

Multiple Queue Management With Real Time Tracking For OPD Scheduling In Hospitals

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Abstract —Appointment scheduling systems are used by primary and specialty care clinics to manage access to service providers, as well as by hospitals to schedule elective surgeries. Many factors affect the performance of appointment systems including arrival and service time variability, patient and provider preferences, available information technology and the experience level of the scheduling staff. The most common types of health care delivery systems are described in this article with particular attention on the factors that make appointment scheduling challenging. For each environment relevant decisions ranging from a set of rules that guide schedulers to real-time responses to deviations from plans are described. The proposed system aims at reducing the dissatisfaction with services with medium to long waiting times while scheduling appointments with OPD. The system will enable streamlining in (OPD) schedule in hospital and participating client units in the form of smart phone applications.

Keyword - Multiple Queue Management, OPD Scheduling, Real Time Tracking.

I. INTRODUCTION

The rapid developments in information technology, particularly in wireless communication and web services technologies, are greatly changing the way people access and work with information. The convenience and powerful functionality offered by mobile devices such as PDAs, has encouraged many people to investigate the benefits of using them. Wireless and handheld devices abound as vendors pitch the common themes of one-to-one computing, instant communication and anytime, anywhere information access. While web services provide a technology for service oriented computing. Web services allow programs written in different languages on different platforms to communicate with each other in a standard way. Queue management systems have been specially designed for modern OPDs that are now a routine necessity in hospitals all over India[6][7]. These have been specially configured to manage the registration of advance and current patient appointments, along with orderly collection of payments, calls to the assigned consulting rooms by the concerned doctors, and finally, provision for immediate logging of doctor's examination reports – if so required. On option, connectivity to the hospital's HIS can also be provided.

II. PROBLEM STATEMENT

In today's world, where the current scenario in the healthcare domain requires efficiency and patients' satisfaction, the numbers of missed appointments that are missed and unnecessary waste of patient's appointment time have led to a

tremendous problem for healthcare institutions. Hence, there is need for an efficient healthcare system that will provide seamless care and facilities for both inpatients and as well as outpatients. Multiple Queue Management for OPD scheduling facilitates effective scheduling of appointments of patients with the doctors. This module allows doctors and patients to view available time slots and allocate appointments accordingly. This module prevents the system from creating an appointment if the doctor is on leave or absent or busy in the OT. The appointments are given with respect to the date, time, department, doctor and the type of visit of the patient.

1.1 Existing System

We have seen and realized that in our country most of the people live in rural area but overwhelmingly health care service organization situated in the urban area[1][2][8]. Rural peoples are bound to come in city to take health care service. Most of the time they don't know the schedule of doctor. So they have to visit hospital or health care service center[1][2]. and often do not get doctor's appointment. As a result they fall in a troublesome situation. For this reason, they go back home with more illness and hope to return later on. Existing system works on either a manual or a computerised approach. The manual approach is the traditional way of patient seeking appointment through phone call or in person from health care contour and waiting at the center in long queues for the service. It is a very unpredictable approach for reasons such as - Doctors may not turn up on time or patients may not be able to meet the schedule on time. Computerised approach is available in various forms such as one which uses NFC (Near

Field Communication) based Mobile Patient appointment system will centralize scheduling system and would also sort the priority for fixing appointments. Along with this, there is an android app available on play store but it a paid app, hence everyone cannot afford to use it.

Disadvantages of Existing System

- Time consuming.
- Unreliable process.

1.2 Proposed System

In today’s world, where the current scenario in the healthcare domain requires efficiency and patients’ satisfaction, the numbers of missed appointments that are missed and unnecessary waste of patient’s appointment time have led to a tremendous problem for healthcare institutions. Hence, there is need for an efficient appointment system that will provide seamless care and facilities for both inpatients and as well as outpatients.

Appointment & Queue Management scheduling module facilitates effective scheduling of appointments of patients with the doctors[3][4]. This module allows patient to view available doctor schedule for the particular OPD section along with days and time slots. The appointments are given with respect to the date, time, department, doctor and also patient is provided with waiting appointment feature which allows patient to take appointment as per his/her preference[3][4][5].

Advantages of Proposed System

- Reliable process.
- Reduce paper work.
- The proposed system will save effort, time and money of patients from waiting in the queue to book appointment.
- It schedules the appointment for patient with desired doctor to make it easier for both.
- It also schedules the services of doctors and emergency cases properly so that facilities are utilized in effective and efficient manner which are provided by hospital.
- If the preferred appointment date by the patient is completely filled then he can still keep the choice open and will be allotted the same if a cancellation happens for that preferred date.

III. PROPOSED SYSTEM WORKFLOW

1. Registration of users

In this module every user will be registered with the system using internet.

2. OPD schedule

In this module the patient will get the schedule about the respective doctors of the particular departments along with the day and timing on which the doctors are available.

3. Rule Guide:

In this section patient will be able to see rules regarding the appointment .

4. Appointment confirmation

In this section patient will fill up the details about the appointments to confirm the appointment (doctor detail, date).

