

Medical Helper Using OCR

A Project Submitted
in Partial Fulfillment of the Requirements of
Networking Programming Lab
In
Master of Technology
(2nd Semester)

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UNDERTAKING

I declare that the work presented in this project titled “*Medical Helper Using OCR*”, submitted to the Computer Science & Engineering Department, **Dr. Mayank Pandey**, Motilal Nehru National Institute of Technology Allahabad, Allahabad for the partial fulfillment of **Network Programming Lab (2nd Semester)** in *Master of Technology*, is my original work. I have not plagiarized or submitted the same work for the award or any other benefit. In case this undertaking is found incorrect, I accept that my degree may be unconditionally withdrawn.

April, 2018
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CERTIFICATE

Certified that the work contained in the project titled “*Medical Helper Using OCR*”, by Nitin Kumar Yadav, Vibhuti Pratap Singh and Brijesh Kumar Chaurasiya has been carried out under my supervision and that this work has not been submitted elsewhere for any kind of benefit.

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Abstract

This is an innovative system for user mostly targeting the aged population as a medical helper. The product to be built will be having reminders to be set according to the time at which the particular medicine the users have to take. To ease this, the reminders will have the feature to be set according to the tablet/capsule color, name, and quantity. Optical Character Recognition (OCR) feature in this product will be saving time to type the name of the medicine during setting the reminder as it just extracts the name (text) from the medicine cover by taking a picture of the medicine cover. A functionality of doctor recommendation is also provides a list of doctors along with their specialty nearer to the patient.

Acknowledgements

We have taken efforts in this project. However, it would not have been possible without the kind support and help of many individuals and organizations. I would like to extend my sincere thanks to all of them.

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We would like to express our gratitude towards our parents for their encouragement.

Our thanks and appreciations also go to our colleagues in developing the project and people who have willingly helped me out with their abilities.

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1. Introduction

1.1 About the project

Whenever we get ill we have to take medicines to cure ourselves from the disease. There's hardly any person on earth who have not taken any medicine ever in life. Taking medicine to be cured is good but more important thing is when we have to take it and how much dose of it. In this project, we have developed Medical Helper Using OCR. It assists the patient by helping them in reminding when he/she has to take and which medicine. It sends an email to the patient to remind him/her to take the medicine. It also has the OCR feature which reduces the typing effort of patient during the setting of a reminder. OCR feature is heart of this project. It makes the patients feel so friendly with the service.

1.2 Project Features

- **Reminder**

A timed email will be sent when the reminder reaches the counter 0 seconds. This email has the information about medicine name, dose and doctor's name and an additional note if user wants to add.

- **OCR**

For OCR we have used Tesseract. Tesseract is an optical recognition engine for various operating systems. It is free software, released under the Apache License 2.0, and development has been sponsored by Google since 2006.

- **Doctor Recommendation system**

This system recommends doctors for the patient and nearest doctor location are listed first.

1.3 Project Scope

This project can be widely used by any patient who don't want to forget that when he/she has to take the medicine with additional information like medicine dose and his doctor name and also the notes (if necessary). The user can make an account here and it will be always there. If in future, the user gets ill; by just login on website he/she can save important information like prescribed by doctor, medicine details by uploading the printed slip of medicine from where he/she has purchased it. Finally the user can set a reminder to get aware every time to not to forget about the medicine he/she has to take. This project assists the patient with its OCR feature where user doesn't need to type the

details in medicine slip. It automatically extracts the texts in the slip. This project can be said patient's friend and is based on usual nature of human that is forgetting.

1.4 Technologies Used

- **Frontend**
 - HTML
 - CSS
 - Bootstrap
- **Backend**
 - PHP
 - MySQL

1.5 Goals

The project developed has the following goals:

1. To assist the patients by reminding the medicine that the patient has to take.
2. To target the patients of age more than 40 years.
3. To save the information in case the patient needs it in future.
4. To minimize the patient's effort in typing by using OCR.
5. To recommend the nearest doctor if the patient want to visit a new doctor.

2. Overall Description

2.1 Project Perspective

It is a web based website with both client and server support. Client can sign up, login and

Set the reminder to not forget about the medicine that he has to take.

System works as follows:-

- User need to register first and then can login to the website.

- User once access the system, he can upload the medicine receipt to extracts medicine name, dose and the doctor name who has prescribed the medicine to the patient.

