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Project Report

On

Online Doctor Appointment System

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For the Degree of

Bachelor of Technology

In

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LUCKNOW

JUNE-2022

DECLARATION

We hereby declare that the work presented in this report entitled "Online Doctor Appointment System", was carried out by us. We have not submitted the matter embodied in this report for the award of any other degree or diploma of any other University or Institute.

We have given due credit to the original authors/sources for all the words, ideas, diagrams, graphics, computer programs, experiments, results, that are not our original contribution. We have used quotation marks to identify verbatim sentences and given credit to the original authors/sources.

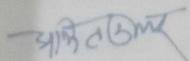
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CERTIFICATE

Certified that Vaibhav Pradhan (1829010172) and Videh Vats (1829010173) have carried out the research work presented in this thesis entitled "**Online Doctor Appointment System**" for the award of **Bachelor of Technology** from Dr. APJ Abdul Kalam Technical University, Lucknow under Prof. Amit Kumar Singh Sanger's supervision. The report embodies results of original work, and studies are carried out by the student Vaibhav Pradhan and Videh Vats, and the contents of the thesis do not form the basis for the award of any other degree to the candidate or to anybody else from this or any other University/Institution.

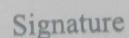


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ABSTRACT

The purpose of the doctor appointment system is to automate the existing manual system by the help of computerized equipment and full-fledged computer software, fulfilling their requirements, so that their valuable data/information can be stored for a longer period with easy accessing and manipulation of the same. The required software and hardware are easily available and easy to work with.

Doctor appointment System, as described above, can lead to error free, secure, reliable and fast management system. It can assist the user to concentrate on their other activities rather to concentrate on the record keeping. Thus, it will help organization in better utilization of resources. The organization can maintain computerized records without redundant entries. That means that one needs to be distracted by information that is not relevant, while being able to reach information. The aim is to automate its existing manual system by the help of computerized equipment's and full-fledged computer software, fulfilling their requirements, so that their valuable data/information can be stored for a longer period with easy accessing and manipulation of the same. Basically, the project describes how to manage for good performance and better services for the clients.

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LIST OF ABBREVIATIONS

ODAS	Online Doctor Appointment System
ERD	Entity Relationship Diagram
DBD	Database Diagram
DFD	Data Flow Diagram
IT	Information Technology
HTML	Hyper Text Markup Language
PHP	Hypertext Preprocessor
MySQL	My Structured Query Language
CSS	Cascading Style Sheets

CHAPTER 1

INTRODUCTION

1.1. Introduction

The aim of this project is to create a physician patient management system that will assist physicians in their work and will help patients to book doctor sessions and monitor medical progress. The system allows doctors to manage their reservations online. Patients are allowed to book empty spaces online and those spaces are kept in their name. The system controls the appointment data of multiple doctors for different dates and times. Every time a user visits a doctor his or her medication is stored on a doctor's website. Next time a user logs in he can view his entire medical history as and when needed. At the same time the doctor may review the patient's previous medical history while the patient is visiting him. The program also contains a blood donation module. This module allows for blood donation registration and blood group search. The module is designed to assist with the immediate needs of Blood with a simple / quick search.

1.2. Objectives

- ❖ To Create Web based online Doctor Appointment management system.
- ❖ To manage all patients related information.
- ❖ To provide emergency information in critical situation.

1.3. Justification of Study

We use this app to get better user experience. This program is very easy to access. And to establish communication in real time, using modern and innovative technology. Thus, the user can see the update without reloading or updating. This program will use a user device such as pc, laptop, tab & smart phone. This program is very simple and easy to use, so any user can use this program easily.

1.4. Scope of Study

Scope of the project is very broad in terms of other online doctor appointment portal. Few of them are:

- There is huge collection of doctor information.
- Anyone can get Blood on time

CHAPTER 2

LITERATURE REVIEW

2.1. Waiting Time

Waiting simply refers to the time that a person has to wait for an action to be performed, after which the request has been requested or approved (Fernandes et al., 1994). Patient waiting time has been defined as "the length of time from the time a patient enters an outpatient clinic until the time the patient receives a prescription" (Jamaiah, 2003). It is defined as the total time from registration to consultation with a physician. There were two waiting times, the first was the time it took to see a doctor and the second was the time to get medication (Suriani, 2003). This paper discusses waiting time to see doctors. Long waiting times are a major problem for patients using urban health facilities in developing countries (Bachmann, 1998). The block selection process was introduced and tested at South Africa's largest health facility. Waiting times for all patients were measured within one week before and after the appointment. After presenting appointments, patients with severe and chronic illnesses and appointments had a shorter waiting period than similar patients without appointment (Mahomed, 1998). Appointments did not benefit patients who did not see doctors or collect recurring medications. However, there was a complete increase in patient waiting times after the introduction of the program, mainly due to one day in the follow-up study. Focus groups and interviews indicated that staff were skeptical at first but later were optimistic about the program. Patients were interested in the appointment process at all stages. Studies show that prescribing blocks may reduce patient waiting times in severe patients, but may not be appropriate for all patients. Staff and patients had differing opinions, which combined with the knowledge of the new system (Mahomed, 1998).

2.2. Patients' Appointment System

The patient appointments process or the health care appointment appointments process started a long time ago (Harper, 2003). Patient appointment management has pre-existing functions and has created simpler line models and more flexible planning situations. Another attempt was made to calculate the waiting time between patient and physician using statistical line models to reduce the waiting time (Gamlin, 2003). However, traditionally the appointment process considers the doctor's time to be more important than the patient's time (Wijewickrama, 2005). The appointment process is therefore designed to reduce physician duration but the current design of the appointment system is based on priorities for the patient and the physician (Takakuwa, 2005). The patient appointment system has complex structures because it represents the patient's appointment time at the clinic and regulates the patient's waiting period based on the type and timing of the patient appointment (Gamlin, 2003). In addition, the patient appointment program is the International Journal of Computer Science & Information Technology

(IJCSIT) Vol 6, No 4, August 2014 62 designed to: manage physician time, reduce patient waiting times, reduce physician downtime, reduce nurse downtime, and improve quality of service in health care (Harper, 2003)

2.2.1. Appointment Delay

Previous studies have shown that if the longer the appointment is defined as the time between the patient's request and the actual date of appointment, the greater the likelihood that he or she will cancel or not appear (Gallucci et al. 2005). This suggests an obvious way to reduce exhibitions and cancellations: this is done by asking patients to come immediately or to make an appointment on the day they want to be seen (Murray, 2000). This is called open access (OA) or advanced access policy (Tantau, 2000), and has recently become a popular paradigm in practice and the subject of practical research. Several authors report their experience in using OA, both positive and negative (Dixon et al. 2006). Some doctors strongly oppose OA (Murray and Tantau 2000), and there are those who strongly oppose it (Lamb, 2002).

2.2.2. Managing Patients' Appointment System

According to Dexter (1999), managing patient appointment system may be a computer application wont to manage and reduce the patient waiting time within the health care center. Some health care centers don't use any appointment system. So it's a extended average patients' waiting time than the health care center that adopts the patients' appointment system. While patients can await quite one hour to be attended to by a physician during a health care center, they can also feel that they're being disregarded and treated unfairly. So when patients are given the time of appointment during a health care center, they will evaluate the standard of service within the center (Dexter, 1999). Hence, developing patients' appointment process for health care centers necessitates the utilization of a classy queuing model that captures much of the important system's features (saving time, reducing idle time, etc). Therefore the appointment schedule represents the important situation within the health care center faced by patient appointment schedulers (Rohleder, 2002). On the opposite hand, the quality practice for scheduling and processing patient appointments are supported the character of treatments of the patients which better approaches more sensitive to patient needs are desirable (Klassen, 2002).

2.3. Online Booking System

An Internet system is also known as a web-based system. A web is made up of a page commonly known as a web page or website, and a website is a computer program that uses a web server that provides access to a group of related web pages (Alex, 2000). A system is a set of independent components that work together to achieve the same purpose. A web-based program is therefore a program that is accessible online by the user in order to achieve a specific task for a specific purpose. The Internet is a program used to connect computers and computer networks. It helps to

connect millions of computer networks around the world and allows users to access information stored on other computers remotely (James, 1999). According to Chua (2010) the community's need for a better healthcare system and the shocking number of appointments of missing people has forced the healthcare industry to embrace how they deliver services. With the advancement of IT technology today and the recognition of the health care system as a critical system, the appointment booking system is at a crossroads to deliver effective, reliable and timely access to health services. The most common way to book by fax, phone or email. But with the growing internet penetration, the healthcare industry is advancing with the use of the online ~ 13 ~ appointment booking system. The web-based selection system is used in Taiwan; everyone is required to register on the national health insurance scheme. When a person needs medical help, he or she shows his or her doctor's health insurance card to the hospital to get started. There are several ways to make an appointment. A person can go directly to the hospital for daily contact or make an appointment at home by telephone or email if their condition does not improve (Gruca, 2004). The Internet provides a variety of technologies that enable hospitals to communicate with their patients. Recently, with the advent of the Internet, more and more hospitals have launched a website design program. Electronic patient-to-patient communication promises to improve the efficiency and effectiveness of health care (Wakefield, 2004)

