

PROJECT REPORT

ONLINE DOCTOR APPOINTMENT SYSTEM



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ONLINE DOCTORS APPOINTMENT SYSTEM

Abstract / Project Overview

The **Online Doctor Appointment System** is a web-based application designed to facilitate patients in booking, managing, and reviewing doctor appointments. The system allows users to:

- Browse doctors by specialization
- Book, edit, and cancel appointments
- Submit reviews and ratings for doctors
- View appointment history and statistics

Key Features:

- **User-Friendly Interface**
Designed with simplicity and accessibility in mind, the platform features an intuitive and responsive layout that works seamlessly on desktops, tablets, and mobile devices.
- **Secure Database Integration (MySQL)**
Patient and doctor information, along with appointment details, are securely stored in a MySQL database with proper constraints and validation mechanisms.
- **Full CRUD Functionality for Appointments**
Users can perform all basic operations — **Create, Read, Update, and Delete** — related to appointments in real time.
- **Form Validation & Error Handling**
The system includes robust validation for all user inputs to ensure accuracy and prevent common errors, enhancing system reliability.
- **Admin Dashboard**
A dedicated administrative panel allows system administrators to monitor, track, and manage appointments, as well as oversee user activity.

Introduction

Background & Purpose

Traditional appointment booking methods are often manual, time-consuming, and prone to errors, requiring patients to physically visit hospitals or call reception desks to secure a consultation. These outdated processes not only result in long waiting times and scheduling conflicts but also limit accessibility for patients with urgent or remote healthcare needs. The purpose of this project is to overcome these challenges by developing an efficient and user-friendly **Online Doctor Appointment System** that allows patients to conveniently search for doctors based on specialization, view availability, and book, reschedule, or cancel appointments online. This system enhances the overall healthcare experience by minimizing wait times, improving communication between patients and doctors, and ensuring timely medical assistance through a reliable digital platform.

Tools & Technologies Used

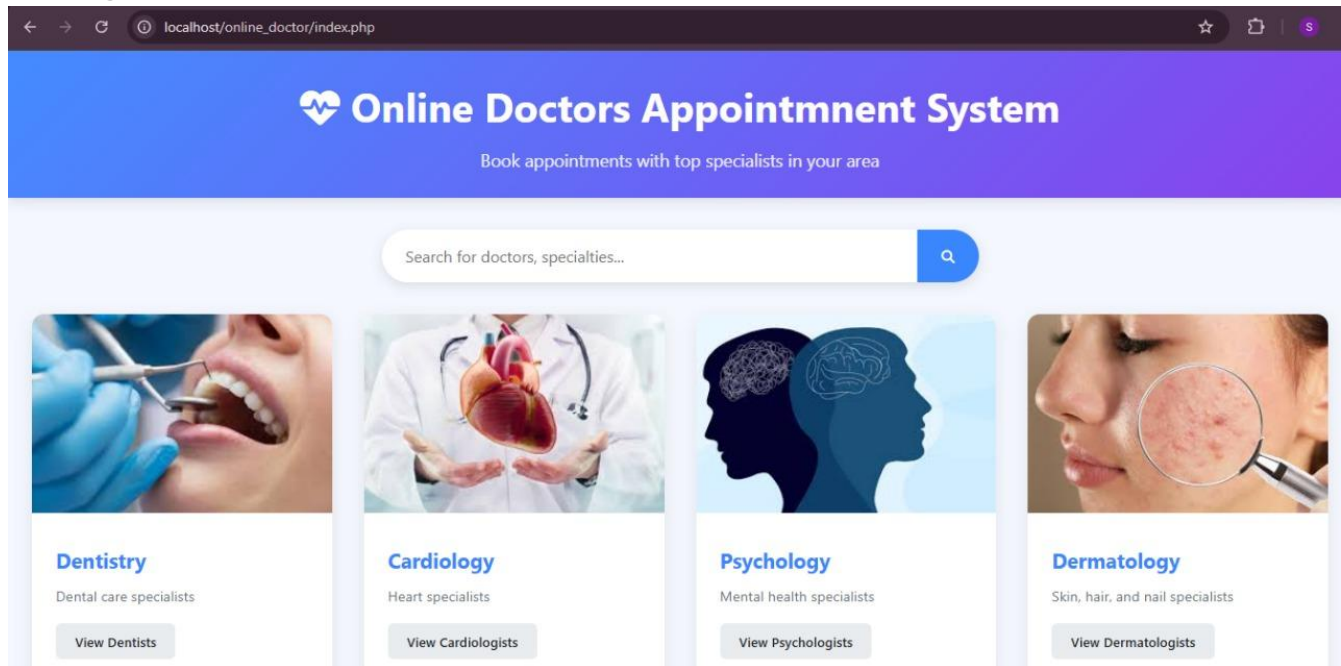
To develop this system, a combination of modern web development technologies and tools was utilized, ensuring a responsive and secure platform:

- **Frontend:** HTML, CSS, JavaScript
Used for designing the user interface and providing an interactive user experience.
- **Backend:** PHP
Responsible for server-side scripting, handling requests, and managing logic for appointment operations.
- **Database:** MySQL
Employed to securely store data related to users, doctors, and appointments with proper data handling.

- **Development Environment:** XAMPP (Apache, MySQL, PHP)
A cross-platform development tool used for running and testing the application in a local environment.

Project Screenshots

Home Page



Displays doctor specializations and search functionality.

Appointment Booking Form

Psychology

Mental health specialists

Hide Doctors

Dr. Fatima Ali

★★★★☆ (124 reviews)

City Hospital, Islamabad

0300-1234567

Mon-Fri: 9AM - 5PM

Book Now

Dr. Imran Khan

★★★★☆ (124 reviews)

City Hospital, Islamabad

Booking with Dr. Fatima Ali

Your Name

Jalal

Phone Number

03471235941

Appointment Time

10:00 AM - 11:00 AM

Medical Conditions (Optional)

Dual personality disorder

Book Appointment



Appointment Confirmed!

Your appointment has been successfully scheduled with Dr. Hina Mirza.
You'll receive a confirmation SMS shortly.

Done

Book an appointment with a selected doctor.

Appointment Management Dashboard

ID	Date/Time	Doctor	Patient	Phone	Diseases	Actions
142	9:00 AM	Dr. Ahsan Khan	Salar	03432786543	Tooth decay	<div><div>Edit</div><div>Delete</div><div>X Cancel</div></div>
144	9:00 AM	Dr. Sana Iqbal	Hiyat	03400599111	Gum disease	<div><div>Edit</div><div>Delete</div><div>X Cancel</div></div>
148	9:00 AM	Dr. Hira Qureshi	Sheru	03400009292	Acne	<div><div>Edit</div><div>Delete</div><div>X Cancel</div></div>
149	9:00 AM	Dr. Hira Qureshi	Sheru	03400009292	Acne	<div><div>Edit</div><div>Delete</div><div>X Cancel</div></div>
151	9:00 AM	Dr. Kamran Shah	Rohaam	03477594098	Eating disorders	<div><div>Edit</div><div>Delete</div><div>X Cancel</div></div>
154	9:00 AM	Dr. Sara Khan	Wajdan	03471654059	Migraines	<div><div>Edit</div><div>Delete</div><div>X Cancel</div></div>
162	9:00 AM	Dr. Samina Qureshi	Mahir	03547654824	Spinal or epidural issues	<div><div>Edit</div><div>Delete</div><div>X Cancel</div></div>
164	9:00 AM	Dr. Kamal Ahmed	Emma	03496543290	Macular degeneration	<div><div>Edit</div><div>Delete</div><div>X Cancel</div></div>
165	9:00 AM	Dr. Saeed Anwar	Zain	03897643219	Fistulas	<div><div>Edit</div><div>Delete</div><div>X Cancel</div></div>
167	9:00 AM	Dr. Bilal Qureshi	Aliyan	03471784059	Vaccination	<div><div>Edit</div><div>Delete</div><div>X Cancel</div></div>

Shows all booked appointments with edit/delete options.