- If the user wants to meet another doctor he can look for recommendations on the website.

2.2 Software Requirements

❖ Server Side

- ☐ XAMPP Package
- ☐ Windows 7/8/10 or Linux
- ☐ Any Latest Web Browser

❖ Client Side

- ☐ Any Latest Web Browser

- ❑ Windows 7/8/10 or Linux

2.3 Hardware requirements

❖ Server Side

- ❑ 2.00 GHz or Above Processor
- ❑ 32-bit / 64-bit Operating System
- ❑ x86 or x64 based processor
- ❑ RAM: 2 GB or above

❖ Client Side

- ❑ x86 or x64 based processor
- ❑ RAM: 1 GB or above

2.4 User Characteristic

- User has to register himself before using any kind of service.
- During registration he has to provide Name, his doctor's name, mobile number, email address, address, DOB etc.
- Registered user can login to website.
- User can set the reminder.
- User can use OCR feature by just uploading the medicine receipt.
- User can delete reminder once the medicine course is completed.

- User can add additional note in reminder which he will be sent in email message along with reminder.
- User can see doctor recommendation in case he wants to visit a new doctor.

2.5 Use Case Diagram

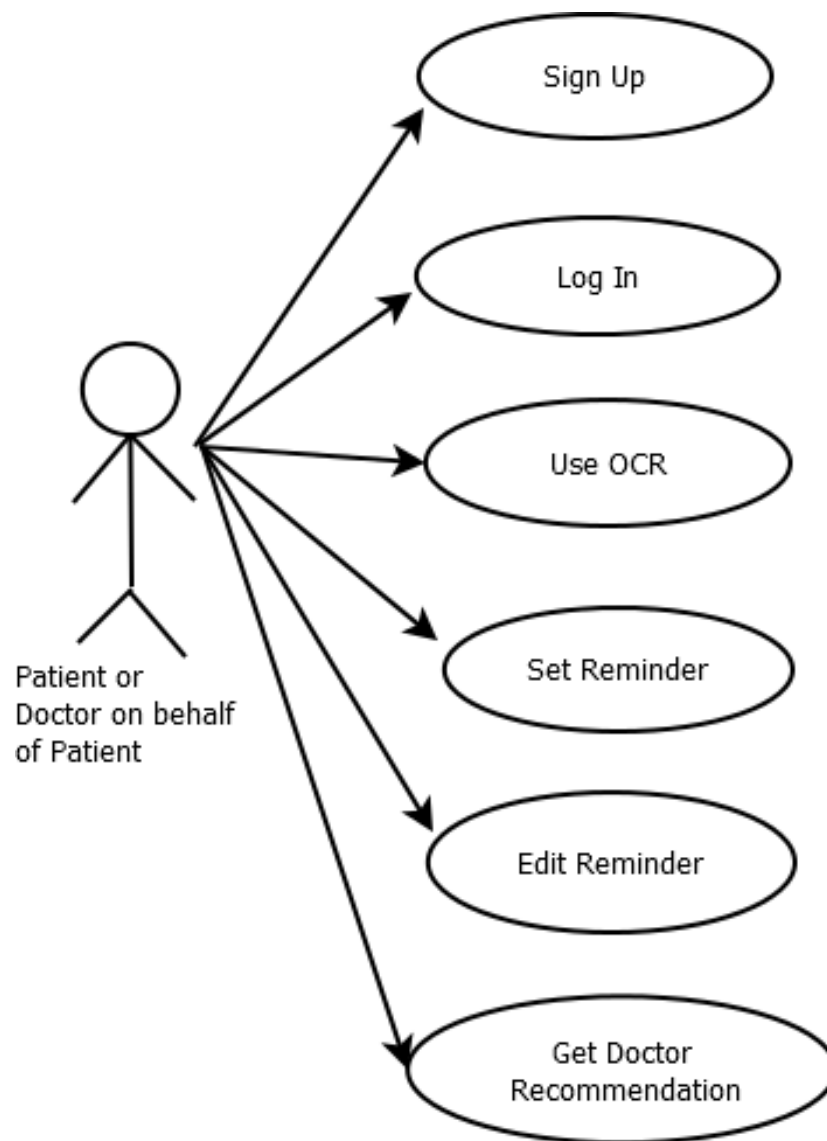


Figure 1

2.6 Block Diagram