2.4. Existing Hospital Appointment Schemes

A single application designed to manage patient appointments used descriptive arrival times. This model assumes that the specific arrival times could not be confirmed directly by date, and is limited due to the nature of the appointment schedule (Rohleder, 2002). As appointments are made in the future, the exact model of the arrival of the call will have a limited effect on the steps related to the time between the call and the time. For this reason, the challenge of developing an appointment system is to design an appropriate system based on the context of the health care system (Klassen, 2002). Therefore, a designated health care provider can arrange for the patient to have an appropriate appointment. Klassen (2004) developed an alternative patient management approach that uses multiple schedule appointments at multiple time points. Patients can call at any set time but when the time is up, they should reschedule appointments. In addition, the various combinations of multiple appointments and double bookings are evaluated and recommended for different uses depending on the area of health care because the variability of the appointment application has little impact on the performance of the appointment system, especially to maintain acceptable performance, unless the system has too full options. (Rohleder, 2004). A lot of research on patient appointments has found that there are rules or policies for scheduling appointments such as not planning for more than 20 or 30 clients and the best practice is to put two patients first and distribute all the others consistently over a long period of time, based on intermediate service times (Klassen, 2004). Alternatively, a patient can call an appointment without knowledge of the type of appointment number and line number and the patient does not know whether the appointment is flexible or not. Sometimes the exact time of each patient is unknown but sometimes this is not known (Rohleder, 2004). Another system

developed by Mustafa, (2004) allows a registered patient, with a username and password, to access and check a doctor's alphabetical list and to select a doctor by contact by email and profile is also provided. The patient can also check the active physician calendar to find his or her active and inactive date to make an appointment. If the patient chooses, look at the calendar the patient can then select any valid day in any month to make an appointment (Mustafa, 2004). Thereafter, the patient will receive an email from the system to confirm the appointment period or to inform the patient that the selected time has already been taken by another patient or blocked by the doctor. Typically, a patient appointment system provides all the decisions and strengths of patients, such as choosing a doctor, choosing an appointment, and allowing them to access the health care system day or night and schedule their appointments online, without wasting time holding the nurse or having long calls. Wijewickrama and Takakuwa (2005) prefer that the working time for health care (fixed time) is from 8:30 am to 5:30 pm on weekdays. Throughout this time, four types of patients arrived to find time to consult with patients selected for the health care facility, patients appointed on the same day (admission), patients coming for screening and new patients (Wijewickrama, 2005). Suspended patients are considered earlier than those who travel to consult. Therefore, these final patients have to wait a long time in the waiting room to meet with the doctor even if the consultation period is only a few minutes (Takakuwa, 2005). Porta-Sales et al. (2005) developed another program. The main idea of the program is to communicate, evaluate and schedule an appointment with the health care facility starting with a professional nurse and a patient who begins contacting the health care facility using a telephone. In addition, a health care facility can be accessed in a variety of locations. So there should be PC resources and PC consultations to reach out to different sources, in some hospitals, to general practitioners, or even to the patients themselves. Porta-Sales et al. (2005) studied 534 patients for more than one year. After the first visit, 195 patients did not return for the second scheduled appointment and 203 patients went on for the third scheduled visit. The main reason cited for scheduled visits was admission to health care; the median end time between the first and second visits was 21 days, between the second and third days it was 27.5 days and between the first and third visits it was 48 days. Comparison of patients, who did not attend three consecutive visits with newcomers, showed that the first was (at the first visit) a lower functional status. Su et al. (2003) studied at a private hospital with multiple clinics. At each clinic, the average patient load rate is 20 in the consultation phase (morning or afternoon) and the health care system uses both patient appointment and patient enrollment model. The system allows patients to have their own doctor of choice to consult with the registrar (Shih, 2003). The management appointment system studied by Su and Shih, (2003) is based on the first 20 reserved for scheduled patients, after which, only seven are provided with planning. Unusual numbers after 20 left to enter. The arrival time of the first patient is considered to be the same as the start time of the clinic. Scheduled patients were assigned based on 3 main periods and were informed of their scheduled arrival times (Su, 2003). If a scheduled patient does not appear on time, the next available patient receives immediate consultation. The management philosophy of service management here is based on "first impressions" to limit



CHAPTER 3 METHODOLOGY

3.1. Methodology

> Waterfall Model

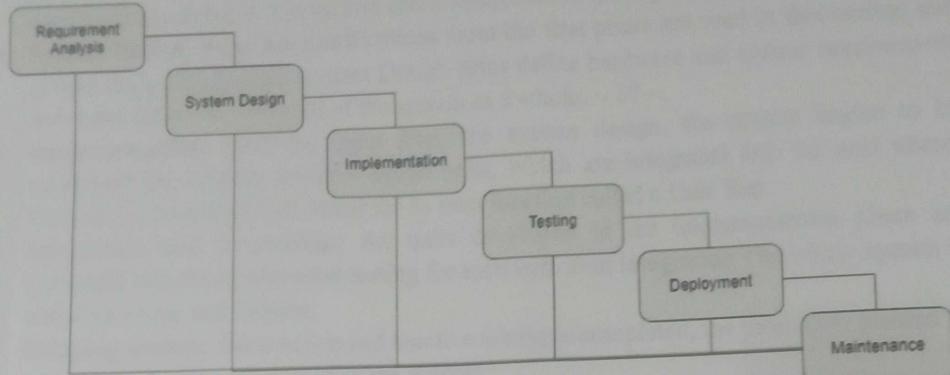


Fig. 3.1. Methodology

3.2. Justification of Methodology

Every software developed is different and requires an appropriate SDLC approach to be followed supporting the interior and external factors. Some situations where the utilization of Waterfall model is most appropriate are:

Requirements are already documented, clear and glued .

- 1. Product definition is stable.
- Technology is known and isn't dynamic.
- The project is brief .
- Simple and straightforward to know and use
- Easy to manage thanks to the rigidity of the model . each phase has specific deliverables and a review process.

- Phases are processed and completed one at a time.
- Easy to rearrange tasks.

3.3. Description of Methodology

The next sections in the Waterfall model are:

- **Collection and Analysis Requirements:** All potential system requirements to be developed are dialed in this section and documented in the requirements document.
- **System Design:** Required specifications from the first phase are read in this section and system design is adjusted. System Design helps define hardware and system requirements and helps define the structure of the system as a whole. ~ 17 ~
- **Implementation:** With the input from the system design, the system begins to be developed into smaller systems called units, which are integrated into the next phase. Each unit is developed and tested for its own function called a Unit Test.
- **Integration and Evaluation:** All units developed in the implementation phase are integrated into the system after testing for each unit. Post integration The whole system is tested for errors and failures.
- **Shipping system:** Once active and inactive testing is completed, the product is planted in the customer's area or released to the market.
- **Maintenance:** There are some problems from the client area. To fix those problems the pegs are released. And to improve the product some better versions are released. Care is taken to bring about these changes in the customer environment.

All of these stages descend into each other as progress appears to flow slowly downward (like a waterfall) in stages. The next phase begins only after a defined set of goals has been reached in the previous phase and signed, hence the name "Waterfall Model". In this example the sections do not overlap.

3.4. Implementation of Rating and Recommendation

Rating and Recommendation help patient to provide their feedback to doctor in the form of rating. Patient can provide rating to a doctor for each booking. Rating given by patient helps other patient to find best doctor for their illness as it recommend doctor with highest rating in that category.

Patient rating page

```
<?php
    include('config.php');
    if(isset($_REQUEST['id'])) {
        $id=$_REQUEST['id']
    }
    else {
        echo "Failure";
    }
</?>
<script type="text/javascript">
    var b_id = '<?>$id';
    function showDoctorData(url) {
        var xhttp = new XMLHttpRequest();
        xhttp.onreadystatechange = function () {
            if (this.readyState == 4 && this.status == 200)
            {
                document.getElementById("doctor_list").innerHTML = this.responseText;
            }
        };
        xhttp.open("POST", url, true);
        var para = "patient_id=" + b_id;
        xhttp.send(para);
    }
    function mouseOverRating(doctorId, rating) {
        resetRatingStars(doctorId);
        for (var i = 1; i <= rating; i++)
        {
            var ratingId = doctorId + "_" + i;
            document.getElementById(ratingId).style.color = "#ff5e00";
        }
    }
    function resetRatingStars(doctorId) {
        for (var i = 1; i <= 5; i++)
        {
            var ratingId = doctorId + "_" + i;
            document.getElementById(ratingId).style.color = "#9E9E9E";
        }
    }
    function mouseOutRating(doctorId, patientRating) {
        var ratingId;
        if(patientRating != 0)
        {
            for (var i = 1; i <= patientRating; i++)
            {
                ratingId = doctorId + "_" + i;
                document.getElementById(ratingId).style.color = "#ff5e00";
            }
        }
        if(patientRating <= 5)
        {
            for (var i = (patientRating+1); i <= 5; i++)
            {
                ratingId = doctorId + "_" + i;
                document.getElementById(ratingId).style.color = "#9E9E9E";
            }
        }
    }
}

function addRating (doctorId, ratingValue) {
    var xhttp = new XMLHttpRequest();

    xhttp.onreadystatechange = function ()
    {
        if (this.readyState == 4 && this.status == 200)
        {
            showDoctorData(getRatingData.php?id=");

            if(this.responseText != "success")
            {
                alert(this.responseText);
            }
        }
    };

    xhttp.open("POST", "insertRating.php?id=", true);
    xhttp.setRequestHeader("Content-type", "application/x-www-form-urlencoded");
    var parameters = "index=" + ratingValue + "doctor_id=" + doctorId + "patient_id=" + b_id;
    xhttp.send(parameters);
}
</script>
```

Getting Rating Data

```
<?php
require_once 'config.php';
require_once 'functions.php';

// Note the user id is hardcoded.
// You can integrate your authentication code here to get the logged in user id

$patientId= 0;

if (isset($_POST['patient_id'])) {
    $patientId= $_POST['patient_id'];
}

$query = "SELECT * FROM doctor ORDER BY doc_id DESC";
$result = mysqli_query($conn, $query);

$outputString = "";

foreach ($result as $row) {
    $patientRating = patientRating($patientId, $row['doc_id'], $conn);
    $totalRating = totalRating($row['id'], $conn);
    $outputString .= '
        <div class="row-item">
            <div class="row-title">' . $row['name'] . '</div> <div class="response" id="response-' . $row['doc_id'] . '"></div>
            <ul class="list-inline" onMouseLeave="mouseOutRating(' . $row['doc_id'] . ',' . $patientRating . ')";>';

    for ($count = 1; $count <= 5; $count++) {
        $starRatingId = $row['doc_id'] . '_' . $count;

        if ($count <= $patientRating) {
            $outputString .= '<li value=' . $count . ' id=' . $starRatingId . ' class="star selected">&#9733;</li>';
        } else {
            $outputString .= '<li value=' . $count . ' id=' . $starRatingId . ' class="star" onclick="addRating(' . $row['doc_id'] . ',' . $count . ')";>&#9733;</li>';
        }
    } // endFor

    $outputString .= '
</ul>

<p class="review-note">Total Reviews: ' . $totalRating . '</p>
<p class="text-address">' . $row['address'] . '</p>
</div>';
}

echo $outputString;
?>
```

