SOFTWARE ENGINEERING AND PROJECT MANAGEMENT

18CSC206J

Presented By-

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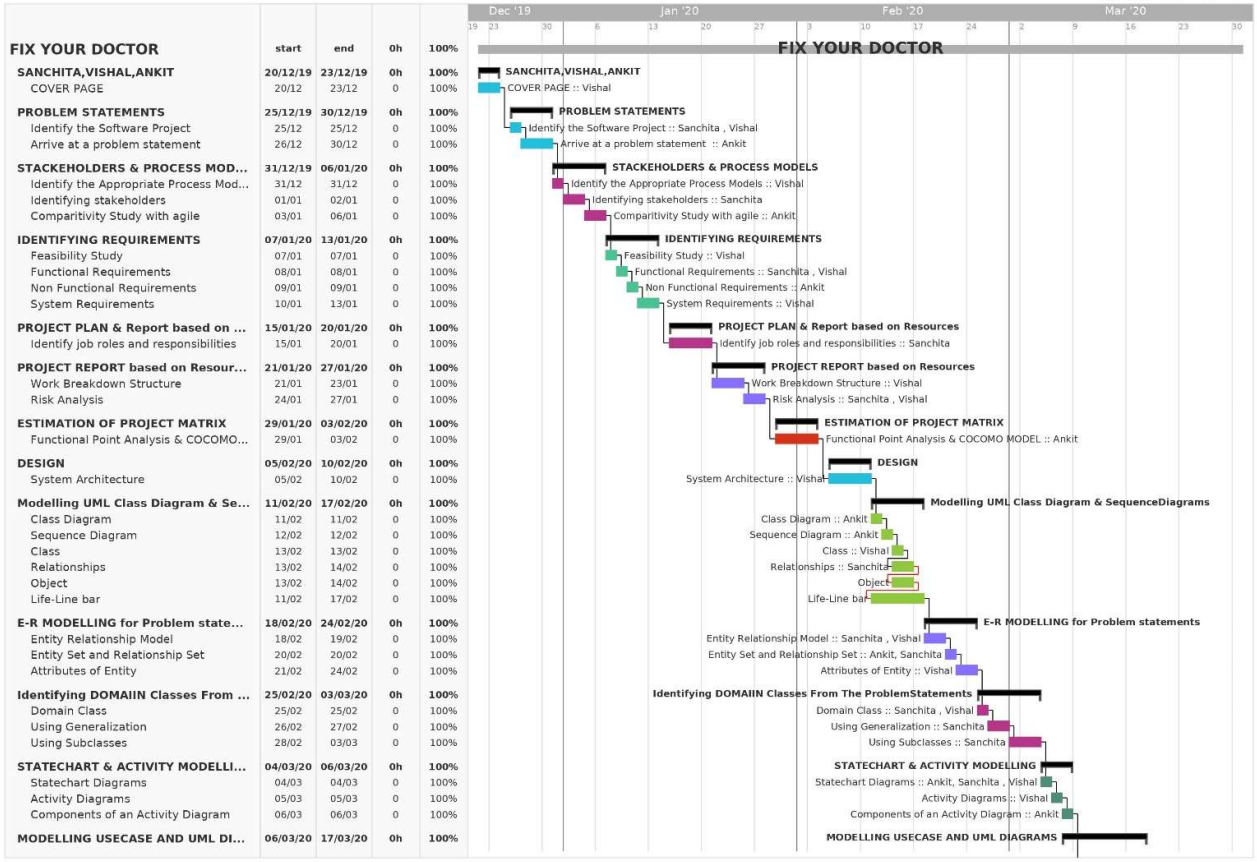

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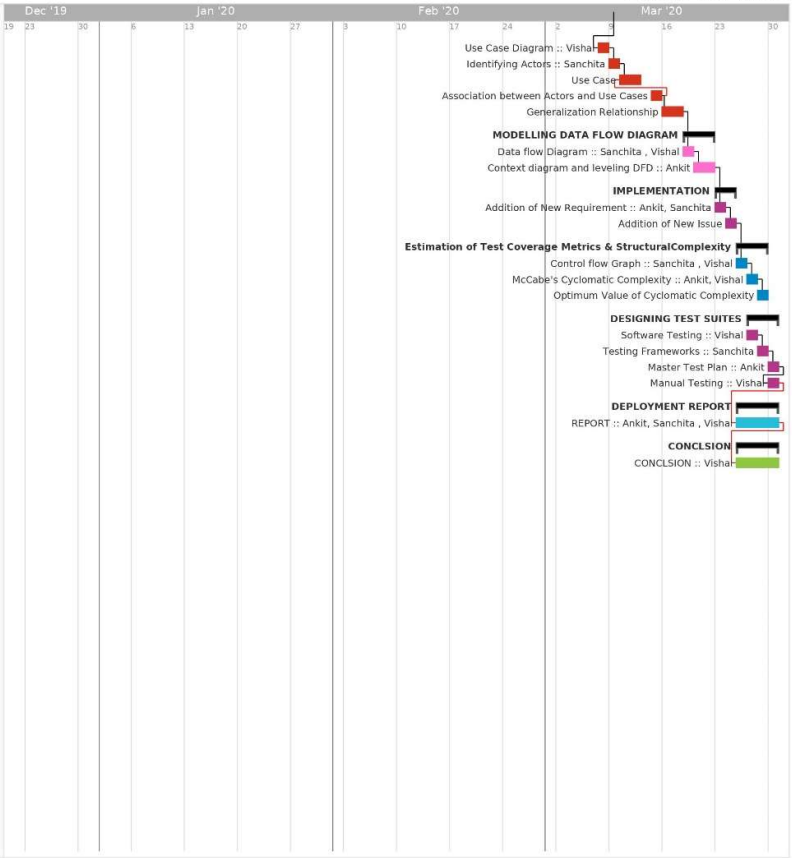

BUSINESS CASE

DATE	23/12/2019
SUBMITTED BY	Ankit Shaw, Sanchita Sinha and Vishal Shukla
TITLE / ROLE	Fix Your Doctor

THE PROJECT

In bullet points, describe the problem this project aims to solve or the opportunity it aims to develop.

- This project aims to create the best opportunity to make the experience of booking and tracking an appointment with a doctor hassle-free, more efficient and less time consuming for all.
- It also offers an effective solution where users can view various booking slots available and select the preferred date and time along with tracking their medical records.
- It also aims at providing a unique facility for the elderly and specially-abled by introducing transportation services designed for their ease.

THE HISTORY

In bullet points, describe the current situation.

- Presently a compounder or doctor himself manually allots appointments for the users as per their availability.
- Although a few such platforms are available through which appointments can be booked but they currently don't provide facilities such as Fix Your Doctor.

LIMITATIONS

List what could prevent the success of the project, such as the need for expensive equipment, bad weather, lack of special training, etc.

- It requires a stable and secure internet connection.
- It also requires a large database.

APPROACH

List what is needed to complete the project.

- It requires the details of the users who would register with the administrator's acknowledgement.
- It also requires a secure database management system.

BENEFITS

In bullet points, list the benefits that this project will bring to the organization.

- Smooth doctor's appointments- Due to Fix Your Doctor's user-friendly interface the entire experience would be much simpler and efficient.
- Easy maintenance of medical records- Due to its superior database management systems, recording and tracking medical history will be easier.
- Security- Fix Your Doctor is a secure platform for its users to feed their data without any worries.

PROBLEM STATEMENT

SECTION 01: PROJECT DESCRIPTION

With our fast-moving lives, it becomes very difficult to take time out and visit a doctor, let alone stand in a queue to book an appointment with one. So, such a platform is required that provides easy appointment booking facilities according to the user's needs with preferred time and date. It should also allow quick and easy cancelation and amendment options for its users. Also, a system to keep the medical records of the patient is required to enable better

treatment options available. It should be such that users can easily browse through the different options that the platform provides so that even the elderly and specially-abled can use it without any troubles. The software 'Fix Your Doctor' aims at providing all the above-mentioned facilities along with a few more that would make this experience better than ever before.

PROBLEM STATEMENT

SECTION 02: PROBLEM CONSTRAINTS

Purpose and Need:

To enable users to easily navigate through the tedious task of booking, tracking and providing feedback for a doctor's appointment.

Key Issues:

The platform provides a secure environment for the users.

Goals and Objectives:

To provide the best facilities for its users at minimal expense and work on the user's side.

Audience:

'Fix Your Doctor' caters to all age groups of people who can work their way through a webpage/application.

PROBLEM STATEMENT

SECTION 03: SCHEDULE, RESOURCE AND BUDGET CONSTRAINTS

Resources:

Presently the resources we are working with are external and consists of data from different doctors and the areas they specialize in, lists of medicines and treatment available.

Budget:

Currently our expenses stand at a minimum 0$ and as we move forward with this it increases accordingly.

Time Constraints:

Initial analysis show that it will take at least 3 to 4 months to finally implement the system.

DATE	30/12/2019
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TITLE / ROLE	Fix Your Doctor

STAKEHOLDERS

- The end users (i.e. the patients and the doctors) would be positively affected by this project.
- The end users, developers, partners, and shareholders have the power of making it a success or a failure.
- The decisions about the money will be made by the project manager.
- The suppliers would be our partners.
- The end users would be the patients and the doctors.
- The project manager has influence over other stakeholders.
- The project manager and the developers can solve potential problems with the project.
- The project manager is in charge of assigning or procuring resources or facilities.
- The project manager and the developers have specialist skills which are crucial to the project.

USER STORY- USER DESCRIPTION

User Story

As an end user (patient) I want to check the availability of a doctor, so that I can book an appointment with the doctor.

Success Criteria

- The patient must be able to sign in/ log in using their credentials.
- The patient should be able to choose the kind of doctor they wish to see.
- The list of doctors of that particular kind including the days and time when they're available must be displayed.
- The patient should be able to choose their preferred date, day and time from the available options.

- If a particular slot is completely booked, the patient should not be able to make a booking in that slot.

DATE	06/01/2020
SUBMITTED BY	Ankit Shaw, Sanchita Sinha and Vishal Shukla
TITLE / ROLE	Fix Your Doctor

SYSTEM REQUIREMENTS

Software Requirement

- Operating System: Windows (8, 8.1, 10) or Mac OSX (El Capitan, Sierra, High Sierra, Mojave, Catalina).
- Web Browser: Google Chrome, Mozilla Firefox, Safari (Mac).
- Web Development System: Visual Studio

Hardware Requirement

- RAM: Minimum 8GB or higher.
- HDD: Minimum 500GB.
- Processor: 9th Generation Intel Core i5 Processor
- LAN: Version 1.6.6.406 (For fixing up client disconnection).

FUNCTIONAL REQUIREMENTS

The user needs to create an account by creating a username and password and entering his location and contact information like phone number and email address. An OTP (One-Time Password) is sent either to the user's email address or phone number based on his choice for verification purposes. When the user logs in using his username and password, he clicks on 'Book an Appointment' tab. He is then requested to enter whether he wishes to book an appointment for himself or someone else and in either case he is asked to enter the patient's name, gender, age, whether the patient is allergic to any kind of medicine and if the patient is specially-abled in which case he will be requested to enter its type. The system then asks if the user wishes to save the details of the patient. The user may or may not choose to save the patient's details. This is followed by the system requesting the user to enter the kind of doctor he wishes to consult from the drop-down list. Upon selecting any one, a list of doctors who are available are displayed along with their names, profile pictures, highest qualification, years of

experience, specialization (if any), hospitals/clinics they're available in, location, consultation fee and ratings given by verified users. The user can add filters like consultation fee, availability, years of experience and the doctor's gender to suit their specific needs and select any one of the doctors after scrolling through their profiles. When the user selects a doctor of his choice, the system displays the days and time slots when they are available from the date of search up to the next 14-day period. After the user selects the slot of his choice, the system asks the user if he wishes to book a cab that caters to their special needs. This is a special facility available for the elderly and the specially abled. If the user is interested, he is requested to enter his location and time at which he wishes the cab to arrive. He is then requested to make the payment (all major debit and credit cards, Google Pay, Paytm are accepted) and asked if he wishes to confirm his booking. Upon clicking on 'Confirm Booking' the user is notified by sending a confirmation mail and message. The user can also change or cancel the booking.

NON-FUNCTIONAL REQUIREMENTS

The system must ensure that all the transferable data such as user's credit or debit card number, CVV code, e-payment should be done in a secured connection.

The system must be able to handle multiple transactions at a time with a peak transaction rate of 10 transactions per second.

The system shall support 5000 concurrent sessions.

The system shall provide its users 24*7 hours online booking service.

The system shall not lose any transaction data.

The system shall accept payment and raise an order within 5 seconds in 95% of the cases.

The system must not take more than 5 seconds for a user to log in.

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TITLE / ROLE	Fix Your Doctor

PROJECT PLAN

Roles and Responsibilities

- Project Manager
  - Develops a project plan.
  - Manages deliverables according to the plan.
  - Recruits project staff.
  - Leads and manages the project team.
  - Assigns tasks to team members.

- Data Analyst
  - Responsible for accusation of data.
  - Performs data cleansing.
  - Analyses the quality of data.
  - Analyses the trends and relations among various features.

- Developer
  - The backbone that leads to the realisation of the implementation aspect.
  - Writes the code to test and train the model.
  - Performs project design and development activities according to customer specifications.
  - Works with manager in preparing project plan, budget, and schedule.

- Project Team Member
  - Contributes to overall project objectives.
  - Completes individual deliverables.
  - Provides expertise.
  - Documents the process.

- Project Sponsor
  - Makes key business decisions for the project

- Approve the project budget
- Ensure availability of resources
- Communicate the project's goals throughout the organization
- Provide direction and guidance for project empowerment, key business strategies and project initiatives
- Participate in initial project planning, including developing the project chart and the project scope
- Evaluate the project's success on completion

- Business Analyst
  - Assist in defining the project
  - Gather requirements from business units or users
  - Document technical and business requirements
  - Verify that project deliverables meet the requirements
  - Test solutions to validate objectives

Kick-off Meeting

- A kick-off meeting is an essential tool to communicate with stakeholders. If done correctly, it can help to execute the project with minimal obstruction, and one can finish the project with fewer obstacles.
- A kick-off meeting is one of the first meetings held amongst the project stakeholders when starting a new project.
- This meeting includes the high-level project stakeholders such as the project sponsor, management, and the project manager, as well as the team members and the project manager.
- This meeting plays a vital role because it gives a project manager the opportunity to define the common goal and the purpose of completing the project and as well build a consensus.

Scope Statement

- A project scope, or project scope statement, is a tool used to describe the major deliverables of a project including the key milestones, high-level requirements, assumptions, and constraints.
- A project scope statement is a useful tool for future decision making when new change requests are considered to modify the project scope.
- An effective project scope statement includes-
- The key project objectives
- Key deliverables
- Key milestones
- High-level requirements
- Assumptions and Exclusions
- Any known issues or risk
- Stakeholder review and approval

Scope Baseline

- Scope baseline is referred to as the approved version of a scope statement, work breakdown structure (WBS), and its associated WBS dictionary, that can be changed only through formal change control procedures and is used as a basis for comparison.
- A project management plan is a document that describes how the project will be executed, monitored, and controlled.
- It integrates and consolidates all of the subsidiary plans and baselines from the planning processes including scope baseline, along with schedule baseline and cost baseline.

Schedule and Cost Baseline

- Schedule baseline is the approved version of a schedule model that can be changed only through formal change control procedure and is used as a basis for comparison to actual results. The project management contains the schedule baseline, used as a reference to compare with the actual results to determine if a change, corrective action, or preventive action is necessary.
- Cost baseline is essentially an important facet of the project management plan that companies use to ensure success. Some of these cost baselines include resource baselines as well as production variations. These measurements of various project

performance aspects ensure that cost is evaluated in regards to the overall yield of a particular project.

Baseline Management Plans

- A baseline management plan, also called a baseline plan, is a plan for adjusting the various project baselines.
- A baseline in project management is a clearly defined starting point for your project plan.
- It is a fixed reference point to measure and compare your project's progress against.

Staffing Management Plans

- Staffing management plan and resource management plans are an important part of project resource management.
- Every project will require resources for executing project activities; the need for both manpower and physical resources
- It is important to select the right staff with the right skills at the right time
- A staffing management plan contains a plan for addressing all aspects of manpower
- It is the staff who will actually complete the project work
- Staff will also consume the majority of the project cost

Project Quality and Risks Analysis

- Project Quality Management is the process for ensuring that all project activities necessary to design, plan and implement a project are effective and efficient with respect to the purpose of the objective and its performance.
- Risk analysis is the process that figures out how likely that risk will arise in a project. It studies uncertainty and how it would impact the project in terms of schedule, quality and costs if, in fact, it was to show up. Two ways to analyse risk is quantitative and qualitative.

Communication and Documentation

- Facilitate effective project meetings, with priority placed on communicating effectively and in a timely manner.

- Prepare project presentations and reports, giving special attention to the audience's interests.
- Prepare a project communication plan that defines how documents will be distributed, how often, and who will do so.
- Identify collaborative tools to facilitate communication among team members, especially when time and travel constraints might affect a project.