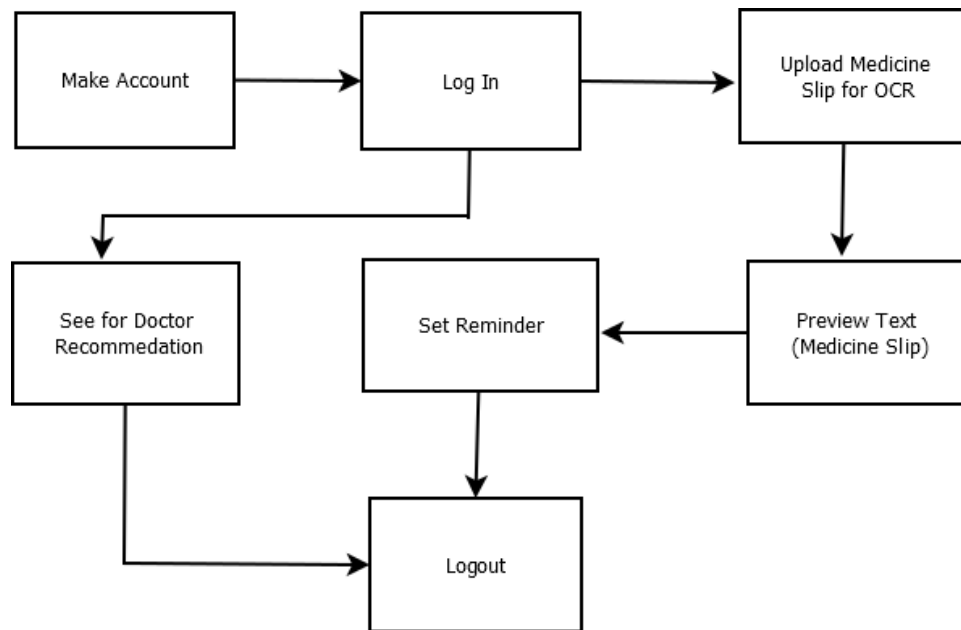


Figure 2

2.7 Database


User Table Structure

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	userId 🔑	int(30)			No	None		AUTO_INCREMENT
2	username 🔑	varchar(30)	latin1_swedish_ci		No	None		
3	email	varchar(50)	latin1_swedish_ci		No	None		
4	password	varchar(30)	latin1_swedish_ci		No	None		
5	gender	varchar(20)	latin1_swedish_ci		No	None		
6	contact	varchar(30)	latin1_swedish_ci		No	None		
7	address	varchar(300)	latin1_swedish_ci		No	None		
8	dob	date			No	None		
9	profileId	int(11)			No	None		
10	image	varchar(50)	latin1_swedish_ci		No	None		
11	doctorName	varchar(60)	latin1_swedish_ci		No	None		
12	maritalStatuse	varchar(60)	latin1_swedish_ci		No	None		

Profile Picture Table - Structure

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	id 🔑	int(10)			No	None		AUTO_INCREMENT
2	name	blob			No	None		

Reminder Table – Structure

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	id 	int(11)			No	None		AUTO_INCREMENT
2	hrs	int(30)			No	None		
3	min	int(30)			No	None		
4	sec	int(30)			No	None		
5	ampm	varchar(3)	latin1_swedish_ci		No	None		
6	notes	varchar(350)	latin1_swedish_ci		No	None		
7	userId	int(30)			Yes	NULL		

