DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
(ARITIFICIAL INTELLIGENCE & MACHINE LEARNING)


# HOSPITAL MANAGEMENT SYSTEM

## BATCH – 2

**Course Name** : Database Systems
**Course Code** : 20AI&ML5301
**Class** : CSE(AI&ML)
**Course Coordinator** : V. Lavanya
**College** : Velagapudi Ramakrishna Siddhartha Engineering College

SUBMITTED BY

| NAME | ROLL No. |
|---|---|
| B.Vinodini | 228W1A4207 |
| B.Sai Geethika | 228W1A4208 |
| B.Vasavya | 228W1A4209 |
| B.Raj Manoj | 228W1A4210 |
| Ch.Bharani | 228W1A4211 |

# Introduction

The Hospital Management System (HMS) is a web-based application designed to streamline hospital operations. This system facilitates patient management, doctor scheduling, appointment bookings, billing, and other critical functions required in a healthcare setting. Developed with Flask (Python), MySQL, and Bootstrap, HMS provides a simple, user-friendly interface for managing hospital records and improving administrative efficiency.

# Requirements

**1. Backend**

- Framework: Flask (Python)
- Libraries:
    - Flask: For handling routing and request processing.
    - Flask-MySQL: For MySQL database integration.
    - Flask-Login: For user authentication and session management.

**2. Frontend**

- Technologies: HTML, CSS, Bootstrap, JavaScript
- Components:
    - Navigation Bar: For accessing different modules (Patients, Doctors, Appointments, Billing).
    - Dashboard: Display key statistics and navigation options.
    - Forms: Patient registration, doctor profile management, appointment scheduling, and billing.

**3. Database:** MySQL

# Database Schema

**Tables**: Patients: Stores information about each patient.

Doctors: Stores information about each doctor.

Appointments: Manages scheduled appointments, linking patients and doctors.

Billing: Tracks billing details for appointments.

**Entities and Attributes:**

Patients:

- id (INT, Primary Key, AUTO_INCREMENT)
- name (VARCHAR, required)
- age (INT)
- gender (VARCHAR)
- contact_number (VARCHAR)
- address (VARCHAR)

- admitted_date (DATE)

Doctors:

- id (INT, Primary Key, AUTO_INCREMENT)
- name (VARCHAR, required)
- specialty (VARCHAR)
- contact_number (VARCHAR)
- email (VARCHAR, unique)

Appointments:

- id (INT, Primary Key, AUTO_INCREMENT)
- patient_id (INT, Foreign Key references Patients.id)
- doctor_id (INT, Foreign Key references Doctors.id)
- appointment_date (DATE)
- status (VARCHA

Billing:

- id (INT, Primary Key, AUTO_INCREMENT)
- patient_id (INT, Foreign Key references Patients.id)
- appointment_id (INT, Foreign Key references Appointments.id)
- amount (DECIMAL)
- status (VARCHAR)
- billing_date (TIMESTAMP, default: CURRENT_TIMESTAMP)

**Relationships:**

- Patients to Appointments: One-to-many (each patient can have multiple appointments).
- Doctors to Appointments: One-to-many (each doctor can have multiple appointments).
- Appointments to Billing: One-to-one (each appointment has one associated billing record).

**Constraints:**

Primary Keys: id in each table to uniquely identify records.

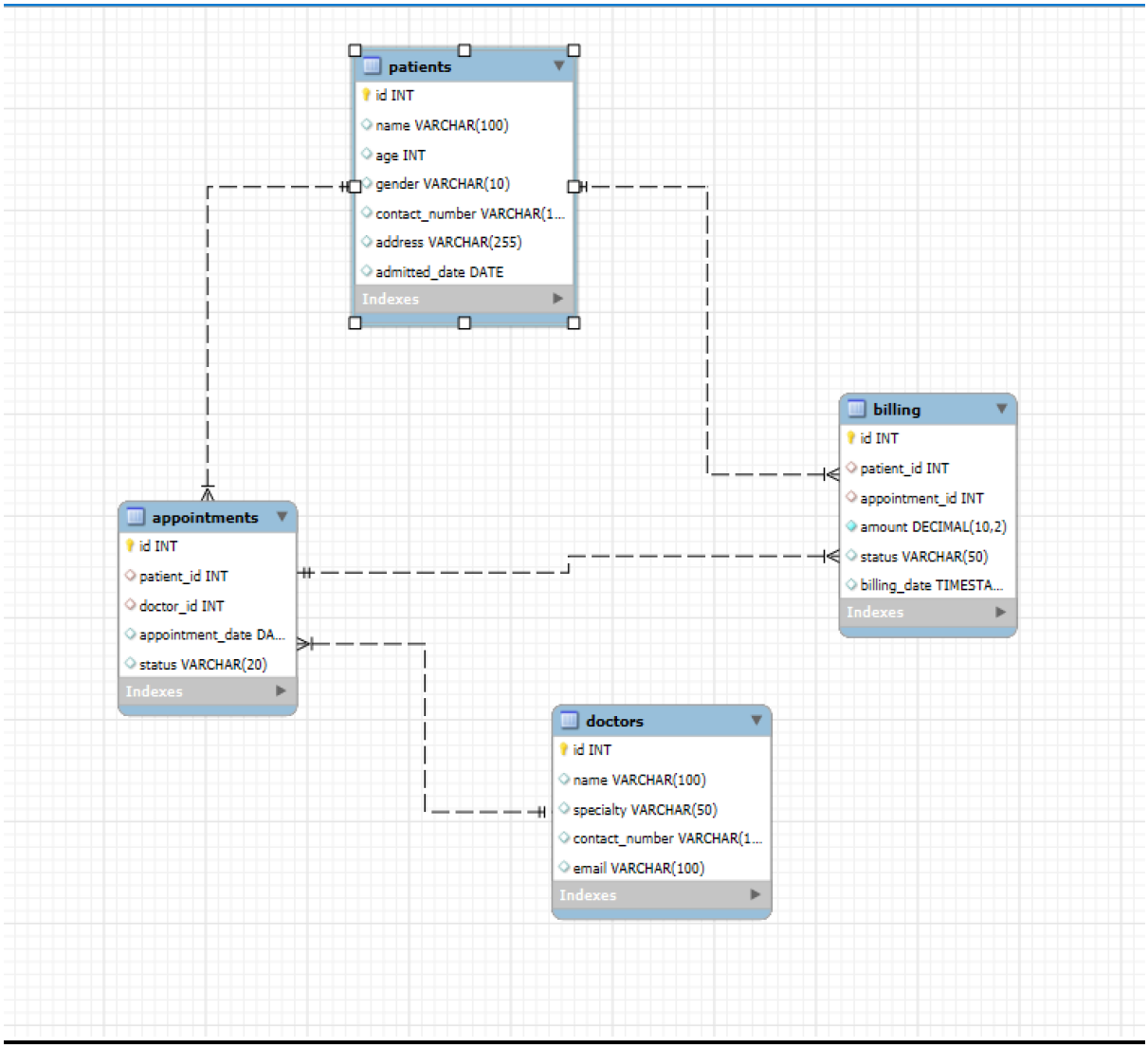
Foreign Keys:

- Appointments.patient_id references Patients.id.
- Appointments.doctor_id references Doctors.id.
- Billing.patient_id references Patients.id.
- Billing.appointment_id references Appointments.id.

Default Values:

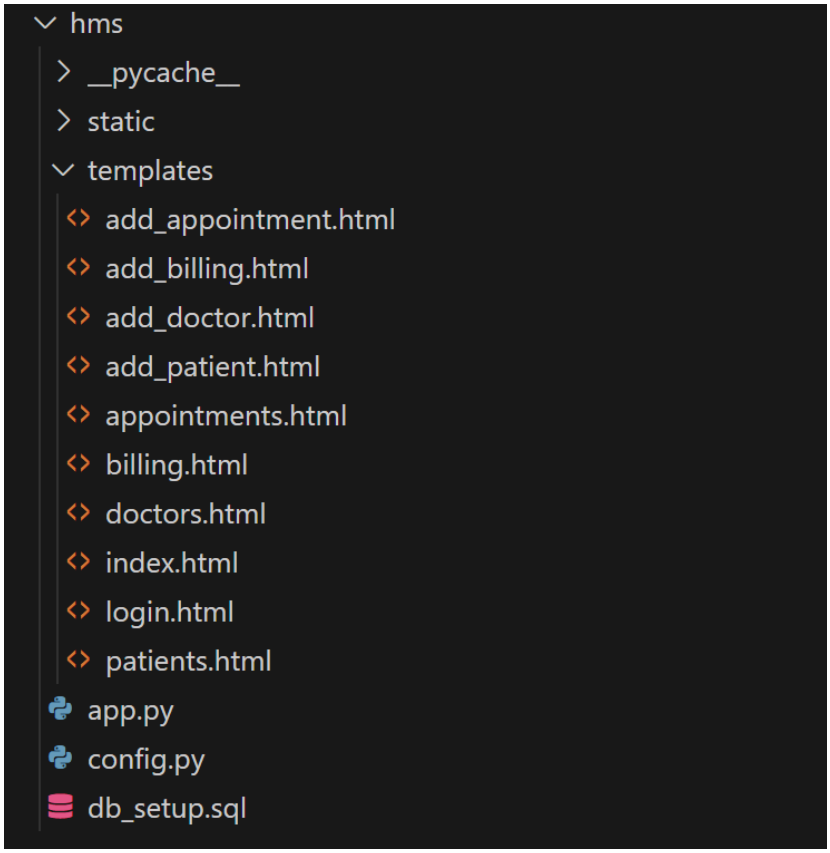
- Billing.billing_date: Default to the current timestamp

# ER DIAGRAM


patients
id INT
name VARCHAR(100)
age INT
gender VARCHAR(10)
contact_number VARCHAR(1...
address VARCHAR(255)
admitted_date DATE
Indexes
billing
id INT
patient_id INT
appointment_id INT
amount DECIMAL(10,2)
status VARCHAR(50)
billing_date TIMESTA...
Indexes
appointments
id INT
patient_id INT
doctor_id INT
appointment_date DA...
status VARCHAR(20)
Indexes
doctors
id INT
name VARCHAR(100)
specialty VARCHAR(50)
contact_number VARCHAR(1...
email VARCHAR(100)
Indexes