ROLES AND RESPONSIBIITIES

Name	Roles
Ankit Shaw	• Subject Matter Expert • Software Developer • Project Owner
Sanchita Sinha	• Subject Matter Expert • Project Manager • Technical Lead • Project Owner
Vishal Shukla	• Project Sponsor • Software Tester • Project Owner

DATE	20/01/2020
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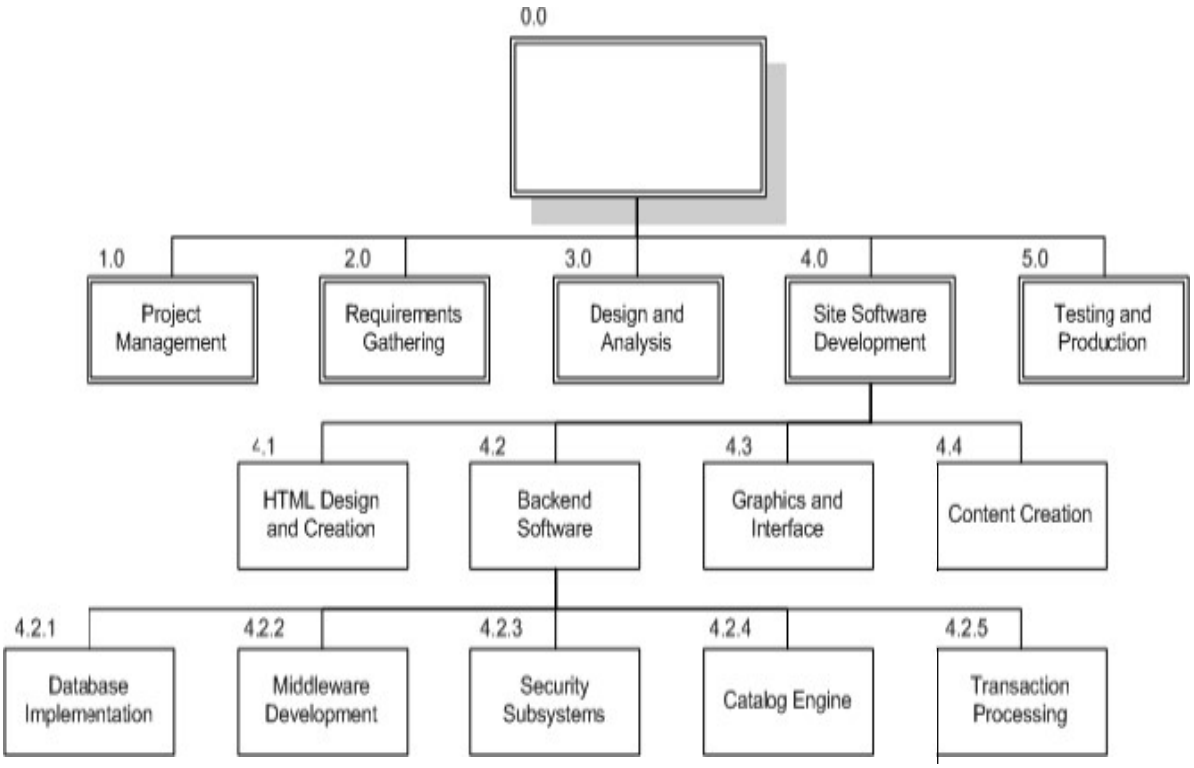
TITLE / ROLE	Fix Your Doctor

WORK BREAKDOWN STRUCTURE (WBS)

- The project proceeds with the exploration and collection of data.
- The model selection is done through deep learning; linear and multiple regression is used and the data is stored using cloud computing.
- We need to check whether the model stores the data properly and is fulfilling the needs of the user properly.
- Before the booking is done for a user it must be checked if the patient has any allergic reaction to any medication or not.
- The details form the previous check-ups is asked for if the user has any.
- Then the booking is done according to the user's preferred date and time.
- Then transport services are provided if patient asks for it in case of specially-abled or elderly persons.
- The records are stored for the user for further use.
- The model needs to be tested.
- The working model need around 50-70 hours to build it.



SIZE ESTOMATION TECHNIQUES

Estimation of the size of the software is an essential part of the project. It helps the project manager to further predict the effort and time which will be needed to build the project. Various measures are used in project size estimation. Some of these are—

- Lines of Code
  - Lines of code or LOC is the most popular and used metrics to estimate the size.
  - LOC determination is simple as well. LOC measures the project size in terms of the number of lines of statements or instructions written in the source code. In this count, comments and headers are ignored.
  - The size is estimated by comparing it with the existing systems of the same kind.
  - The experts use it to predict the required size of various components of software and then add them to get the total size.
  - The size is estimated by comparing it with the existing systems of the same kind. The experts use it to predict the required size of various components of software and then add them to get the total size.

- Number of entities in the ER diagram

- ER model provides a static view of the project.
- It describes the entities and their relationships.
- The no. of entities in the ER model can be used to measure the estimation of the size of the project.
- This is because more entitles need more classes/structures, thus leading to more coding.
- Size estimation can be done during the initial stages of planning.

- Total number of processes in a detailed data flow diagram
  - Data Flow Diagram (DFD) represents the functional view of a software
  - The model depicts the main processes/functions involved in software and flow of data between them
  - Utilization of the number of functions in DFD to predict software size.
  - Already existing processes of similar type are studied and used to estimate the size of the process.
  - The sum of the estimated size of each process gives the final estimated size.
  - It is independent of any programming languages.

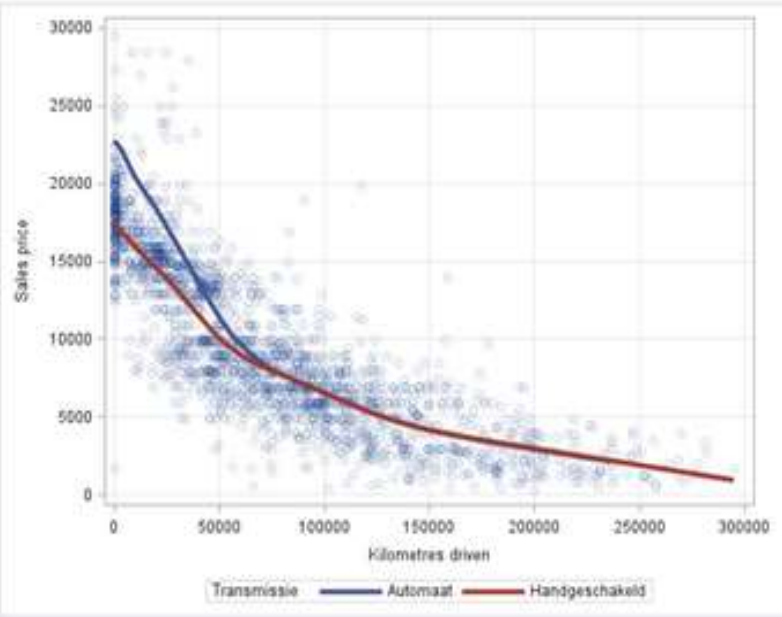
  - Function Point Metrics
    - Function point metrics overcomes many of the shortcomings of LOC.
    - Function point metrics proposes that the size of the software project is directly dependent on various functionalities it supports; more the features supported the more would be the size.
    - This technique helps determine the size of the project directly from the problem specification so is really helpful to project managers during project planning while determining size.

DEPENDANCY GRAPH

- A program is a collection of statements, the ordering and scheduling of which depends on dependence constraints. Dependencies are broadly classified into two categories —
  1. Data Dependencies – when statements compute data that are used by other statements.
  2. Control Dependencies – are those which arise from the ordered flow of control in a program.
- A dependency graph can be constructed by drawing edges connect dependent operations.
- These arcs impose a partial ordering among operations that prohibit a fully concurrent execution of a program.
- The use-definition chaining is a form of dependency analysis but it leads to overly conservative estimates of data dependence.
- Four kinds of dependence may exist between statement number ‘i’ and ‘j’ on a common control path —

  1. Flow Dependence: Sj is flow-dependent on Si if a value of a variable used by Sj was computed by Si
  2. Anti-dependence: Sj is anti-dependent on Si if a value of a variable used by Si is recomputed by Sj.
  3. Output-Dependence: Sj is output-dependent on Si if both compute the same variable and value of the variable from Sj has to be stored after that from Si
  4. Control-Dependence: Sj is control-dependent on a conditional statement Si if its execution of Si and the path chosen after that (Si must execute before Sj).

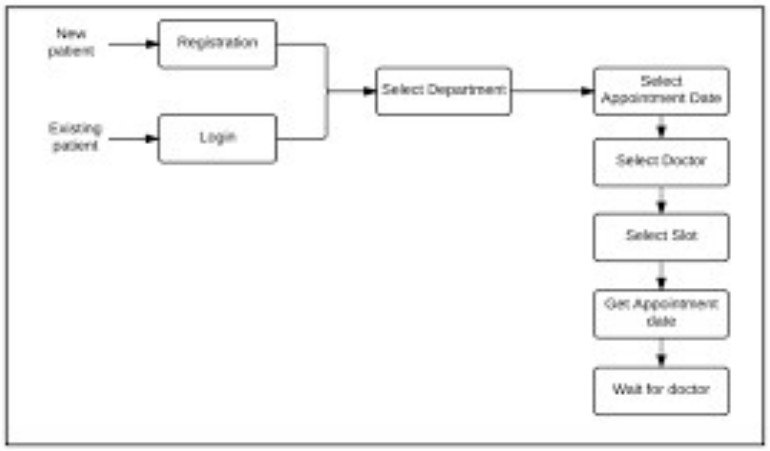
Example of dependency graph is given below –



NETWORK DIAGRAM

- A Network Diagram is a visual representation of a project's schedule.
- Well-known complements to network diagrams include the PERT and Gantt charts.
- A network diagram in project management is useful for planning and tracking the project from beginning to finish.
- It represents a project's critical path as well as the scope for the project.
- There are two types of network diagrams –
    1. **Arrow Diagram:** depicts nodes for events and arrows for activities.
    2. **Precedence Diagram:** depicts activities in the order they occur.

Example of a network diagram is given below –



TIMELINE

Schedule Inputs:

Several types of inputs are needed to create a project schedule –

1. Personal and project calendars – Understanding working days, shifts, and resource availability is critical to completing a project schedule.
2. Description of project scope – From this, you can determine the key start and end dates, major assumptions behind the plan, and key constraints and restrictions. You can also include stakeholder expectations, which will often determine project milestones.
3. Project risks – You need to understand these to make sure there's enough extra time to deal with identified risks – and with unidentified risks (risks are identified with thorough Risk Analysis).
4. Lists of activities and resource requirements – Again, it's important to determine if there are other constraints to consider when developing the schedule. Understanding the resource capabilities and experience you have available – as well as company holidays and staff vacations – will affect the schedule.

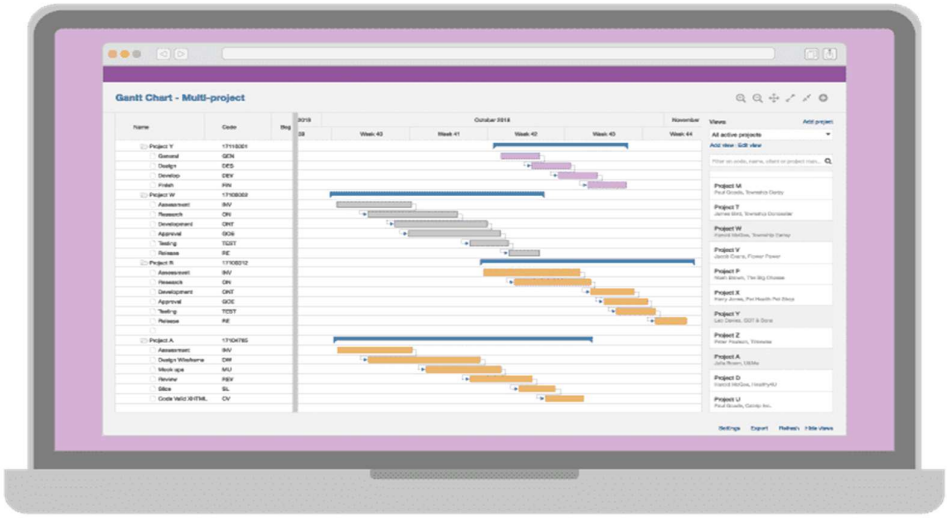
A project manager should be aware of deadlines and resource availability issues that may make the schedule less flexible.

Scheduling Tools:

Some of the tools and techniques for combining these inputs to develop the schedule are –

1. Schedule Network Analysis – It is a graphic representation of the project's activities, the time it takes to complete them, and the sequence in which they must be done. Project management software is typically used to create these analyses – Gantt charts and PERT Charts are common formats.
2. Critical Path Analysis – This is the process of looking at all of the activities that must be completed, and calculating the "best line" – or critical path – to take so that you'll complete the project in the minimum amount of time. The method calculates the earliest and latest possible start and finish times for project activities, and it estimates the dependencies among them to create a schedule of critical activities and dates.
3. Schedule Compression – This tool helps shorten the total duration of a project by decreasing the time allotted for certain activities. It's done so that you can meet time constraints, and still keep the original scope of the project. You can use two methods here:
    - Crashing – This is where you assign more resources to an activity, thus decreasing the time it takes to complete it. This is based on the assumption that the time you save will offset the added resource costs.
    - Fast-Tracking – This involves rearranging activities to allow more parallel work. This means that things you would normally do one after another are now done at the same time. However, do bear in mind that this approach increases the risk that you'll miss things, or fail to address changes.

Example of Gantt Chart for Online Doctor's Appointment Booking System-



RISK ANALYSIS

Like any other business that ever took off or the ones just starting, eventually, reach down to this very crucial stage and spend a significant amount of time deliberating, analysing and questioning their strategy and efforts, with the sole purpose of identifying those instances, or loopholes which if went unnoticed may lead to jeopardizing the assets and profitability of the business. Analysing the risk factors come as a part of the sweet package that includes the idea of coming up with the solution for the same, be it immediate or potential jeopardizing scenarios of the future.

Similarly, the feasibility and the prospective profitability of this Used Car Value predictor project, greatly relies on the number of crucial factors along with the other certain number of risking factors.

This is how the Risk Analysis for the Online Doctor's Appointment System has been adopted:

DEFINING THE RISKS

- Patients won't understand certain nuances in a doctor's scheduling system, such as not having an appointment booked after a long string of meetings.
- Patient's may not have the kind of medical information to understand how and when they should be scheduled for an appointment, depending on certain questions that medical practices will ask of their health. Is a patient having a problem that requires a routine check-up or are they experiencing something emergent?
- There might be cases where the cab might not be available when there is lots of appointment.

SCALING THE RISK AND ITS IMPACTS

- The patient might have a critical situation which might cost to his life.
- There must be professional drivers for the transportation for the disabled persons otherwise which might cause an accident.
- There must be backup server for any type of server failure otherwise which might cause a problem for person who is in critical condition.

SELECTION AND INCORPORATION OF THE RISK IDENTIFICATION TOOLS/TECHNIQUES

The essentially needed modes for analysing and identifying the risk and other jeopardizing factors for the stated project calls for:

- **Information Gathering Techniques:** The given techniques are similar to the techniques used to collect requirements.

- **Brainstorming:** Brainstorming is done with a group of people who focus on the identification of risk for the project.

- **Root Cause Analysis:** Root causes are determined for the identified risks. These root causes are further used to identify additional risks.

- **Swot Analysis (Strength, Weakness, Opportunities and Threats):** Strengths and weaknesses are identified for the project and thus, risks are determined.

- **Assumption Analysis:** Identification of different assumptions of the project and determining their validity, further helps in identifying risks for the project.

- **Risk Data Quality Assessment:** Data is collated for the identified risks. The project manager will try to find the precision of the data that must be analysed for completing the qualitative analysis of risks.

- For each risk, in Risk Data Quality Assessment, the project manager needs to determine:
  - The extent of the understanding of the risk
  - Data available
  - Quality and reliability of the data
  - The integrity of the data

DOCUMENTATION OF RISK

- All the impactful and highly important analysis is needed to be laid down on a piece of a legal document, that would clearly define the work and effort flow for the system sustainability.
- This documentation needs to be structured under the above stated risking factors - data, quality, instances of fraud etc.
- Structuring must be done in a prioritizing fashion

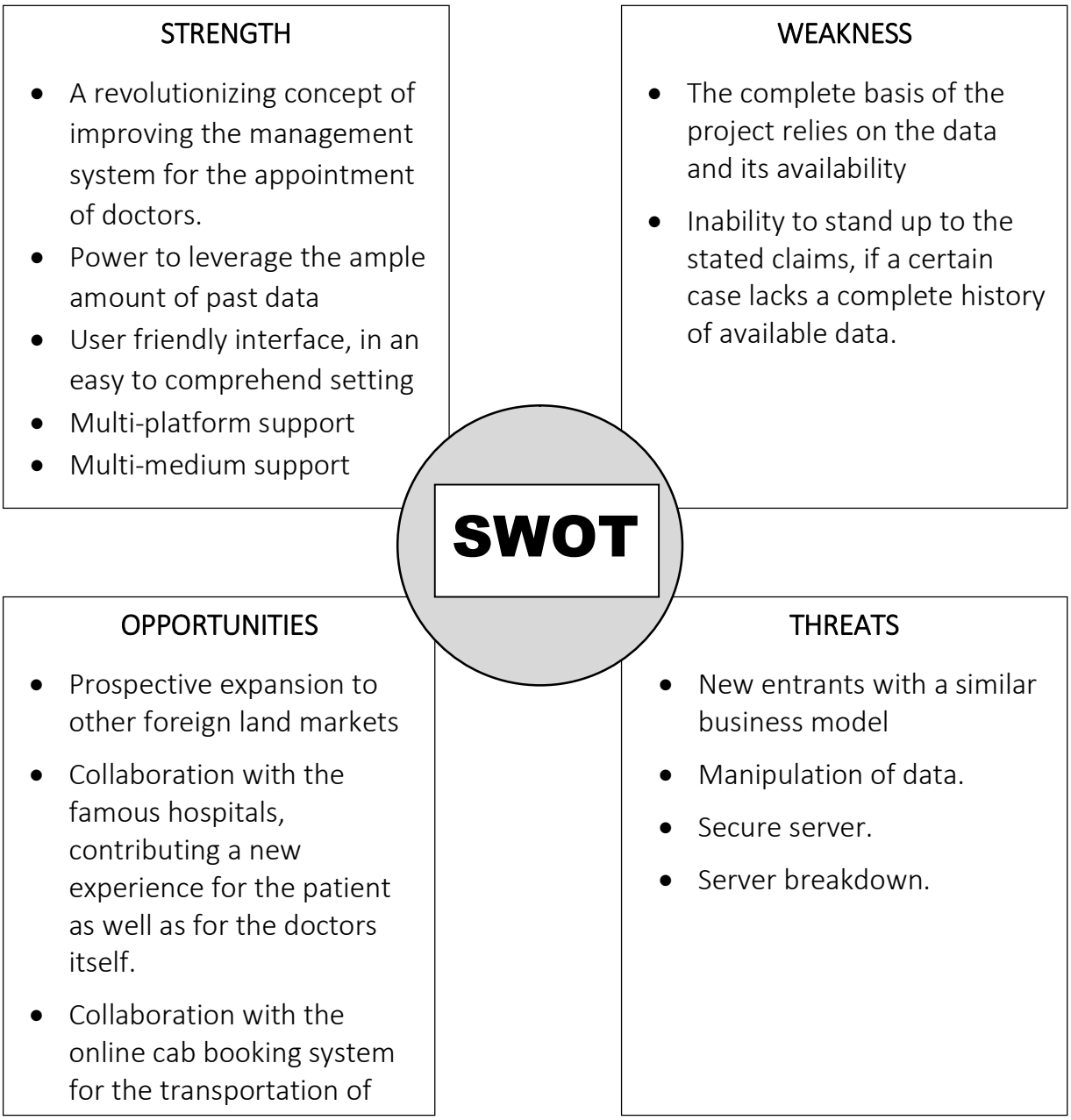
DOCUMENTATION OF RISK IDENTIFICATION PROCESS

With the application of all the needed risk accessing techniques- Risk data quality assessment, SWOT analysis, Root cause analysis etc; it is essential to bring down the assessment flow for the same onto a legal document for its maintenance in a reviewable format.

