ARCHITECTURE OF DATABASE MANAGEMENT SYSTEM

PATIENT MEDICAL RECORD DISPATCH

FALL - 2016

Submitted by

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ABSTRACT

The requirement of health care systems to develop centres of clinical excellence has increased the dependence on the medical transport to move the patients or the records/reports of the patients which is a time sensitive issue. This is dependent on the efficiency of the transport services. In order to enhance the efficiency of the record maintenance, use of EMR (Electronic Medical Record) has been started which is, however, limited to the outcomes analysis. The need of development of a fully integrated and automated medical system is highly required to enhance the efficiency in the medical field.

In this paper, we describe the elements necessary to develop a fully integrated medical transport EMR, the current limitations and challenges and present the future scope in developing the support tools for the patients requiring transport.

Contents

1. INTRODUCTION

Introduction to the Topic

In a very general scenario, in hospitals, the doctors order the medical tests for the patients. These orders go to the testing lab and the results are sent back to the doctors. This is highly manually intensive in the current situation. Generally, the staffs take the orders, take them to right labs for testing and carry the results back to the right doctors for consultation. This entire process can be automated by the development of fully integrated medical system.

Health care systems are increasingly developing centres of excellence which provide the ability to deliver highly specialized care while improving the outcomes. These centres mostly are located at the urban areas, often limiting access to the timely care of the patients residing in the remote areas, especially for time sensitive conditions. Several studies provide evidence of positive outcomes for the transfer of patients who experience time sensitive emergencies. Contradicting these studies, others have reported that some patients have experienced worst outcomes. Therefore, the purpose of this project is to merge the electronic data sources for the patients to create a fully integrated medical record to support comparative effectiveness research (CER) efforts.

Existing System

Physicians are expected to document the encounters they have with the patients to ensure that the crucial information for decision making is recorded and appropriate actions are taken. This documentation is mostly ignored as it distracts the main intention of the doctors, i.e., taking care of the patients. To ensure that the records don’t go unrecorded, the idea of recording the patient’s information electronically instead of on paper has been introduced. This maintenance of electronic records is called as Electronic Medical Record (EMR). Although the EMR was introduced and developed decades ago (around 1972), the substantial use has increased from 1998.

The use of EMR has undoubtedly decreased the requirement of manual documentation of the patient records, but could not completely provide an automated

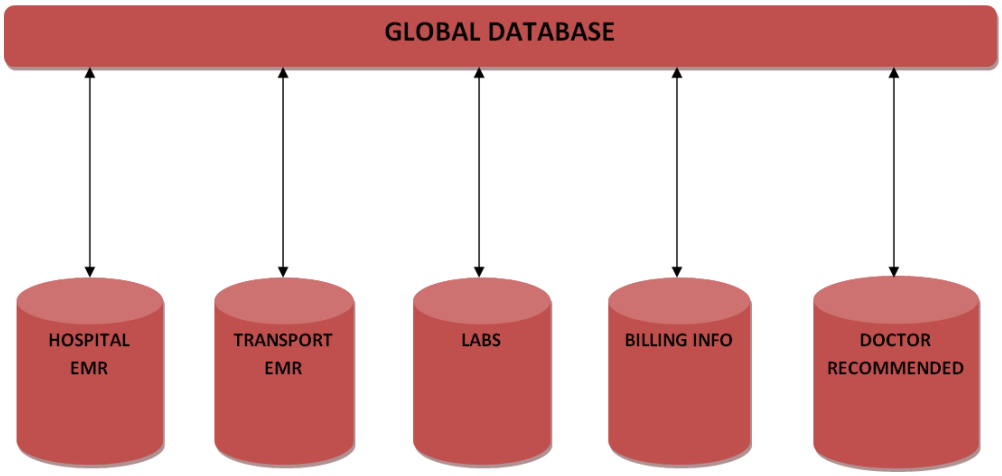
medical system that even reduces the human intervention in making an appointment, ordering for lab tests, collecting the results from the labs, etc.

To overcome the limitations of EMR, we propose this system that further reduces the human intervention in maintaining the medical records.

Proposed System

The primary challenge is the interoperability of the transport EMR with the hospital EMR. Recent research efforts focus on leveraging the large amounts of data that is available to conduct CER. Combining these multiple data sources to enable CER can be accomplished via a fully integrated medical system. Development of a fully integrated medical system will provide the ability to address the complex questions related to patient's outcomes which can provide valid conclusions in a timely manner. The fully integrated EMR is SQL based and is stored on a global server.

2. FULLY INTEGRATED EMR



Fully Integrated EMR

From the figure, it is clear that the data is bidirectional from the database and the corresponding sources of data. Right from the initial hospital admission through transport to appointment and consultation with the recommended doctor, all the data is incorporated through the patient's entire episode of care.

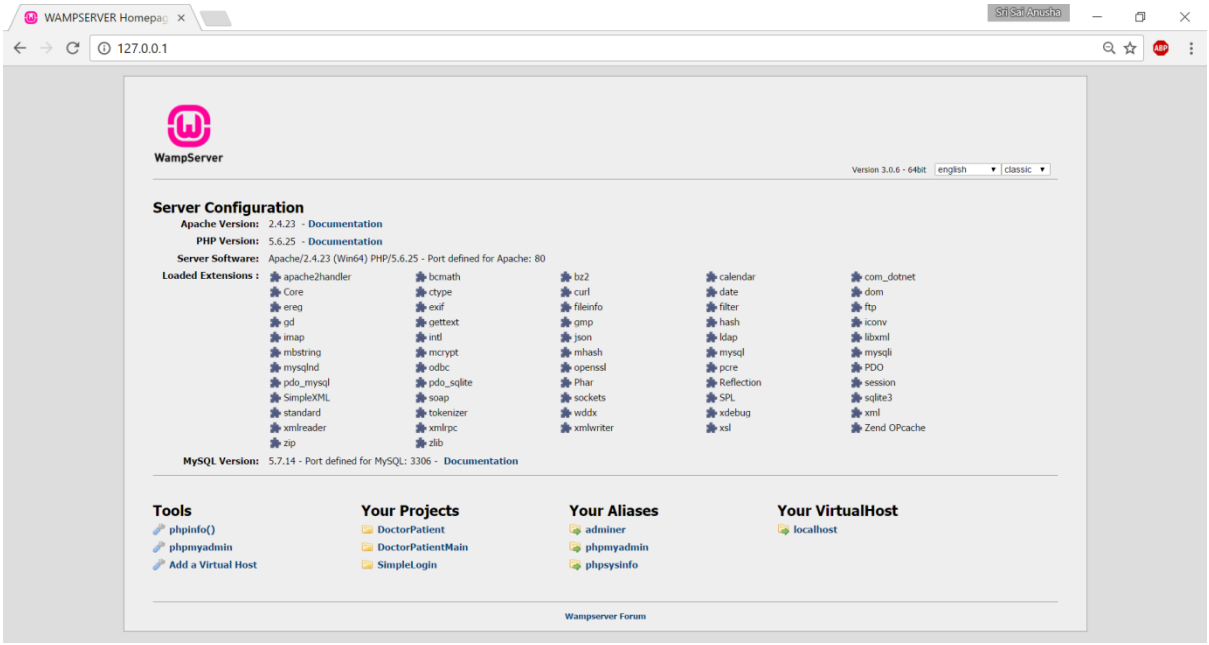
Here, Hospital EMR stores the records of the patients from their initial admission; Transport EMR stores the records of the patients which were sent to the other recommended doctors; Lab records contain the information regarding the patients that need to take the tests and the results of the tests taken; Billing information records contain the information regarding the payments made and which are due by the patients and Doctor recommended records contain the information of the patients that have been sent to a particular doctor for consultation.

In the past, retrieving the information from these sources was very time consuming as the records maintained were physical and on paper. But recent studies and works has made the record maintenance electronic that it takes just moments to create a record or obtain the record of any patient.

3. MODEL WE HAVE WORKED ON

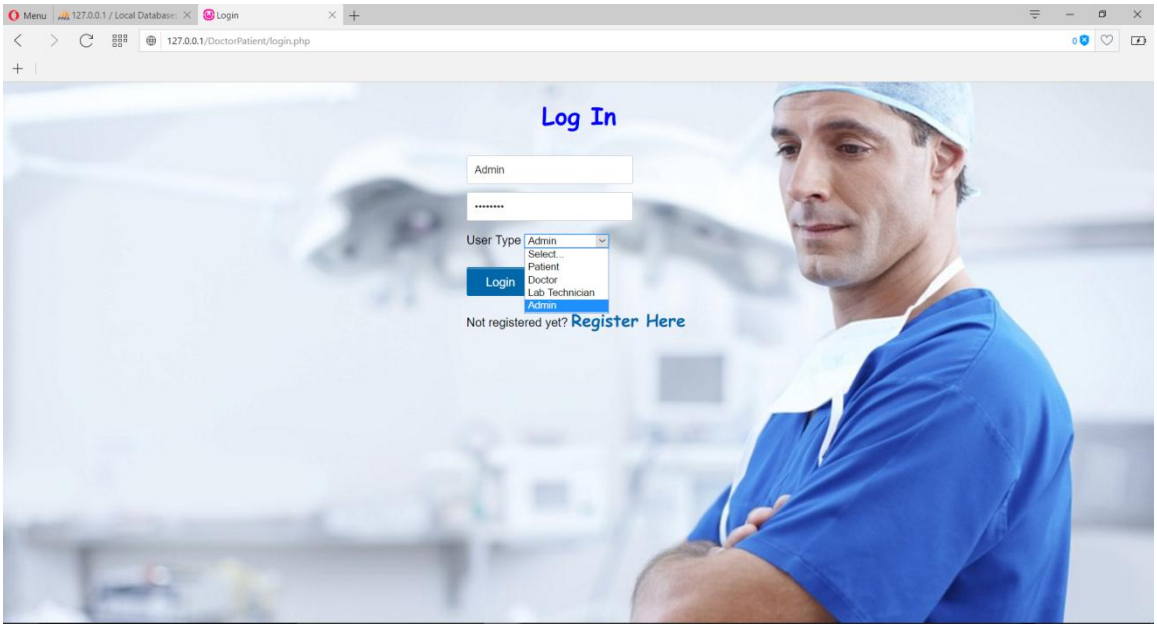
Data Management

The data in this project is created using **php** using **wampserver.** Individual data sources are maintained and stored in the database. This model record is locked and allows inquiries only from registered users.