# Implementation

Below is the complete folder structure of the project**:**




**app.py**

```
from flask import Flask, render_template, request, redirect, url_for, flash
import mysql.connector
from mysql.connector import Error, IntegrityError

app = Flask(__name__)
app.secret_key = 'your_unique_secret_key'

# Database Connection
def get_db_connection():
    conn = mysql.connector.connect(
      host='localhost',
      port='3306',
      user='root',
      password='Bv@04102004',
      database='hospital__management'
   )
    return conn
```

```
@app.route('/login', methods=('GET', 'POST'))
def login():
    if request.method == 'POST':
        username = request.form['username']
        password = request.form['password'
        # Here, you can verify the credentials from the database
        if username == 'admin' and password == 'password123':
            session['logged_in'] = True
            flash('Login successful!', 'success')
            return redirect(url_for('index'))
        else:
            flash('Invalid credentials, please try again.', 'danger')
    return render_template('login.html')


@app.route('/')
def index():
    if 'logged_in' not in session:
        return redirect(url_for('login'))
    return render_template('index.html')
@app.route('/logout')
def logout():
    session.pop('logged_in', None)  # Remove the logged_in session variable
    flash('You have been logged out.', 'info')
    return redirect(url_for('login'))

# Patients Routes
@app.route('/patients')
def patients():
    conn = get_db_connection()
    cursor = conn.cursor()
    cursor.execute('SELECT * FROM Patients')
    patients = cursor.fetchall()
    conn.close()
```

```
    return render_template('patients.html', patients=patients)

@app.route('/patients/add', methods=('GET', 'POST'))
def add_patient():
    if request.method == 'POST':
        name = request.form['name']
        age = request.form['age']
        gender = request.form['gender']
        contact = request.form['contact']
        address = request.form['address']

        conn = get_db_connection()
        cursor = conn.cursor()
        cursor.execute('INSERT INTO Patients (name, age, gender, contact_number, address,
admitted_date) VALUES (%s, %s, %s, %s, %s, NOW())',
                       (name, age, gender, contact, address))
        conn.commit()
        conn.close()
        return redirect(url_for('patients'))
    return render_template('add_patient.html')

# Doctors Routes
@app.route('/doctors')
def doctors():
    conn = get_db_connection()
    cursor = conn.cursor()
    cursor.execute('SELECT * FROM Doctors')
    doctors = cursor.fetchall()
    conn.close()
    return render_template('doctors.html', doctors=doctors)

@app.route('/doctors/add', methods=('GET', 'POST'))
def add_doctor():
    if request.method == 'POST':
        name = request.form['name']
        specialty = request.form['specialty']
        contact = request.form['contact']
        email = request.form['email']

        conn = get_db_connection()
        cursor = conn.cursor()
        cursor.execute('INSERT INTO Doctors (name, specialty, contact_number, email)
VALUES (%s, %s, %s, %s)',
                       (name, specialty, contact, email))
        conn.commit()
        conn.close()
```

```
        return redirect(url_for('doctors'))
    return render_template('add_doctor.html')

# Appointments Routes
@app.route('/appointments')
def appointments():
    conn = get_db_connection()
    cursor = conn.cursor()
    cursor.execute('SELECT * FROM Appointments')
    appointments = cursor.fetchall()
    conn.close()
    return render_template('appointments.html', appointments=appointments)

@app.route('/appointments/add', methods=('GET', 'POST'))
def add_appointment():
    if request.method == 'POST':
        patient_id = request.form['patient_id']
        doctor_id = request.form['doctor_id']
        appointment_date = request.form['appointment_date']
        status = request.form['status']

        conn = get_db_connection()
        cursor = conn.cursor()
        try:
            cursor.execute('INSERT INTO Appointments (patient_id, doctor_id,
appointment_date, status) VALUES (%s, %s, %s, %s)',
                           (patient_id, doctor_id, appointment_date, status))
            conn.commit()
            flash('Appointment added successfully!', 'success')
        except IntegrityError:
            flash('Error: Cannot add appointment. Please ensure the patient ID and doctor ID
exist.', 'danger')
        except Error as e:
            flash(f'Error: {e}', 'danger')
        finally:
            cursor.close()
            conn.close()

        return redirect(url_for('appointments'))

    return render_template('add_appointment.html')

# Billing Routes
@app.route('/billing')
def billing():
    conn = get_db_connection()
```

```
    cursor = conn.cursor()
    cursor.execute('SELECT * FROM Billing')
    billing_records = cursor.fetchall()
    conn.close()
    return render_template('billing.html', billing_records=billing_records)

@app.route('/billing/add', methods=('GET', 'POST'))
def add_billing():
    if request.method == 'POST':
        patient_id = request.form['patient_id']
        appointment_id = request.form['appointment_id']
        amount = request.form['amount']
        status = request.form['status']

        conn = get_db_connection()
        cursor = conn.cursor()
        try:
            cursor.execute('INSERT INTO Billing (patient_id, appointment_id, amount, status)
VALUES (%s, %s, %s, %s)',
                           (patient_id, appointment_id, amount, status))
            conn.commit()
            flash('Billing record added successfully!', 'success')
        except IntegrityError:
            flash('Error: Cannot add billing record. Please ensure the appointment ID exists.',
'danger')
        except Error as e:
            flash(f'Error: {e}', 'danger')
        finally:
            cursor.close()
            conn.close()

        return redirect(url_for('billing'))

    return render_template('add_billing.html')


if __name__ == '__main__':
    app.run(debug=True)
```

**database.sql**

```
CREATE DATABASE hospital_management;

USE hospital_management;

CREATE TABLE Patients (
```

```
    id INT AUTO_INCREMENT PRIMARY KEY,
    name VARCHAR(100),
    age INT,
    gender VARCHAR(10),
    contact_number VARCHAR(15),
    address VARCHAR(255),
    admitted_date DATE
);
CREATE TABLE Doctors (
    id INT AUTO_INCREMENT PRIMARY KEY,
    name VARCHAR(100),
    specialty VARCHAR(50),
    contact_number VARCHAR(15),
    email VARCHAR(100)
);
CREATE TABLE Appointments (
    id INT AUTO_INCREMENT PRIMARY KEY,
    patient_id INT,
    doctor_id INT,
    appointment_date DATE,
    status VARCHAR(20),
    FOREIGN KEY (patient_id) REFERENCES Patients(id),
    FOREIGN KEY (doctor_id) REFERENCES Doctors(id)
);
CREATE TABLE Billing (
    id INT AUTO_INCREMENT PRIMARY KEY,
    patient_id INT,
appointment_id INT,
    amount DECIMAL(10, 2) NOT NULL,
    status VARCHAR(50),
```

```
    billing_date TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    FOREIGN KEY (patient_id) REFERENCES Patients(id),
    FOREIGN KEY (appointment_id) REFERENCES Appointments(id)
);
```

**Patients.html**

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Patients</title>
</head>
<body>
    <div class="container">
        <h1>Patients</h1>
        <a href="{{ url_for('add_patient') }}">Add New Patient</a>
        <table class="table table-striped">
            <thead>
                <tr>
                    <th>ID</th>
                    <th>Name</th>
                    <th>Age</th>
                    <th>Gender</th>
                    <th>Contact</th>
                    <th>Address</th>
                    <th>Admitted Date</th>
                </tr>
            </thead>
            <tbody>
                {% for patient in patients %}
```