5. Appointment status

In this module patient will get the status of his appointments (confirmation message about the appointment, patients queue no, estimated time left for patients no.)

6. Cancel appointment

In this particular section patient can cancel his/her appointments in case of any emergency.

7. Update appointment

In this module, hospital staff will provide the recommendation for the other doctors availability in case of absence of any doctor in a particular section.

8. Waiting List

According to the patient first preference his/her name will be added into the waiting list.

If one of the user will be deleted from the queue then slot is suggested to patient present in waiting list.

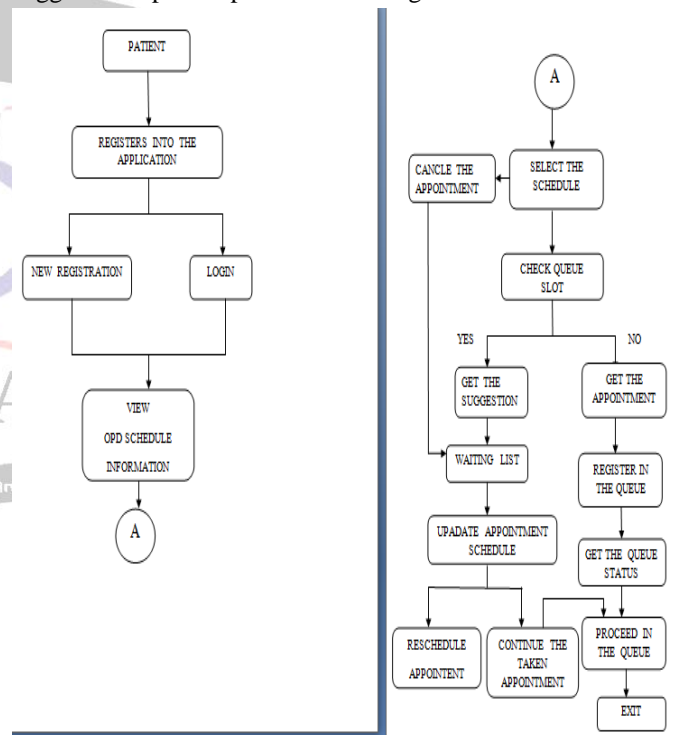


Fig 1. Basic workflow

IV. WORKING OF QUEUE MANAGEMENT

1. OPD Schedule gets divided into various OPD departments for example: NEURO Section, HEART Section etc.
2. These OPD departments further getting divided into Particular No. of Doctors those are available in those particular departments.
3. Doctors are divided according to their respected OPD schedule for the Days on which the doctors are available in that hospital.

4. Days are further divided according to Time Slots for that day.
5. Patient's appointment will work on the basis of Date & Day that the patient have chosen for his/her appointment.
6. Patient will get entered into the waiting list according to the preferences he/she has chosen for their appointment.
7. If the time slot that the patient had chosen is available then the appointment gets confirmed.
8. If the time slot that patient had chosen is not available then patient have to chose another day and date for that time slot. But the patient get into the waiting appointment list as per by his/ her first entered/preferred date.
9. If anyone from the confirmed appointment cancels his/her appointment then patients from the waiting list gets notified with the message .
10. Then the patient from the waiting list can book for that vacant slot otherwise can continue with the confirmed slot.