Review Submission Form

★ Review a Doctor

localhost/online_doctor/index.php

View Ophthalmologists

View Specialists

Endocrinology and Metabolism

Hormonal and metabolic disorder experts

View Specialists

View Specialists

Hematology

Blood disorders

View Specialists

★ Review a Doctor

Dr. Kamran Shah

Dr. Nadia Hussain

Dr. Nadia Sohail

Dr. Omar Farid

Dr. Saeed Anwar

Dr. Samina Qureshi

Dr. Samina Qureshi

Dr. Sana Iqbal

Dr. Sana Rehman

Dr. Sara Khan

Dr. Usman Tariq

Dr. Usman Tariq

Dr. Zeeshan Ahmad

Dr. Zeeshan Ahmad

Proceed to Review

localhost/online_doctor/index.php

View Ophthalmologists

View Specialists

Endocrinology and Metabolism

Hormonal and metabolic disorder experts

View Specialists

View Specialists

Hematology

Blood disorders

View Specialists

★ Review a Doctor

Review Doctor

Reviewing: Dr. Zeeshan Ahmad

Your Name

Zumar

Rating

★★★★☆

Your Review

He listened carefully to my concerns and explained everything clearly. I felt comfortable and well cared for throughout my visit.

Submit Review



Review Submitted!

Thank you for your feedback.

Done

Allows patients to rate and review doctors

Database Design(Tables & Schema)

patients

- id (INT, Primary Key, Auto Increment)
- name (VARCHAR)
- phone (VARCHAR)
- diseases (TEXT)

doctors

- id (INT, Primary Key)
- name (VARCHAR)
- specialization (VARCHAR)

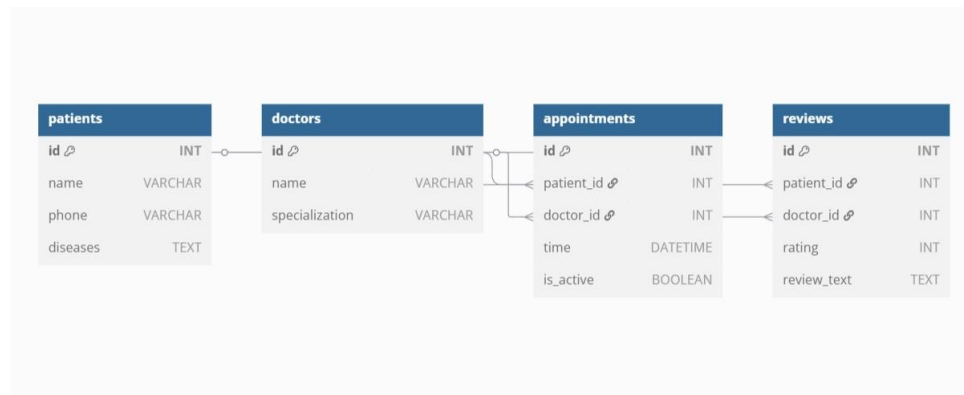
appointments

- id (INT, Primary Key)
- patient_id (INT, Foreign Key → patients.id)
- doctor_name (VARCHAR)
- time (DATETIME)
- is_active (BOOLEAN, default TRUE)

reviews

- id (INT, Primary Key)
- doctor_name (VARCHAR)
- patient_name (VARCHAR)
- rating (INT)
- review_text (TEXT)

ER Diagram



Database Connection

PHP Connection Code

```

php
CopyEdit
<?php
$servername = "localhost";
$username = "root";
$password = "";
$dbname = "appointments_db";

$conn = new mysqli($servername, $username, $password, $dbname);
  
```

```
if ($conn->connect_error) {
    die("Connection failed: " . $conn->connect_error);
}
?>
```

Host: localhost (local server)

Username: root (default MySQL user)

Password: Empty (for development)

Database Name: appointments_db

SQL Queries & Integration

1. SELECT (Fetch Appointments)

```
$query = "SELECT a.id, a.time, a.doctor_name, p.name AS patient_name, p.phone, p.diseases
FROM appointments a
JOIN patients p ON a.patient_id = p.id
ORDER BY a.time DESC";
```

```
$result = $conn->query($query);
```

Purpose: Retrieves all appointments with patient details.