```
            <tr>
                <td>{{ patient[0] }}</td>
                <td>{{ patient[1] }}</td>
                <td>{{ patient[2] }}</td>
            </tr>
            {% endfor %}
        </tbody>
    </table>
    <a href="{{ url_for('index') }}">Back to Main Page</a>
</div>
```

**Index.html**

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Hospital Management System</title>
</head>
<body>
    <div class="container text-center mt-5">
        <h1>Welcome to the Hospital Management System</h1>
                                                                    <img
src="https://upload.wikimedia.org/wikipedia/commons/7/7a/Okayama_Red_Cross_Hospital.jpg" class="img-fluid mb-4" alt="Hospital Logo" wid>
        <nav class="mb-4">
            <a href="{{ url_for('patients') }}" class="btn btn-primary mx-2">Patients</a>
            <a href="{{ url_for('doctors') }}" class="btn btn-secondary mx-2">Doctors</a>
                    <a href="{{ url_for('appointments') }}" class="btn btn-success mx-2">Appointments</a>
            <a href="{{ url_for('billing') }}" class="btn btn-info mx-2">Billing</a>
        <div class="mt-5">
```

```
        <h2>Our Services</h2>
        <div class="row">
          <div class="col-md-4">
            <div class="card mb-4">
                                                                    <img
src="https://th.bing.com/th/id/OIP.hdPSncSSMUFLsTY2Sk5kCwHaEq?rs=1&pid=ImgDet
Main" class="card-img-top" alt="Appointments">
                <div class="card-body">
                  <h5 class="card-title">Manage Appointments</h5>
                    <p class="card-text">Easily book and manage your medical appointments
with our online system.</p>
          <div class="col-md-4">
            <div class="card mb-4">
          </div>
          <div class="col-md-4">
            <div class="card mb-4">
                                                                    <img
src="https://th.bing.com/th/id/R.8c80544369850d43bb46468870cd9531?rik=wVABW0nZtlq
tGw&riu=http%3a%2f%2fwww.touchette.org%2fmedia-library%2fphotos%2ffull%2f300-
1517858913.jpg&ehk=tE10m6JZsl33RdPcaH84yOiTrXh0uUNjCsfPYnqRA6I%3d&risl=&p
id=ImgRaw&r=0" class="card-img-top" alt="Services">
                <div class="card-body">
                  <h5 class="card-title">Comprehensive Services</h5>
                   <p class="card-text">We offer a wide range of medical services to meet all
your health needs.</p>
        </div>
      </div>
    </div>
</body>
</html>
```

**Doctors.html**

```
<!DOCTYPE html>
<html lang="en">
```

```
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Doctors</title></head>
<body>
    <div class="container">
        <h1>Doctors</h1>
        <a class="btn btn-primary" href="{{ url_for('add_doctor') }}">Add New Doctor</a>
        <table class="table table-striped">
            <thead>
                <tr>
                    <th>ID</th>
                    <th>Name</th>
                    <th>Specialty</th>
                    <th>Contact</th>
                    <th>Email</th>
                </tr>
            </thead>
            <tbody>
                {% for doctor in doctors %}
                <tr>
                    <td>{{ doctor[0] }}</td>
                    <td>{{ doctor[1] }}</td>
                    <td>{{ doctor[2] }}</td>
                    <td>{{ doctor[3] }}</td>
                    <td>{{ doctor[4] }}</td>
                </tr>
                {% endfor %}
            </tbody>
        </table>
```

```
    <a href="{{ url_for('index') }}">Back to Main Page</a>
</body>
</html>
```

**Billing.html**

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Billing Records</title>
  <link rel="stylesheet" href="{{ url_for('static', filename='style.css') }}">
</head>
<body>
  <div class="container">
    <h1>Billing Records</h1>
      <a class="btn btn-primary mb-3" href="{{ url_for('add_billing') }}">Add New Billing</a>
    <table class="table table-striped">
      <thead>
        <tr>
          <th>ID</th>
          <th>Patient ID</th>
          <th>Appointment ID</th>
          <th>Amount</th>
          <th>Status</th>
          <th>Billing Date</th>
        </tr>
      </thead>
      <tbody>
        {% for record in billing_records %}
```

```
            <tr>
                <td>{{ record[0] }}</td>
                <td>{{ record[1] }}</td>
            </tr>
            {% endfor %}
        </tbody>
    </table>
    <a href="{{ url_for('index') }}">Back to Main Page</a>
</div>
</body>
</html>
```

**Appointments.html**

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Appointments</title>
    <link rel="stylesheet" href="{{ url_for('static', filename='style.css') }}">
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
    <link rel="stylesheet" href="https://fonts.googleapis.com/css?family=Roboto:400,700&display=swap">
</head>
<body>
    <div class="container">
        <h1 class="mt-5">Appointments</h1>
        <a class="btn btn-primary mb-3" href="{{ url_for('add_appointment') }}">Schedule New Appointment</a>
        <table class="table table-striped">
            <thead>
```

```
            <tr>
                <th>ID</th>
                <th> Patient ID</th>
                <th>Doctor ID</th>
                <th>Appointment Date</th>
                <th>Status</th>
            </tr>
        </thead>
        <tbody>
            {% for appointment in appointments %}
            <tr>
                <td>{{ appointment[0] }}</td>
                <td>{{ appointment[1] }}</td>
                <td>{{ appointment[2] }}</td>
                <td>{{ appointment[3] }}</td>
                <td>{{ appointment[4] }}</td>
            </tr>
            {% endfor %}
        </tbody>
    </table>
    <a href="{{ url_for('index') }}">Back to Main Page</a>
  </div>
</body>
</html>
```

**Add_patient.html**

```
<!DOCTYPE html>
<html lang="en">
<head>
```

```
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Add New Patient</title>
    <link rel="stylesheet" href="{{ url_for('static', filename='style.css') }}">
                                                <link                    rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
                                                <link                    rel="stylesheet"
href="https://fonts.googleapis.com/css?family=Roboto:400,700&display=swap">
    <style>
        body {
            font-family: 'Roboto', sans-serif;
            background-color: #f4f7f8;
            color: #333;
        }
        h1 {
            text-align: center;
            margin: 20px 0;
            color: #0056b3;
        }
        .container {
            max-width: 600px;
            margin: auto;
            padding: 20px;
            background-color: #fff;
            border-radius: 10px;
            box-shadow: 0 0 15px rgba(0, 0, 0, 0.1);
        }
        label {
            font-weight: bold;
        }
    </style>
```

```
</head>
<body>
    <div class="container">
        <h1>Add New Patient</h1>
        <form action="{{ url_for('add_patient') }}" method="post">
            <label for="name">Name:</label>
            <input type="text" id="name" name="name" required>
            <label for="age">Age:</label>
            <input type="number" id="age" name="age" required>
            <label for="gender">Gender:</label>
            <input type="text" id="gender" name="gender" required>
            <label for="contact">Contact Number:</label>
            <input type="text" id="contact" name="contact" required>
            <label for="address">Address:</label>
            <input type="text" id="address" name="address" required>
            <button type="submit">Add Patient</button>
        </form>
    </div>
    <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"></script>
                                                                    <script
src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.11.6/dist/umd/popper.min.js"></script>
                                                                    <script
src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>
</body>
</html>
```