ASSESSING THE EFFECTIVENESS

Having documentation of all the accessed risks, a methodology of assessment and prospective solutions can make it easier to test the devised problem/risk tackling plan for its effectiveness through scenario planning, or in the case of actually sharing the front with the accessed problem/risk in a real business transaction.

SWOT ANALYSIS

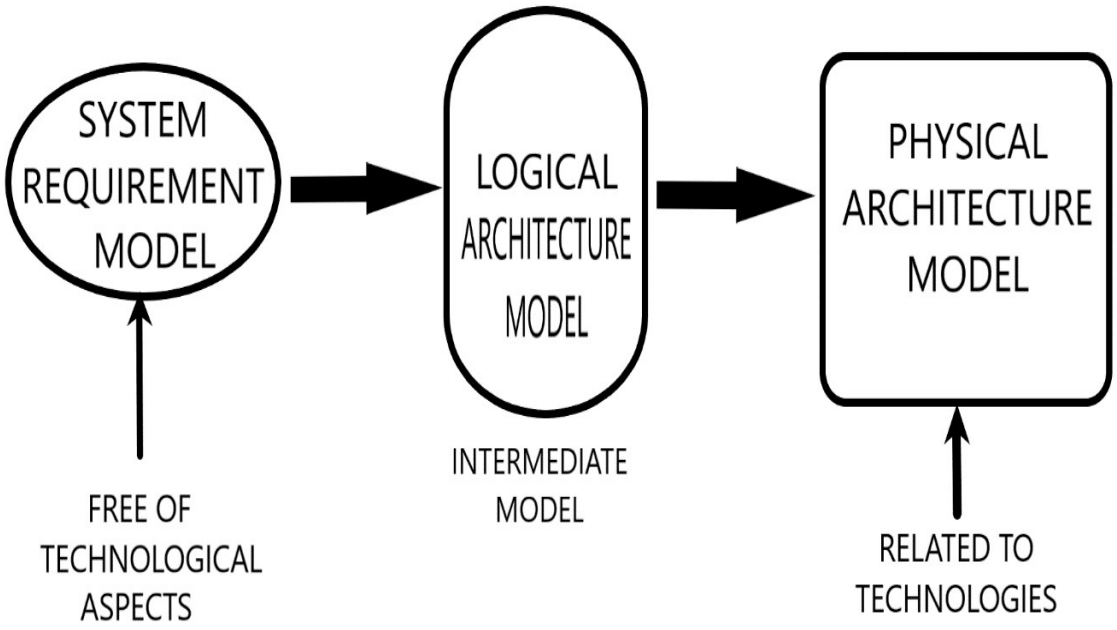


RISK MITIGATION

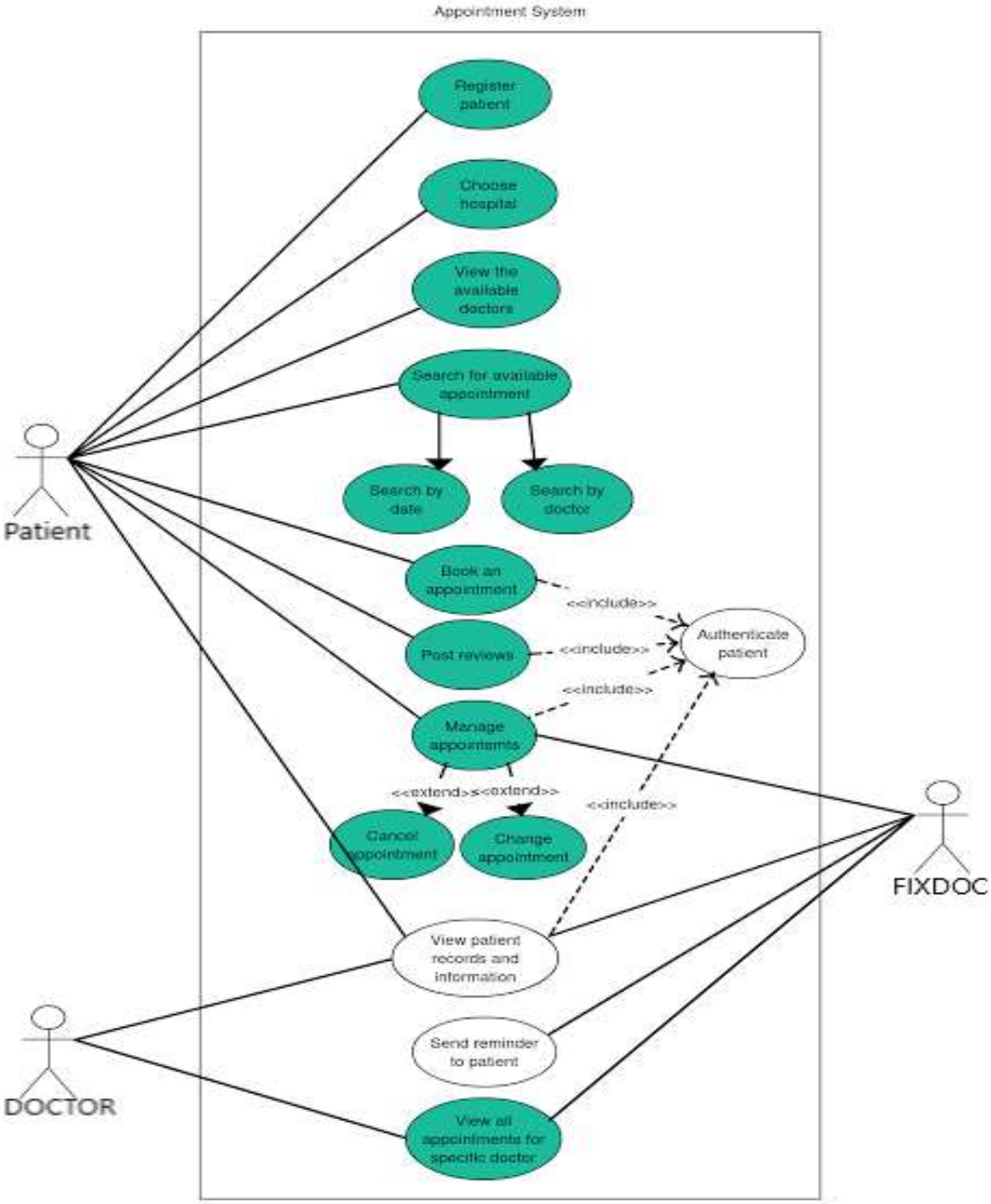
RESPONSE	STRATEGY	EXAMPLES
Avoid	• Monitoring the data which feeds, trains and tests the model. • Avoiding fake account. • Keeping backup servers.	• Web scraping for data • Fake bookings. • Server breakdown.
Transfer	• Clearly stating out the accessed policies and risks, especially concerning the data and model usage, for the transference to the third party	• Proper statement for the transfer of data from the doctor to patient and vice versa.
Mitigate	• One important strategy for the mitigation of all the major potential threats, includes the prior through study and analysis of the current market scenario of the medical industry.	• Exploration of all the data sources and data-points and its careful analysis to assess the impactful parameters.
Accept	• Putting down all the achievable end-points and non-achievable dead-ends, during the course of prior dealings and deliberation of the budding business/project	• Scenario planning for tackling situations in a planned fashion.

DATE	27/01/2020
SUBMITTED BY	Ankit Shaw, Sanchita Sinha and Vishal Shukla
TITLE / ROLE	Fix Your Doctor

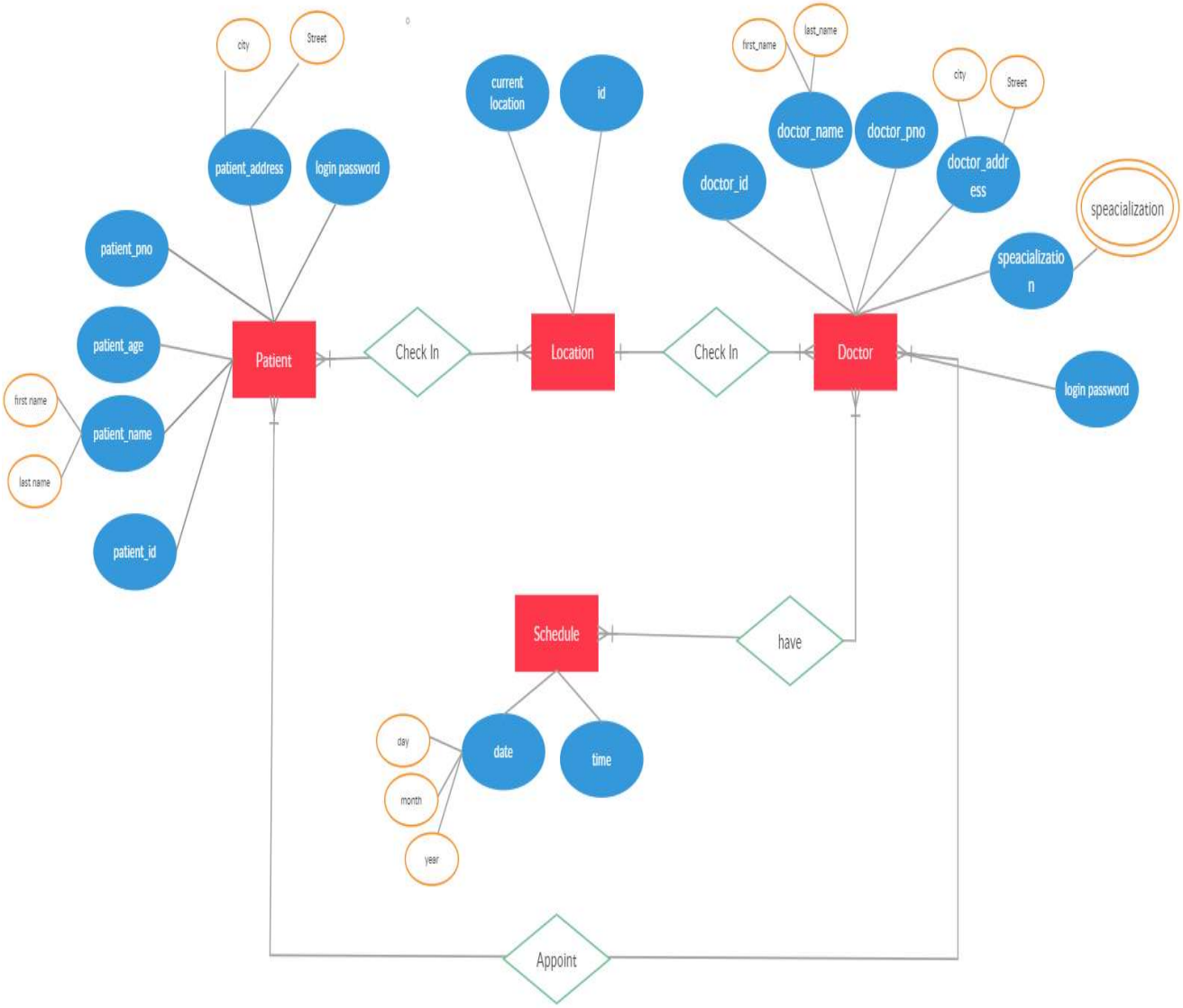
SYSTEM DESIGN ARCHITECTURE



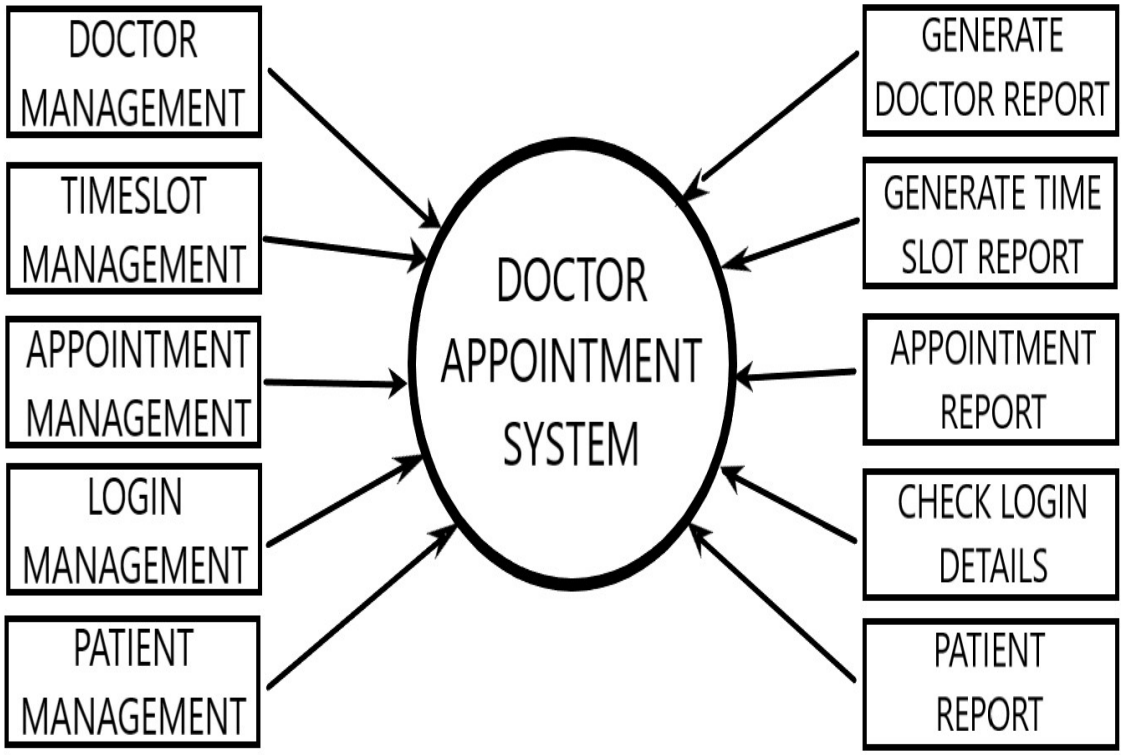
USE CASE DIAGRAM



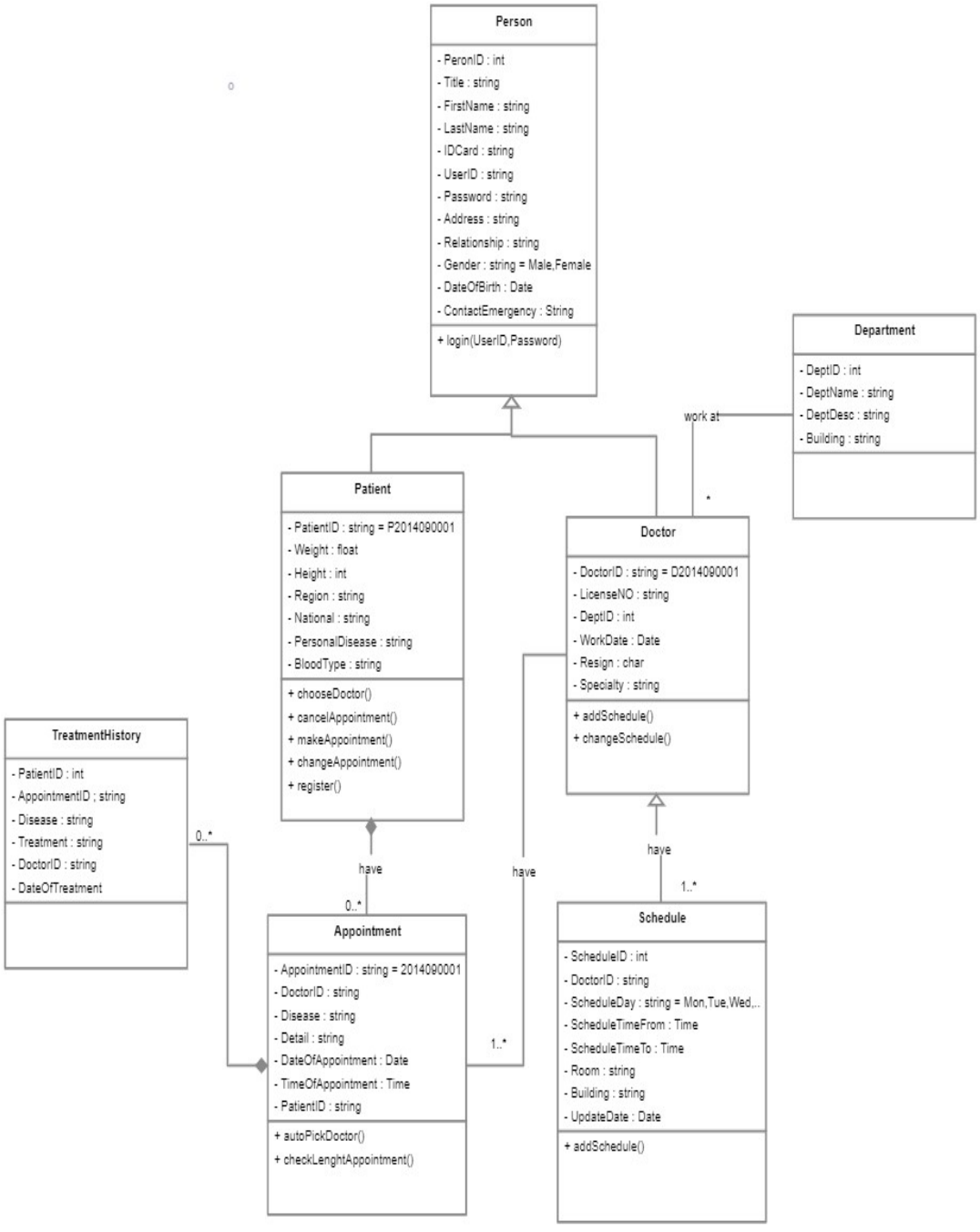
ENTITY RELATIONSHIP DIAGRAM



DATA FLOW DIAGRAM (DFD)