ID	Date/Time	Doctor	Patient	Phone	Diseases
144	9:00 AM	Dr. Sana Iqbal	Hiyat	03400599111	Gum disease
148	9:00 AM	Dr. Hira Qureshi	Sheru	03400009292	Acne
149	9:00 AM	Dr. Hira Qureshi	Sheru	03400009292	Acne
151	9:00 AM	Dr. Kamran Shah	Rohaam	03477594098	Eating disorders
154	9:00 AM	Dr. Sara Khan	Wajdan	03471654059	Migraines
162	9:00 AM	Dr. Samina Qureshi	Mahir	03547654824	Spinal or epidural issues
164	9:00 AM	Dr. Kamal Ahmed	Emma	03496543290	Macular degeneration
165	9:00 AM	Dr. Saeed Anwar	Zain	03897643219	Fistulas
167	9:00 AM	Dr. Bilal Qureshi	Aliyan	03471784059	Vaccination
146	3:00 PM	Dr. Bilal Mehmood	Faris	03401119292	Coronary artery disease
157	3:00 PM	Dr. Kamran Malik	Imama	03401299292	Hypertension

2. INSERT (Book Appointment)

```
$stmt = $conn->prepare("INSERT INTO appointments (name, phone, time, doctor_name, patient_id)
VALUES (?, ?, ?, ?, ?)");
```

```
$stmt->bind_param("ssssi", $name, $phone, $time, $doctorName, $patientId);
```

```
$stmt->execute();
```

Purpose: Adds a new appointment to the database.

Book Appointment

Booking with Dr. Sana Rehman

Full Name

Hashim

Phone Number

0340-0514792

Preferred Time

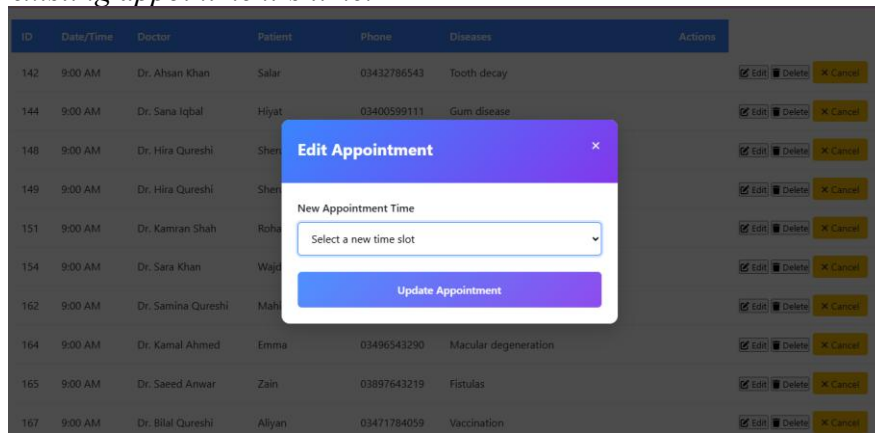
1:00 PM - 2:00 PM

Confirm Appointment

3. UPDATE (Edit Appointment Time)

```
$stmt = $conn->prepare("UPDATE appointments SET time = ? WHERE id = ?");
$stmt->bind_param("si", $new_time, $appointment_id);
$stmt->execute();
```

Purpose: *Updates an existing appointment's time.*



Appointment Updated!

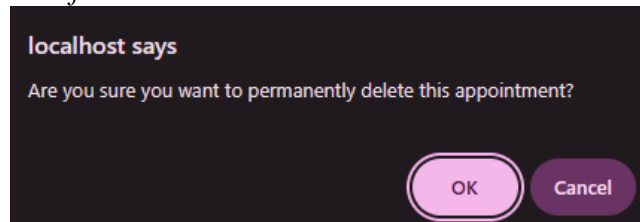
Your appointment has been successfully rescheduled.

Done

4. DELETE (Cancel Appointment)

```
$stmt = $conn->prepare("DELETE FROM appointments WHERE id = ?");
$stmt->bind_param("i", $appointment_id);
$stmt->execute();
```

Purpose: *Removes an appointment from the database.*



Appointment Deleted!

Your appointment has been successfully deleted.