**Add_doctor.html**

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
```

```
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Add New Doctor</title>
    <link rel="stylesheet" href="{{ url_for('static', filename='style.css') }}">
 <linkrel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
 <linkrel="stylesheet"
href="https://fonts.googleapis.com/css?family=Roboto:400,700&display=swap">
</head>
<body>
    <div class="container">
        <h1 class="mt-5">Add New Doctor</h1>
        <form action="{{ url_for('add_doctor') }}" method="post" class="mt-4">
            <div class="form-group">
                <label for="name">Name:</label>
                <input type="text" id="name" name="name" class="form-control" required>
            </div>
            <div class="form-group">
                <label for="specialty">Specialty:</label>
                <input type="text" id="specialty" name="specialty" class="form-control" required>
            </div>
            <div class="form-group">
                <label for="contact">Contact Number:</label>
                <input type="text" id="contact" name="contact" class="form-control" required>
            </div>
            <div class="form-group">
                <label for="email">Email:</label>
                <input type="email" id="email" name="email" class="form-control" required>
            </div>
            <button type="submit" class="btn btn-primary">Add Doctor</button>
        </form>
    </div>
```

```
    <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"></script> <script src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.11.6/dist/umd/popper.min.js"></script>
                                                                                <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>
</body>
</html>
```

**Add_billing.html**

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Add Billing Record</title>
    <link rel="stylesheet" href="{{ url_for('static', filename='style.css') }}">
 <linkrel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
</head>
<body>
    {% with messages = get_flashed_messages(with_categories=true) %}
      {% if messages %}
        <ul class="flashes">
          {% for category, message in messages %}
            <li class="{{ category }}">{{ message }}</li>
          {% endfor %}
        </ul>
      {% endif %}
    {% endwith %}
    <div class="container mt-5">
        <h1>Add Billing Record</h1>
        <form action="{{ url_for('add_billing') }}" method="post">
```

```
        <div class="form-group">
            <label for="patient_id">Patient ID:</label>
                <input type="number" class="form-control" id="patient_id" name="patient_id" required>
        </div>
        <div class="form-group">
            <label for="appointment_id">Appointment ID:</label>
                        <input type="number" class="form-control" id="appointment_id" name="appointment_id" required>
        </div>
        <div class="form-group">
            <label for="amount">Amount:</label>
                    <input type="number" step="0.01" class="form-control" id="amount" name="amount" required>
        </div>
        <div class="form-group">
            <label for="status">Status:</label>
            <input type="text" class="form-control" id="status" name="status" required>
        </div>
        <button type="submit" class="btn btn-primary">Add Billing</button>
      </form>
   </div>
</body>
</html>
```

**Add_appointment.html**

```
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
```

```
    <title>Schedule New Appointment</title>
    <link rel="stylesheet" href="{{ url_for('static', filename='style.css') }}">
 <linkrel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
</head>
<body>
    {% with messages = get_flashed_messages(with_categories=true) %
        <ul class="flashes">
          {% for category, message in messages %}
            <li class="{{ category }}">{{ message }}</li>
          {% endfor %}
        </ul>
      {% endif %}
    {% endwith %}
    <div class="container mt-5">
        <h1>Schedule New Appointment</h1>
        <form action="{{ url_for('add_appointment') }}" method="post">
            <div class="form-group">
                <label for="patient_id">Patient ID:</label>
                    <input type="number" class="form-control" id="patient_id" name="patient_id"
required>
            </div>
            <div class="form-group">
                <label for="doctor_id">Doctor Id:</label>
                     <input type="number" class="form-control" id="doctor_id" name="doctor_id"
required>
            </div>
            <div class="form-group">
                <label for="appointment_date">Appointment Date:</label>
                                <input type="date" class="form-control" id="appointment_date"
name="appointment_date" required>
            </div>
```

```
        <div class="form-group">
            <label for="status">Status:</label>
            <input type="text" class="form-control" id="status" name="status" required>
        </div>
        <button type="submit" class="btn btn-primary">Schedule Appointment</button>
    </form>
</div>
</body>
</html>
```

**Index.html**

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Hospital Management System</title>
    <link rel="stylesheet" href="{{ url_for('static', filename='css/style.css') }}">
                                                    <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
</head>
<body>
    <div class="container text-center mt-5">
        <h1>Welcome to the Hospital Management System</h1>
                                                                                <img
src="https://upload.wikimedia.org/wikipedia/commons/7/7a/Okayama_Red_Cross_Hospital.j
pg" class="img-fluid mb-4" alt="Hospital Logo" width="300">

        <nav class="mb-4">
            <a href="{{ url_for('patients') }}" class="btn btn-primary mx-2">Patients</a>
            <a href="{{ url_for('doctors') }}" class="btn btn-secondary mx-2">Doctors</a>
```

```
                <a href="{{ url_for('appointments') }}" class="btn btn-success mx-2">Appointments</a>
        <a href="{{ url_for('billing') }}" class="btn btn-info mx-2">Billing</a>


    </nav>


    <div class="mt-5">
      <h2>Our Services</h2>
      <div class="row">
        <div class="col-md-4">
          <div class="card mb-4">
                                                                                <img src="https://th.bing.com/th/id/OIP.hdPSncSSMUFLsTY2Sk5kCwHaEq?rs=1&pid=ImgDetMain" class="card-img-top" alt="Appointments">
            <div class="card-body">
              <h5 class="card-title">Manage Appointments</h5>
                <p class="card-text">Easily book and manage your medical appointments with our online system.</p>
            </div>
        <div class="col-md-4">
          <div class="card mb-4">
            <div class="card-body">
              <h5 class="card-title">Expert Doctors</h5>
              <p class="card-text">Our team of experienced doctors is here to provide the best care possible.</p>
            </div>
          </div>
        </div>
        <div class="col-md-4">
          <div class="card mb-4">
                                                                                <img src="https://th.bing.com/th/id/R.8c80544369850d43bb46468870cd9531?rik=wVABW0nZtlqtGw&riu=http%3a%2f%2fwww.touchette.org%2fmedia-library%2fphotos%2ffull%2f300-
```