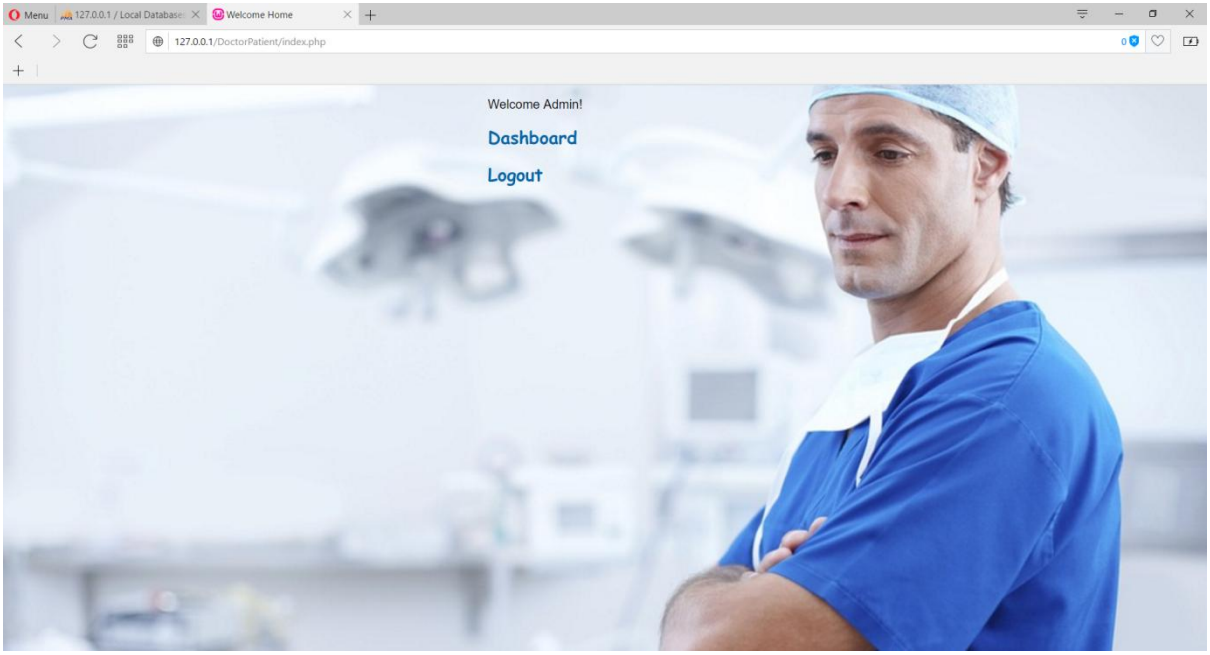


Login Page – Admin

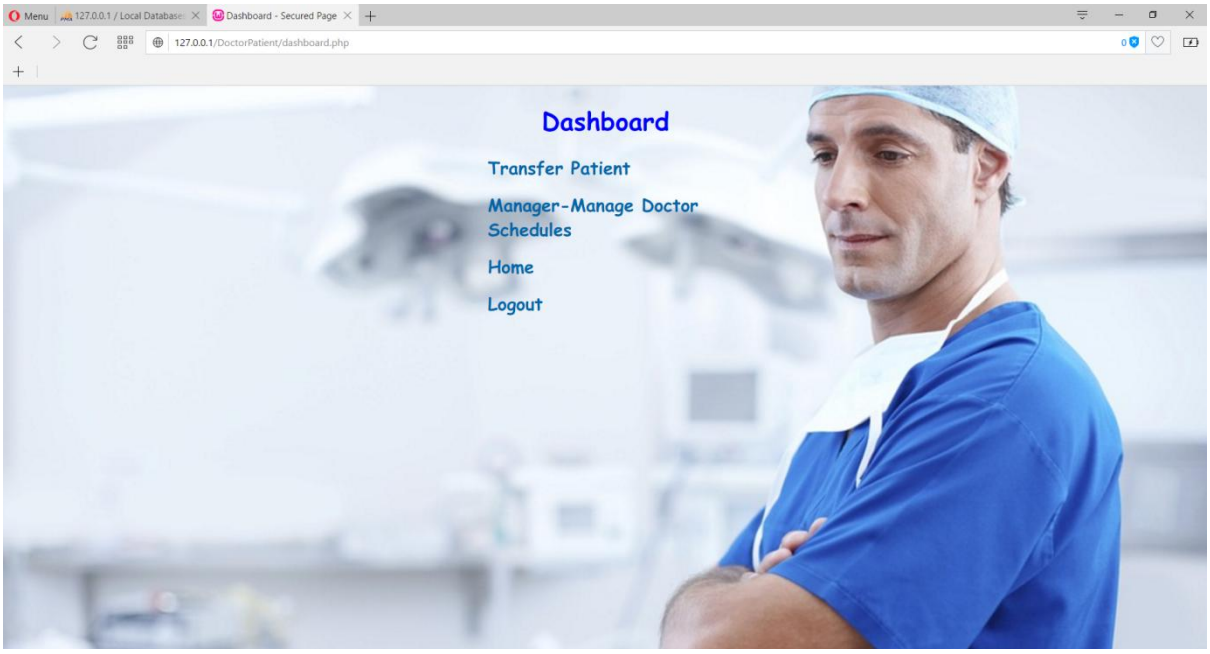
Admin doesn't need any registration as he is the one who will be creating and managing the page/website.