OCR Table for Medicine Slip

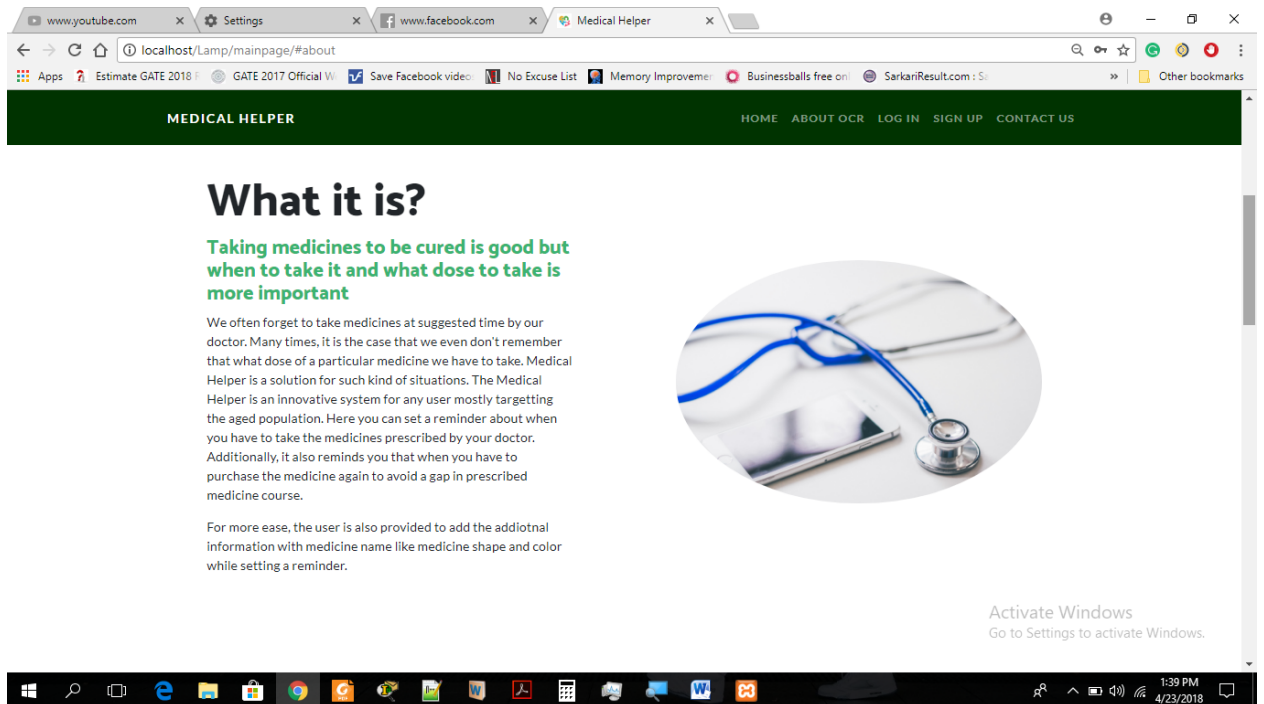
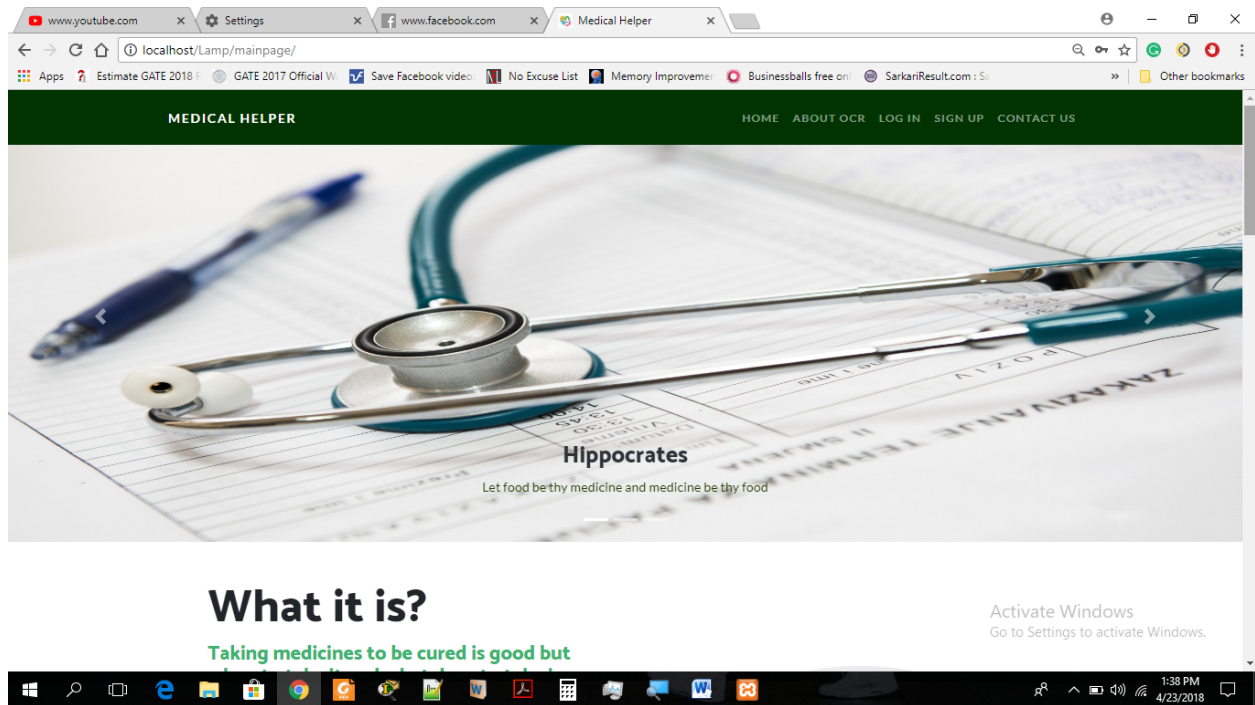
id	ocrtext	userID	datetime
9		0	0000-00-00 00:00:00
10		0	0000-00-00 00:00:00
12	something	2	2018-04-22 00:00:00
13	something	2	2018-04-22 11:29:29
	Prabhat Medical Stores		
14	Siddharthnagar (UP)	12	2018-04-22 11:32:32