Done

5. Checking for Existing Appointments (Prevent Duplicates)

```
$checkQuery = "SELECT * FROM appointments
```

```

WHERE doctor_name = ? AND time = ? AND is_active = TRUE";
$checkStmt = $conn->prepare($checkQuery);
$checkStmt->bind_param("ss", $doctorName, $time);
$checkStmt->execute();
$result = $checkStmt->get_result();
if ($result->num_rows > 0) {
    $_SESSION['error'] = "This time slot is already booked!";
    header("Location: " . $_SERVER['PHP_SELF']);
    exit();
}

```

Purpose: Ensures no two appointments have the same doctor and time slot.

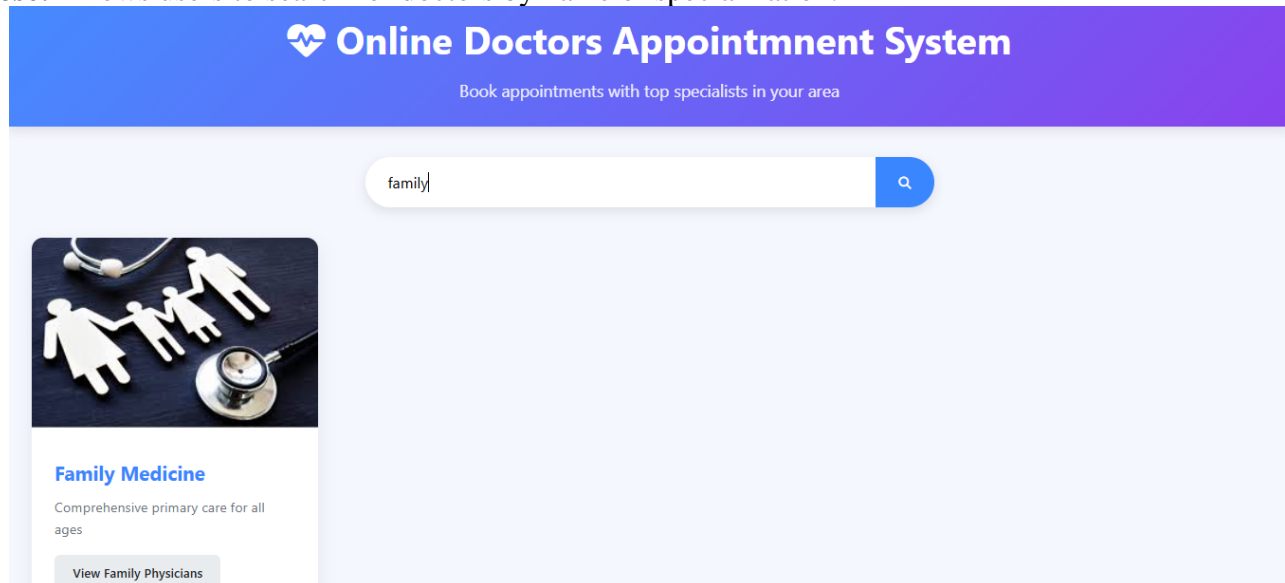
6. Searching for Doctors (Dynamic Query)

```

$searchTerm = $_GET['search'] ?? "";
if (!empty($searchTerm)) {
    $searchTerm = "%$searchTerm%";
    $query = "SELECT * FROM doctors
        WHERE name LIKE ? OR specialization LIKE ?";
    $stmt = $conn->prepare($query);
    $stmt->bind_param("ss", $searchTerm, $searchTerm);
    $stmt->execute();
    $result = $stmt->get_result();
    $doctors = $result->fetch_all(MYSQLI_ASSOC);
}

```

Purpose: Allows users to search for doctors by name or specialization.