Insert Rating Data

```
<?php
require_once ('config.php');
// Here the user id is hardcoded.
// You can integrate your authentication code here to get the logged in user id

$patientId = 0;

if (isset($_POST["index"], $_POST["doctor_id"])) {
    $doctorId = $_POST["doctor_id"];
    $rating = $_POST["index"];

    $checkIfExistQuery = "select * from doc_rating where booking_id = " . $patientId . " and doctor_id = " .
        $doctorId . "";
    if ($result = mysqli_query($conn, $checkIfExistQuery)) {
        $rowcount = mysqli_num_rows($result);
    }

    if ($rowcount == 0) {
        $insertQuery = "INSERT INTO doc_rating(booking_id, doctor_id, rating) VALUES (" . $patientId . "," .
            $doctorId . "," . $rating . ")";
        $result = mysqli_query($conn, $insertQuery);
        echo "success";
    }
    else {
        echo "Already Voted!";
    }
}
```

Recommendation

```
<?php
    include('../config.php');

    $sql = " SELECT * FROM doctor, doc_rating WHERE doctor.doc_id=doc_rating.doctor_id,
doctor.expertise = ". $_POST['expertise']."' AND ORDER BY doc_rating.rating DESC ";
    $result = mysqli_query($conn,$sql);
    $count = mysqli_num_rows($result);

    if($count>=1){
        echo "<table border='1' align='center' cellpadding='3'>
<tr>
<th>SL.</th>
<th>Name</th>
<th>Address</th>
<th>Mobile</th>
<th>Email</th>
<th>Expertise in</th>
<th>Rating</th>
<th>Fee</th>
<th>Book</th>
</tr>";
        while($row=mysqli_fetch_array($result)){
            echo "<tr>";
            echo "<td>". $row['doc_id']. "</td>";
            echo "<td>". $row['name']. "</td>";
            echo "<td>". $row['address']. "</td>";
            echo "<td>". $row['contact']. "</td>";
            echo "<td>". $row['email']. "</td>";
            echo "<td>". $row['expertise']. "</td>";
            echo "<td>". $row['rating']. "/5</td>";
            echo "<td>". $row['fee']. "</td>";
        }
        <td><a href="booking.php?doc_id=<?php echo $row['doc_id'] ?>">Book</a></td>;
    }
    echo "</table>";
}
else{
    print "<p align='center'>Sorry, No match found for your search result..!!!</p>";
}

?>
```

CHAPTER 4

ANALYSIS, DESIGN AND DEVELOPMENT

4.1. Introduction

The chapter describes the system study, analysis, design strengths and weaknesses of the current system, Contest level diagrams, Entity Relationship Diagram, Architectural design.

4.2. System Study

The research was conducted at the Hospital, Doctors and Hospital the main purpose of the study was to find out how the process of recording patient information was done. The current system for Patient, Physician and Hospital are complete manuals. When a patient requests all written information from appointment then the system is very lazy and very skeptical of actual information, doctor's availability and timely maintenance of the doctor's appointment process.

4.3. System Analysis

During the system study phase, requirements of Online Doctor Appointment System (ODAS) were categorized into user requirements, system and hardware requirements.

4.3.1. Existion Online Doctor Appointment Systems

See the book reviews, reviews, interviews and questionnaires as described in Chapter 3 it should be noted that at the Hospital the medical staff have been able to analyze the existing programs as discussed below. The current system was written on separate sheets of paper and passed on to different departments, the errors of the people were at risk as they were based on paper and the retrieval of files was time consuming as they had to find the patient in person some of which were lost. obtaining such information was difficult. According to statistics taken 90% of users were dissatisfied with the reason for the unsafe system about safety and maintenance as they preferred injuries such as loss of important information, worn paper, lire leaks, speed. of recording and retrieval of patient information was standard but 10% was correct due to the reason the system could be used for paper work for future use. Users recommend that the proposed system be user-friendly, multi-tasking to manage the number of users on the go, may generate feedback when a request is sent and the use of passwords that may prevent unauthorized access to unauthorized users of the system. Content diagrams, data flow diagrams and the Entity Relationship Diagram (ERD) where it is used in system analysis and design.

4.3.2. Requirements Specifications

After analyzing the data collected, we created a number of requirements namely user requirement, software system hardware platform. These are grouped as user requirements, functional, non-functional and programs.

4.3.3. User Requirement

During the data collection, we investigated and found out how the current system works, not only that but also tried to figure out what problems are being addressed and how they can best be resolved. Users have defined some of the basic system requirements including Patient Search, Patient Registration, Record Review, Medical Information Record, view physician access record and view all types of reports.

4.3.4. Functional and Non Functional Requirements

Next up is the desired performance of the new system. Accepting referral in the form of immature patients; perform a financial analysis to verify the users of the system. And non-applicable requirements include the following The system should ensure the authentication of every user input should be notified in case of errors found on the site, the system should allow for expansion space.

4.4. System Design

After the data was translated, tables were drawn and the data process was determined to guide the researcher to the project implementation phase. Tools, used in this performance section, where mainly Tables, Data Flow Drawings and Business Relationship Drawings. The design ensures that it only allows authorized users to access system information.

4.4.1. Logical Model

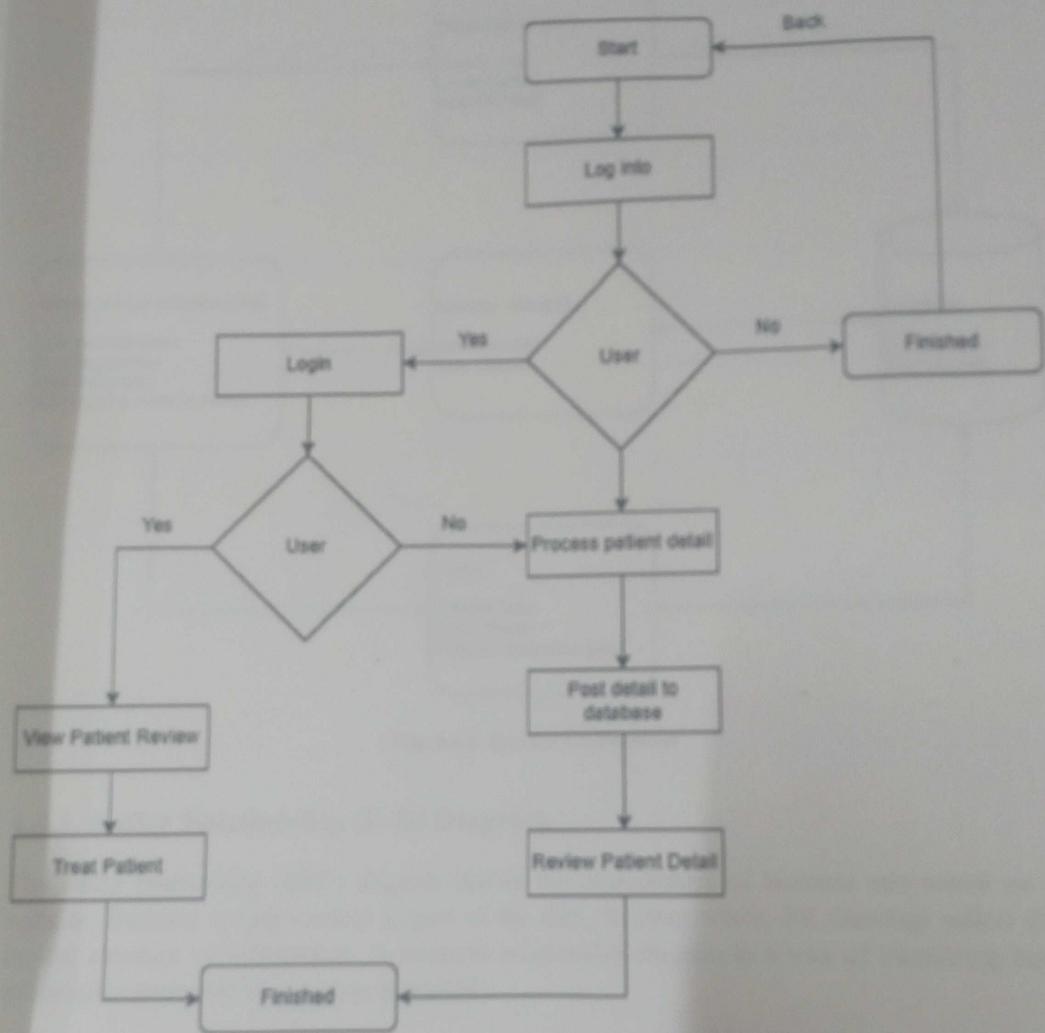


Fig: 4.4.1. Logical Model

4.4.2. System Architecture

After the data was translated, tables were drawn and the data process was determined to guide the researcher to the project implementation phase. Tools, used in this performance section, where mainly Tables, Data Flow Drawings and Business Relationship Drawings. The design ensures that it only allows authorized users to access system information.