Doctor Table for Recommendation System

id	name	specialization	mobile_no	address	lat	lon
1	Dr. B. K. Gupta	Sr. Consultant, Cardiologist	9412183360	Agra	27.17667	78.008075
2	Dr. Atul Sarswat	Consultant, Physician	9412360807	Agra	27.17667	78.008075
3	Dr. Sanjeev Saxena	Sr. Consultant, Opthology	9760514498	Agra	27.17667	78.008075
4	Dr. Parveen Garg	Orthopedic	9935014991	Agra	27.17667	78.008075
5	Dr.Harish Kumar	Physician	9012045999	Allahabad	25.435801	81.846311
6	Dr.D.K Shrivastav	Sr. Ortho Surgeon	9415309937	Allahabad	25.435801	81.846311
7	Dr.S.K Johari	Sr. Consultant Surgeon	941524069	Allahabad	25.435801	81.846311
8	Dr.P.P Panday	Ortho Surgeon	9565335132	Pratapgarh	25.897304	81.945298
9	Dr. Rama Shankar	Consultant	9415136154	Pratapgarh	25.897304	81.945298
10	Dr.R.m Gupta	Physician	9450134066	Fatehpur	25.849981	80.89865
11	Dr.V.N Pathak	Sr. consultant	9935523032	Fatehpur	25.849981	80.89865
12	Dr. Dharam Raj Singh	Surgeon	9307540847	Koshambi	25.506486	81.427898
13	Dr.C.K Prasad	Sr. Consultant Surgeon		Azamgarh	26.073704	83.185946
14	Dr. Vinod Kumar	Consultant Physician	9335734474	Balia	25.830717	84.185712
15	Dr. Ramesh Kumar	Consultant Orthopedics	9415592299	Balia	25.830717	84.185712
16	Dr. M L Agarwal	Sr. Physician	94125866357	Shahjahanpur	27.883744	79.912245