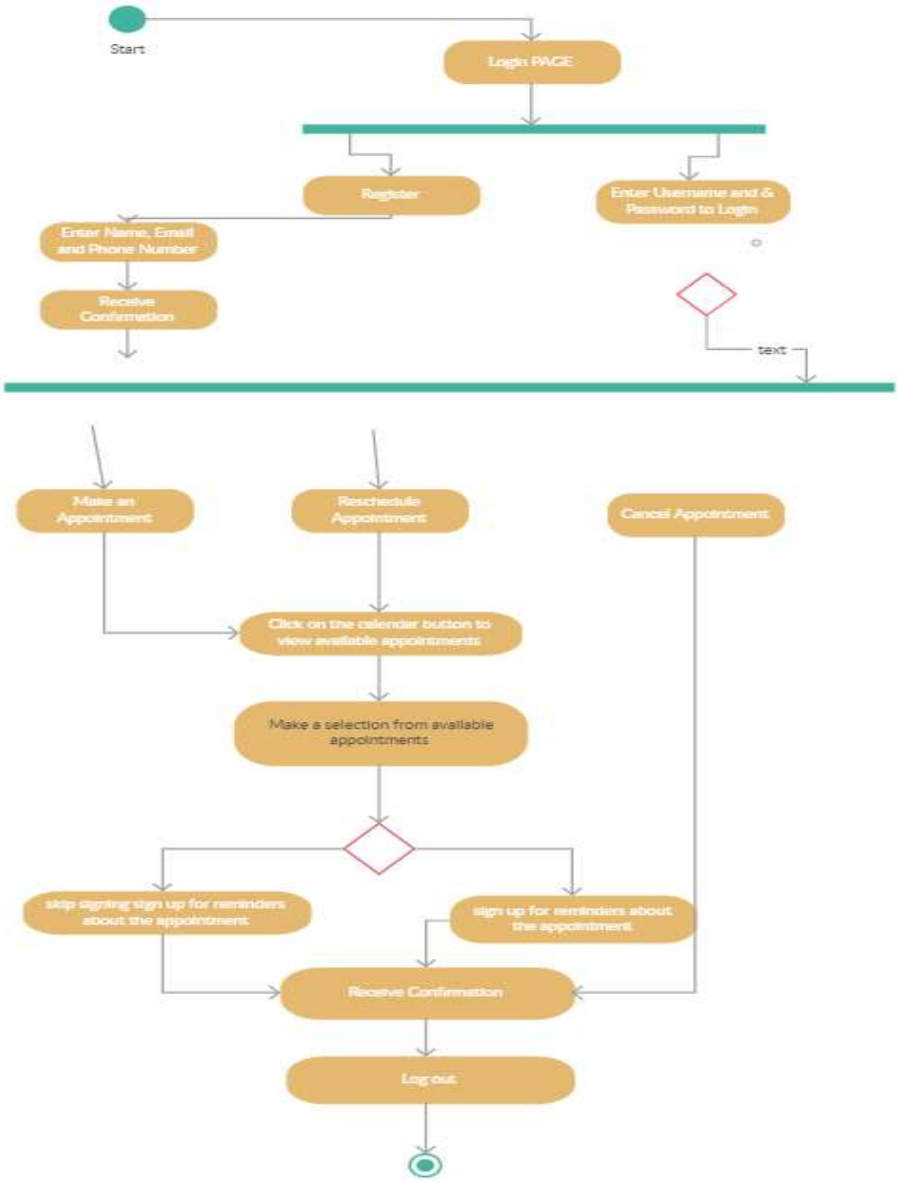


CLASS DIAGRAM

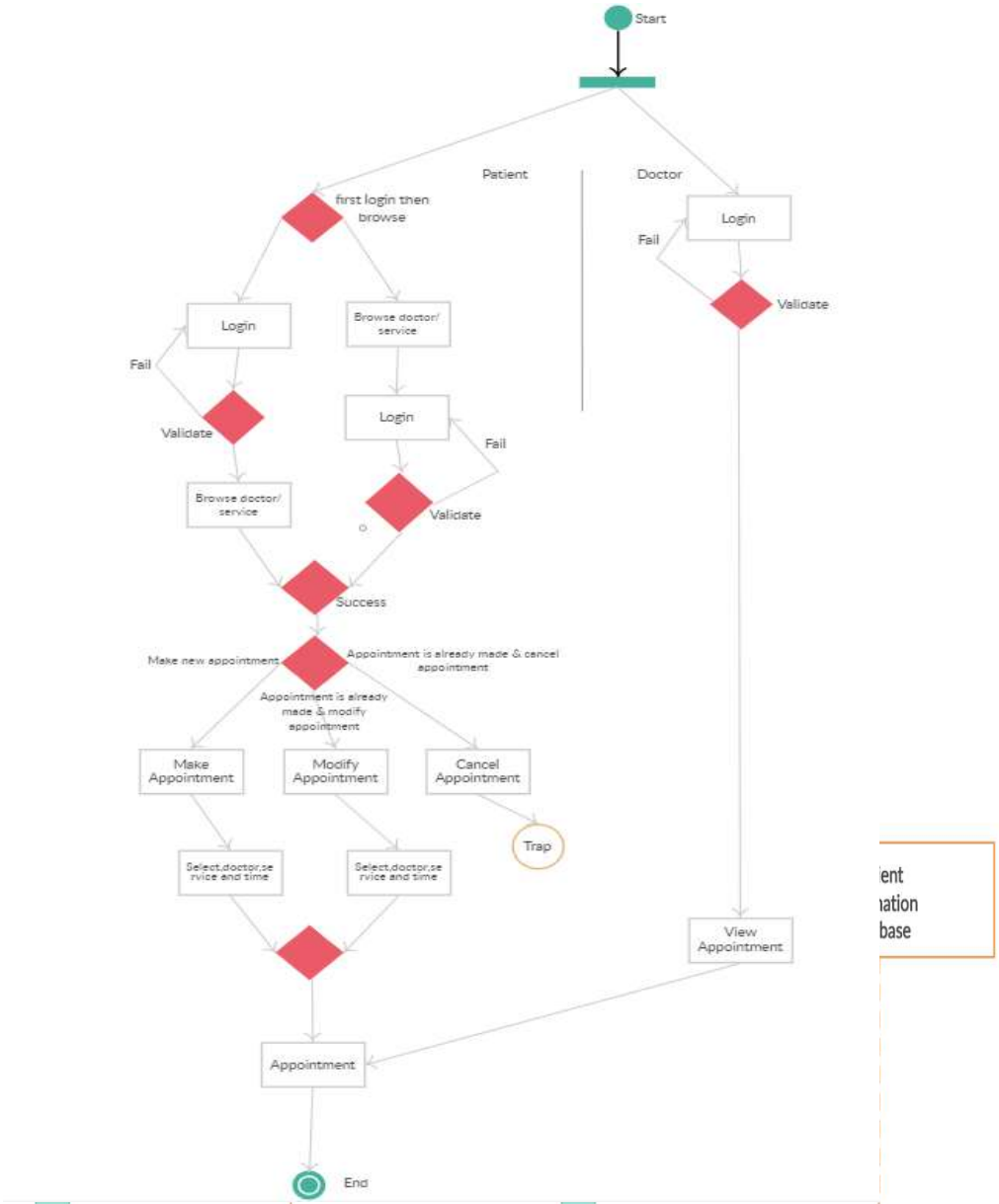


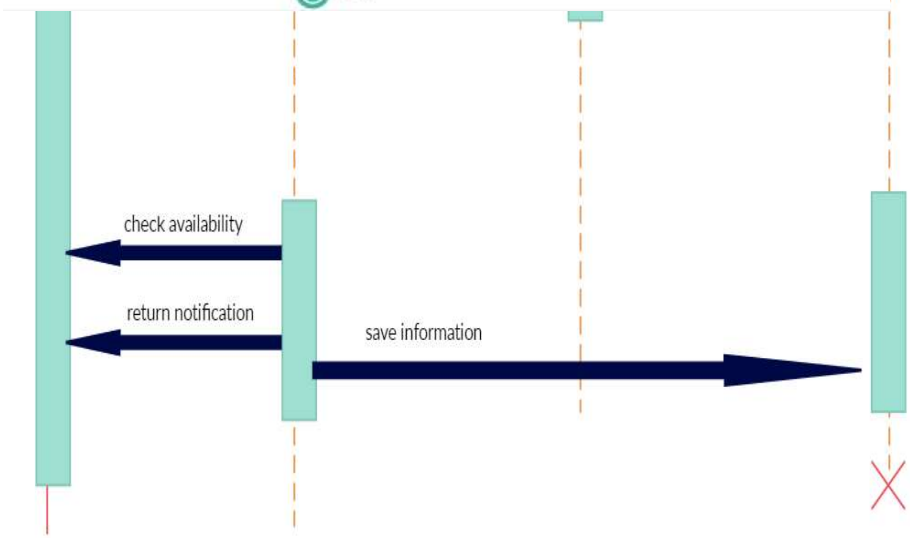
DATE	03/02/2020
SUBMITTED BY	Ankit Shaw, Sanchita Sinha and Vishal Shukla
TITLE / ROLE	Fix Your Doctor

ACTIVITY DIAGRAM



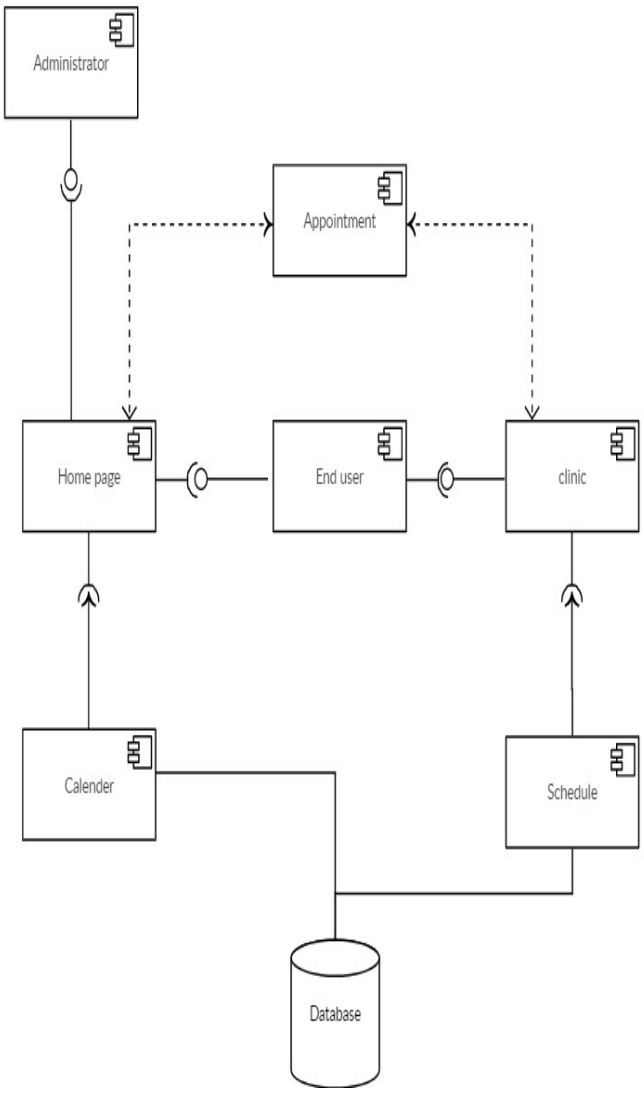
STATECHART DIAGRAM





SEQUENCE DIAGRAM

DEPLOYMENT DIAGRAM



DATE	10/02/2020
SUBMITTED BY	Ankit Shaw, Sanchita Sinha and Vishal Shukla
TITLE / ROLE	Fix Your Doctor

MODULE DESCRIPTION

```
#include <iostream>
#include <string>
#include <fstream>
#include <cstring>
using namespace std;

int bookAppointment()
{
	system("cls");
	cout<<"\n ----- Book Your Appointment ---- \n";
	cout<<"\n ----- Availbale slots ---- \n";
	//check if record already exist..
	 ifstream read;
	 read.open("appointment.dat");
	 int hoursbook = 8;
	 int arr[13] = {0,0,0,0,0,0,0,0,0,0,0,0,0};
	 int recordFound =0;
	 if(read)
	 {
		string line;
		char key = 'A';
		int i = 9;
		while(getline(read, line))
		 {
			char temp = line[0];
			int index = (temp - 65);
			arr[index]=1;
			recordFound = 1;
		}
		if(recordFound == 1)
```

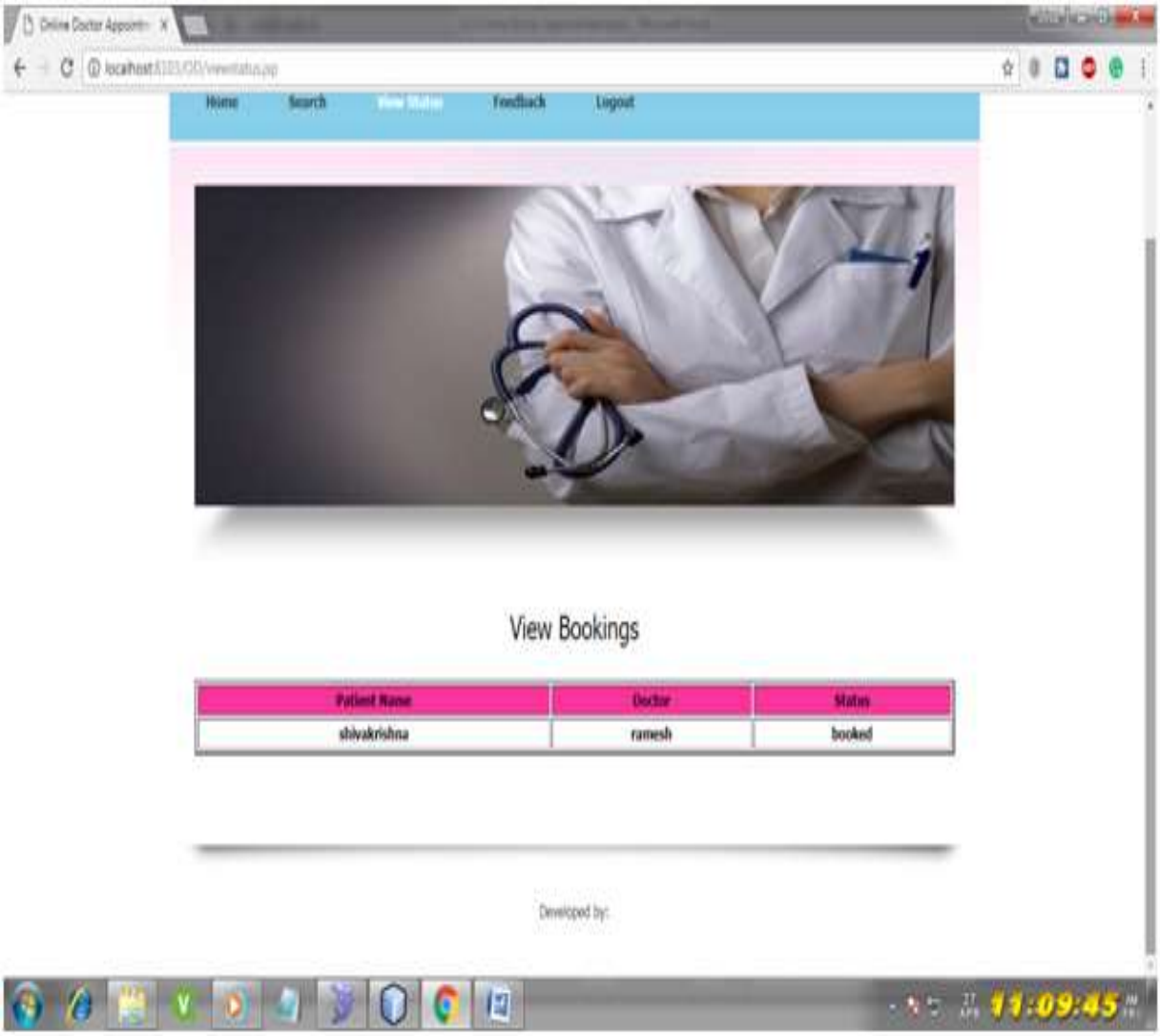
```
		{
			cout<<"\n Appointment Summary by hours:";
			char key = 'A';
			int hours = 9;
			for(int i = 0; i<=12; i++)
			{
				if(i == 0)
				{
					if(arr[i] == 0)
						cout<<"\n	"<<key<<"->	0"<<hours<<"	-
Available";
					else
						cout<<"\n	"<<key<<"->	0"<<hours<<"	-
Booked";
				}

				else
				{
					if(arr[i] == 0)
						cout<<"\n		"<<key<<"->"<<hours<<"		-
Available";
					else
						cout<<"\n		"<<key<<"->"<<hours<<"		-
Booked";
				}
				hours++; key++;
			}

		}
		read.close();
	}
	if(recordFound == 0)
	{
		cout<<"\n Appointment Available for following hours :";
		char key = 'A';
		for(int i = 9; i<=21; i++)
		{
			if(i==9)
				cout<<"\n "<<key<<" -> 0"<<i<<" - Available";
			else
```