```
1517858913.jpg&ehk=tE10m6JZsl33RdPcaH84yOiTrXh0uUNjCsfPYnqRA6I%3d&risl=&pid=ImgRaw&r=0" class="card-img-top" alt="Services">
                    <div class="card-body">
                        <h5 class="card-title">Comprehensive Services</h5>
                        <p class="card-text">We offer a wide range of medical services to meet all your health needs.</p>
                    </div>
                </div>
    </div>
    <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"></script>
                                                                                <script src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.11.6/dist/umd/popper.min.js"></script>
                                                                                <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>
</body>
</html>
```

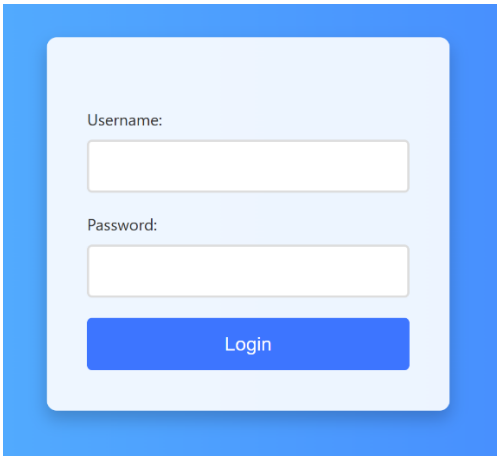
**Style.css**