2.8 Screenshots

Home Page



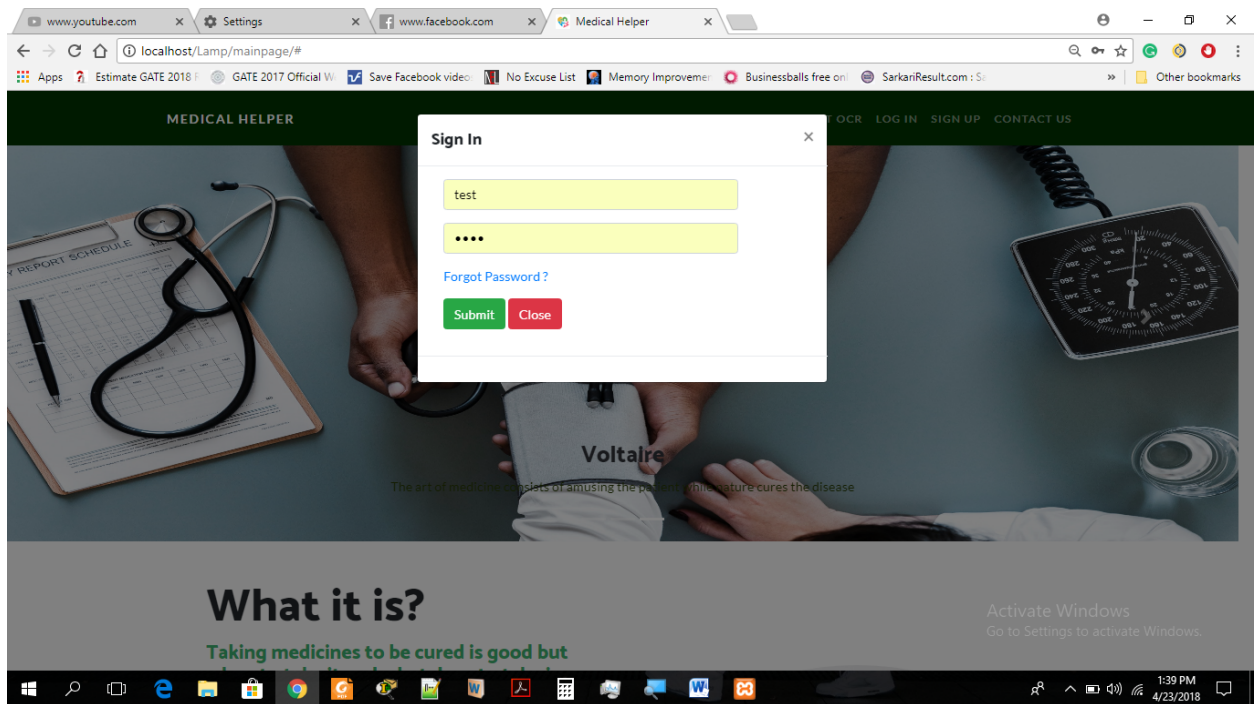
Sign Up

The screenshot shows a web browser window with multiple tabs. The active tab is 'Medical Helper' at the URL 'localhost/Lamp/mainpage/#'. The website has a dark green header with the text 'MEDICAL HELPER' and navigation links for 'OCR', 'LOGIN', 'SIGN UP', and 'CONTACT US'. A 'Create Account' modal form is centered on the screen, overlaid on a background image of a stethoscope and medical papers. The form contains the following fields and options:

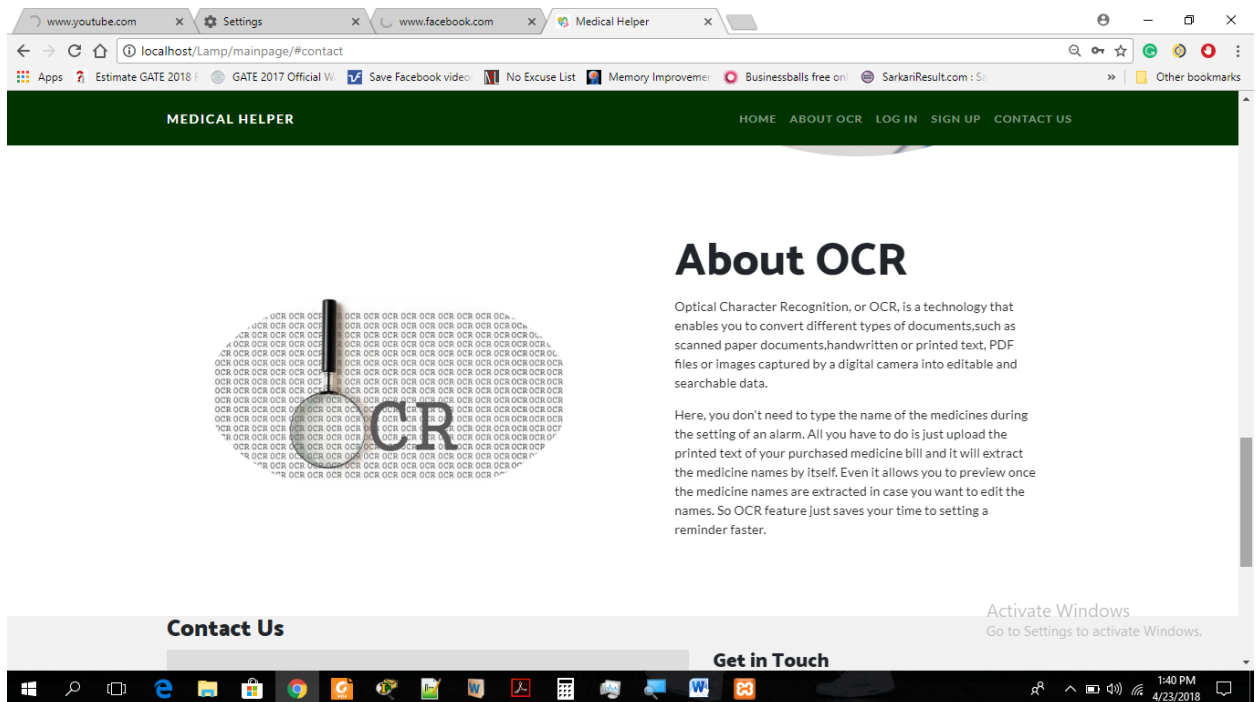
- Enter Name
- Enter Email
- Enter Mobile Number
- Doctor Name
- Gender: ☒ Male ☐ Female
- Marital Status: ☒ Married ☐ Unmarried
- Date: mm/dd/yyyy
- Enter Password
- Confirm Password
- Buttons: Submit (green), Close (red)