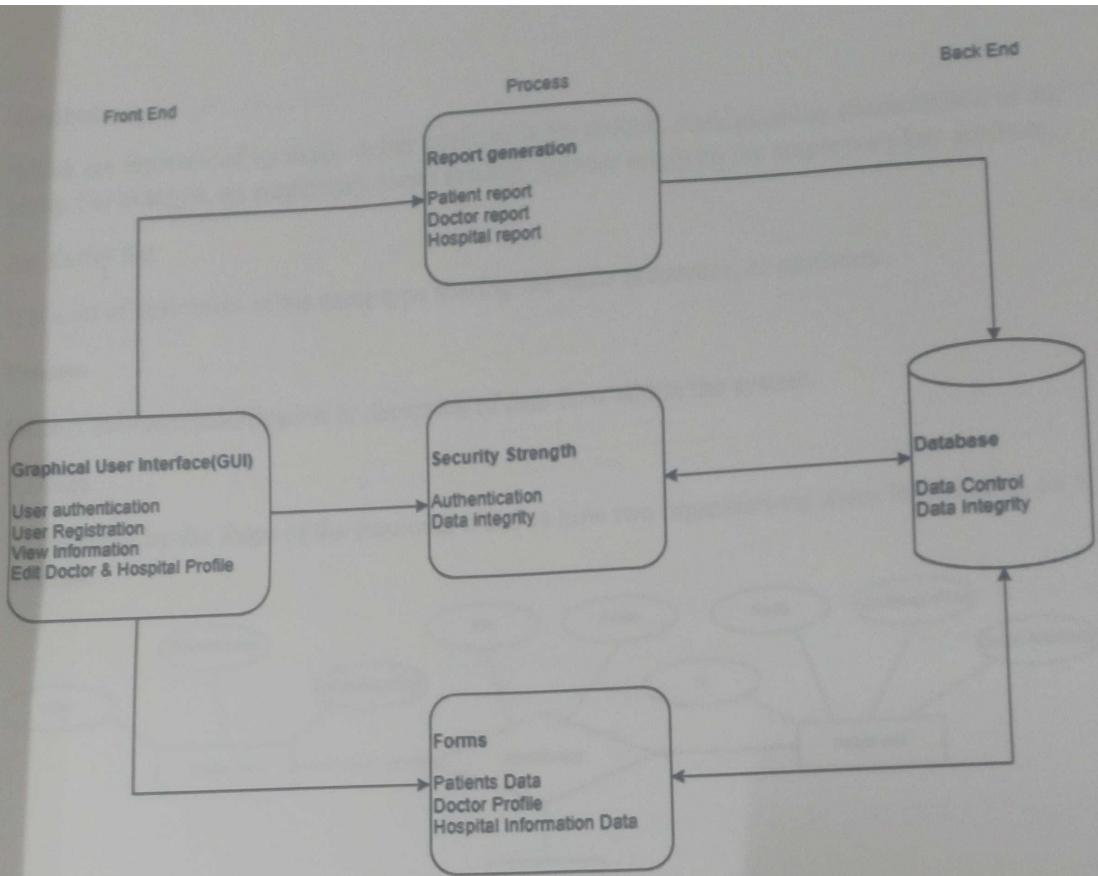


Fig: 4.4.2. System Architecture

4.4.3. Entity Relationship (E-R) Diagram

The entity relationship (ERD) diagram shows the relationships of business sets stored on a website. Business in this context is part of the data. In other words, ER drawings reflect the logical structure of information. A business relationship diagram is a way of visualizing how information generated by a system is related.

Entity

Representing the rectangle. A business is an object or a concept that exists in the real world. It covers all those things about what data is collected. A weak entity is an entity that should be defined as a foreign key relationship with another entity as it cannot be identified separately by its own characteristics.

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Attributes

Which are represented by ovals. A key attribute is the unique, distinguishing characteristic of the entity. For example, an employee's social security number might be the employee's key attribute.

An Entity Set

It is a set of businesses of the same type sharing the same properties, or attributes.

Process

Process indicates modification or deletion of data flow within the system.

Actions

Represented by the shape of the diamond, it shows how two organizations share information on a website.

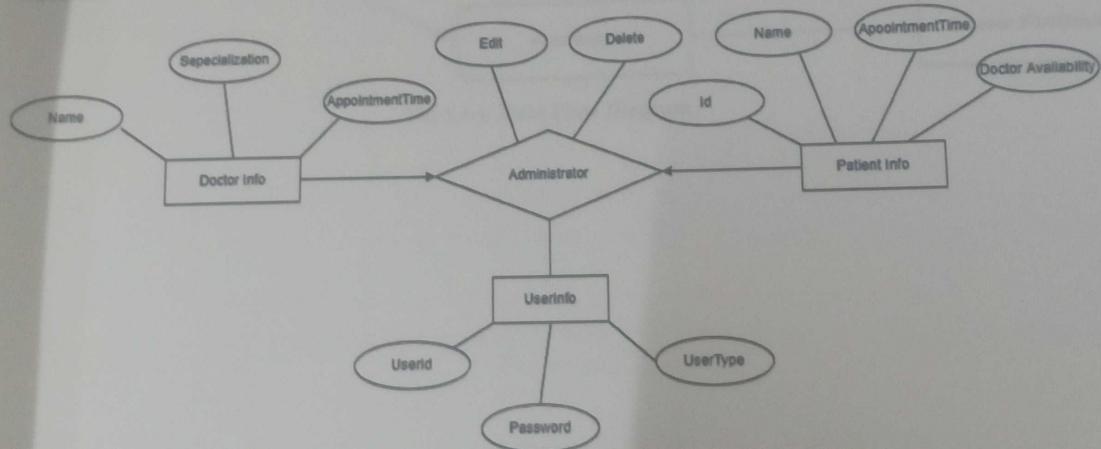


Fig 4.4.3. Entity Relationship Diagram

4.4.4. Data Flow Diagram

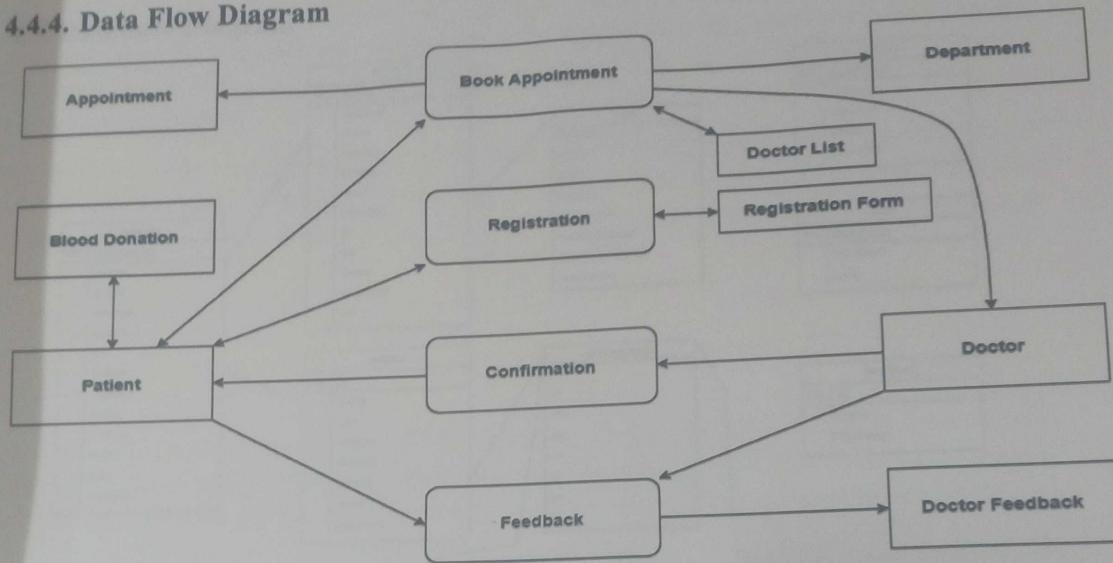


Fig 4.4.4. Data Flow Diagram

4.5. Database Diagram

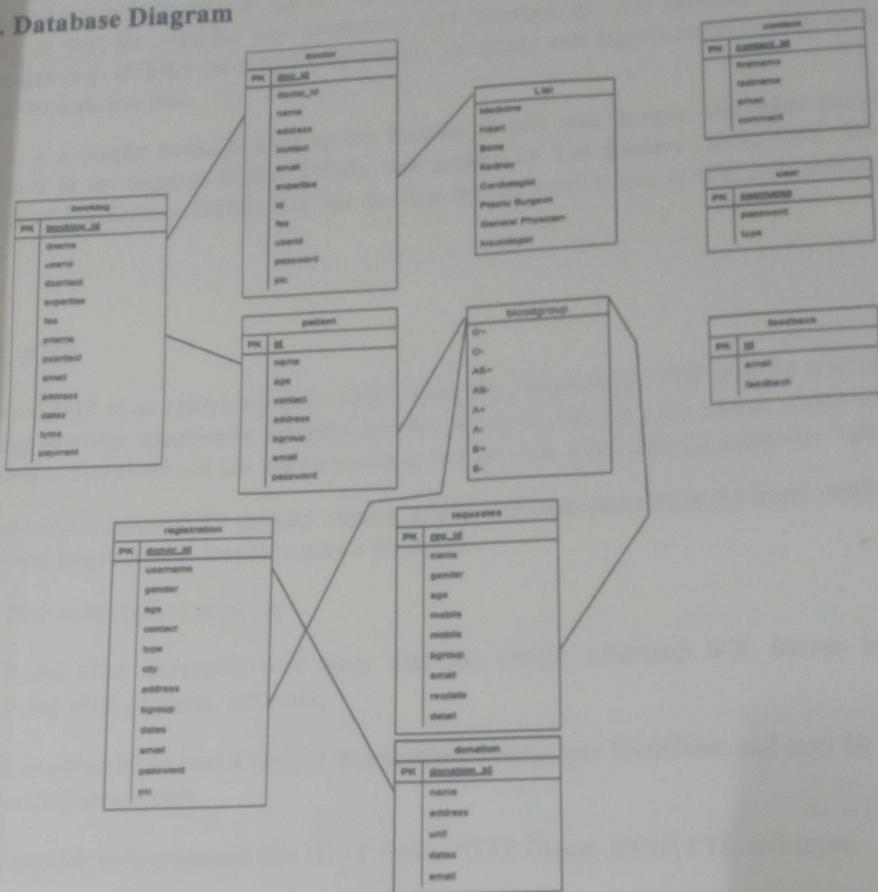


Fig 4.5. Database Diagram

4.6. System Development

System development we are used the tools HTML, PHP, CSS, JavaScript, MySQL, Xampp.