```
body {
    background-color: #f8f9fa;
    background-image: url('../images/background.jpg');
    background-size: cover
    background-position: center  }
h1 {
    color: #343a40;
    text-align: center;
    padding: 20px;
    background: rgba(255, 255, 255, 0.7);
    border-radius: 8px;
}
.table {
```

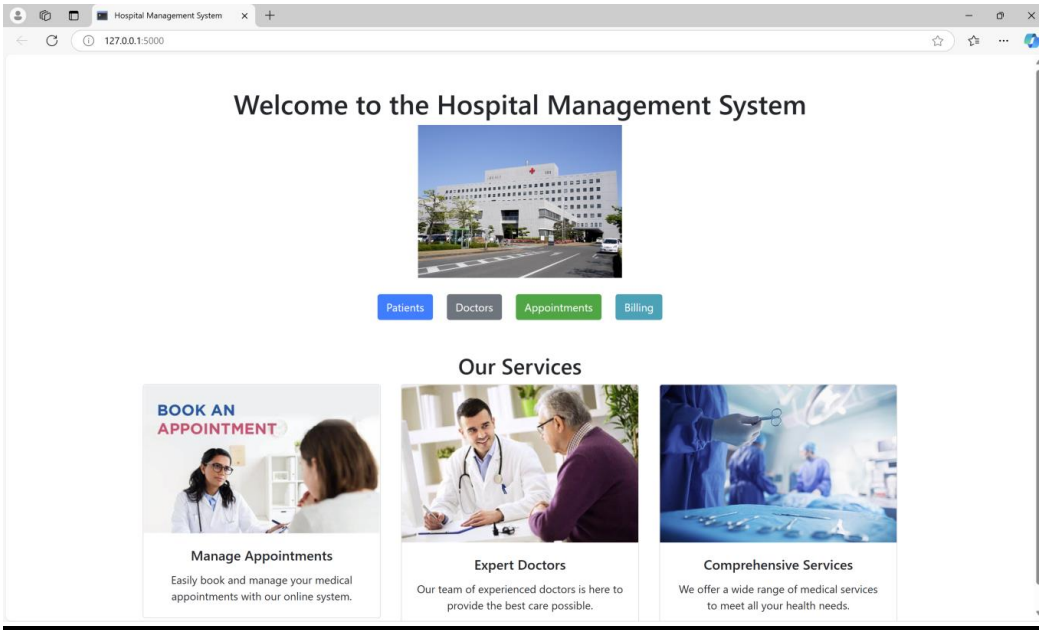
```
    margin-top: 20px;
}
.btn-image {
    background-image: url('../images/button-image.png'); /* Use an image as a button background */
    background-size: contain;
    background-repeat: no-repeat;
    width: 200px;
    height: 50px;
    border: none;
    color: white;
    font-weight: bold;
    cursor: pointer,
}
.btn-image:hover {
    opacity: 0.8;
}
```

## Result

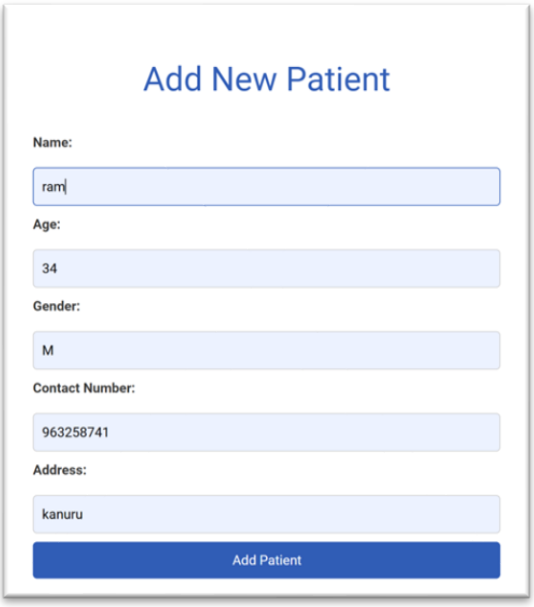
The login page allows users to authenticate and access the hospital management system. The form securely captures user credentials and redirects to the dashboard upon successful login

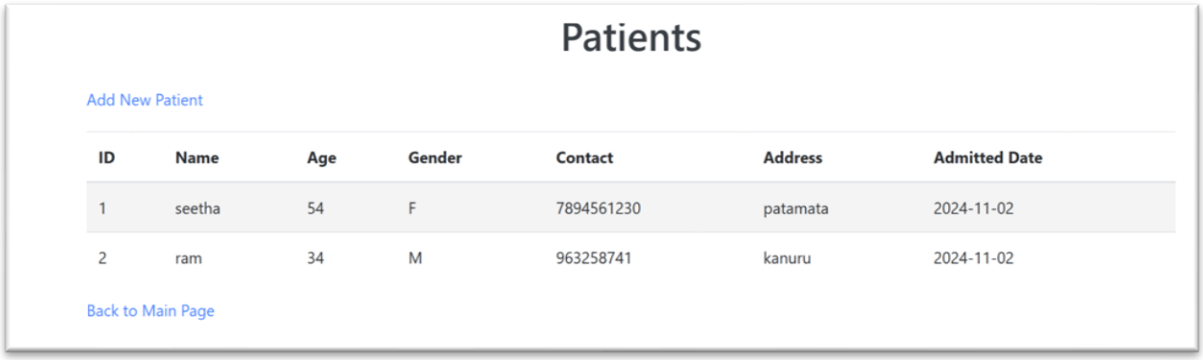



"The dashboard provides an overview of all the modules in the system, offering quick links to patients, doctors, appointments, and billing sections."

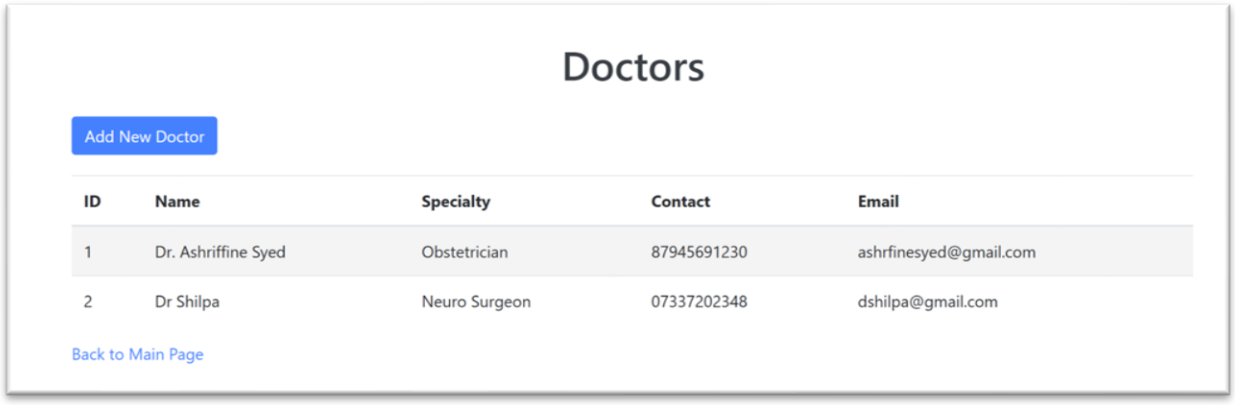



The patient management module enables hospital staff to add new patients and view existing ones.

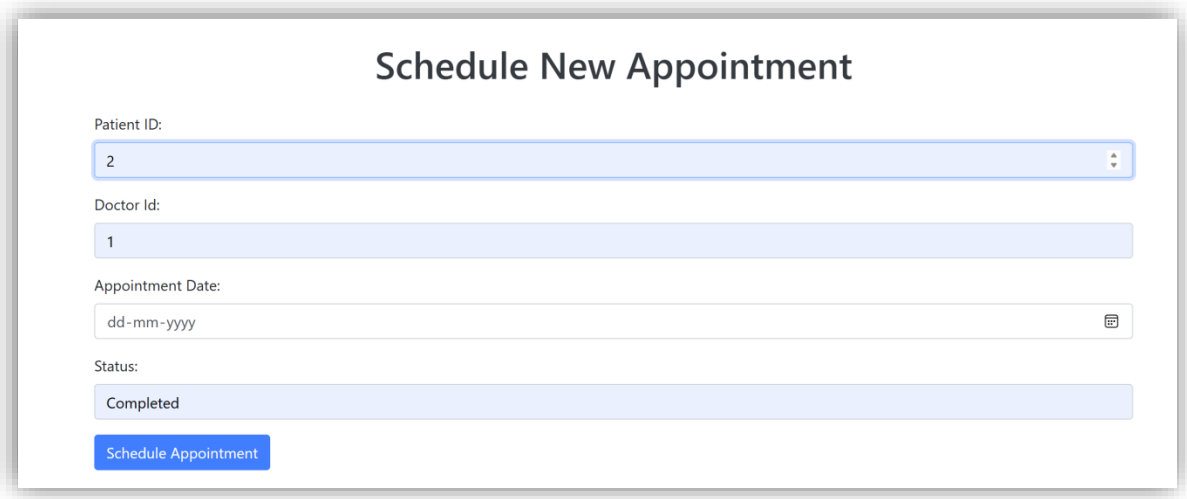


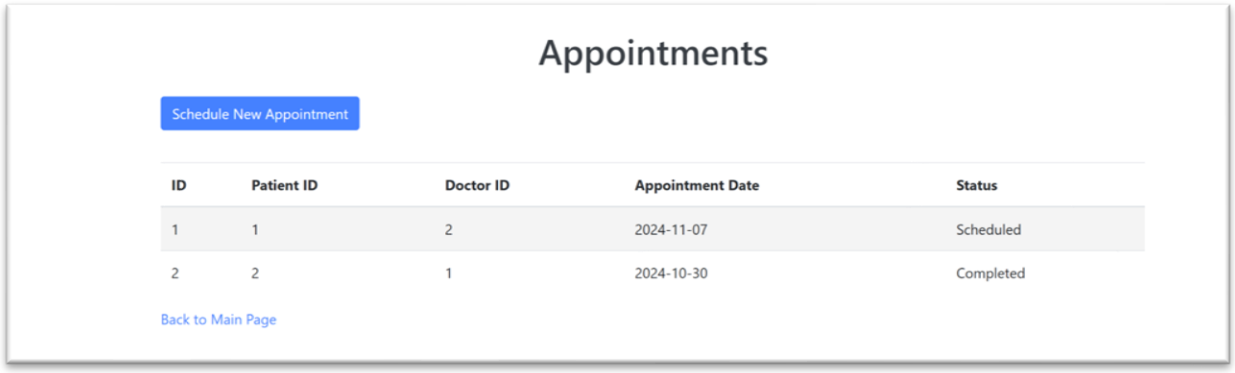