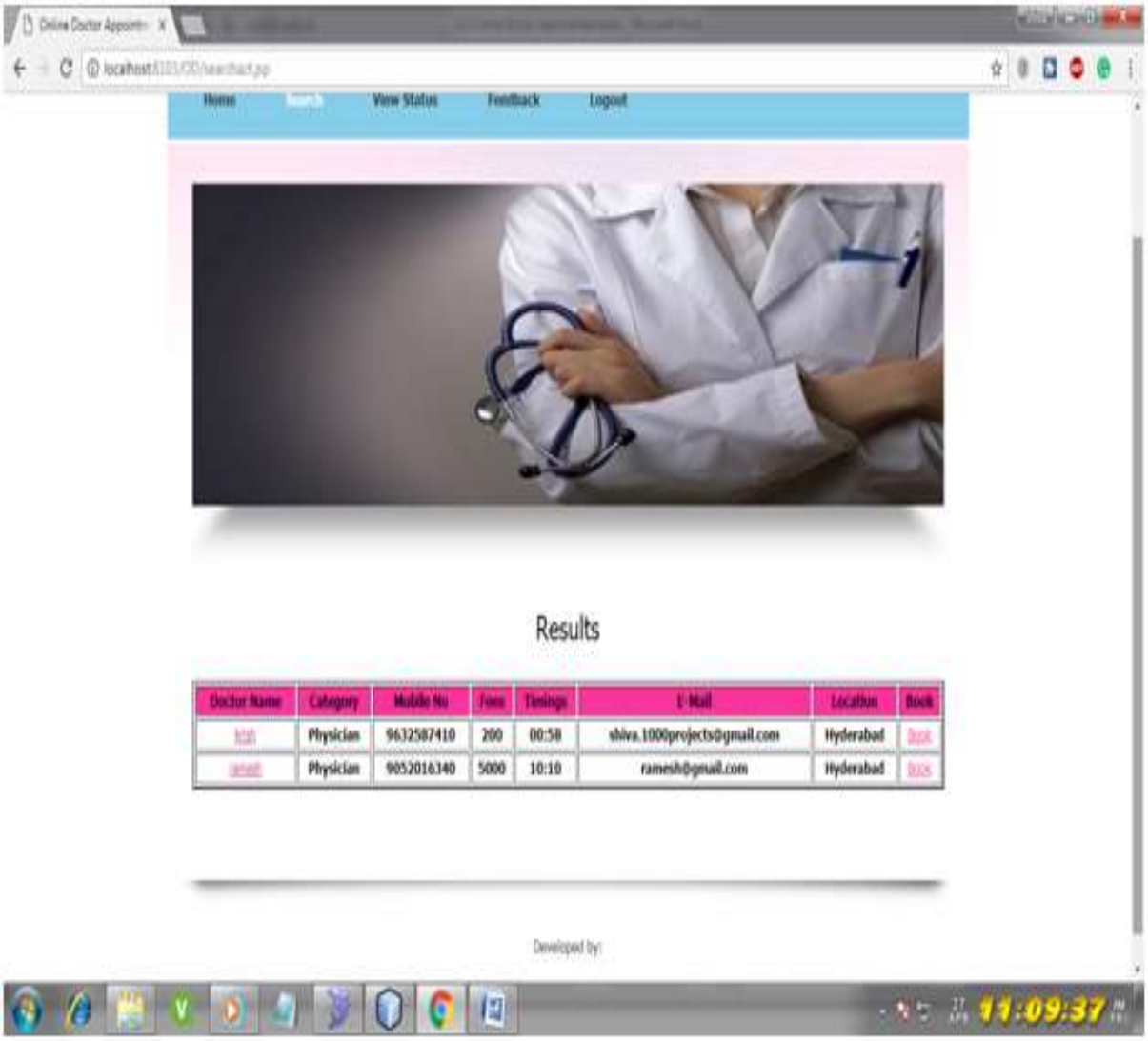
```
                                cout<<"\n "<<key<<" -> "<<i<<" - Available";
                        key++;
                }
}

char choice;
cout<<"\n\n Input your choice : ";
cin>>choice;
if( !(choice >= 'A' && choice <='Z'))
 {
        cout<"\n Error : Invalid Selection";
        cout<<"\n Please selction correct value from menu A- Z";
        cout<"\n Press any key to continue";
        getchar();getchar();
        system("cls");
        bookAppointment();
 }
int index = (choice-65 );
int isBooked = 1;
if(arr[index] == 0)
isBooked = 0;

if(isBooked ==1)
{
        cout<<"\n Error : Appointment is already booked for this Hour";
        cout<<"\n Please select different time !!";
        cout<<"\n Press any key to continue!!";
        getchar();getchar();
        system("cls");
        bookAppointment();
}

string name;
cout<<"\n Enter your first name:";
cin>>name;
ofstream out;
out.open("appointment.dat", ios::app);

if(out)
{
```

```
                out<<choice<<":"<<name.c_str()<<"\n";
                out.close();
                cout<<"\n Appointment booked for Hours : "<< (choice-65) + 9 <<" successfully !!";
        }
        else
        {
                cout<<"\n Error while saving booking";
        }
        cout<<"\n Please any key to continue..";
        getchar(); getchar();
        return 0;
}

int existingAppointment()
{
        system("cls");
        cout<<"\n ----- Appointments Summary ---- \n";
        //check if record already exist..
        ifstream read;
        read.open("appointment.dat");
        int hoursbook = 8;
        int arr[13] = {0,0,0,0,0,0,0,0,0,0,0,0,0};
        int recordFound =0;
        if(read)
        {
                string line;
                char key = 'A';
                int i = 9;
                while(getline(read, line))
                {
                        char temp = line[0];
                        int index = (temp - 65);
                        arr[index]=1;
                        recordFound = 1;
                }

                if(recordFound == 1)
                {
                        cout<<"\n Appointment Summary by hours:";
```

```
                        char key = 'A';
                        int hours = 9;
                        for(int i = 0; i<=12; i++)
                        {
                                if(arr[i] == 0)
                                        cout<<"\n "<<key<<"->"<<hours<<" - Available";
                                else
                                        cout<<"\n "<<key<<"->"<<hours<<" - Booked";
                                hours++; key++;
                        }
                }
                read.close();
        }
        else
        {
                char key = 'A';
                for(int i = 9; i<=21; i++)
                {
                        if(i==9)
                                cout<<"\n "<<key<<" -> 0"<<i<<" - Available";
                        else
                                cout<<"\n "<<key<<" -> "<<i<<" - Available";
                        key++;
                }
        }
        cout<<"\n Please any key to continue..";
        getchar(); getchar();
        return 0;
}

int main(int argc, char** argv)
{
        while(1)
        {
                system("cls");
                cout<<"\t\t\tDoctor Appointment System\n";
                cout<<"---------------------------------------\n\n";
                cout<<"1. Book Appointment\n";
                cout<<"2. Check Existing Appointment\n";
                cout<<"0. Exit\n";
```

```
		int choice;
		cout<<"\n Enter you choice: ";
		cin>>choice;
		switch(choice)
		{
			case 1: bookAppointment(); break;
			case 2: existingAppointment(); break;
			case 0:
			while(1)
			{
				system("cls");
				cout<<"\n Are you sure, you want to exit? y | n \n";
				char ex;
				cin>>ex;
				if(ex == 'y' || ex == 'Y')
					exit(0);
				else if(ex == 'n' || ex == 'N')
				{
					break;
				}
				else
				{
					cout<<"\n Invalid choice !!!";
					getchar();
				}
			}
			break;

			default: cout<<"\n Invalid choice. Enter again ";
				getchar();

		}
	}
	return 0;
}
```


Home
Search
View Status
Feedback
Logout
View Bookings
Patient Name
Doctor
Status
shivakrishna
ramesh
booked
Developed by:


Online Doctor Appointm
Home
Search
View Status
Feedback
Logout
Results
Doctor Name
Category
Mobile No
Fees
Timings
E-Mail
Location
Book
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Physician
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shiva.1000projects@gmail.com
Hyderabad
Book
ramesh
Physician
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5000
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Hyderabad
Book
Developed by:
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Online Doctor Appointm
Search
Category
Reason
Location
Search
Map
Satellite
MOTI NAGAR
Yellamma Temple
Begumpet Airport
BEGUMPET
Jalavihar Water Park
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PVR Cinemas
Buddha Statue
CARE Hospitals
BANJARA HILLS
KHAIRATABAD
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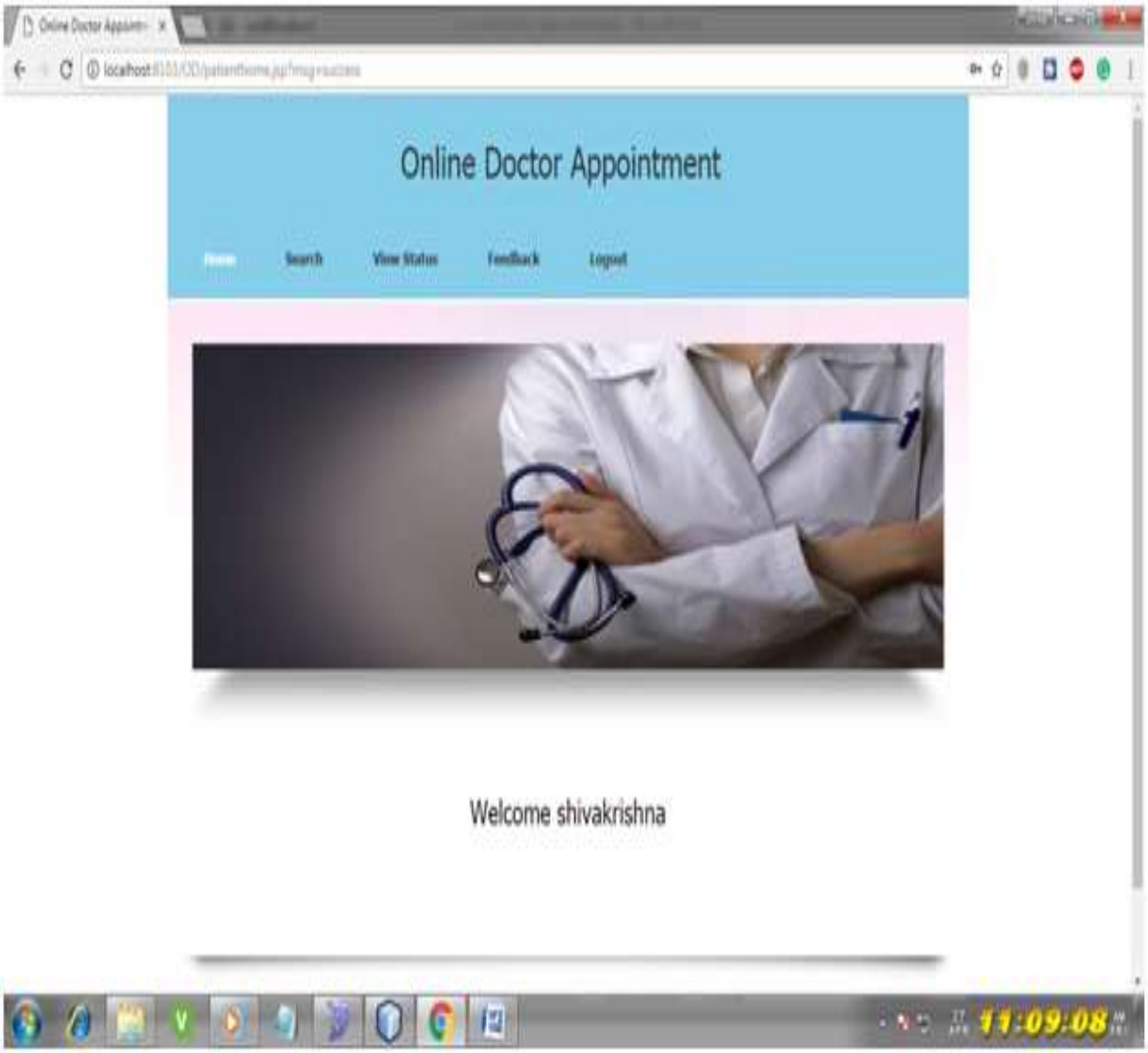
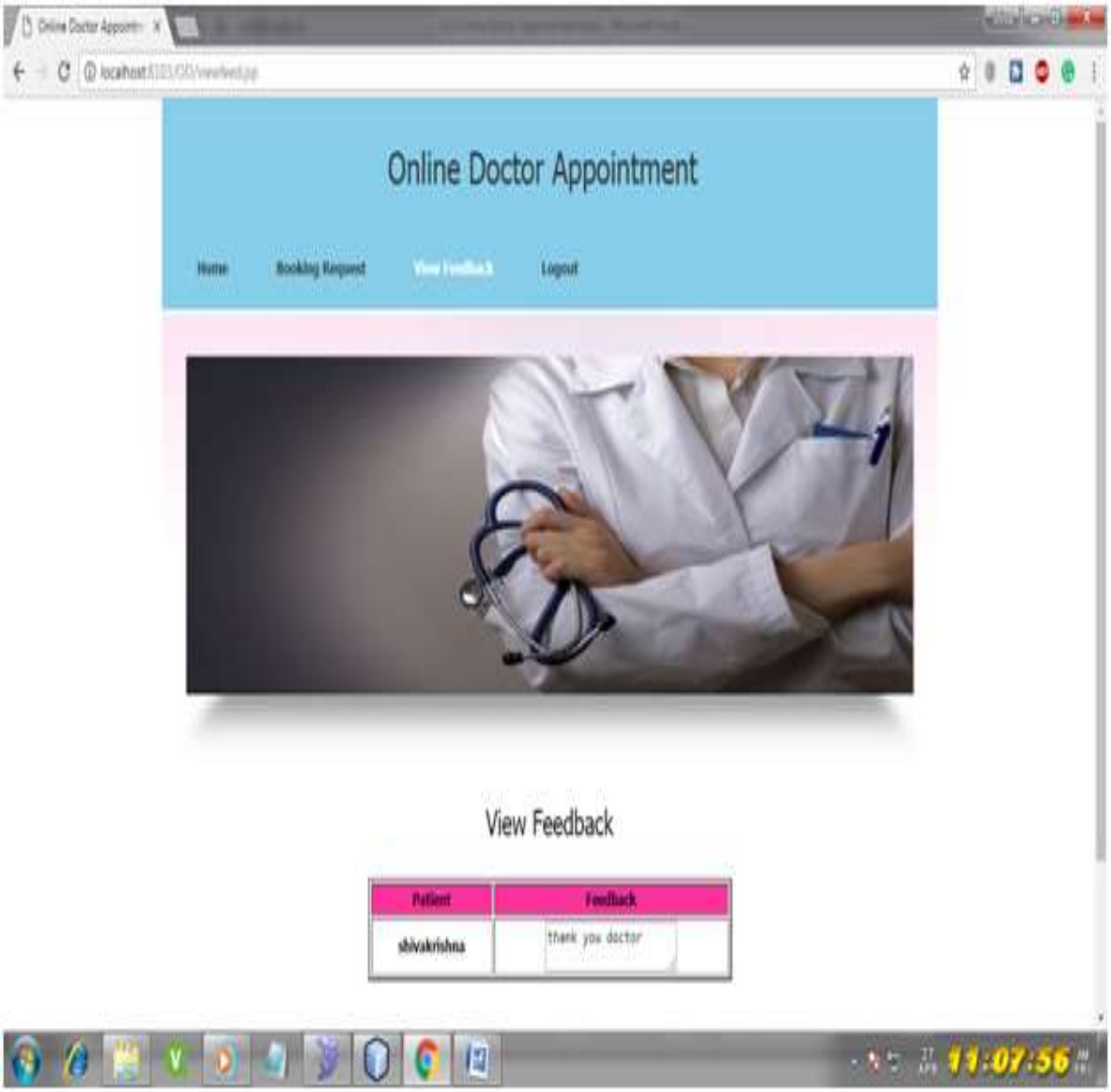
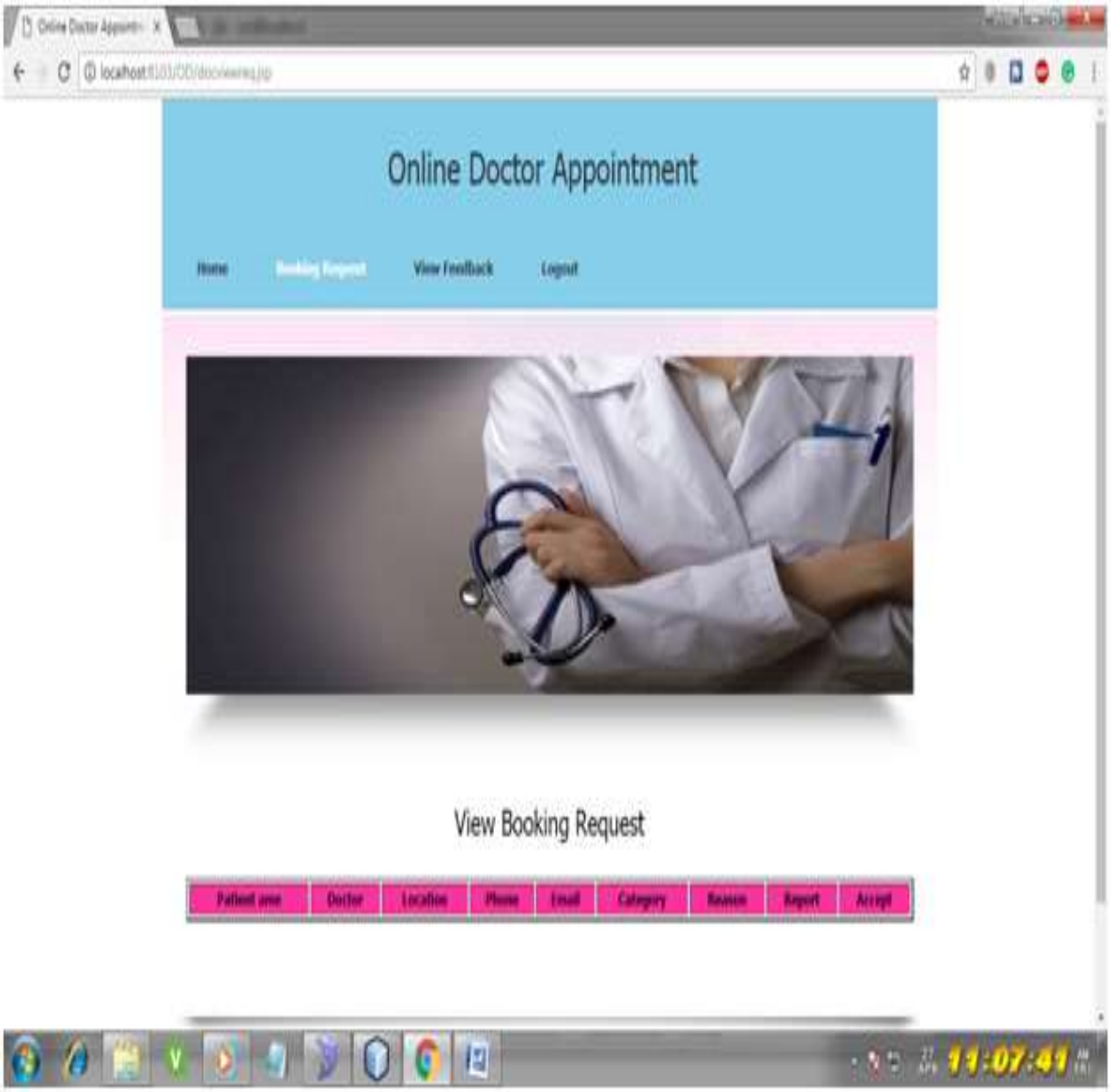

Online Doctor Appointment
Home
Search
View Status
Feedback
Logout
Welcome shivakrishna


Patient Registration
Name
User Name
Password
Password
Email ID
Email ID
Date Of Birth
mm/dd/yyyy
Select Gender
-Select-
Mobile Number
Mobile Number
Address
Address
Report
Choose File
No file chosen
REGISTER