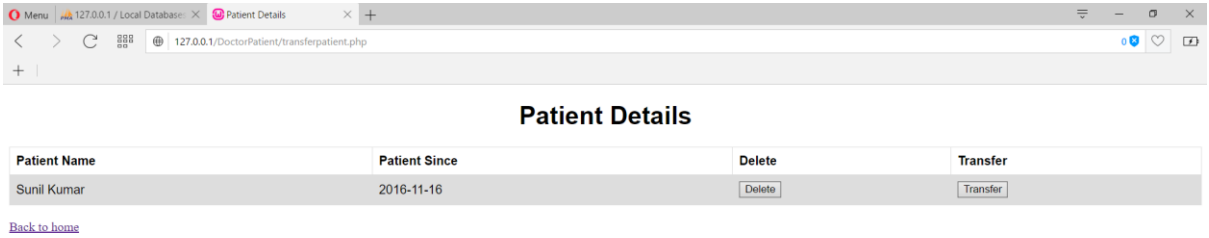
Welcome Page - Admin



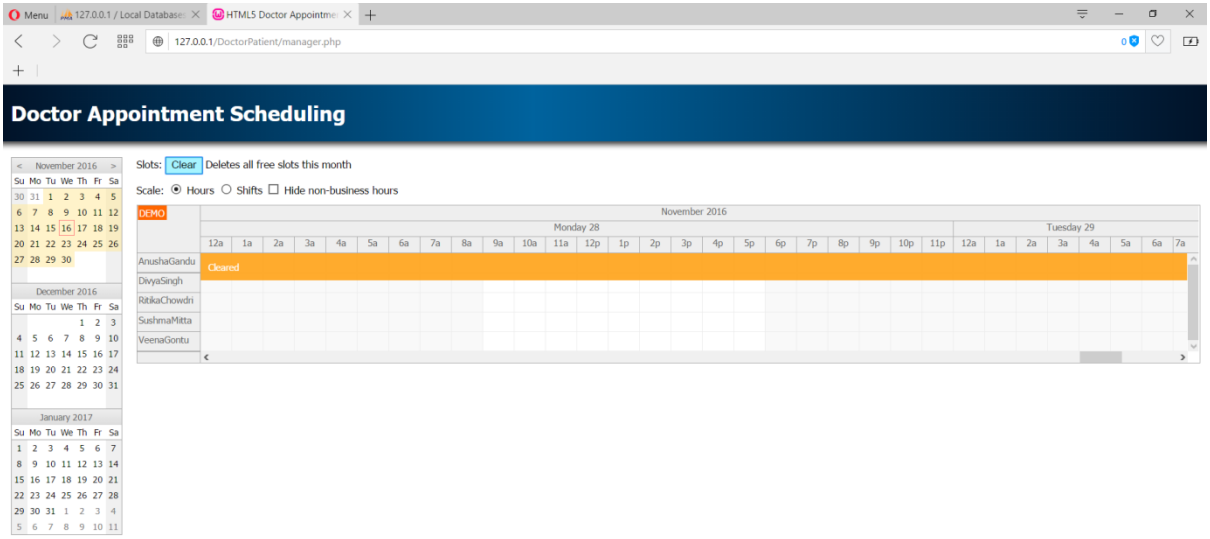
Dashboard - Admin

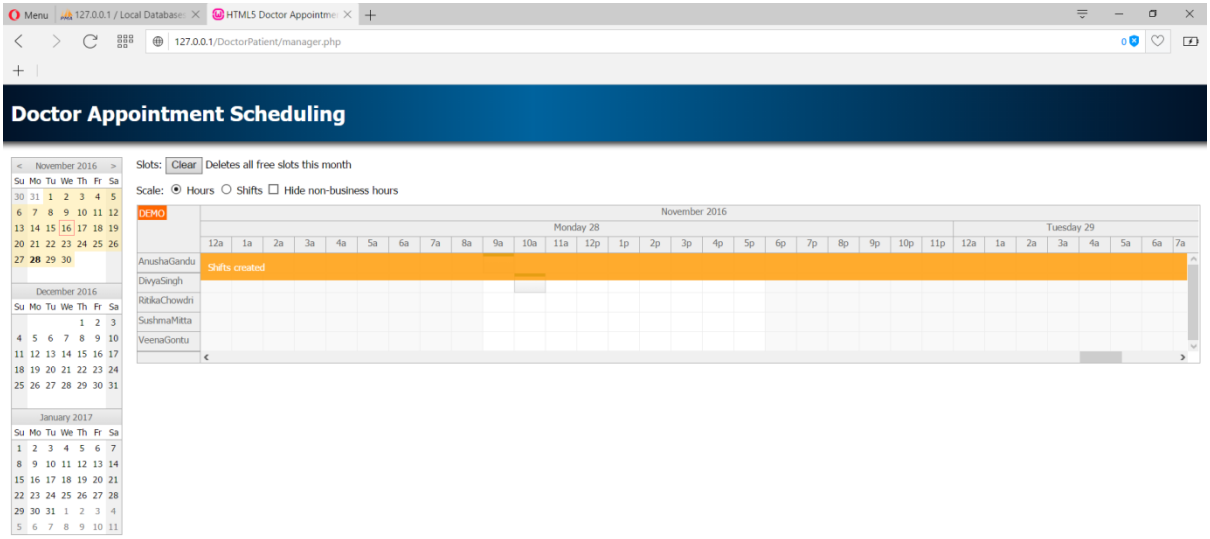


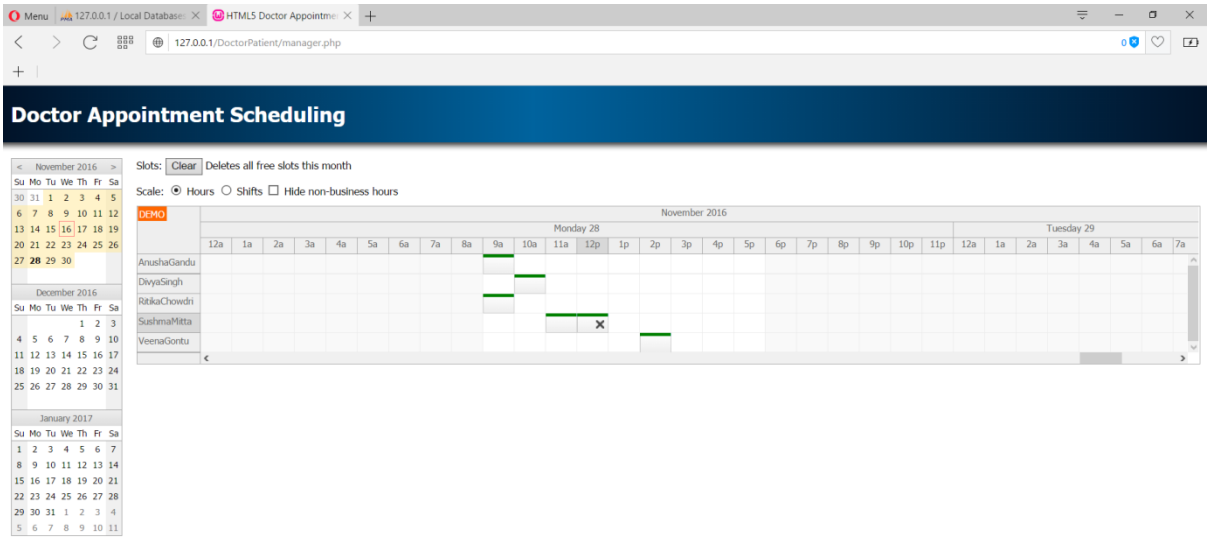
Patient Details

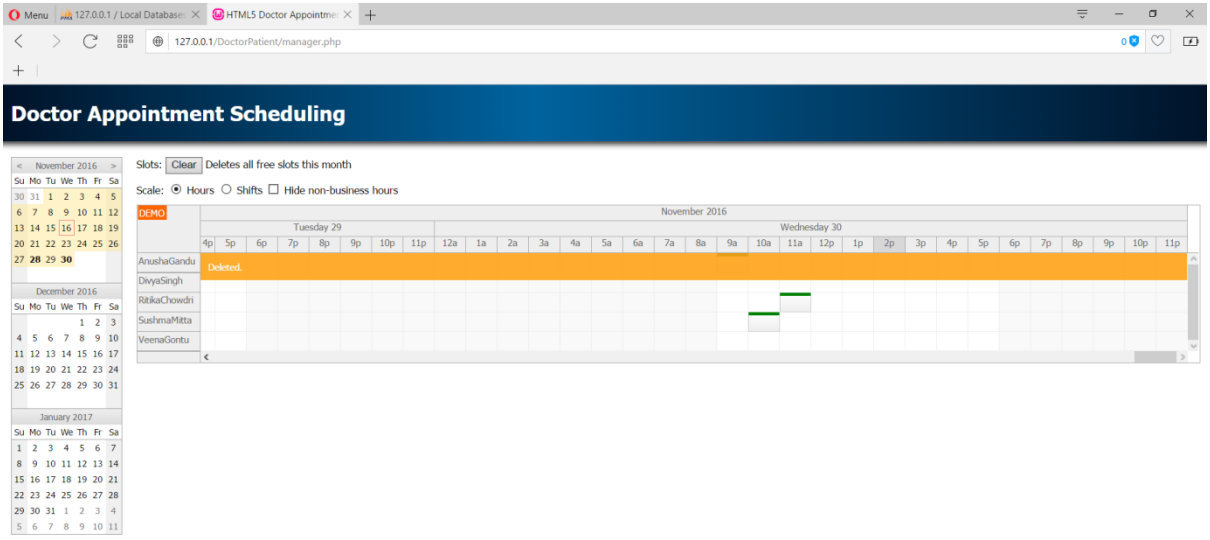


Managing Doctor Schedules



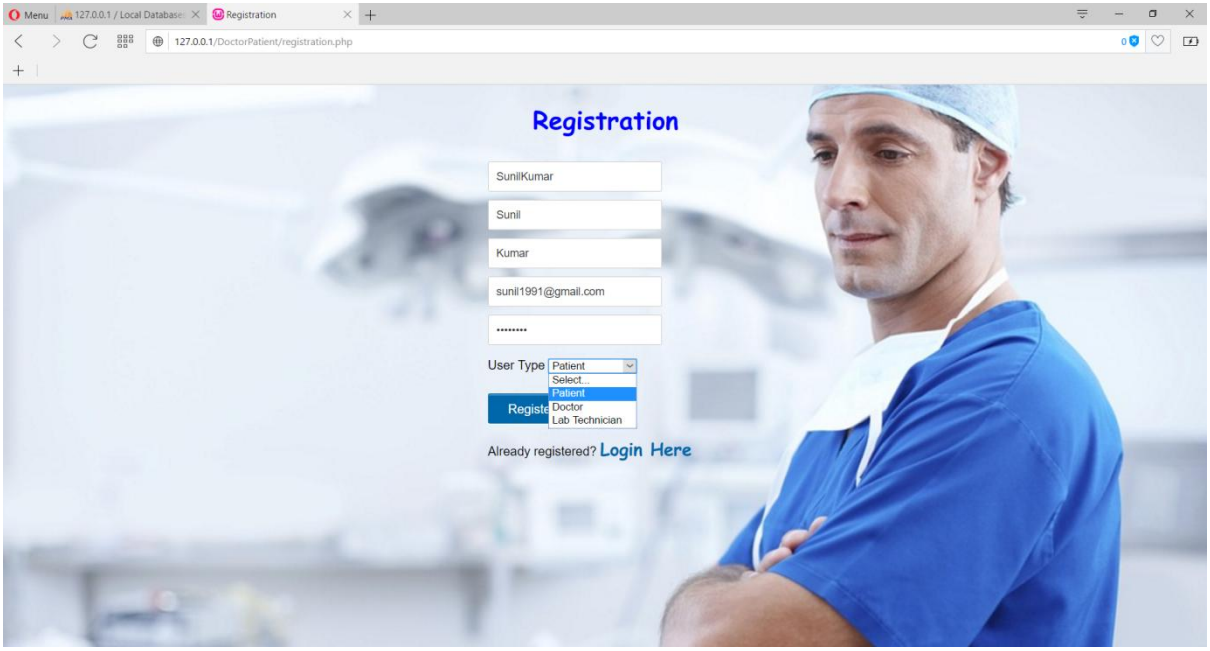



Doctor Appointment Scheduling
Slots: Clear Deletes all free slots this month
Scale: Hours Shifts Hide non-business hours
DEMO
November 2016
Monday 28
Tuesday 29
AnushaGandu
DivyaSingh
RitikaChowdri
SushmaMitta
VeenaGontu

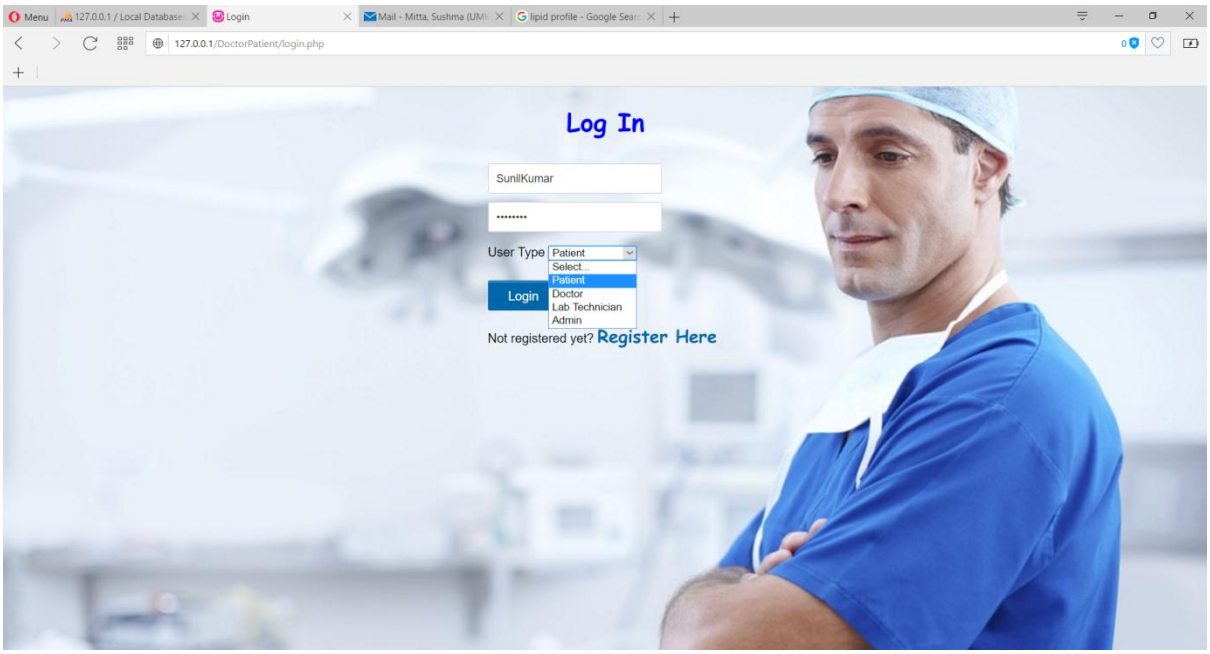

Doctor Appointment Scheduling
Slots: Clear Deletes all free slots this month
Scale: Hours Shifts Hide non-business hours
DEMO
November 2016
Tuesday 29
Wednesday 30
AnushaGandu
Deleted.
DivyaSingh
RitikaChowdri
SushmaMitta
VeenaGontu