Below the form, the text 'What it is?' and 'Taking medicines to be cured is good but' is visible. An 'Activate Windows' watermark is present in the bottom right corner of the page. The Windows taskbar at the bottom shows the time as 1:39 PM on 4/23/2018.

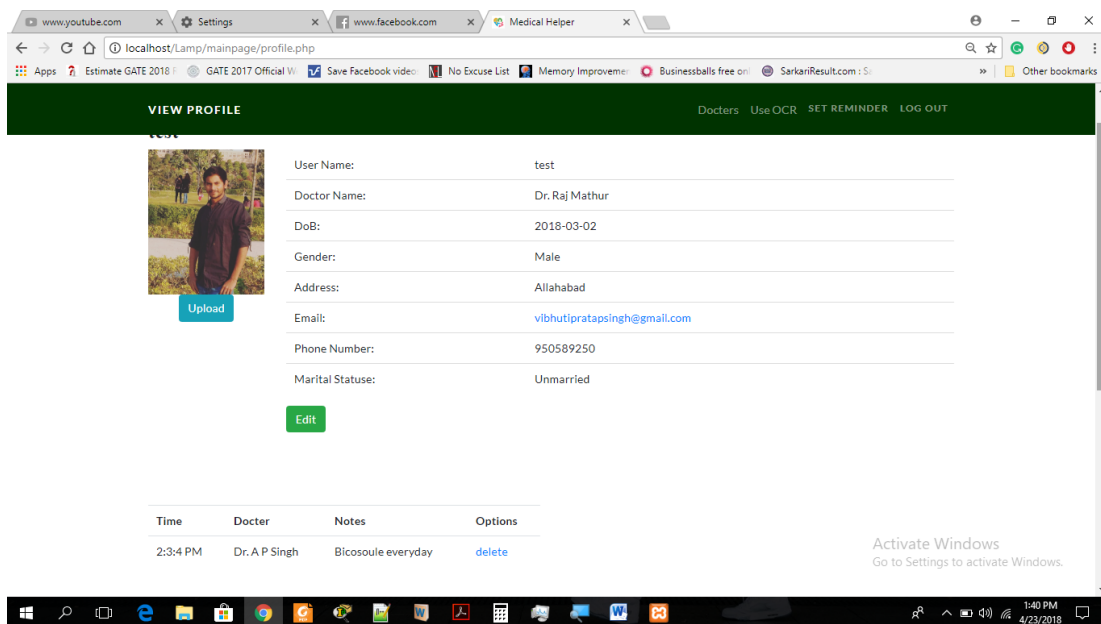
Login



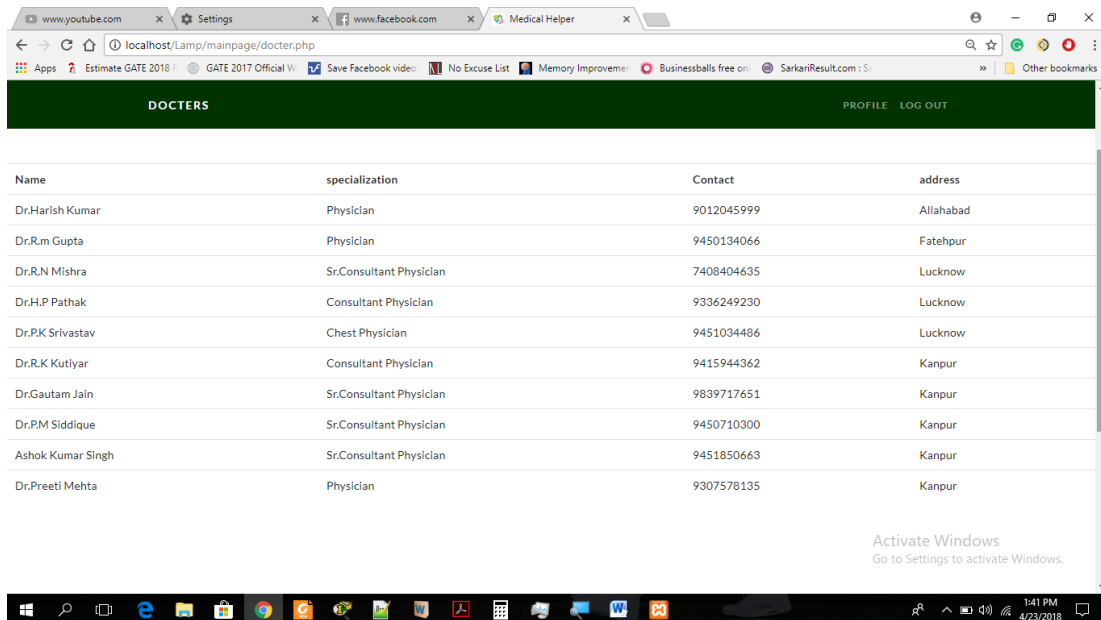
OCR



Patient Profile



Recommended Doctors



Name	specialization	Contact	address
Dr.Harish Kumar	Physician	9012045999	Allahabad
Dr.R.m Gupta	Physician	9450134066	Fatehpur
Dr.R.N Mishra	Sr.Consultant Physician	7408404635	Lucknow
Dr.H.P Pathak	Consultant Physician	9336249230	Lucknow
Dr.P.K Srivastav	Chest Physician	9451034486	Lucknow
Dr.R.K Kutiyar	Consultant Physician	9415944362	Kanpur
Dr.Gautam Jain	Sr.Consultant Physician	9839717651	Kanpur
Dr.P.M Siddique	Sr.Consultant Physician	9450710300	Kanpur
Ashok Kumar Singh	Sr.Consultant Physician	9451850663	Kanpur
Dr.Preeti Mehta	Physician	9307578135	Kanpur

2.9 Constraints

Different hardware, software and memory constraints are there in our website.

- ❖ Our website can work with any system that supports internet and can browse the Web pages.

- ❖ As we are using XAMPP for server connection and database requirement, we would

Not be able to handle large amount of users simultaneously.

- ❖ System is fault tolerant and is able to recover easily.

3. Summary

3.1 Conclusion

Our memory is selective, we keep in memory things we or see all the time, things with high priority and things enforced by a strong emotional connection, by example, first love, death of close friends, traumatic situations, etc.