Online Doctor Appointment
Home
Booking Request
View Feedback
Logout
View Feedback
Patient
Feedback
shivakrishna
thank you doctor


Online Doctor Appointment
Home
Booking Request
View Feedback
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View Booking Request
Patient ame
Doctor
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Phone
Email
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Reason
Report
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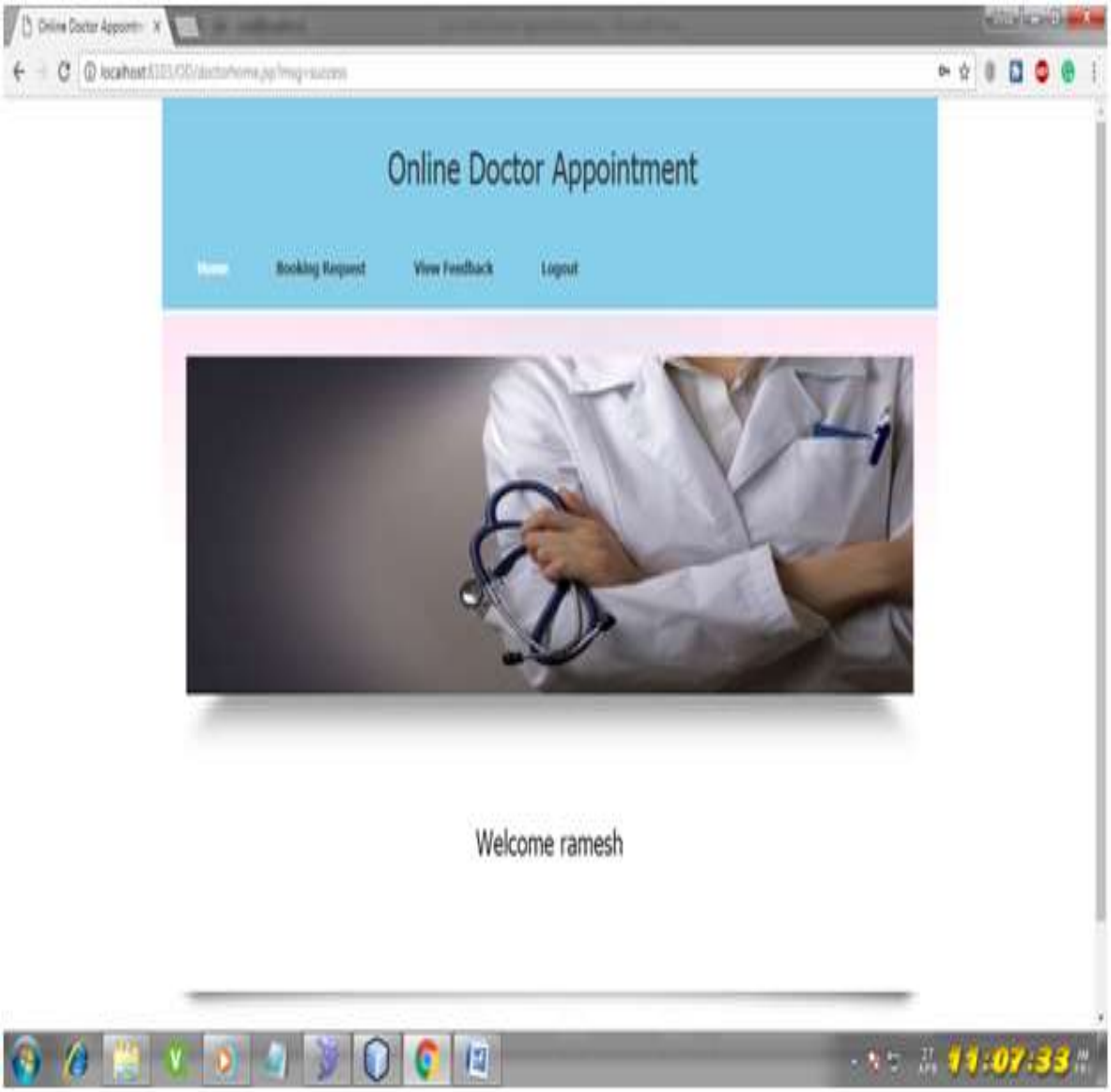
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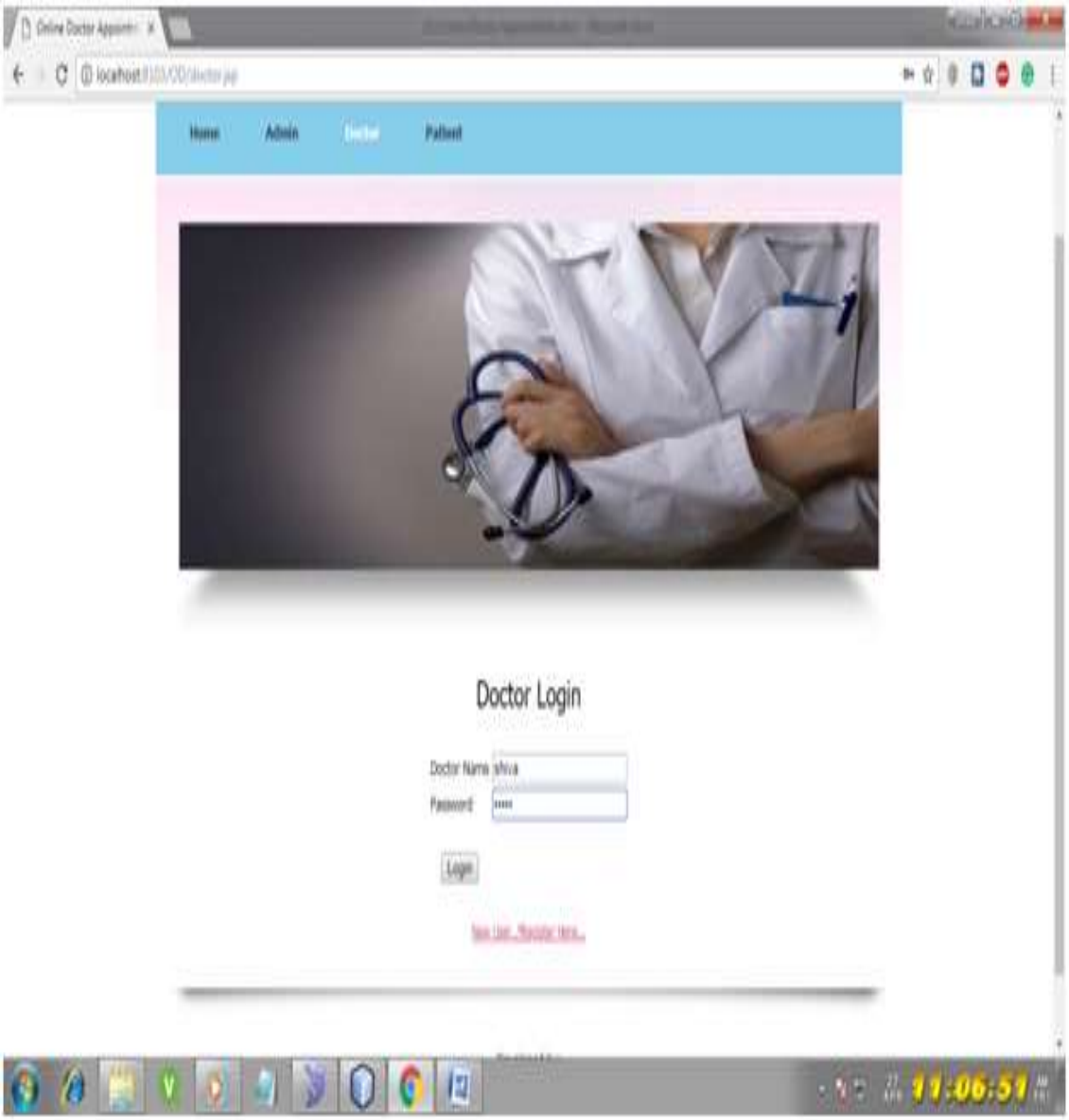
Home
Booking Request
View Feedback
Logout
Welcome ramesh