Registration Page – Patient

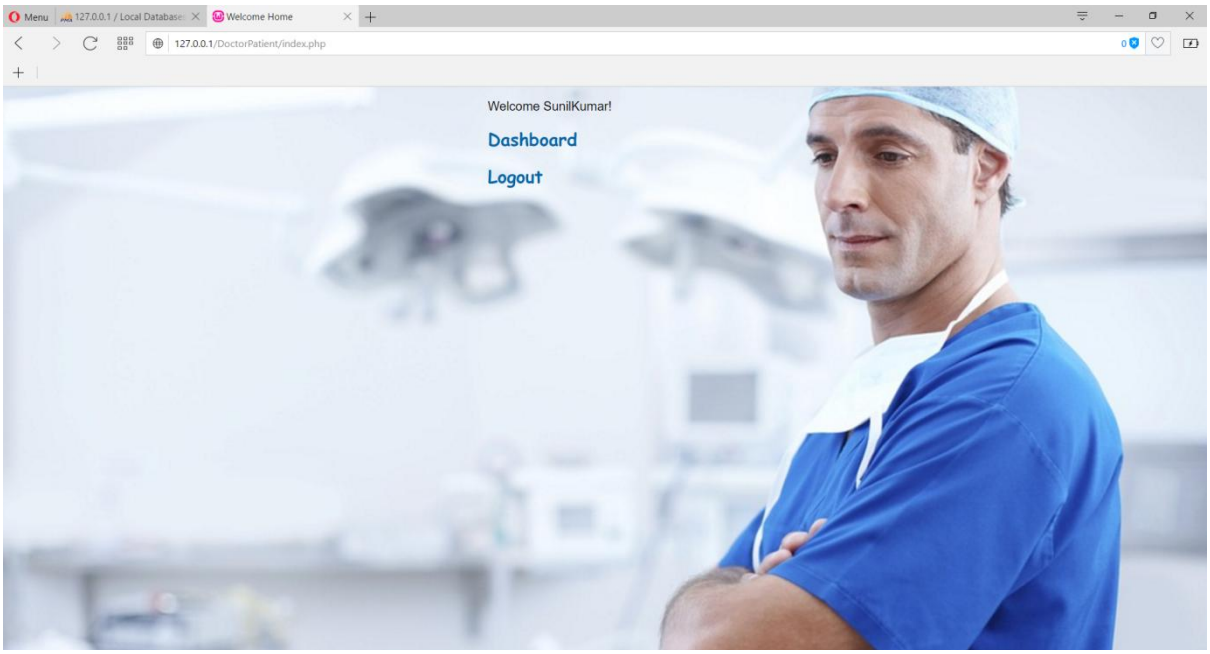
A patient can login only if he/she is registered previously.