4.6.1. HTML

HTML stands for Markup HyperText Language. It is used to design web pages using tag language. HTML is a combination of Hypertext and Markup languages. Hypertext defines a link between web pages. Marking language is used to describe a text document within a tag that

describes the structure of web pages. This language is used to interpret text (to make computer notes) so that the machine can understand and translate the text correctly. Many tagging languages (e.g. HTML) are readable by people. Language uses tags to describe what deception should be done in a text.

HTML is a simple language used by the browser to edit text, images, and other content, to display it in the required format. HTML was created by Tim Berners-Lee in 1991. The first version of HTML was HTML 1.0, but the first regular version was HTML 2.0, published in 1999.

4.6.2. PHP

The word PHP is an abbreviation for PHP: Hypertext Preprocessor. PHP may be a server-side scripting language specifically designed for web development. It's open source which suggests it's liberal to download and use. It's very easy to read and use. Files with the extension ".php".

Rasmus Lerdorf inspired the primary version of PHP and took part within the latest versions. It's a translated language and doesn't require a facilitator.

- PHP code applied to server.
- It is often integrated with many data like Oracle, Microsoft SQL Server, MySQL, PostgreSQL, Sybase, Informix.
- It is powerful to host a content management system like WordPress and may be want to control user access.
- Supports basic protocols like HTTP Basic, HTTP Digest, IMAP, FTP, and more.
- Websites like www.facebook.com, www.yahoo.com also are built on PHP.
- One of the most reasons behind are often "> this is often that PHP can be easily embedded in HTML files and HTML codes also can be written to a PHP file.
- The thing that distinguishes PHP from client-side language like HTML is that, PHP codes are used on the server while HTML codes are rendered directly within the browser. PHP codes are first applied to the server and therefore the result's returned to the browser.
- Only the client or browser knows the result returned after creating PHP text on the server and not the particular PHP codes present within the PHP file. Also, PHP files can support other client-written scripts like CSS and JavaScript.

Some features of PHP are as follows.

- Simple and fast
- It works well
- It is safe
- It depends on the circumstances
- Cross-platform, works with large applications like Windows.

4.6.3. CSS

Cascading Style Sheets, also known as CSS, is a simple language designed to simplify the process of making web pages look good. CSS lets you apply styles to web pages. Most importantly, CSS allows you to do this without the HTML that forms each web page. CSS is easy to read and understand, but it offers powerful control over the presentation of HTML text.

WHY CSS?

- CSS time saving: You can write CSS once and reuse the same sheet on multiple HTML pages.
- Easy Care: Making a change in the world just changes the style, and all features on all web pages will be automatically updated.
- Search Engines: CSS is considered a pure code, meaning search engines will not have to struggle to "read" its content.
- Higher styles than HTML: CSS has a much wider range of attributes than HTML, so you can give a better look to your HTML page when compared to HTML attributes.
- Offline browsing: CSS can keep web applications locally with the help of offline repository. By using this we can view offline websites.

4.6.4. JavaScript

JavaScript is a simple, compliant language, and the written language is translated. Well-known for web design, many non-browser sites also use it. JavaScript can be used for client side development and Server-side development. JavaScript contains a standard library of objects, such as Array, Date, and Mathematics, as well as a basic set of language objects such as operators, control structures, and statements.

- **Client-side:** Provides browser control tools and its Document Object Model (DOM). Such as when client side extensions allow the app to place features in HTML form and respond to user events such as mouse clicks, form input, and page navigation. Useful client side libraries are AngularJS, ReactJS, VueJS and many more.
- **Server-side:** Provides JavaScript enabled features on the server. Such as when the server side extensions allow the app to connect to the site, and provide continuity of information from one application to another application, or to create a file trick on the server. The most popular useful framework these days is node.js.

4.6.5. MySQL

MySQL server is an open source web-based management system that is a great support for web-based applications. Databases and related tables are a major part of many websites and applications as data is stored and traded on the web. Even all social networking sites especially Facebook, Twitter, and Google rely on MySQL data designed and optimized for that purpose. For all these reasons, the MySQL server becomes the default choice for web applications.

MySQL server is used for data tasks such as query, filtering, filtering, collecting, editing and merging tables. Before reading the commonly used questions, let's look at some of the benefits of MySQL.

Advantages of MySQL :

- Fast and high Performance database.
- Easy to use, store and manage.
- It is easily accessible and maintains the integrity of the website.
- It offers scalability, usability and reliability.
- Cheap hardware.
- MySQL can read simple and complex questions and write tasks.
- InnoDB is an automated and widely used storage engine.
- Provides strong index support.
- Provides SSL support for secure connections.
- Provides powerful and accurate data encryption.
- Provides Cross-platform compatibility.

- Provides reduced code duplication.

4.6.6. Xampp

XAMPP is a free and open web server that allows us to host our website on a local system. Developed by Apache friends. Contains Apache HTTP server, MariaDB Database, and translator for PHP and Perl programming languages. Supported by Windows, Linux, and macOS.

WHY DO WE USE XAMPP?

XAMPP is designed to be used as a development tool only, to allow website designers and programmers to monitor their work on their computers without internet access. XAMPP creates a platform to use our PHP and Perl scripts locally. We can post our project developed in these languages and we will be able to see your output.

COMPONENTS IN XAMPP

XAMPP contains a number of features that help it to operate and host websites locally. We'll look at some of the big parts here. So if you see XAMPP made of essentials only the first name. X stands for Cross-Platform, A stands for Apache HTTP server, M stands for details of Maria DB, the last two Ps represent PHP and Perl languages.

1. Cross Platform: - This is not a part but we can say that this is a feature of XAMPP. Which tells us that XAMPP does not depend on the platform, we can use XAMPP on any system like Windows, Linux or macOS.
2. Apache HTTP Server: - As we know Apache is a popular HTTP cross server. Used to deliver web content worldwide. It processes applications and provides web content via HTTP.
3. Maria DB website: - Originally, MySql was part of XAMPP but after version 5.5.30, Maria DB took its place. Maria DB is the only affiliate site developed by MySql. We can perform all CRUD tasks as we do with MySql.
4. PHP: - Background writing language, used to develop dynamic websites. We build websites using PHP and send it to the XAMPP server. Apache from XAMPP processes php requests translated by XAMPP translator.
5. Perl: - Perl is a combination of two advanced languages. Like PHP, Perl is also used to develop dynamic websites. Perl is listed in C.
6. phpMyAdmin: - This is a dashboard for doing Maria DB tasks. PhpMyAdmin provides GUI data management. We can create a Table or Websites using the GUI and queries. We can also do CRUD work using this GUI and queries.

7. XAMPP Control Panel: - The XAMPP control panel gives us the option to use different components of XAMPP.
8. Filezilla: - Filezilla is a File Transfer Protocol Server, which allows us to manage file operations.

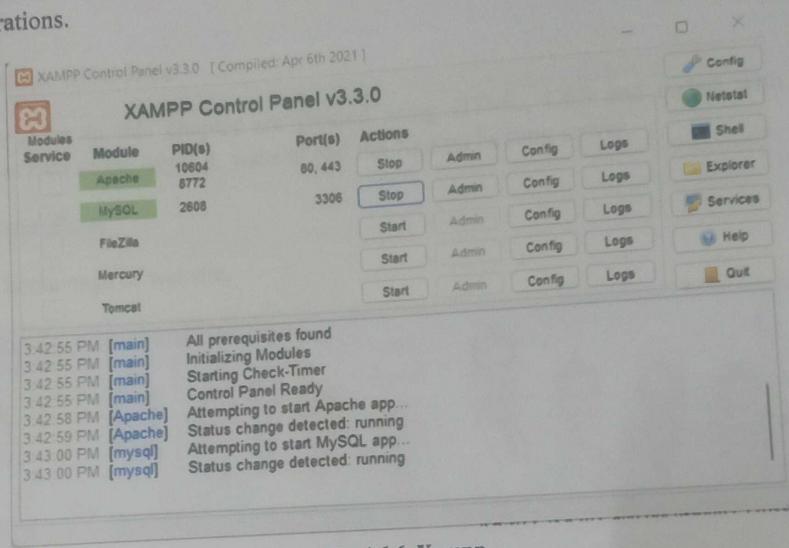


Fig 4.6.6. Xampp

CHAPTER 5

RESULT

5.1. System Interface

All System links in this chapter are created using HTML, CSS and coded with PHP and JavaScript as well as the MySQL website and the Xampp hosting server.

5.2. Home Page

This is the home page of website.



Fig 5.2. Home Page

5.2.1. Medical College

In this page user can find about different medical colleges.

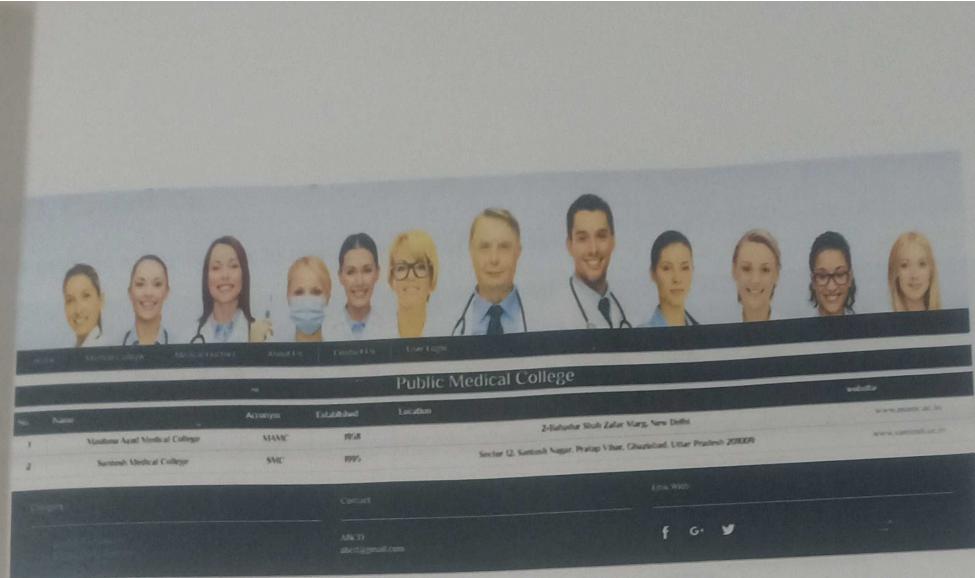


Fig 5.2.1. Medical College

5.2.2. Medical Doctors

This page shows all the registered doctors and their qualification and contact details.