Things without such importance or meaning are lost with time, with the advent of press, computers, etc. We don't have necessity of remembering everything.

The real problem is our memory is not a digital copy of the events, it's a reconstruction made with symbols, and sometimes those memories turn out very incorrect. So we can say, forgetting is human nature. Forgetting about medicine can be so serious because it is concerned to health related issues. In some case it can be dangerous for entire life.

Here, we have developed a very useful and essential website to help the patient in such situations so that he can take medicines without forgetting and without storing his/her disease related data physically as he can store it in his/her account. An OCR API is used to reduce the human typing effort. A smart recommendation system is also provided here if the patient wants to visit a new doctor to the or near to the place where he/she lives.

3.2 Long Term Objective

As this is just a basic version of our website, we can enhance it in future by adding more good features such as:

- A reminder to remind the scheduled visit to the doctor.
- Having a Tracking System to get the notification about how much medicine is left so that the patient can purchase the medicine timely.
- The website can be made able to use for users all over India.

4. References

1. <https://www.w3schools.com/>
2. <https://getbootstrap.com/>
3. <https://www.apachefriends.org/>
4. <https://github.com/tesseract-ocr/tesseract/>
5. <https://www.mysql.com/>
6. <http://up.gov.in/>
7. <https://www.smartdraw.com/block-diagram/>