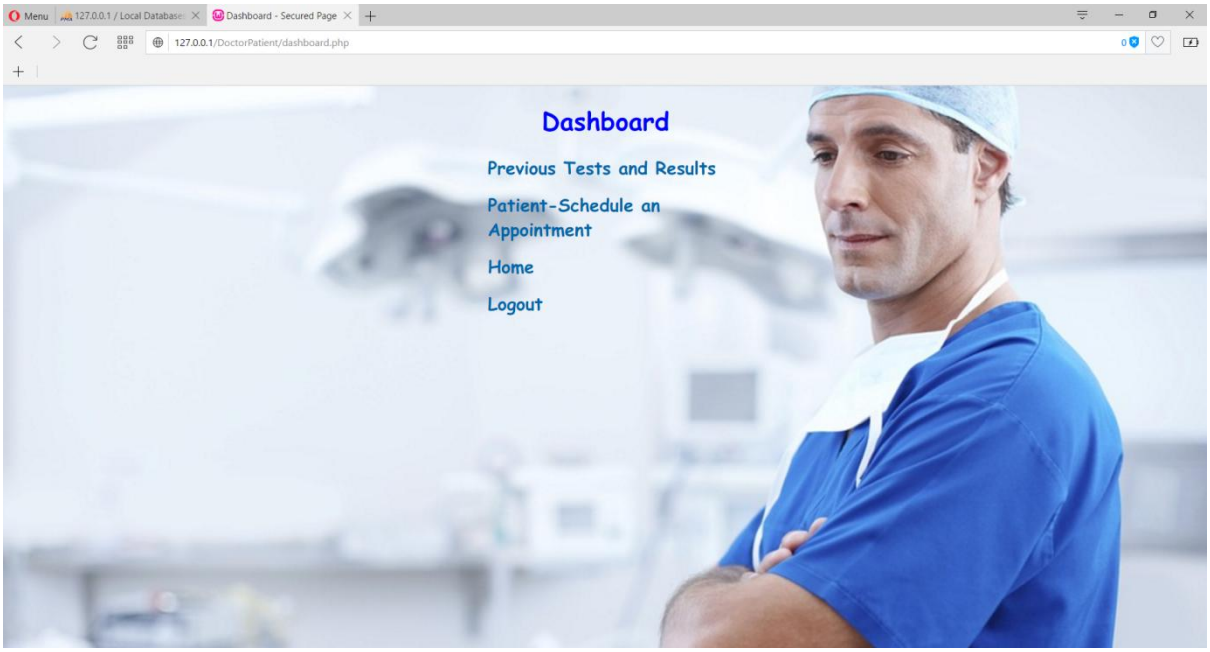
Login Page – Patient



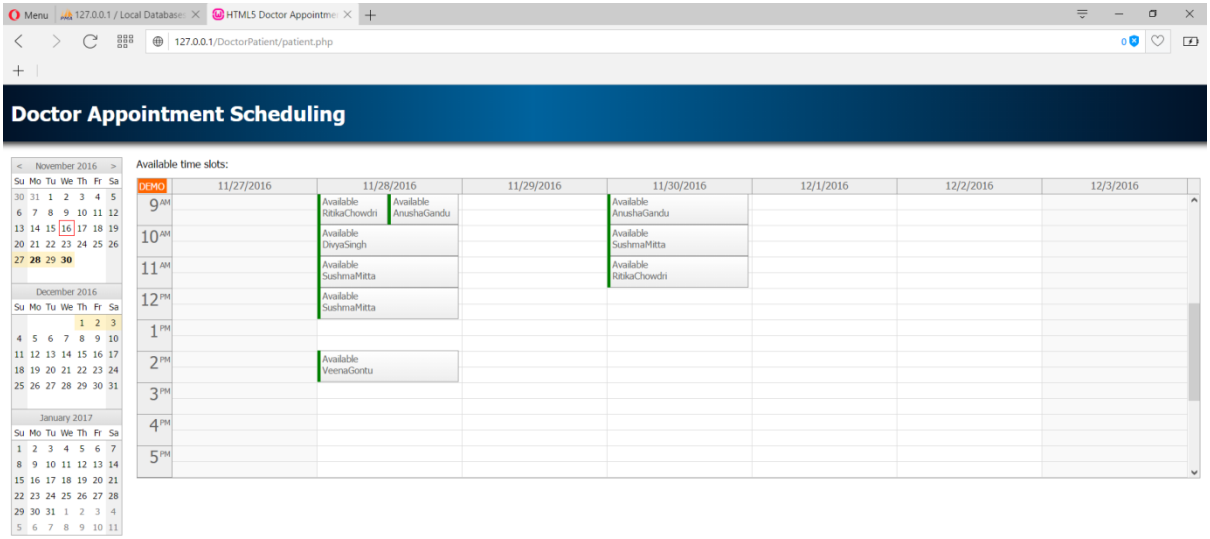
Welcome Page – Patient



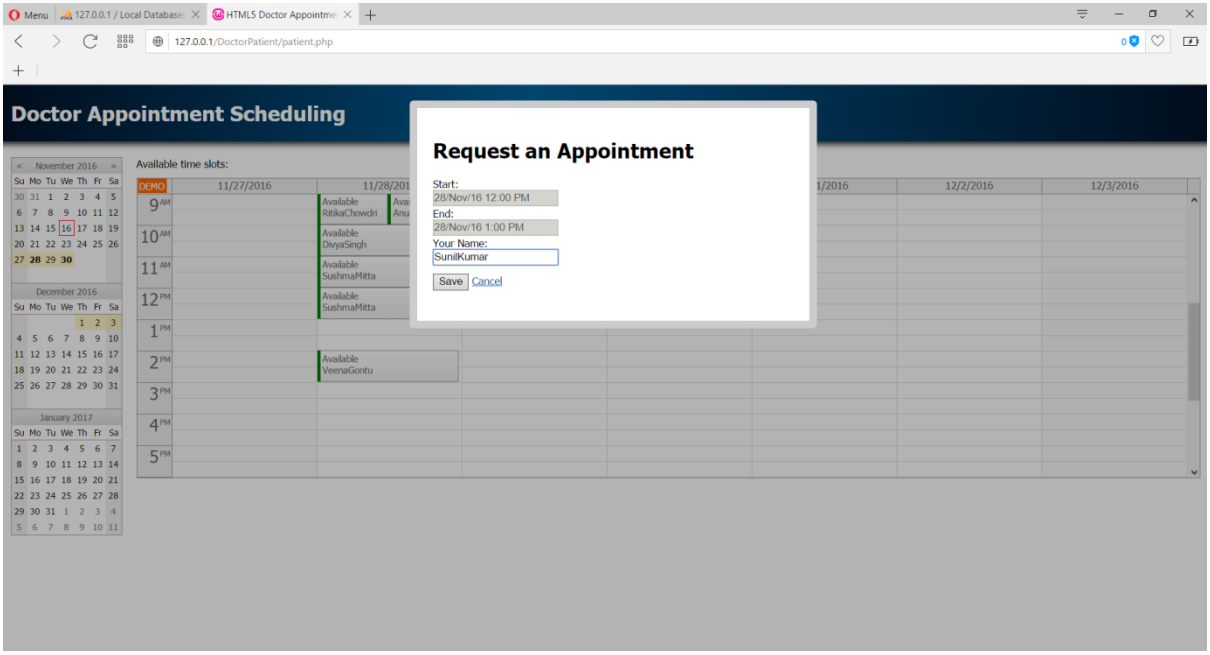
Dashboard – Patient



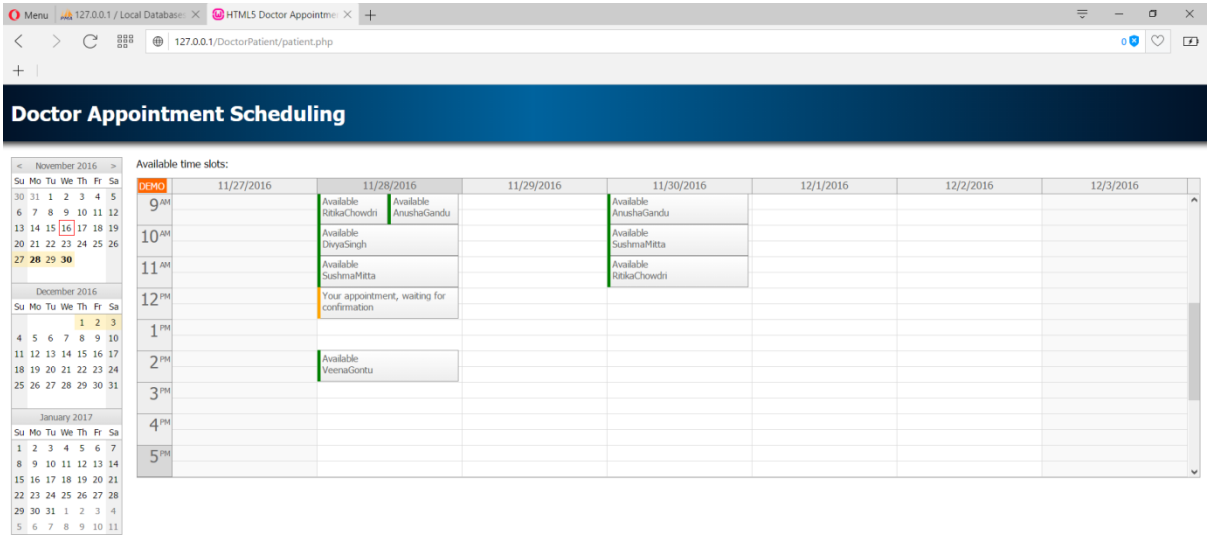
Scheduling an Appointment



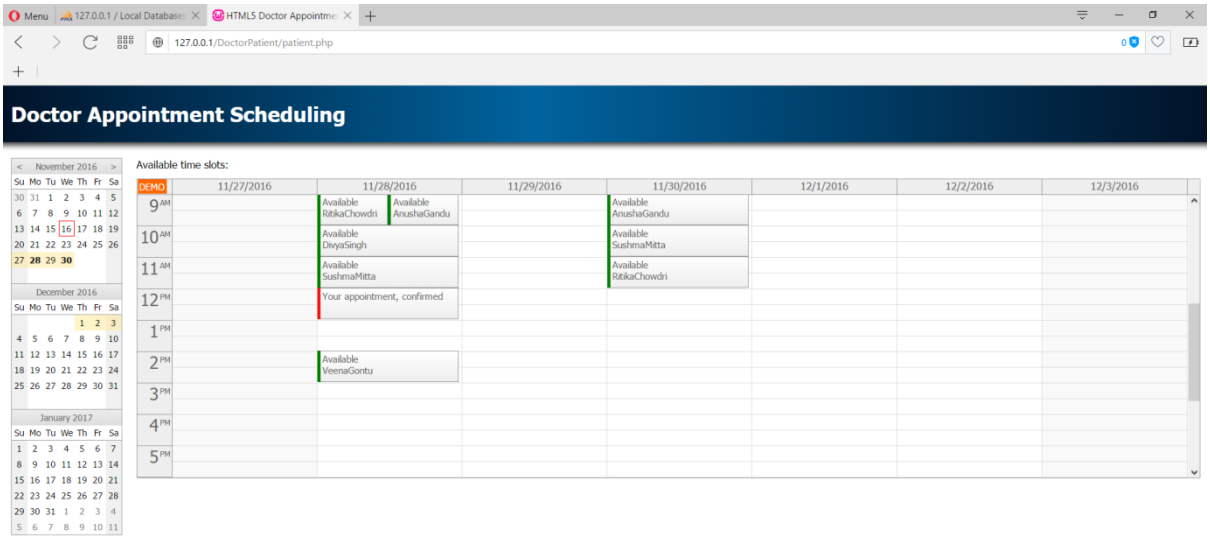
Appointment Confirmation



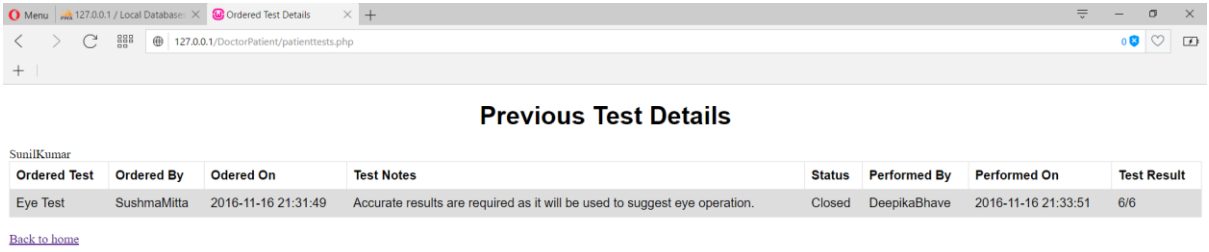
Requested Appointment



Confirmed Appointment

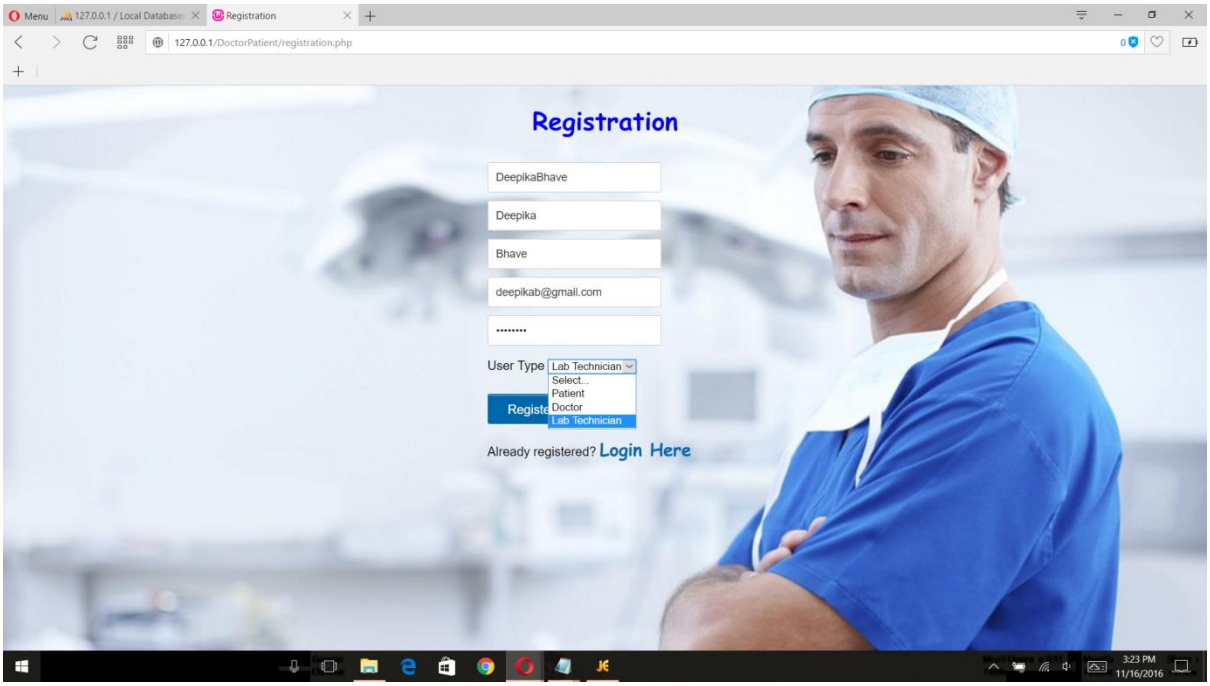


Previous Test Details

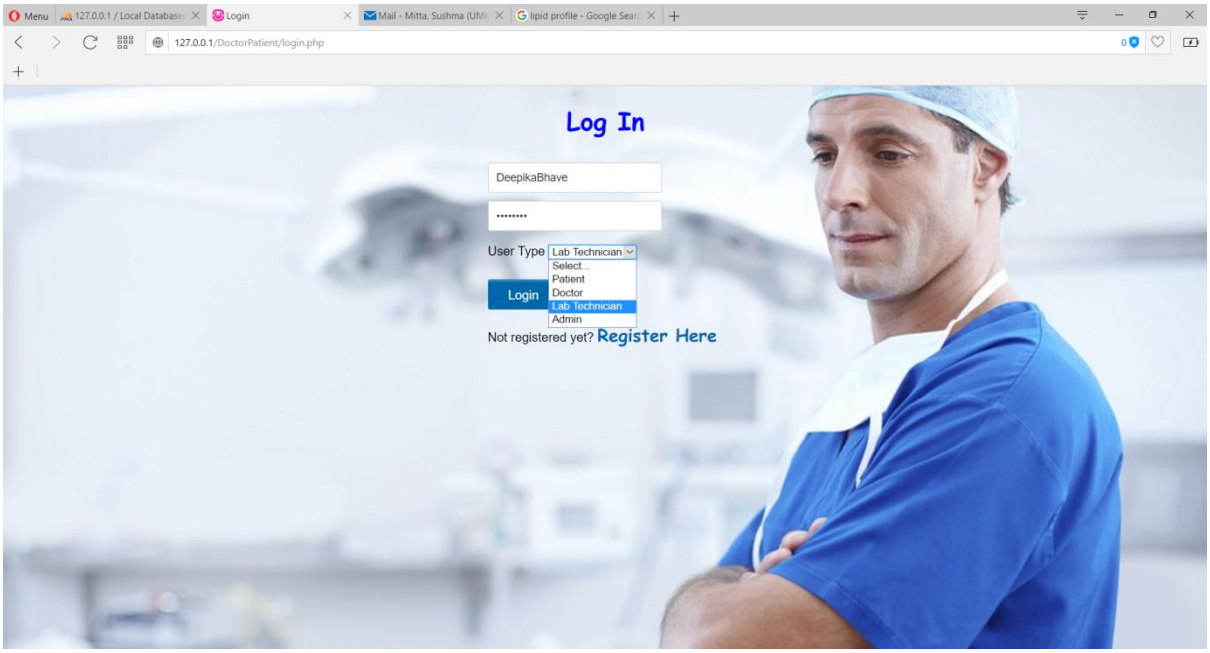


Registration – Lab Technician

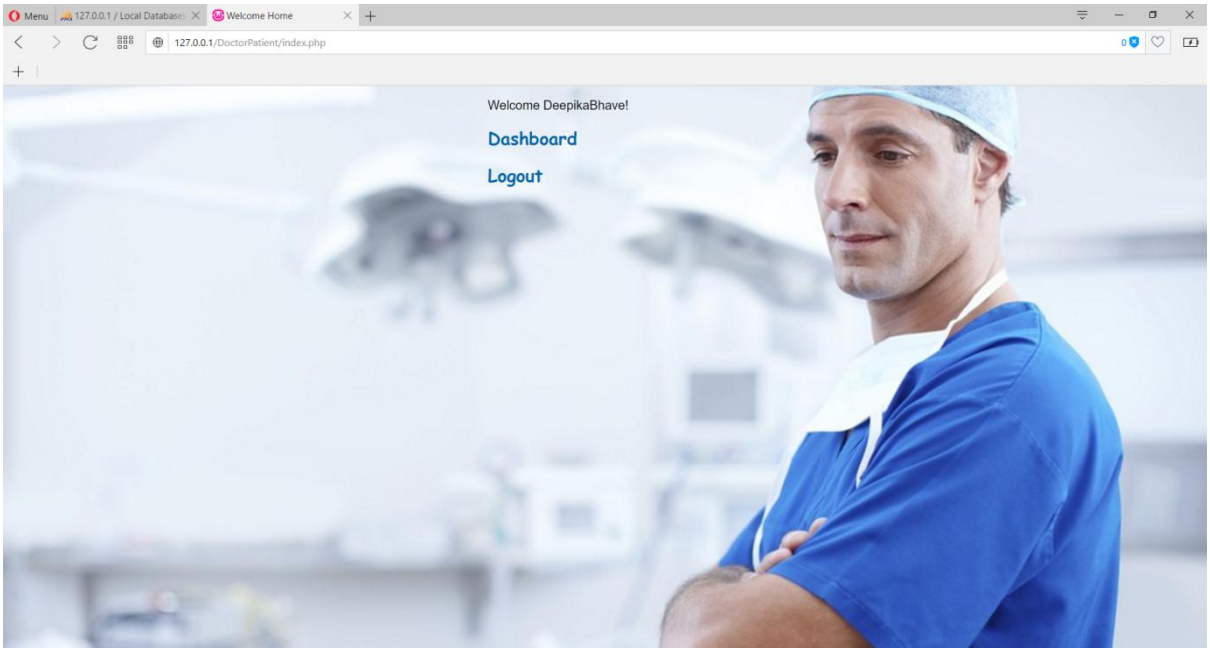
The login is possible only after the person has registered.