The screenshot shows a page titled 'The Doctors' with a banner at the top featuring twelve headshots of medical professionals. Below the banner is a navigation bar with links: Home, Medical College, Medical Doctor, About Us, Contact Us, User Login. The main content area displays a doctor's profile:

Dr. Sanjeev Gupta

Qualifications:
MBBS, MD - Medicine

Address:

Call for Appointment:

Get Appointment:

At the bottom of the page are 'Summary' and 'Contact' links.

Fig 5.2.2. Medical Doctors

5.2.3. Contact Us

This provide a way to user to contact admin of webpage.

The screenshot shows a contact form titled "Your Message". It includes fields for First Name, Last Name, Email, and a large area for "Your Comment". A "Send Us" button is at the bottom right. The background features a banner with several portraits of medical professionals.

Contact Us

Your Message

First Name:

Last Name:

Email:

Your Comment:

Send Us

Fig 5.2.3. Contact Us

5.2.4. User Login

This page have option for both patient and doctor to login. By selecting their login page.

The screenshot shows a login interface for a "Doctor Appointment System". It features a banner with portraits of medical staff. Below the banner, there are two login options: "Patient login" and "Doctor login". The "User Login" button is located above these options. At the bottom, there are links for "Category", "Contact", and "FAQ/WIN". Social media icons for Facebook, Google+, and Twitter are also present.

Doctor Appointment System

User Login

Patient login

Doctor login

User Login

Category

Contact

FAQ/WIN

abcd@gmail.com

f G+ t

Fig 5.2.4. User Login

5.3. Patient

5.3.1. Patient Login

This page allow patient to create a new account by clicking on Sign Up and for existing user to enter their email id and password to login.

The screenshot shows a top navigation bar with several user profile icons. Below this is a dark header bar with links: 'Home', 'Medical College', 'Medical Doctors', 'About Us', 'Contact Us', and 'User Login'. The main content area is titled 'Patient Login' and contains fields for 'email' and 'password', with a 'Login' button below them. A link 'Not a member yet? Sign Up' is also present. At the bottom of the page, there are links for 'Category', 'Contact', 'Link With', and social media icons for Facebook, Google+, and Twitter.

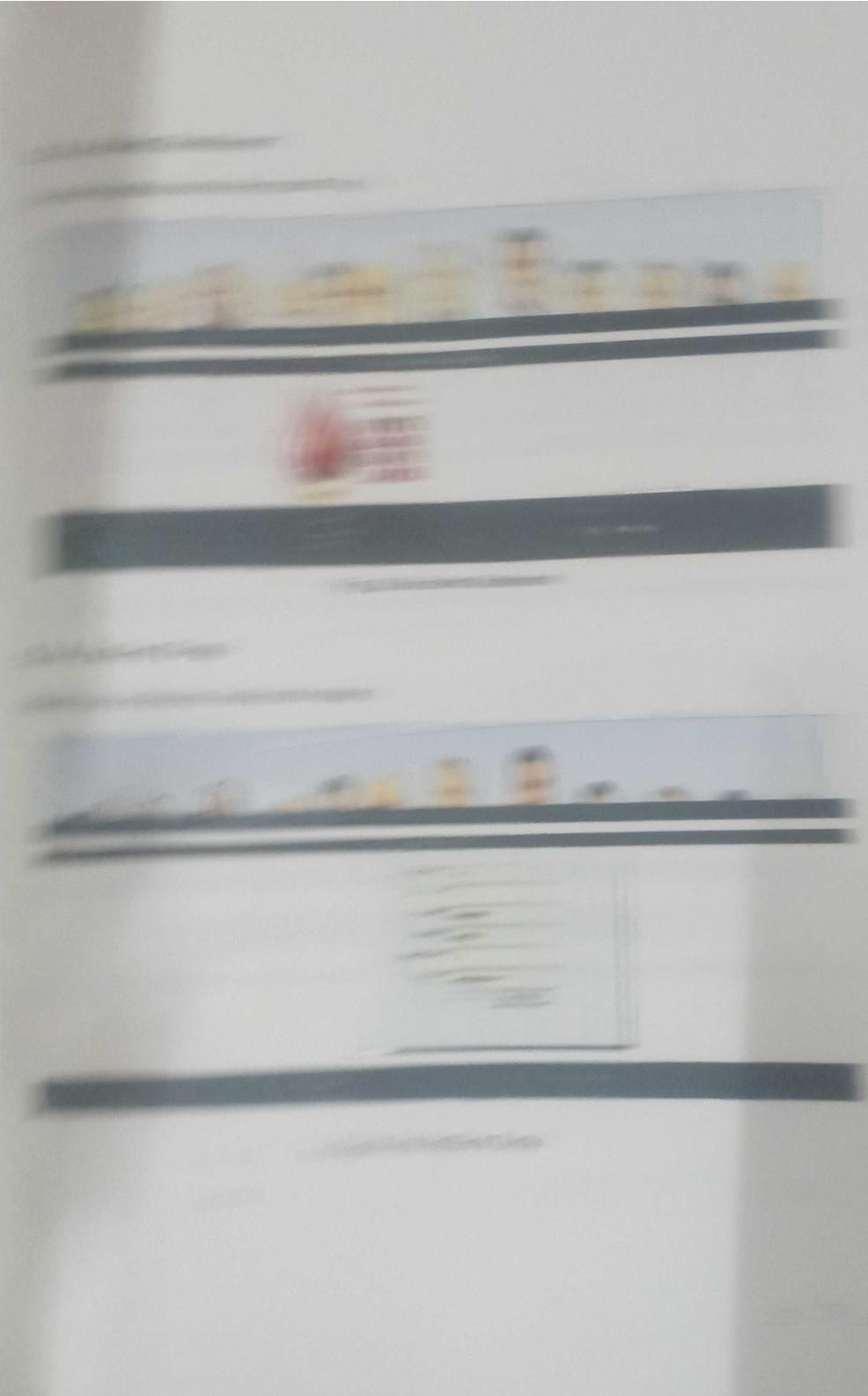
Fig 5.3.1. Patient Login

5.3.2. Patient Registration

Patient can create their new account by entering their personal information, email and password.

The screenshot shows a top navigation bar with links: 'Home', 'Medical College', 'Medical Doctors', 'About Us', 'Contact Us', and 'User Login'. The main content area is titled 'Patient Registration' and contains a form with fields for: 'Your Name' (with placeholder 'Full name'), 'Age' (with placeholder 'age'), 'Mobile' (with placeholder 'contact no.'), 'Address' (with placeholder 'address'), 'Blood Group' (a dropdown menu with placeholder '-select-'), 'Email' (with placeholder 'email'), and 'Password' (with placeholder 'password'). A 'Register' button is at the bottom of the form. At the bottom of the page, there are links for 'Category', 'Contact', 'Link With', and social media icons for Facebook, Google+, and Twitter. There is also an 'ARCD' logo and an email address 'arcd@gmail.com'.

Fig 5.3.2. Patient Registration



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5.3.5. Search Doctor

Here patient can search doctor as per expertise and book appointment.

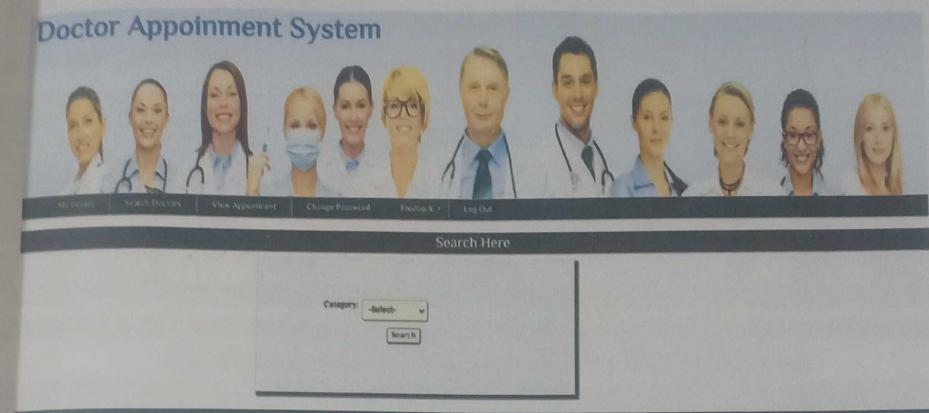


Fig 5.3.5.1. Search Doctor

Doctor Appointment System

SL.	Name	Address	Mobile	Email	Expertise In	Rating	Fee	Book
1	Dr. Surjeet Gupta	Ashok Khanda, Ghaziabad	85267328976	surjeetgupta@gmail.com	Medicine	4.5%	500	

Fig 5.3.5.2. Search Doctor Result

5.3.6. Patient View Appointment

In this page patient can view his/her appointment with doctor.



Fig. 5.3.6. Patient View Appointment

5.3.7. Patient Rating Doctor

Patient give rating to doctor in this page.