7. Counting Reviews per Doctor (For Ratings)

```

$reviewCountQuery = "SELECT doctor_name, COUNT(*) as total_reviews
    FROM reviews
    GROUP BY doctor_name";
$reviewCountResult = $conn->query($reviewCountQuery);
$reviewCounts = [];
if ($reviewCountResult) {

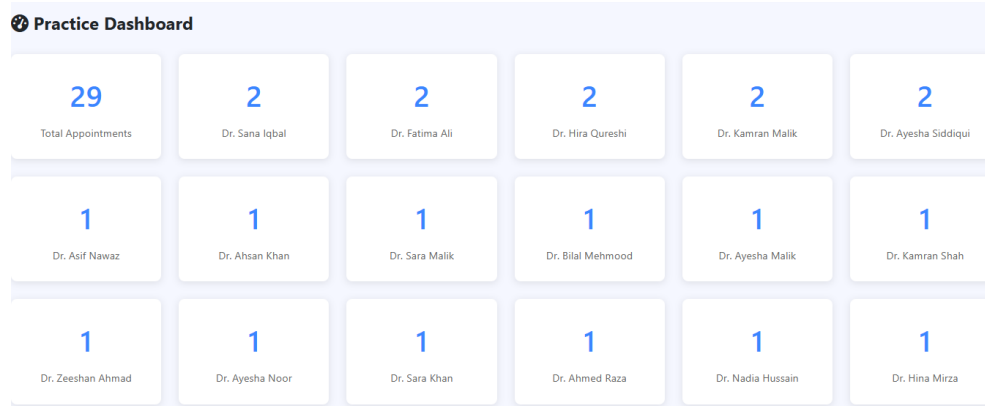
```

```

while ($row = $reviewCountResult->fetch_assoc()) {
    $reviewCounts[$row['doctor_name']] = $row['total_reviews'];
}
$reviewCountResult->free();
}

```

Purpose: Helps display the total number of reviews per doctor.



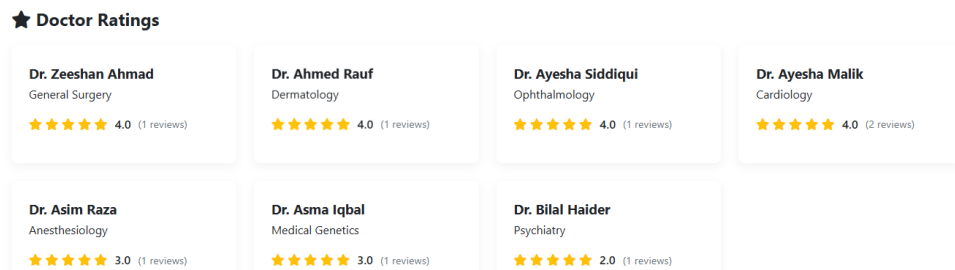
8. Calculating Average Doctor Ratings (using joins)

```

$query = "SELECT d.name, d.specialization,
    AVG(r.rating) AS avg_rating,
    COUNT(r.id) AS review_count
FROM doctors d
LEFT JOIN reviews r ON d.name = r.doctor_name
GROUP BY d.name
HAVING review_count > 0
ORDER BY avg_rating DESC";

```

Purpose: Computes average ratings and review counts for each doctor to display in the ratings dashboard.



Security Measures

Preventing SQL Injection

Prepared Statements: Used for all database queries.

Input Sanitization:

```
$name = $conn->real_escape_string(htmlspecialchars($_POST['name']));
```

Session Management:

```
session_start();
if (!isset($_SESSION['user'])) {
    header("Location: login.php");
}
```

Validation & Error Handling


Form Validation Example

```
if (empty($name) || empty($phone) || empty($time) || empty($doctorName)) {
    $_SESSION['error'] = "All fields are required!";
    header("Location: " . $_SERVER['PHP_SELF']);
    exit();
}
```

Booking with Dr. Sana Rehman ✕

Your Name
Sidra

Phone Number
|

Appointment Time  Please fill out this field.
9:00 AM - 10:00 AM ▼

Medical Conditions (Optional)

Book Appointment

Purpose: Ensures no empty fields are submitted.

Error Handling

```
if ($stmt->execute()) {
    $_SESSION['success'] = "Appointment booked successfully!";
} else {
    $_SESSION['error'] = "Error: " . $stmt->error;
}
```

Challenges & Learnings

Challenges Faced

- Managing session variables for user authentication.
- Handling concurrent database operations.
- Ensuring responsive design across devices.

Key Learnings

- Improved PHP/MySQL integration skills.
- Better understanding of security best practices.
- Enhanced problem-solving in form validation.

Conclusion

The Online Doctor Appointment System successfully simplifies the process of booking and managing medical appointments. It improves convenience for patients and efficiency for doctors by providing a secure, user-friendly online platform. The project helped me develop important skills in PHP, MySQL, and web design while addressing key challenges like security and validation. With future enhancements such as user authentication and notifications, this system can become even more effective in improving healthcare accessibility.