Home
Admin
Doctor
Patient
Doctor Login
Doctor Name shiva
Password
Login


Online Doctor Appointm
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Doctor Registration
Name
User Name
Password
Password
Location
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Email ID
Email ID
Category
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Timings
Fees
Fees
Mobile Number
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Experience
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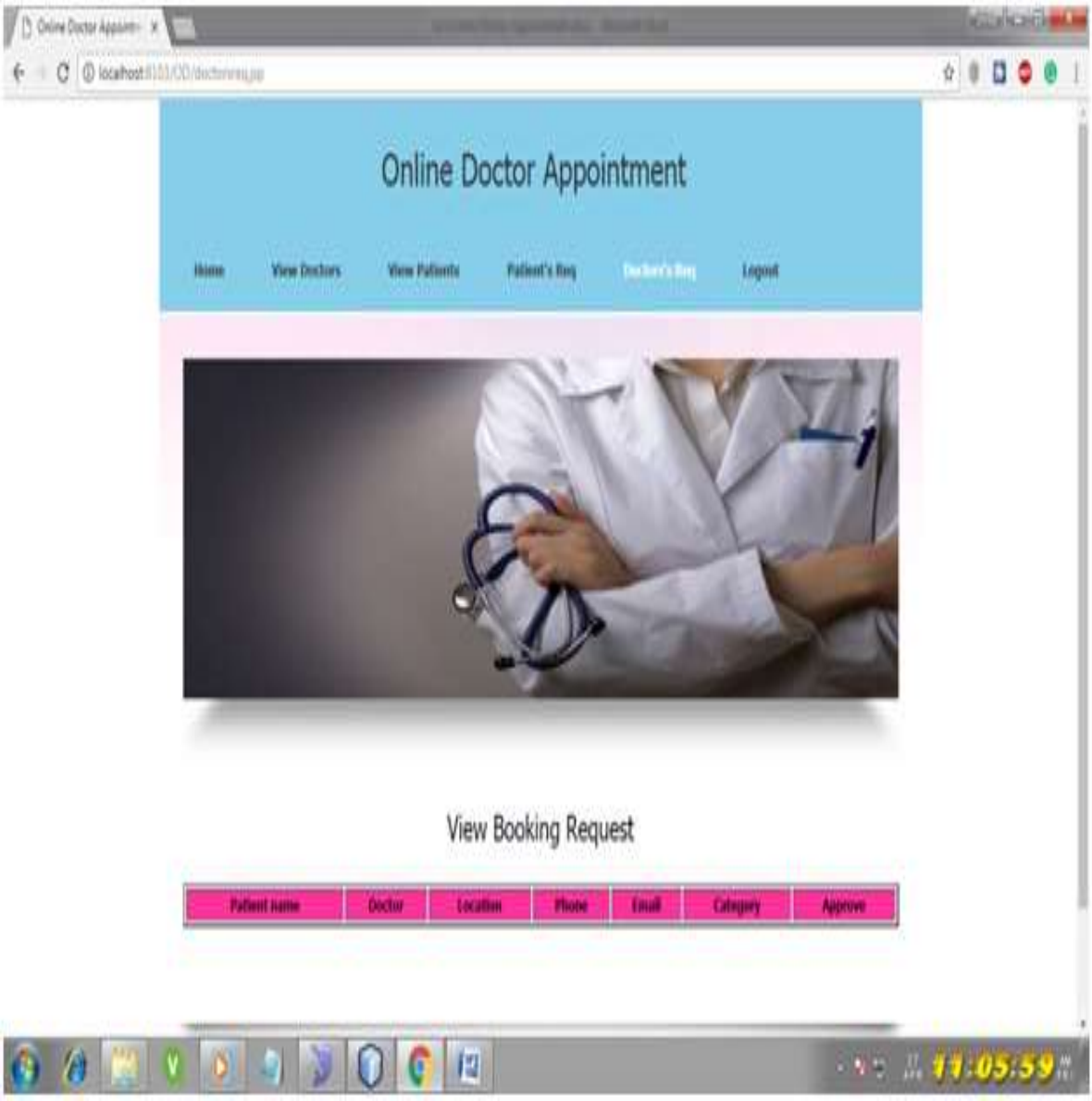
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View Doctors
View Patients
Patient's Req
Doctor's Req
Logout
View Booking Request
Patient name
Doctor
Location
Phone
Email
Category
Approve
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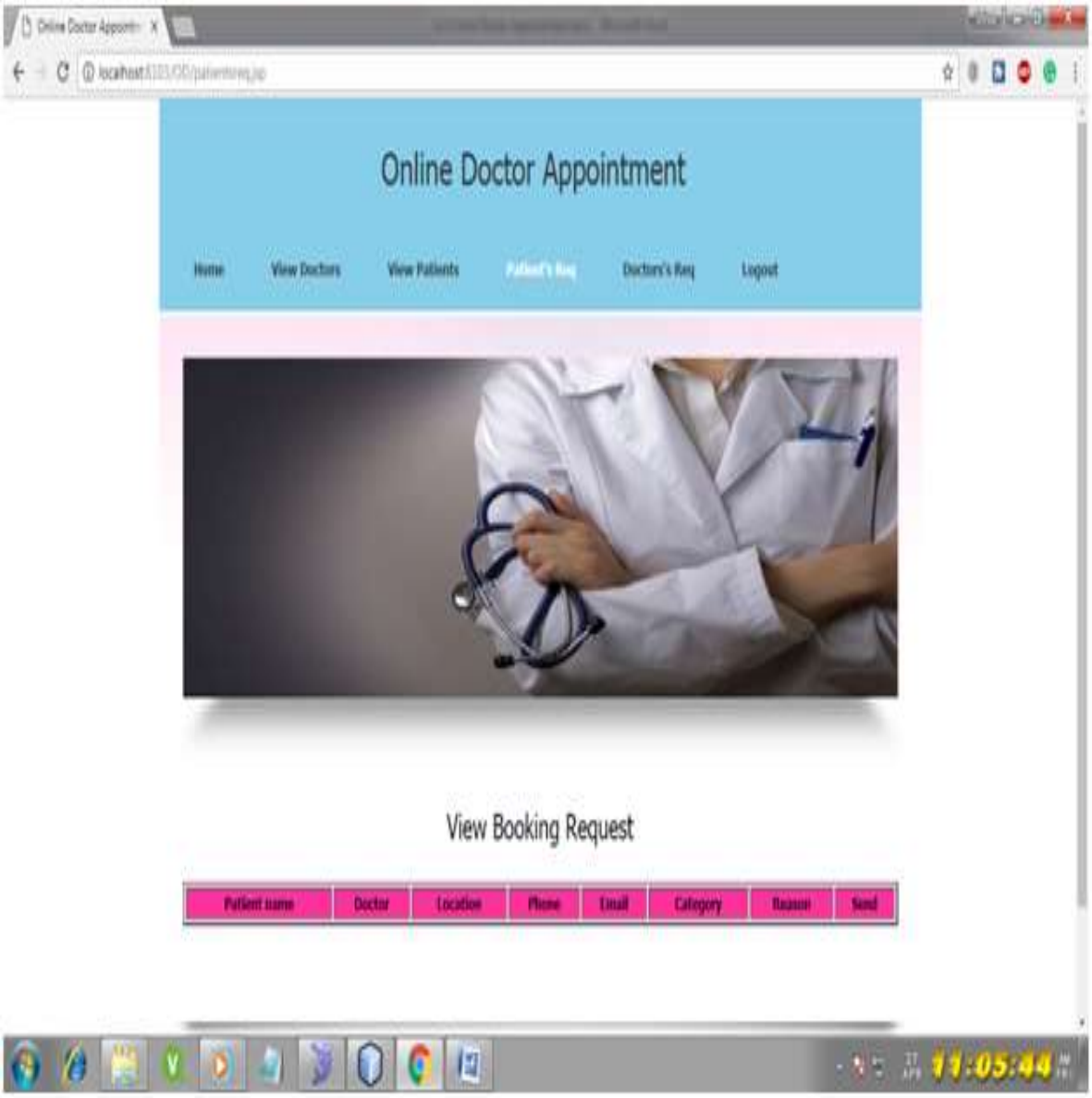
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View Doctors
View Patients
Patient's Req
Doctors's Req
Logout
View Booking Request
Patient name
Doctor
Location
Phone
Email
Category
Reason
Send
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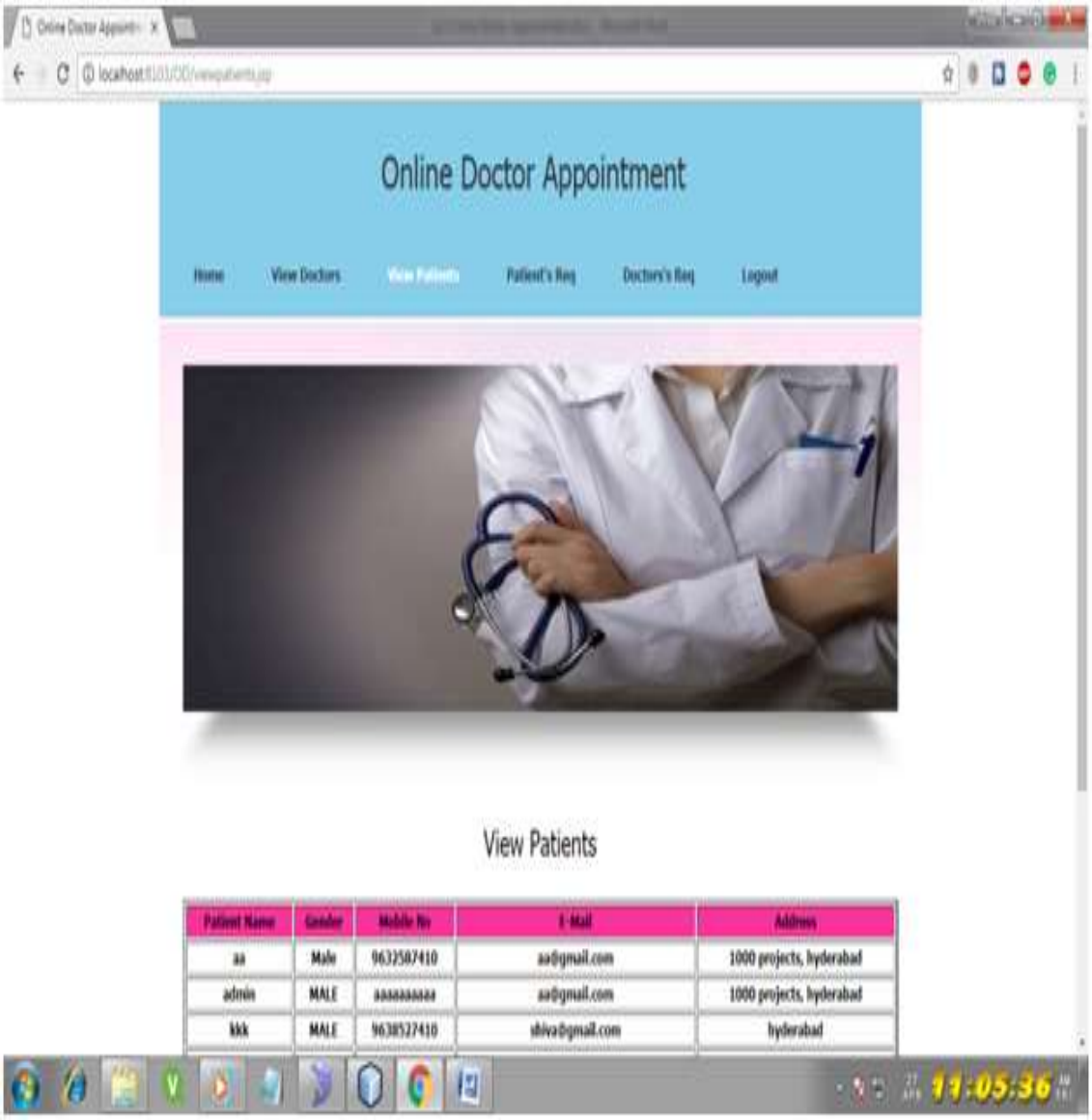
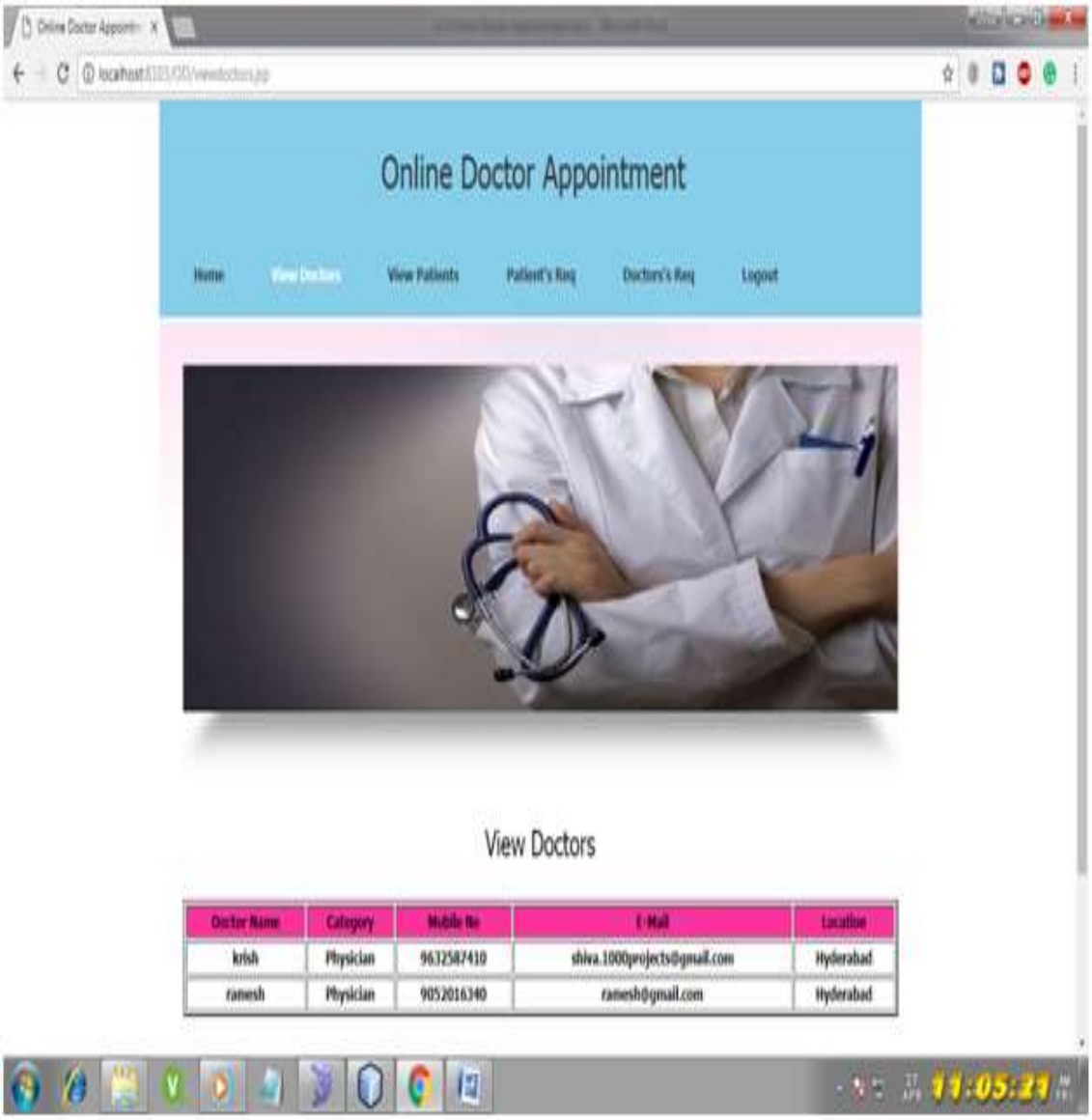
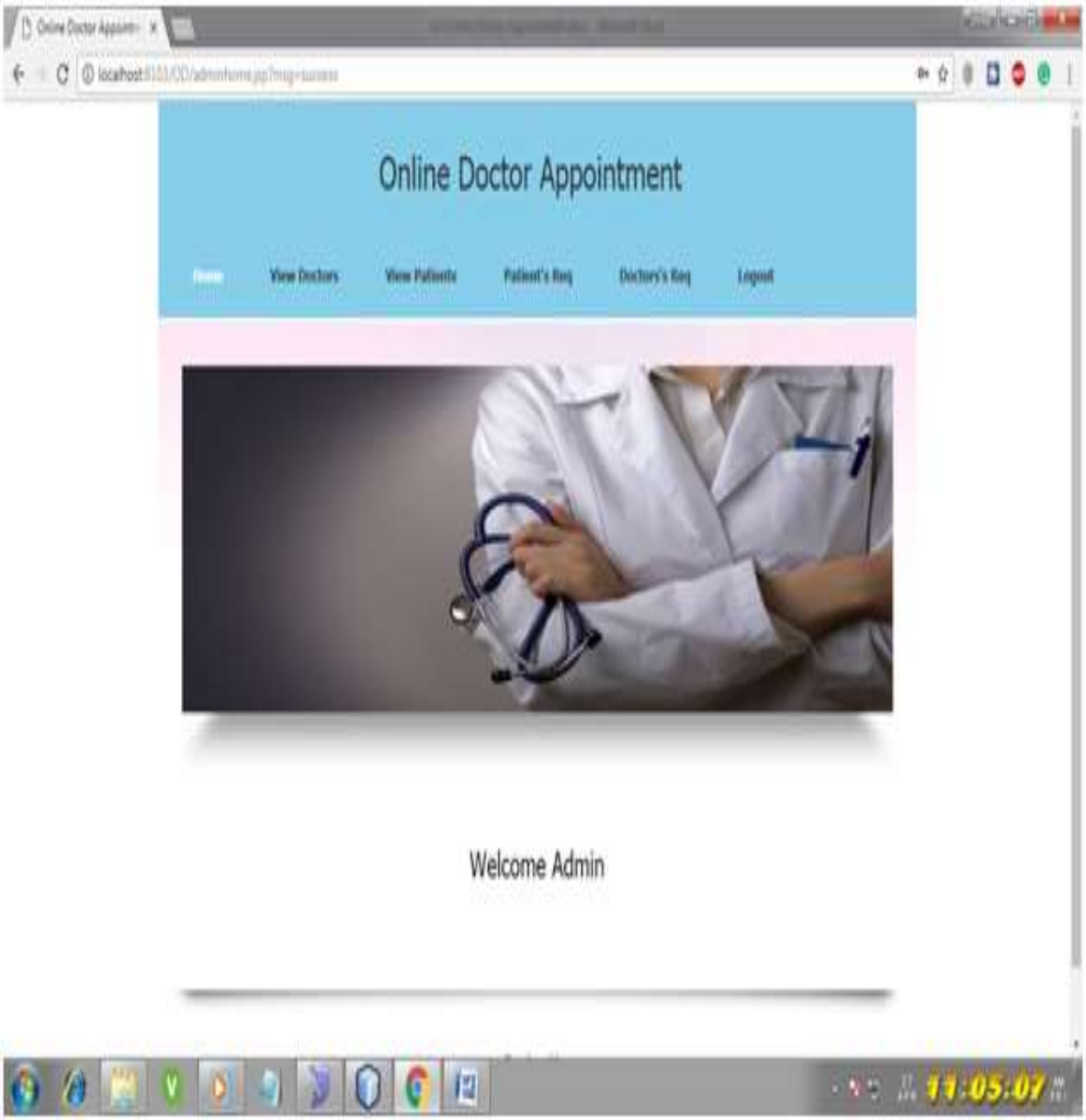
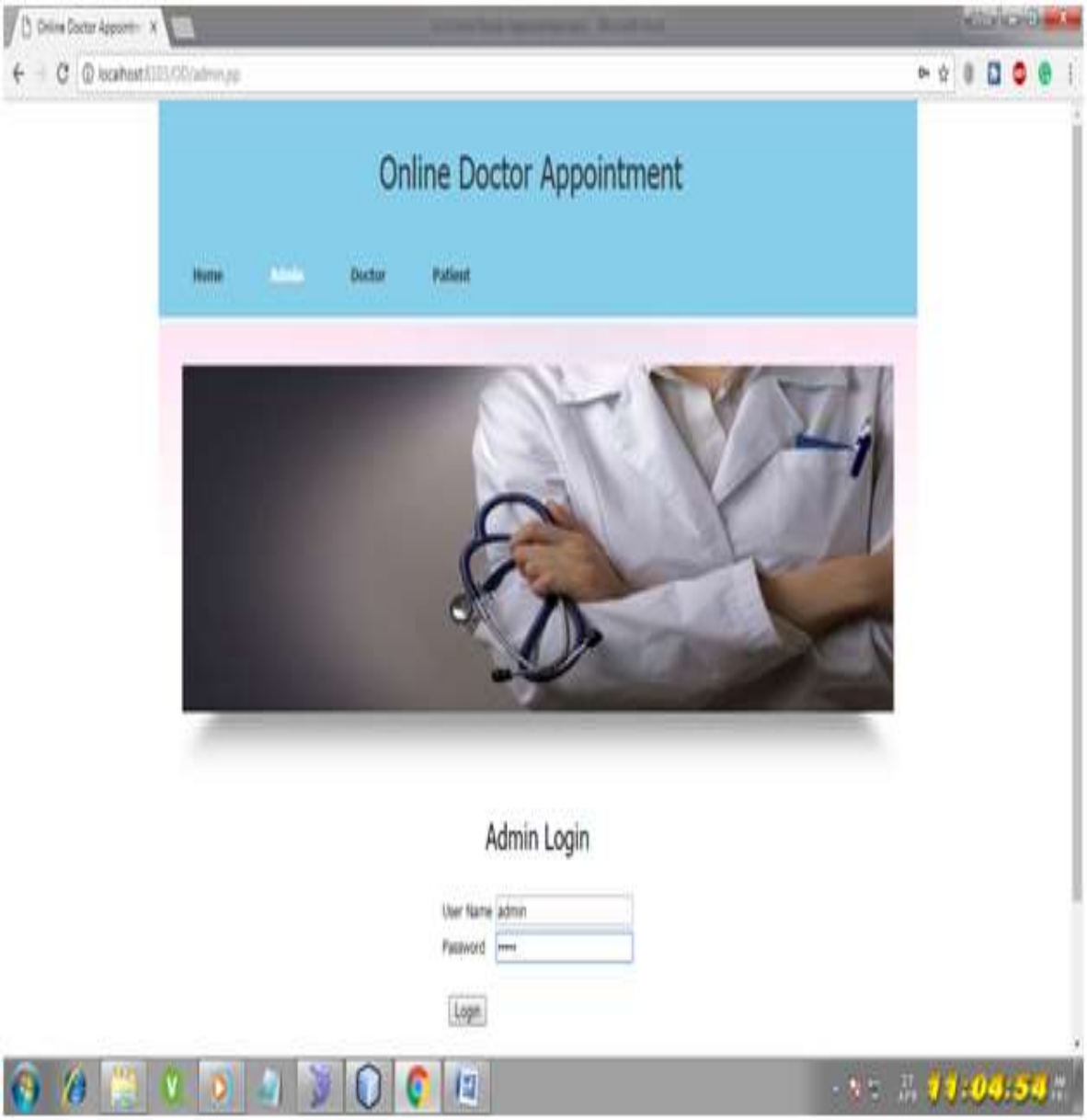

Online Doctor Appointment
Home
View Doctors
View Patients
Patient's Req
Doctors's Req
Logout
View Patients
Patient Name
Gender
Mobile No
E-Mail
Address
aa
Male
9632507410
aa@gmail.com
1000 projects, hyderabad
admin
MALE
aaaaaaaaa
aa@gmail.com
1000 projects, hyderabad
kkk
MALE
9638527410
shiva@gmail.com
hyderabad
11:05:36


Online Doctor Appointment
Home
View Doctors
View Patients
Patient's Req
Doctors's Req
Logout
View Doctors
Doctor Name
Category
Mobile No
E-Mail
Location
krish
Physician
9632587410
shiva.1000projects@gmail.com
Hyderabad
ramesh
Physician
9052016340
ramesh@gmail.com
Hyderabad