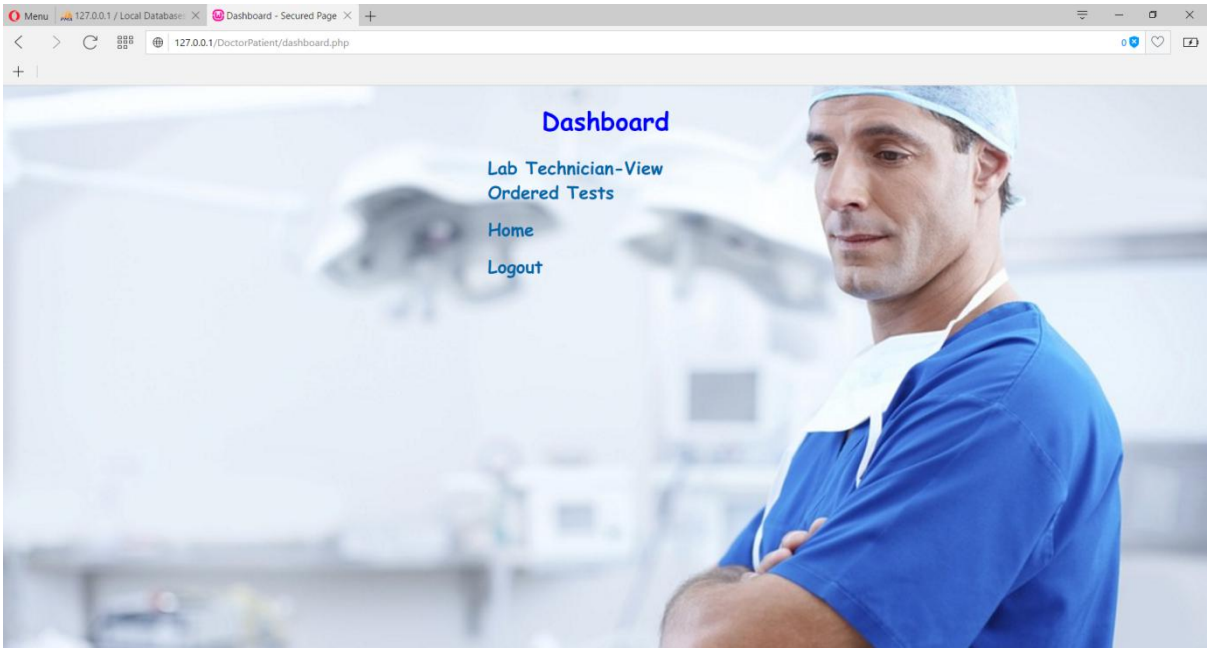
Login – Lab Technician



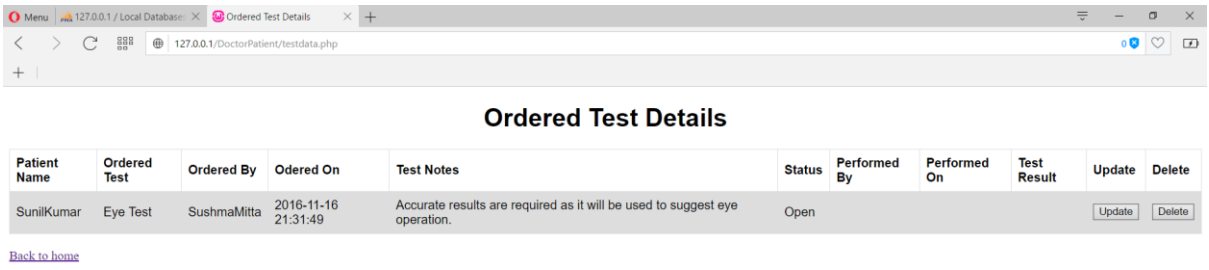
Welcome Page – Lab Technician



Dashboard – Lab Technician



Ordered Test Details

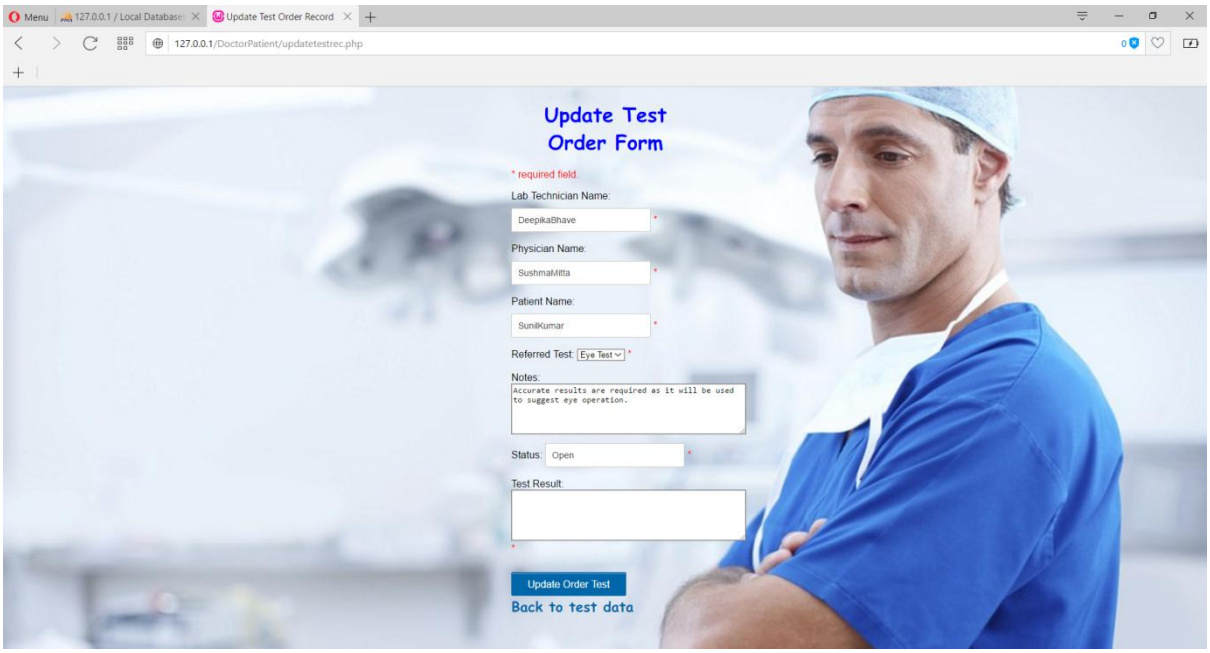


Ordered Test Details

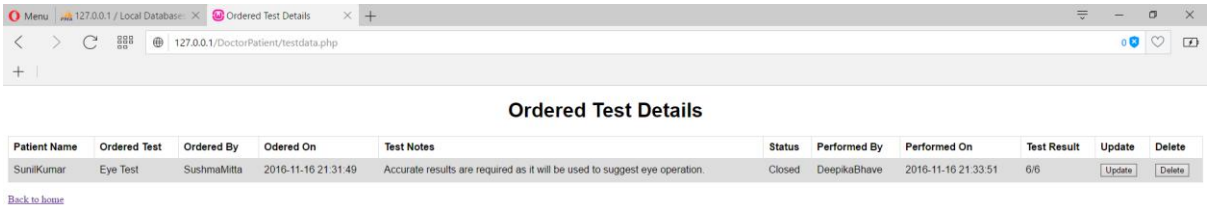
Patient Name	Ordered Test	Ordered By	Odered On	Test Notes	Status	Performed By	Performed On	Test Result	Update	Delete
SunilKumar	Eye Test	SushmaMitta	2016-11-16 21:31:49	Accurate results are required as it will be used to suggest eye operation.	Open				Update	Delete

