The actions to be taken can be easily explained as shown below:

- Find the difference
Difference=current time-allotted time
- Repeat until token is finished under this doctor starting from the next token.
 - Assign the allotted time of current token holder as allotted time+ difference.
 - Increment the token number.
- Inform the current token holder+4 patients via SMS or by email about the time change.
- Go back to the main algorithm for next patient.

IV. CONCLUSION AND FUTURE WORKS

Our architecture, Smart Patient Queue Managing System is an innovative system to make the process of patient consultation more easy and practical than the existing systems. It is a user friendly and secure android-website application for enhanced token booking facilities with added features like prescription saved as pdf, pharmacy assistance etc. It is a promising technology which gives cent percent efficiency in storing the documents of the patients. It is of high use for hospitals now days. Therefore, this architecture, as a software product has relevant social usage for all kinds of users.

Blood Bank details through the same android application, In-patient room navigation on the basis of patient id provided, and advertising through Android application for Health Seminars conducted are the possible future works. MPI database that keeps single unique id for every patients. Improvements to include voice recognition can be done in future.

ACKNOWLEDGMENT

This is to acknowledge and thank all the group members who played role in shaping this paper. Without their constant guidance and assistance this report would not have been completed. Their guidance, coordination and reviewing this task could not be completed alone. We avail this opportunity to express our deep sense of gratitude and heartfelt thanks to our guide Asst. Prof. Remya Joshy (CSE Department), for giving her valuable guidance, inspiration and encouragement to develop this paper.

REFERENCES

- [1] Condotta ,NV Shakhlevich, "Scheduling patient appointments via multilevel template :A case study in chemotherapy," School of Computing, University of Leeds, Leeds, LS29JT, United Kingdom.
- [2] Leandro O. Freitas ,Rafael T Pereira[Universidade do Minho] ,Henrique G.G Pereira ,Ricardo G Martini ,Bruno Mozzaquatro ,Jeferson Kasper[Univeridade Federal de Santa Maria ,Santa Maria ,RS ,97105900, Brazil] ,Giovani Rubert Librelotto : "A methodology for an Architecture of Pervasive Systems to Homecare Enviornments"-
- [3] William Stallings- Cryptography and Network security, principles and practices – fifth edition.