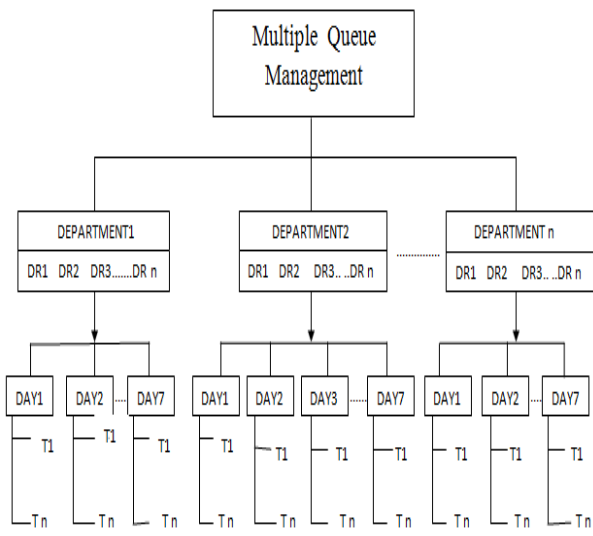


Fig 2. Multiple Queue Management

V. IMPLEMENTATION

1. Book Appointment

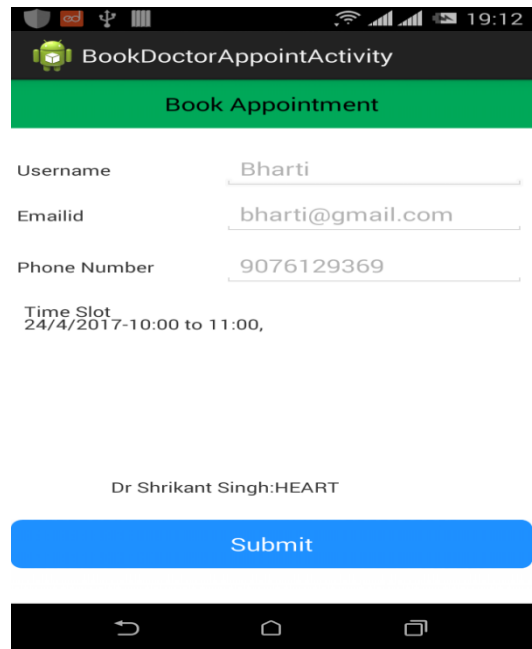
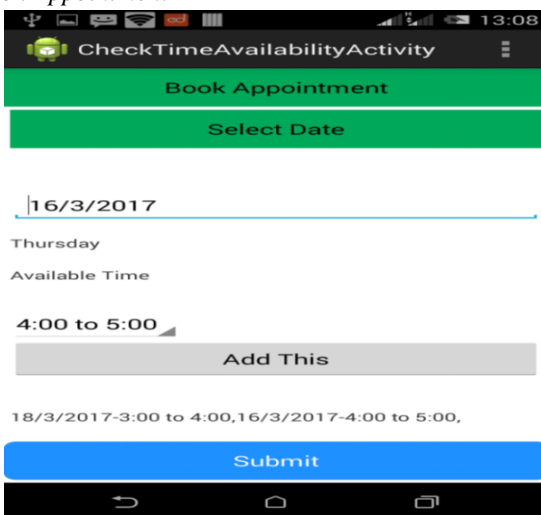


Fig 3. Book Appointment

2. Cancel Appointment

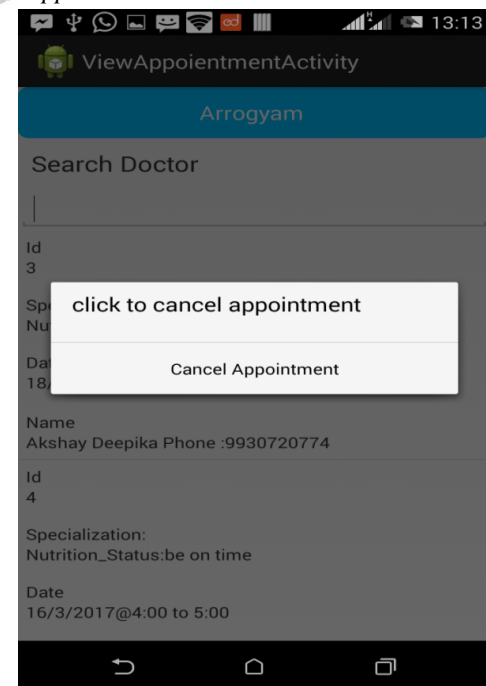


Fig 4. Cancel Appointment

3. waiting Appointment

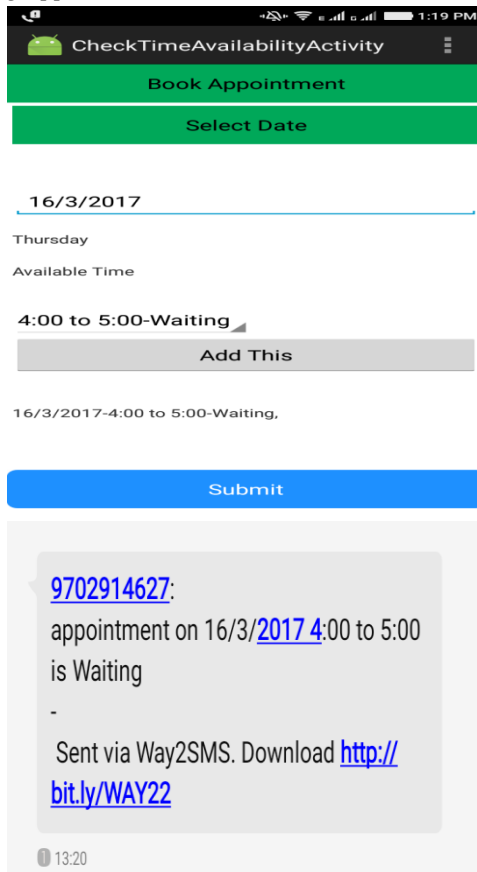


Fig 5. Appointment with status waiting

VI. CONCLUSION

Thus we can conclude that the proposed system provides smart OPD schedule management system in hospital there by providing the digital queues for the patients to reduce the extra waiting time that get wasted in those physical queues. To conclude the smart queue management system has the potential to improve client satisfaction and productivity and to solve the problem of improving waiting time for services. For getting an appointment into the hospital we need to physically present over there still we don't know much about the doctors and their visiting time etc so we have to spend hours and hours in the queues over there. So we have come across the idea about the Multiple queue management for the patient that provides all the details about the OPD sections, Doctors , and their respective visiting timings that makes the work of the user/patient to be easy. Also patient do not need to invest their time for physical queues as our application provides the real time tracking feature that provides the notification to the user/patient to keep track of their respective queues. Also this application can be further used for any domain example any government sector. This reduces the extra overload of the employees.

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