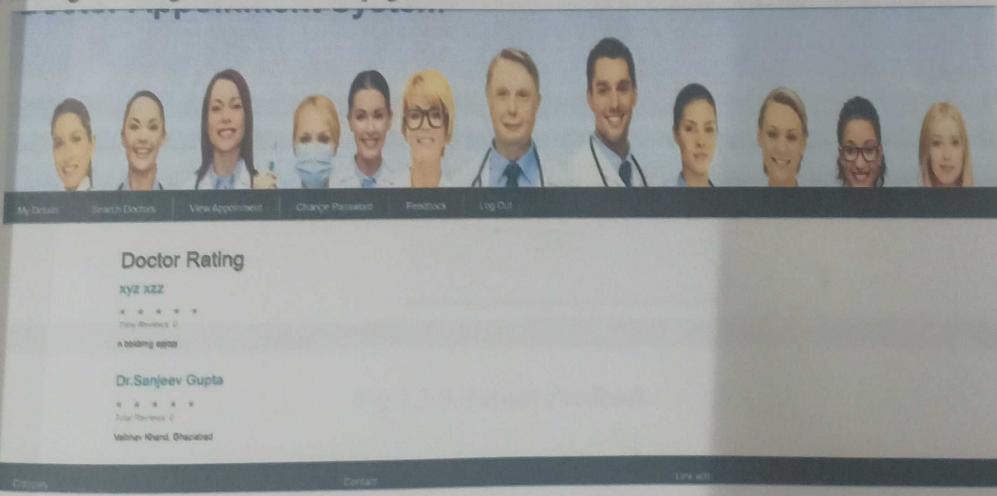


Fig. 5.3.7. Patient Rating Doctor

5.3.8. Patient Change Password

In this page patient can change password.

The screenshot shows the 'Doctor Appointment System' homepage with a navigation bar at the top. Below the navigation bar, there is a row of ten doctor portraits. A modal window titled 'Change Password' is displayed in the center. The modal contains three input fields: 'Old Password' (placeholder: 'Current password'), 'New Password' (placeholder: 'New password'), and 'Confirm Password' (placeholder: 'confirm password'). Below these fields is a 'Update Password' button.

Fig 5.3.8. Patient Change Password

5.3.9. Patient Feedback

Through this page a patient can enter their feedback to admin of webpage.

The screenshot shows the 'Doctor Appointment System' homepage with a navigation bar at the top. Below the navigation bar, there is a row of ten doctor portraits. A modal window titled 'My Feedback' is displayed in the center. The modal contains a text area labeled 'Feedback' and a 'Send' button below it. At the bottom of the modal, there are links for 'Contact' and 'Link Web'.

Fig 5.3.9. Patient Feedback

J.J. Doctor Login

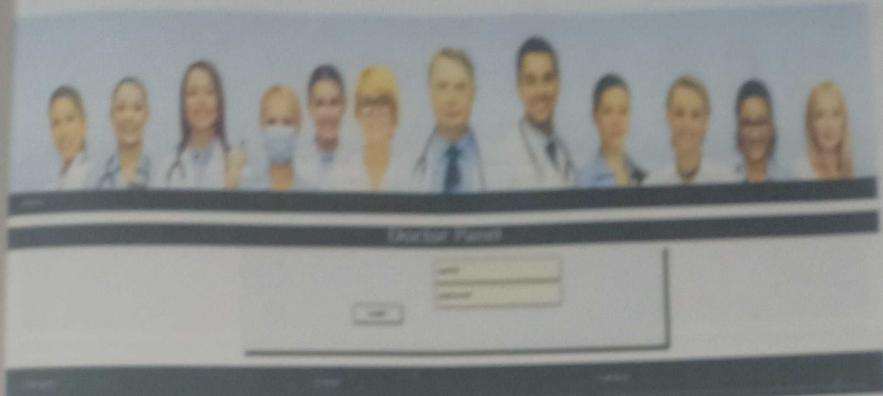
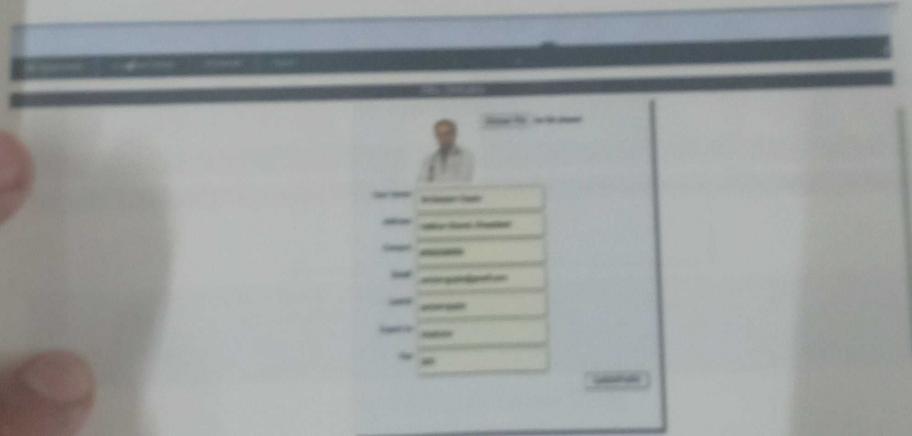


Fig 5.4.1. Doctor Login

3.4.2. Doctor Detail



5.4.3. Today Appointment

By this page doctor can view his daily patient appointment.

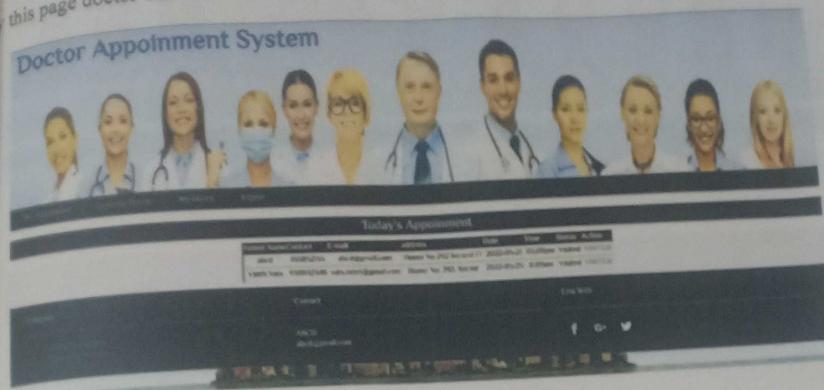


Fig 5.4.3. Today Appointment

5.4.4. Costumer Detail

Through this page doctor can get detail of his/her patient by entering booking id, phone, email of the patient.

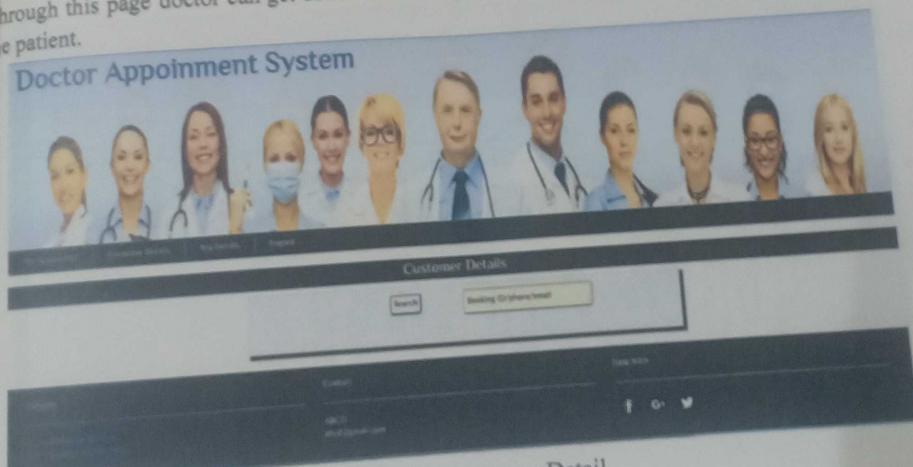


Fig 5.4.4.1. Costumer Detail



Fig 5.4.4.2. Costumer Detail Result

5.5. Admin

5.5.1 Admin Login

This page allow admin to login.

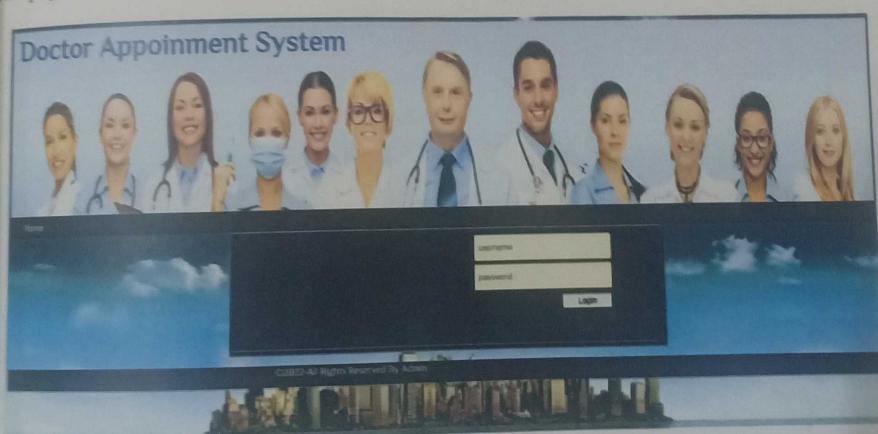


Fig 5.5.1. Admin Login

5.5.2. Admin View Doctor

It allow admin to view all the doctors and their details.



Fig 5.5.2. Admin View Doctor

5.5.3. Admin View Patient

It allow admin to view all patients and their details.



Fig 5.5.3. Admin View Patient

5.5.4. Admin View Appointment

It allow admin to view all the appointment and its detail.