Back to home

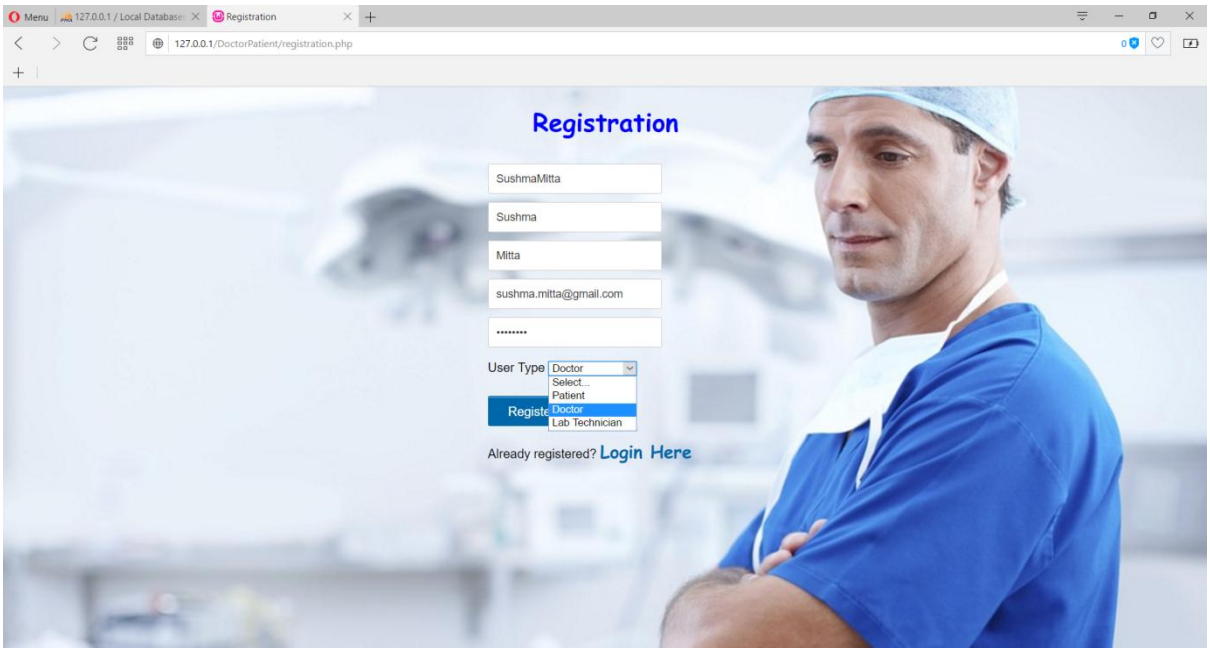
Test Update Form



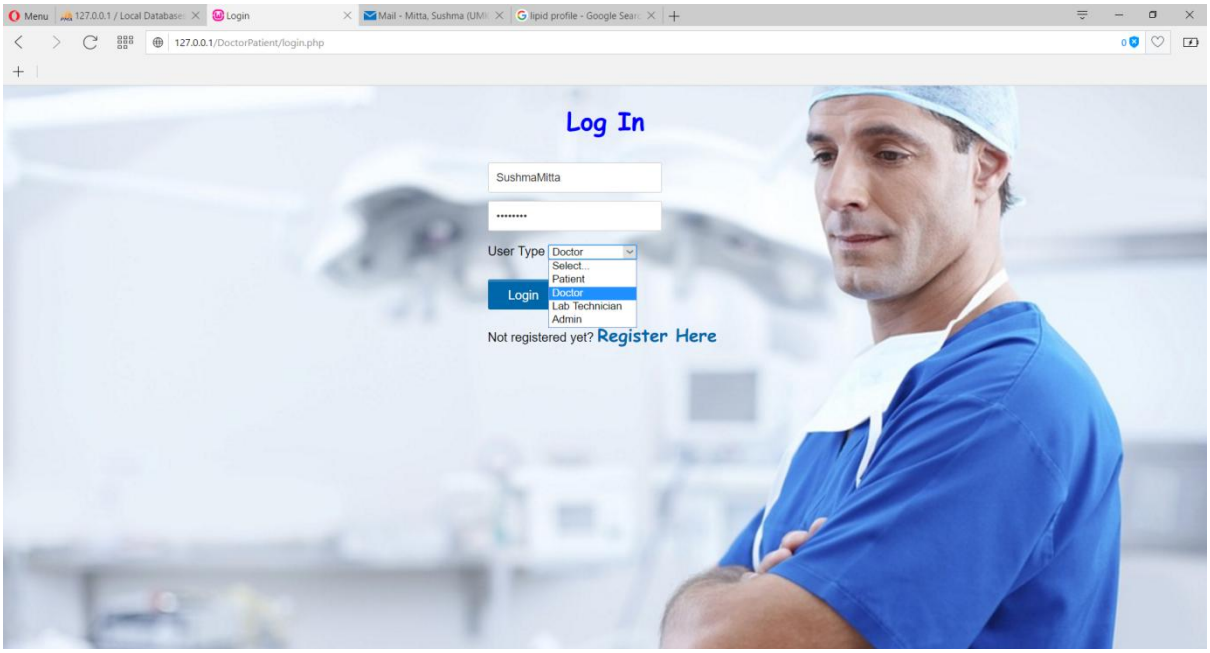
Test Results



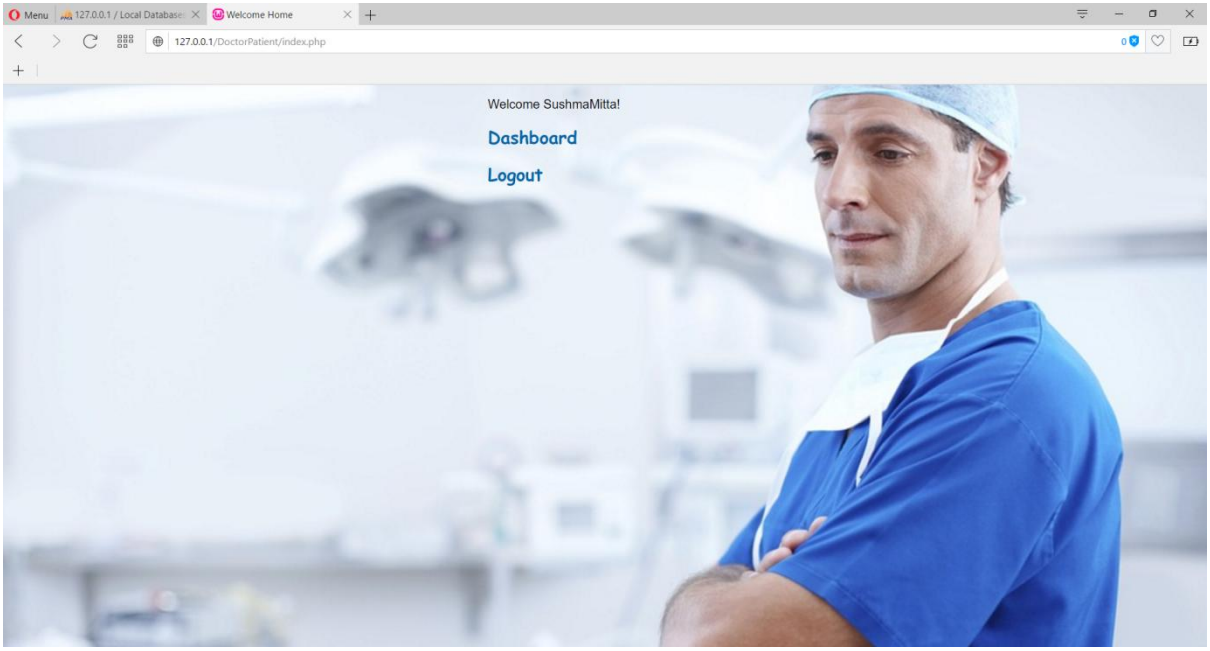
Registration – Doctor



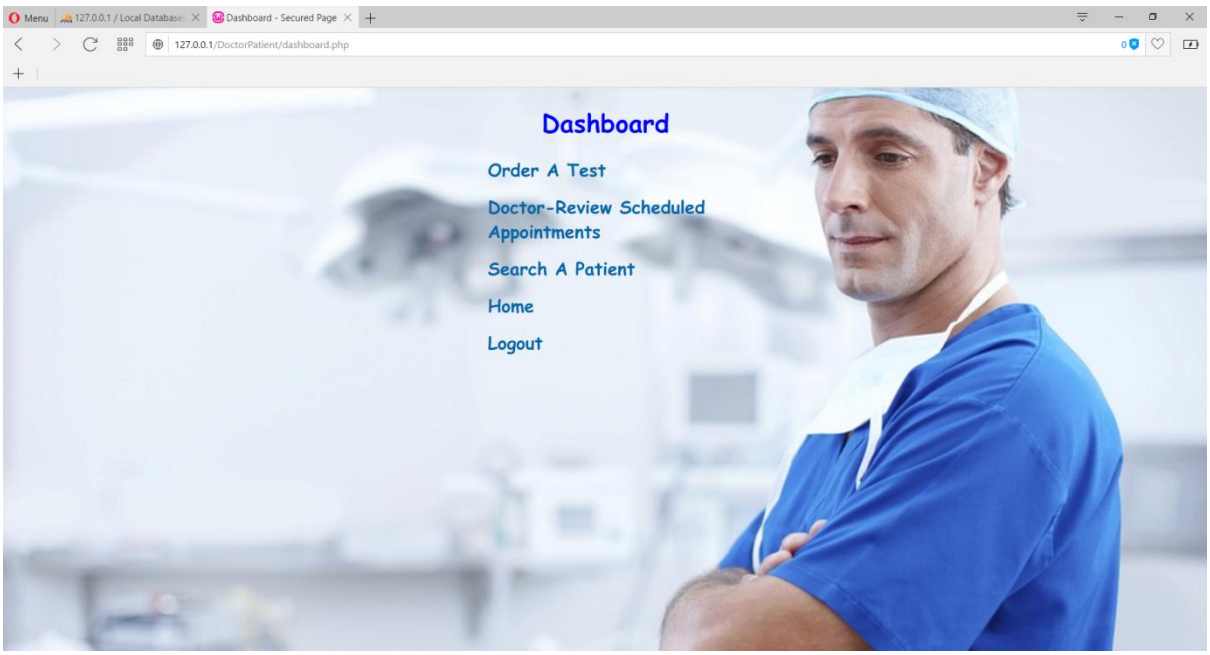
Login – Doctor



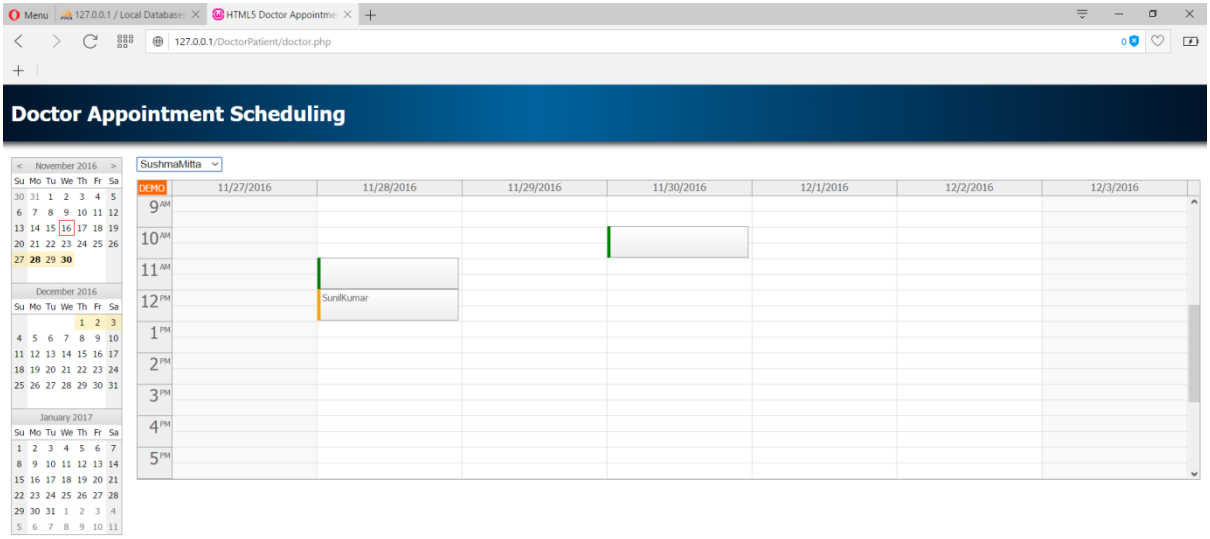
Welcome Page – Doctor



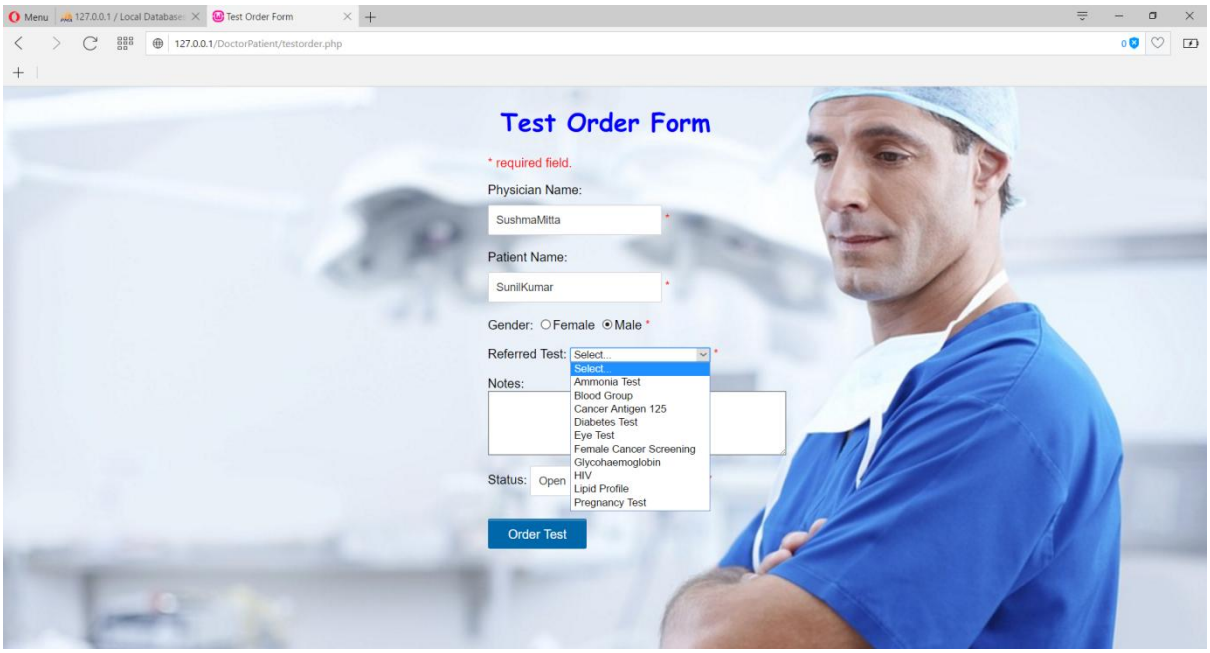
Dashboard – Doctor



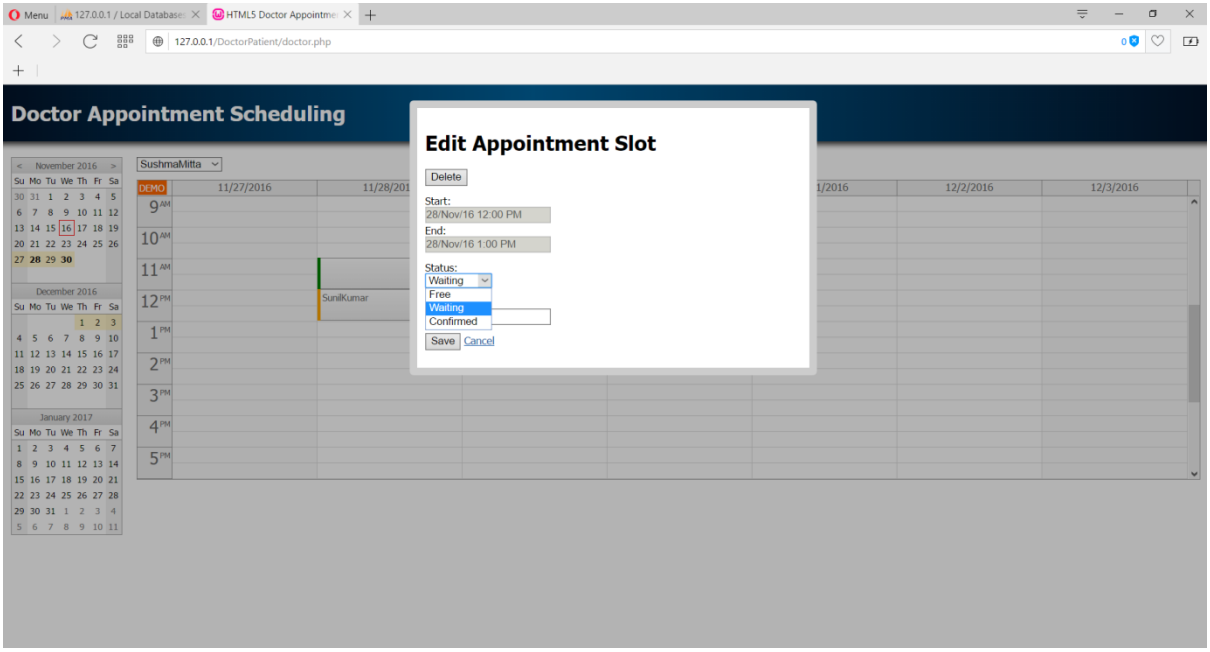
Reviewing Appointments

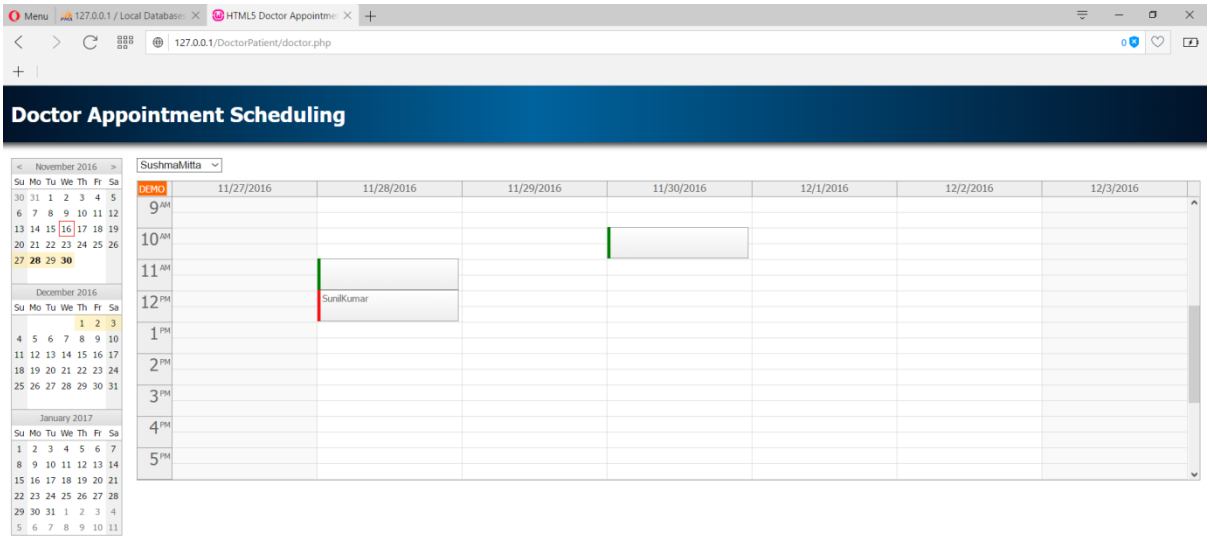


Ordering tests for a patient

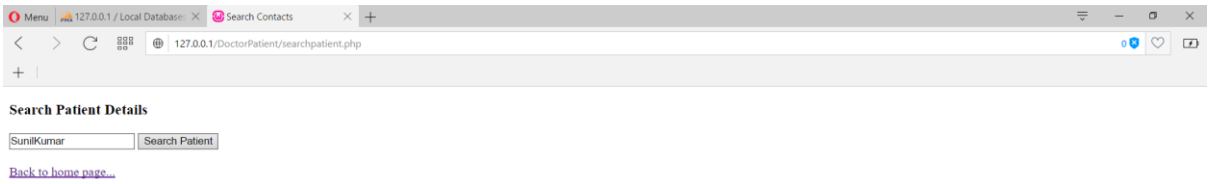


Confirming Appointments

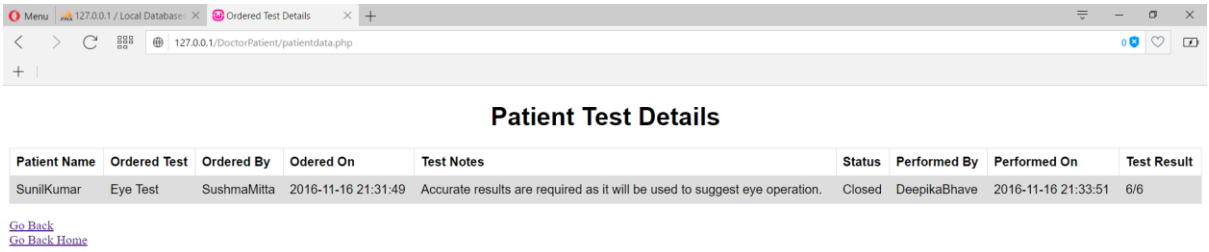




Search Patient



Patient Test Details



4. PERFORMANCE CRITERIA OF THE MODEL

Performance of the System

The project described in this paper is expected to decrease the manual intervention in recording the history of the patients' right from the initial admission/consultation to the doctor in a particular hospital till date.

In this project, we have made it possible by combining the EMR (Electronic Medical Record) with the additional features that include the submission/ordering of the tests online, making an appointment with the doctor online, sending the reports of a particular patient to the doctor.

Challenges in the System

The challenge faced in the system is incorporating the patient's transport EMR. Generally the transport EMR was previously ignored due to the inability to obtain the time limitations. Recent works have however made this electronic that would overcome the limitations.

5. CONCLUSION AND FUTURE SCOPE

Conclusion

The progress on health information exchange is increasing gradually. Despite the limitations of fully integrated medical record, this idea is being given importance and development in still in process in real time. There are limiting factors for the development of fully integrated medical record to a fully automated system. It also supports CER efforts. Despite these challenges, the EMR data holds for improving the provision of patient care.

Future Scope

The primary motive for creating the fully integrated medical record system was to develop a robust platform to support CER efforts.

Future development of this system will focus on automating the system to incorporate the real time data. Once this automation is done, this system will be able to provide the capability of real time queries.

References

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6. http://www.w3schools.com/php/
7. http://php.net/manual/en/language.functions.php
8. http://php.net/manual/en/language.functions.php
9. https://css-tricks.com/snippets/css/
10. http://www.mustbebuilt.co.uk/php/php-and-mysql/
11. http://blogs.verisign.com/identity/2008/02/security_of_online_medical_rec.php (Feb. 26, 2008, 15:14 CST).