Online Doctor Appointment
Home
View Doctors
View Patients
Patient's Req
Doctor's Req
Logout
Welcome Admin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Home
Admin
Doctor
Patient
Admin Login
User Name admin
Password
Login
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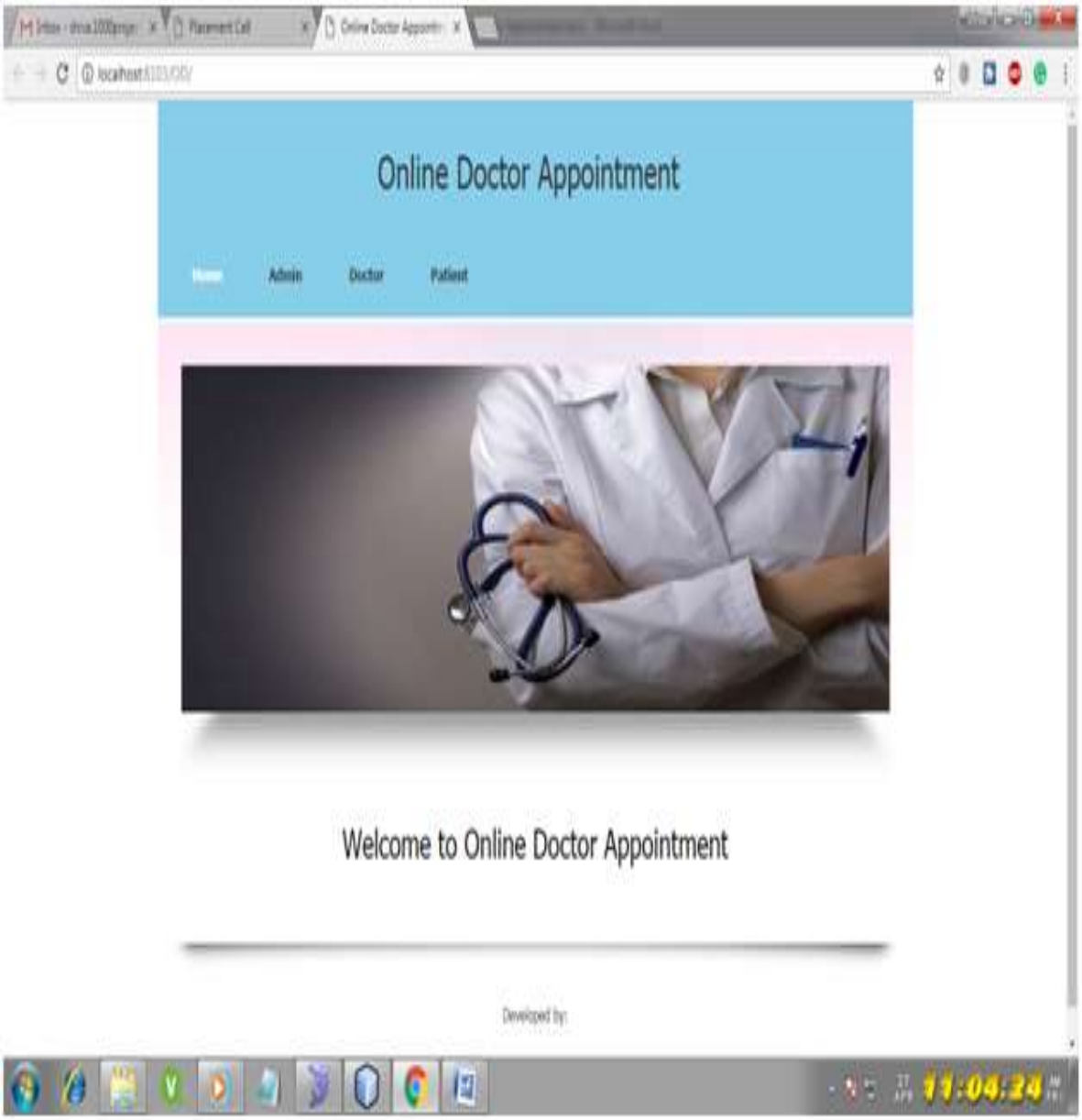
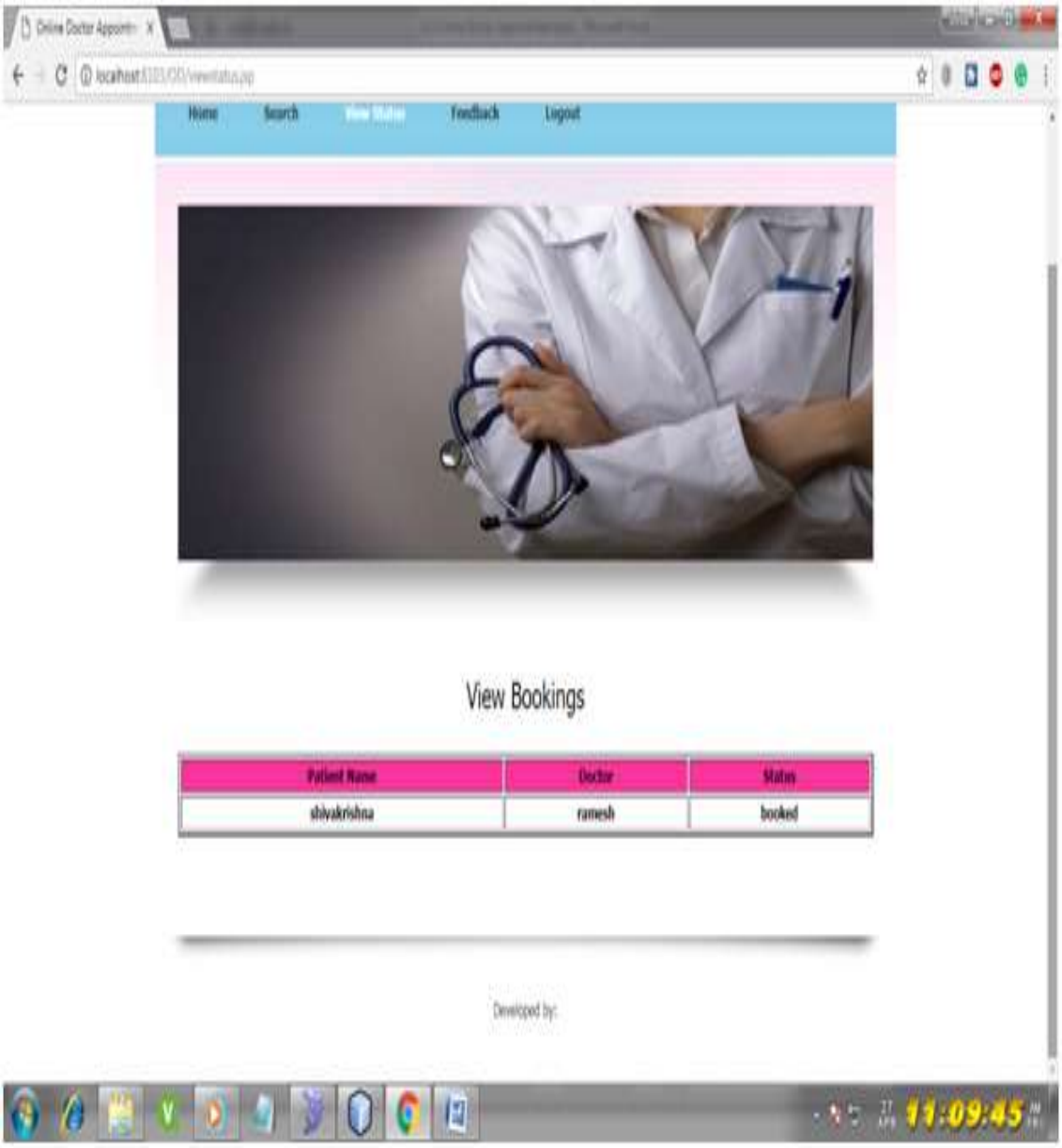
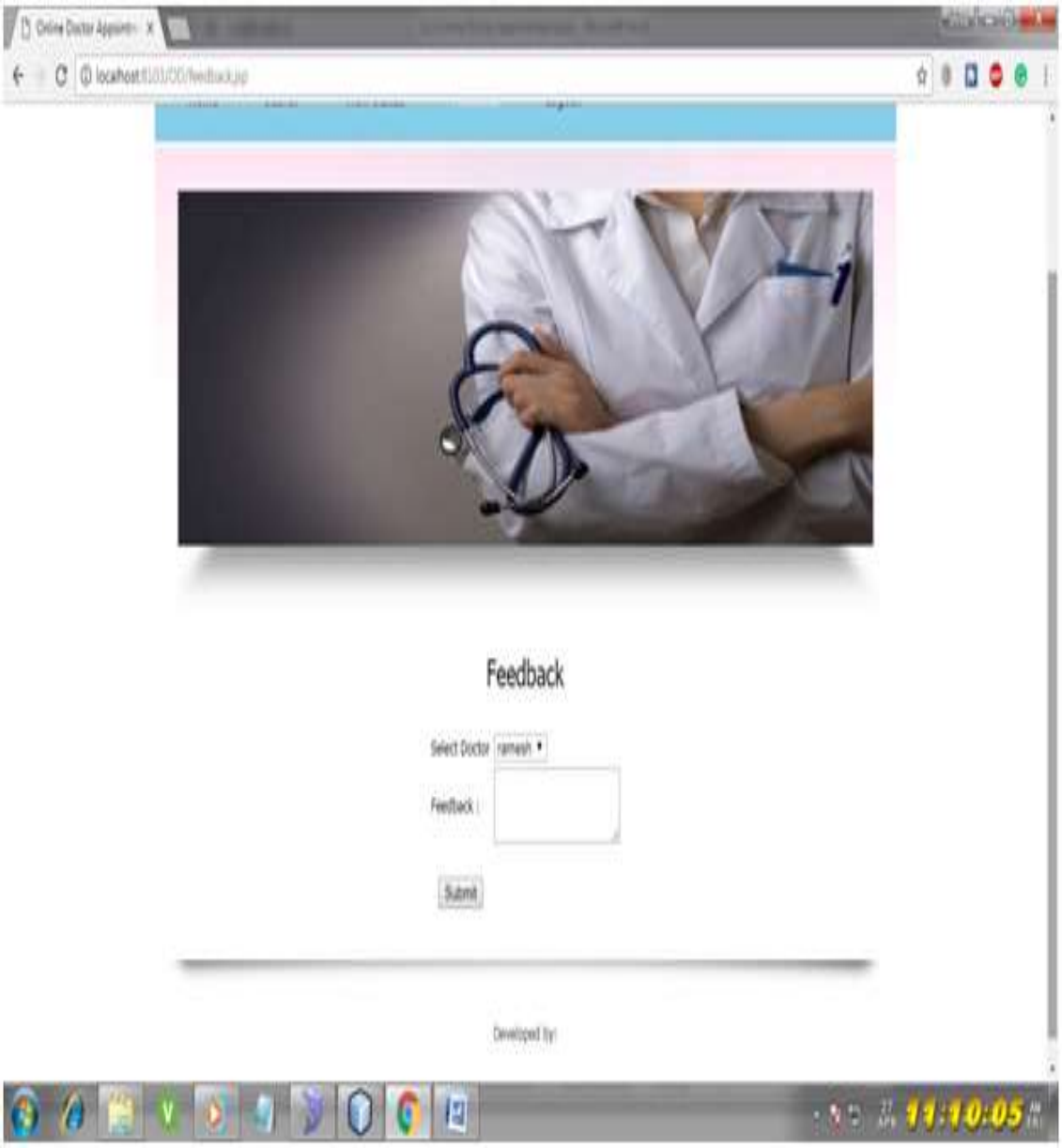

Online Doctor Appointment
Home
Admin
Doctor
Patient
Welcome to Online Doctor Appointment
Developed by:


Online Doctor Appointm
Home
Search
View Status
Feedback
Logout
View Bookings
Patient Name
Doctor
Status
shivakrishna
ramesh
booked
Developed by:
11:09:45


Feedback
Select Doctor
ramesh
Feedback :
Submit
Developed by:

DATE	17/02/2020
SUBMITTED BY	Ankit Shaw, Sanchita Sinha and Vishal Shukla
TITLE / ROLE	Fix Your Doctor

ADDITIONAL REQUIREMENTS

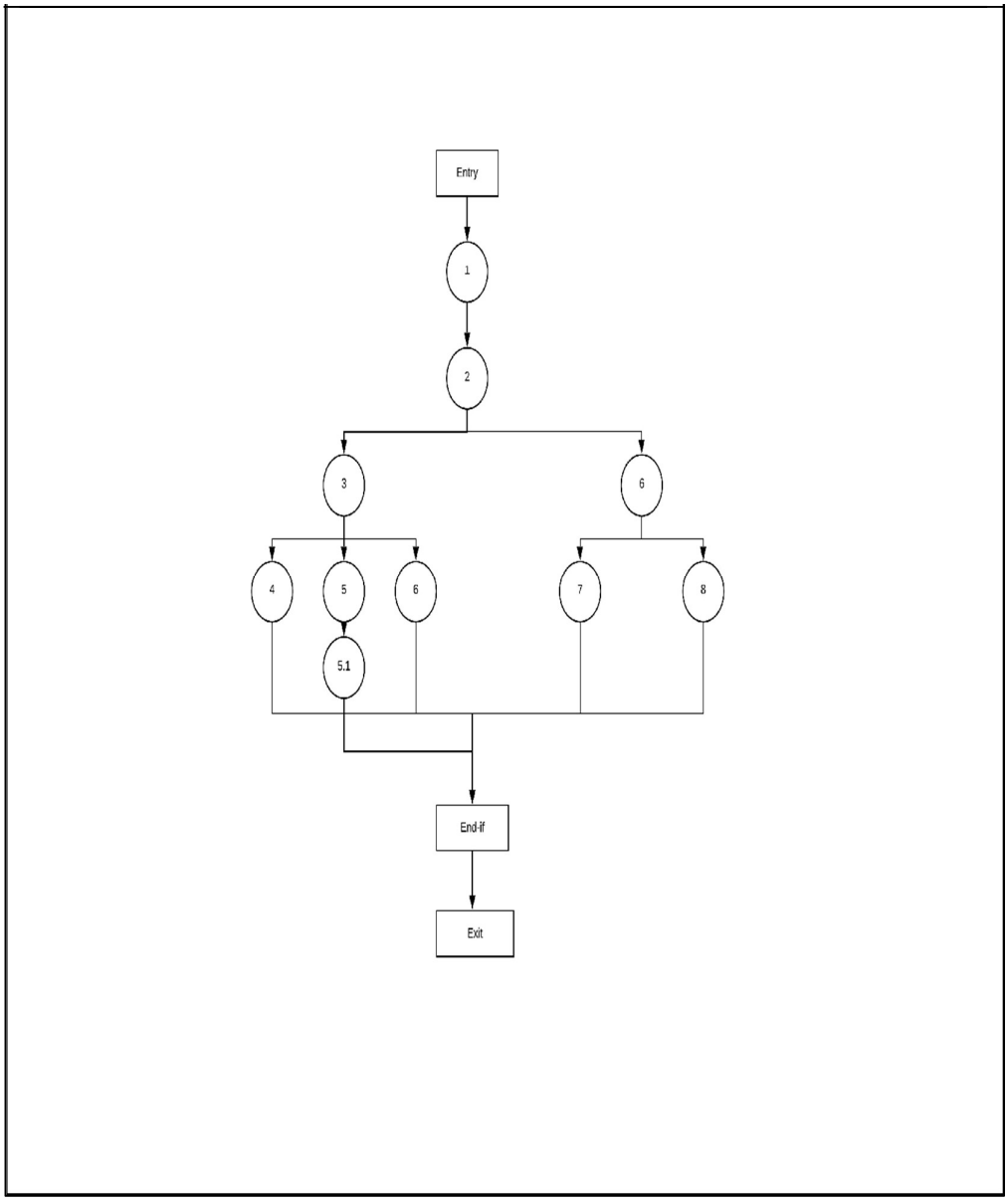
- Support for users from Linux & iOS platforms.
- Support for Video Call feature to directly reach doctors.
- Support for applying custom backgrounds.
- Support for applying custom themes.
- Feature for managing soft copy of medical reports from different hospitals & doctors.
- Feature for remote monitoring using mobile application.

DATE	24/02/2020
SUBMITTED BY	Ankit Shaw, Sanchita Sinha and Vishal Shukla
TITLE / ROLE	Fix Your Doctor

ADDITIONAL ISSUES

- Issue while switching from one network to another network
- Issue while generating two way authentication request
- Issue while dumping log file and saving log file in cloud
- Issue with network analyzer on bigger networks
- Issue with mismatch of data (like empty slots, appointment not aligned) in the physical log of the hospital and app log.
- Issue with graphical user interface and clarity of instructions.

CONTROL FLOW GRAPH



DATE	03/03/2020
SUBMITTED BY	Ankit Shaw, Sanchita Sinha and Vishal Shukla
TITLE / ROLE	Fix Your Doctor

ADDITIONAL ISSUES

- Feature for downloading medical prescriptions provided by the doctor.
- Support for sharing X-ray reports, blood test reports, etc. with the doctor.
- Feature for paying the doctor's fee and commission through digital money via GooglePay, Paytm, PhonePe, etc.
- Support for online pharmacy in the app.
- Support for adding prescribed medicines to your cart automatically.
- Support for online payment in pharmacy where patient can show the bill at the hospital pharmacy and collect their medicines.

DATE	10/03/2020
SUBMITTED BY	Ankit Shaw, Sanchita Sinha and Vishal Shukla
TITLE / ROLE	Fix Your Doctor

SOFTWARE TESTING

Testing Frameworks

Testing framework used to test the "Network Helper" is a module based testing framework and data driven testing framework.

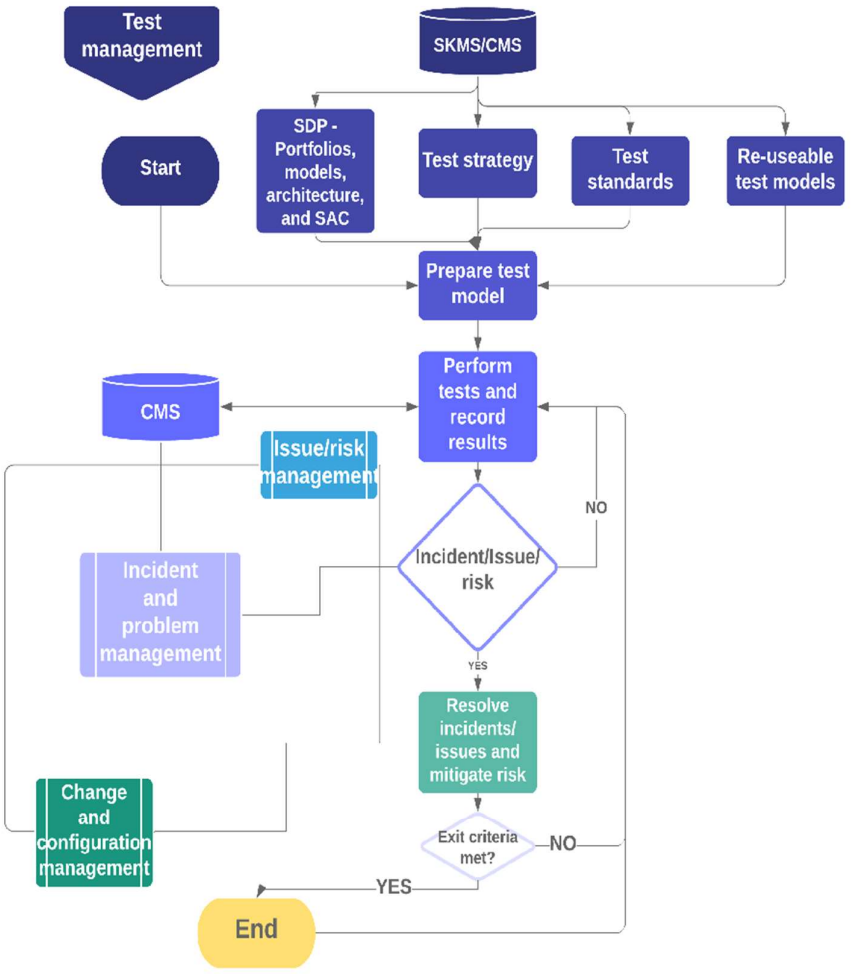
- **Module Based Testing Framework**

  Module based testing framework is based on the concept of abstraction one of the popular OOPS concept. Here the application is divided into a number of logical and isolated modules. An independent test script is created for each module. The modules are separated by an abstraction layer so that any change in the section does not affect the module.

- **Data Driven Testing Framework**

  It is often required to test functionality multiple times with different set of input data. Here, instead of putting the test data in the test script, it is advised to keep the data in an external database. This will help in segregating the test script logic and test data from each other. This is exactly what test data driven framework does. The external database could be anything like XML, CSV, or ODBC repository. The data is generally kept in 'Key-Value' pair.

MASTER TEST PLAN FLOW DIAGRAM



MASTER TEST PLAN

Testing Objective	Focusing on performance issue
Test Items	Login system , Registration system, Version control system
Features to be Tested	OTP Verification, Two-way authentication, Network Analyzer, Pinging tool
Approach	Level – 2 Method - Manual Testing
Required Hardware / Software	A PC with 8GB RAM, Internet connectivity, RobotRE Framework
Risks	Difficulties in recruiting resources, Instability of the product , High attrition rates
Testers & schedules	Tester: Vishal Shukla Scheduling Information: 10th March, 2020 9:00 AM
Estimate	Level 0 : Rs 1250/- only Level 1 : Rs 2000 /- only Level 2 : Rs 3250/- only Including Tax And Other Charges

DATE	17/03/2020
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MANUAL TESTING

Test Area	Input	Test Description	Output / Result
All Search field contains only spaces	Search=“ ”	Display any all information	tested
Search for key word	SearchBoxes1,2,3,or 4=“computers”	Display all the information and results	tested
Search for sentence or phrase	Searchboxes1,2,3,or4= “computer science”	Display all the information and results	tested
If all fields are empty	Search table1to4=“”	Display all the information	Tested
Using different logical combination of 2 or more fields	Searchboxes1=”xyz” and Searchboxes2”wxyz” or Searchboxes3=”uvxyz ”	May display all the information and results list	tested
One or more Search for an expression of 1024 characters	Searchboxes1,2,3,or4= ”computer … programs”	Display all the information and results for 1023 characters	tested
One or more Search for a numbers	Searchboxes1,2,3,or4= “10 ”	Display all the information and results list	tested

DATE	24/03/2020
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DEPLOYEMENT REPORT

- Windows Server Configuration
    - Install Windows Server 2008 using default configuration.
    - Open the Windows Firewall Configuration and select Inbound Rules
    - Click New Rule. In the window that opens select “Port” and click Next.
    - Select “Specific local ports” and enter 80 in the text box.

- Apache Configuration
    - Download XAMP v1.7.3 from here. Install with default op ons. Also install the Tomcat 6.0.20 plug-in available from here. Default op ons work but you may specify an alternate install path if you prefer.
    - Aer installation XAMPP should run automatically. Click the Start button beside Apache, MySql, and Tomcat.

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