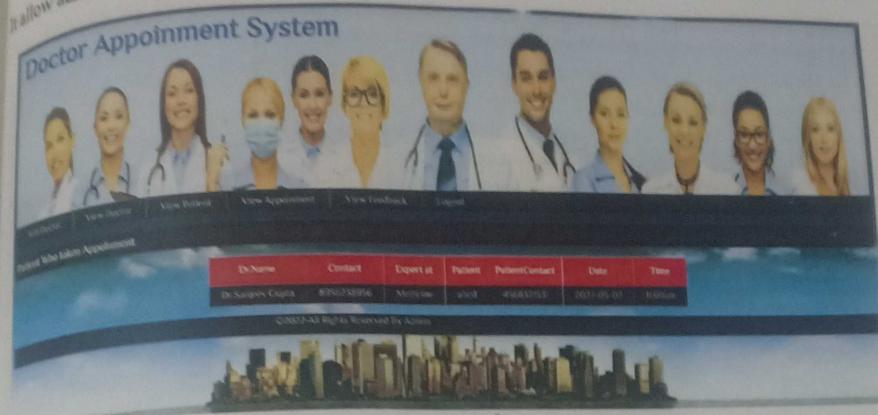


Fig 5.5.4. Admin View Appointment

5.5.5. Admin View Feedback

It allow admin to view all the feedback given by the costumers.

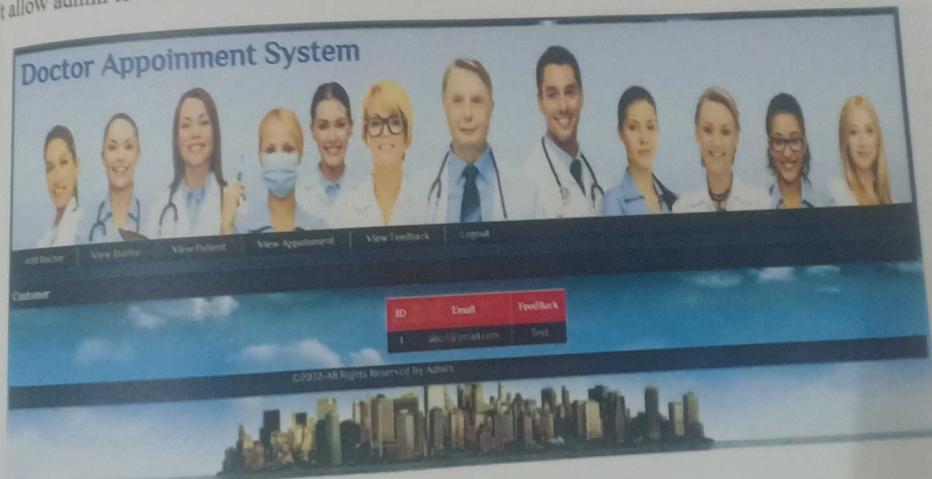
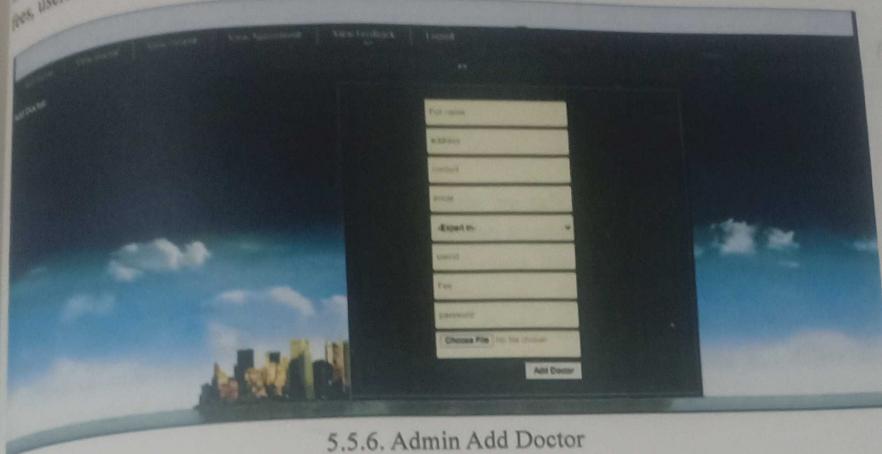


Fig 5.5.5. Admin View Feedback

5.5.6. Admin Add Doctor

In this project only admin can add new doctor by creating their profile by entering their detail, fees, username and password.



Fig

5.5.6. Admin Add Doctor

CHAPTER 6

CONCLUSION

6.1. Introduction

This Chapter describes a discussion of the system objectives stated in the previous chapters, the system limit and the conclusion.

6.2. Summary

As discussed in previous chapters the main issue we talked about was about the patient, the doctor and the hospital book. It is a matter of fact that in addition to our strategies to improve this online physician appointment system for use by Patient, Physician and Hospital so that they can manage policy information effectively and efficiently. This work has served many of the purposes mentioned in the preceding chapter. The Online Doctor Appointment System provides a number of benefits to the user and can capture data, store, view, add and delete records uploaded to cal cal and sent information to a website.

6.3. Conclusion

The main reason for the development of the Online Doctor Appointment System is to enable hospital administrators to operate in a simple, fair and timely manner. Applied IT should therefore support the core purpose of the program if it is to remain relevant in the hospital. Much remains to be done in the IT department to make the available technology a success. This may include training of hospital staff on how to enter accurate and relevant data into the system and managers in order to further update the hardware and software requirements of the system. IT and computer systems need to be kept up to date as more and more IT software is introduced in the IT market these days. The researcher agrees that the program does not cover every doctor and hospital patient. An inexpensive way to handle the whole process of a hospital patient management system.

REFERENCES

- [1]. Fernandes, J., Celniker, S.E., Lewis, E.B., Vijay Raghavan, K. (1994). Muscle development in the four-winged Drosophila and the role of the Ultrabithorax gene.
- [2]. SM Sam, N Fisal, 9th Asia-Pacific Conference on Communications (IEEE Cat. No. 03EX732) 2, 467-472
- [3]. International Journal of Computer Science & Information Technology (IJCSIT) Vol 6, No 4, August 2014 62
- [4]. Functional health status of adults with achondroplasia,Nizar N. Mahomed,Mark Spellmann,Michael J. Goldber
- [5]. David A. Harper (2003) Foundations of Entrepreneurship and Economic Development, New York: Routledge, 267 pp.
- [6]. Harper, P.R. and Gamlin H.M. (2003) Reduced Outpatient Waiting Times with Improved Appointment Scheduling: A Simulation Modelling Approach. OR spectrum, 25, 207-222.
- [7]. A. Wijewickrama and S. Takakuwa, "Simulation analysis of appointment scheduling in an outpatient department of internal medicine," Proceedings of the Winter Simulation Conference, 2005., 2005, pp. 10 pp.-, doi: 10.1109/WSC.2005.1574515.
- [8]. Dixon-Woods, M., Cavers, D., Agarwal, S. et al. Conducting a critical interpretive synthesis of the literature on access to healthcare by vulnerable groups. BMC Med Res Methodol 6, 35 (2006). <https://doi.org/10.1186/1471-2288-6-35>
- [9]. Murray, M. and Tantau, C. (2000) Same-Day Appointments: Exploding the Access Paradigm. Family Practice Management, 7, 45-50.
- [10]. Gallucci G, Swartz W, Hackerman F. Impact of the wait for an initial appointment on the rate of kept appointments at a mental health center. Psychiatr Serv. 2005 Mar;56(3):344-6. doi: 10.1176/appi.ps.56.3.344. PMID: 15746510.
- [11]. Dexter, T.J. (1999), Death in the dental chair. Anaesthesia, 54: 703-704. <https://doi.org/10.1046/j.1365-2044.1999.1013a.x>
- [12]. Klassen, Kenneth J. and Thomas Rohleder. "Demand and capacity management decisions in services: How they impact on one another." International Journal of Operations & Production Management 22 (2002): 527-548.
- [13]. Idowu, Peter & Adeosun, Olajide & Williams, Kehinde. (2014). Dependable Online Appointment Booking System for Nhis Outpatient in Nigerian Teaching Hospitals. International Journal of Computer Science and Information Technology. 6. 59-73. 10.5121/ijcsit.2014.6405.
- [14]. Gruca, Thomas S. and Wakefield, Douglas S., (2004), Hospital web sites: Promise and progress, Journal of Business Research, 57, issue 9, p. 1021-1025, <https://EconPapers.repec.org/RePEc:eee:jbrese:v:57:y:2004:i:9:p:1021-1025>.
- [15]. Klassen, & Rohleder, Thomas. (2004). Outpatient appointment scheduling with urgent clients in a dynamic, multi period environment. International Journal of Service Industry Management. 15. 167-186. 10.1108/09564230410532493.

- [16]. Josep Porta-Sales, Núria Codorniu, Xavier Gómez-Batiste, Eulalia Alburquerque, Gala Serrano-Bermúdez, Daniel Sánchez-Posadas, Xavier Pérez-Martin, Jesús González-Barboteo, Albert Tuca-Rodríguez, Patient Appointment Process, Symptom Control and Prediction of Follow-up Compliance in a Palliative Care Outpatient Clinic, *Journal of Pain and Symptom Management*, Volume 30, Issue 2, 2005, Pages 145-153, ISSN 0885-3924, <https://doi.org/10.1016/j.jpainsymman.2005.03.008>.
- [17]. Su S, Shih CL. Managing a mixed-registration-type appointment system in outpatient clinics. *Int J Med Inform.* 2003 Apr;70(1):31-40. doi: 10.1016/s1386-5056(03)00008-x. PMID: 12706180.
- [18]. <https://www.geeksforgeeks.org/html-introduction/>
- [19]. <https://www.geeksforgeeks.org/php-introduction/>
- [20]. <https://www.geeksforgeeks.org/css-introduction/>
- [21]. <https://www.geeksforgeeks.org/introduction-to-javascript/#:~:text=JavaScript%20is%20a%20lightweight%2C%20cross,well%20as%20Server%2Dside%20developments.>
- [22]. <https://www.geeksforgeeks.org/mysql-common-mysql-queries/>
- [23]. <https://codetech.in/1-introduction-to-xampp-local-server/>