"Doctors are registered and managed within the system. Here is a view of the list of doctors, showcasing their specialties and contact information."

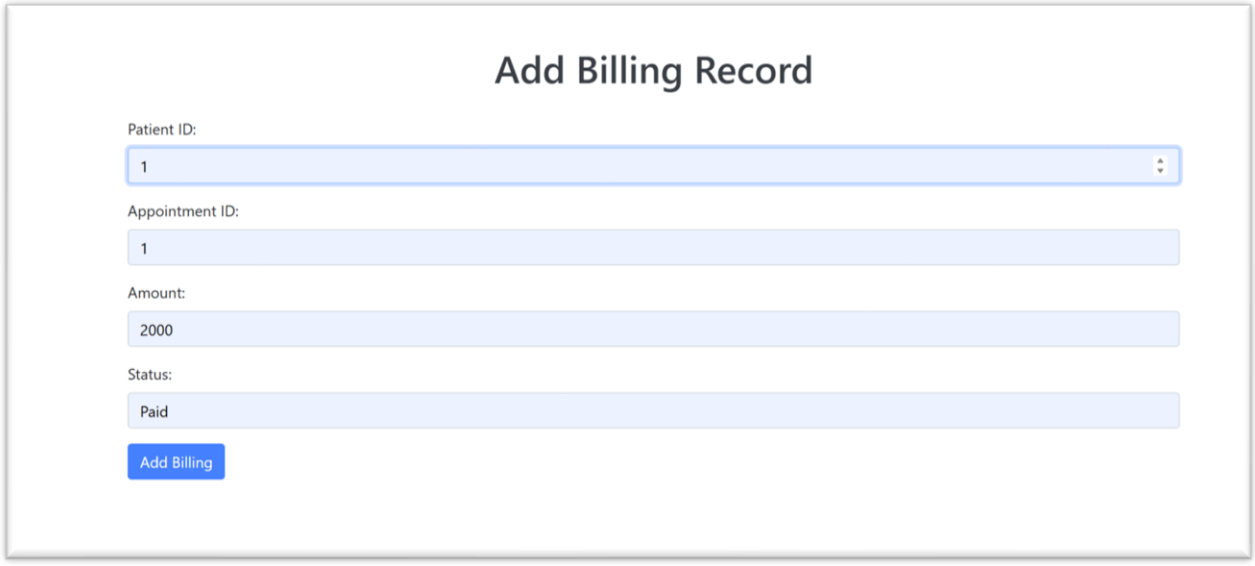



"Appointments can be scheduled by selecting a patient and a doctor, along with the date and status. The system ensures that appointments are displayed and stored correctly."



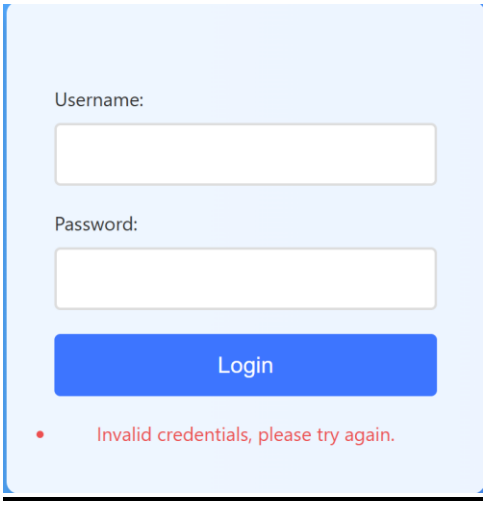




"The billing module tracks patient payments for their appointments. Below is a screenshot showing the billing records for various patients."

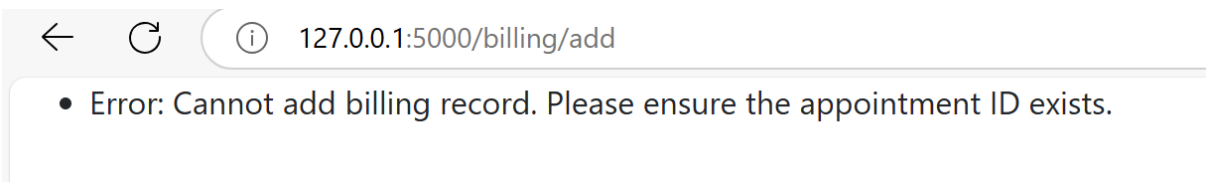



## Testing

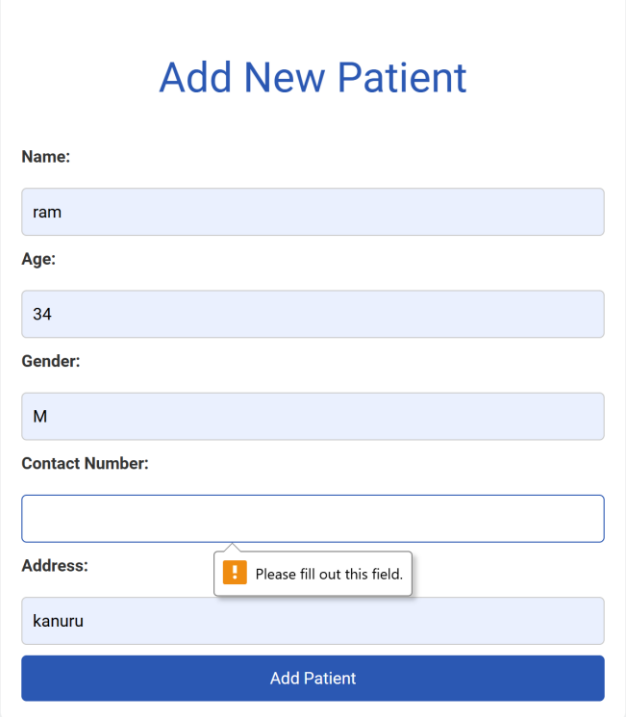
"The login functionality was tested with both valid and invalid credentials. The system correctly displays an error message when invalid credentials are entered."




“When an invalid appointment_id is entered, the application displays an error message ("Error: The appointment ID does not exist") and does not add the billing record to the database”



"Form validation was tested to ensure all fields are filled correctly. The following screenshot shows a failed submission due to a missing required field."




## Conclusion

The Hospital Management System provides a practical solution for managing hospital operations efficiently. With its robust functionality, user-friendly interface, and streamlined workflows, this project has significant potential for enhancing operational efficiency and accuracy in a healthcare environment.