

# Hospital Management System - Testing Checklist

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This comprehensive testing checklist ensures all features of the Hospital Management System work correctly before submission. Test each feature systematically and check off items as you complete them.

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## Testing Prerequisites

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Before you begin testing:

- ☐ Application is running successfully ( `python app.py` )
  - ☐ Database is initialized ( `hospital.db` exists)
  - ☐ Browser is open at `http://127.0.0.1:5000`
  - ☐ You have multiple browser tabs ready for different user sessions
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## A. Admin Portal Testing

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### Login & Authentication

- ☐ Navigate to `/admin/login`
- ☐ Login with correct credentials (username: `admin` , password: `admin123` )
- ☐ Verify successful login redirects to admin dashboard
- ☐ Try login with incorrect password - should show error message
- ☐ Try login with non-existent username - should show error message
- ☐ Verify admin cannot access doctor portal directly
- ☐ Verify admin cannot access patient portal directly

### Dashboard Overview

- ☐ View admin dashboard at `/admin/dashboard`
- ☐ Verify "Total Doctors" count displays correctly

- [ ] Verify “Total Patients” count displays correctly
- [ ] Verify “Total Appointments” count displays correctly
- [ ] Verify “Today’s Appointments” count displays correctly
- [ ] Check all statistics are updating in real-time
- [ ] Verify dashboard layout is clean and responsive

## Charts & Analytics

- [ ] View appointments chart/graph on dashboard
- [ ] Check if chart displays appointments by status (Booked/Completed/Cancelled)
- [ ] View doctor-wise statistics chart
- [ ] Verify chart shows number of appointments per doctor
- [ ] Check if charts are interactive (hover effects, legends)
- [ ] Verify charts render correctly without JavaScript errors
- [ ] Test chart responsiveness on different screen sizes

## Doctor Management

### Add New Doctor

- [ ] Navigate to “Add Doctor” page
- [ ] Fill in all required fields:
- [ ] Full Name (e.g., “Dr. John Smith”)
- [ ] Email (e.g., “john.smith@hospital.com”)
- [ ] Password (e.g., “doctor123”)
- [ ] Specialization (e.g., “Cardiology”)
- [ ] Qualification (e.g., “MBBS, MD”)
- [ ] Experience (e.g., “10 years”)
- [ ] Phone Number (e.g., “9876543210”)
- [ ] Submit the form
- [ ] Verify success message appears
- [ ] Verify new doctor appears in doctors list
- [ ] Try adding doctor with duplicate email - should show error
- [ ] Try adding doctor with empty required fields - should show validation errors

### View Doctors List

- [ ] Navigate to “View Doctors” page
- [ ] Verify all doctors are displayed in a table/list
- [ ] Check each doctor shows: Name, Specialization, Email, Phone, Actions
- [ ] Verify pagination works (if implemented)
- [ ] Verify doctor count matches dashboard statistics

### Edit Doctor Details

- [ ] Click “Edit” button for a doctor
- [ ] Modify doctor’s name
- [ ] Modify doctor’s specialization
- [ ] Modify doctor’s phone number
- [ ] Save changes
- [ ] Verify success message

- [ ] Verify changes are reflected in doctors list
- [ ] Try saving with invalid email format - should show error
- [ ] Try saving with empty required fields - should show validation errors

### **Delete/Blacklist Doctor**

- [ ] Click “Delete” or “Blacklist” button for a doctor
- [ ] Verify confirmation dialog appears
- [ ] Confirm deletion
- [ ] Verify doctor is removed from active list (soft delete)
- [ ] Verify doctor cannot login after deletion
- [ ] Check if doctor’s past appointments are still visible
- [ ] Verify dashboard statistics update correctly

## **Patient Management**

### **Add New Patient**

- [ ] Navigate to “Add Patient” page
- [ ] Fill in all required fields:
- [ ] Full Name (e.g., “Jane Doe”)
- [ ] Email (e.g., “jane.doe@email.com”)
- [ ] Password (e.g., “patient123”)
- [ ] Phone Number (e.g., “9876543210”)
- [ ] Date of Birth (e.g., “1990-05-15”)
- [ ] Gender (e.g., “Female”)
- [ ] Blood Group (e.g., “O+”)
- [ ] Address (optional)
- [ ] Submit the form
- [ ] Verify success message appears
- [ ] Verify new patient appears in patients list
- [ ] Try adding patient with duplicate email - should show error

### **View Patients List**

- [ ] Navigate to “View Patients” page
- [ ] Verify all patients are displayed
- [ ] Check each patient shows: Name, Email, Phone, Age, Actions
- [ ] Verify pagination works (if implemented)
- [ ] Verify patient count matches dashboard statistics

### **Edit Patient Details**

- [ ] Click “Edit” button for a patient
- [ ] Modify patient’s phone number
- [ ] Modify patient’s address
- [ ] Modify patient’s blood group
- [ ] Save changes
- [ ] Verify success message
- [ ] Verify changes are reflected in patients list

## Delete/Blacklist Patient

- [ ] Click “Delete” or “Blacklist” button for a patient
- [ ] Verify confirmation dialog appears
- [ ] Confirm deletion
- [ ] Verify patient is removed from active list
- [ ] Verify patient cannot login after deletion
- [ ] Check if patient’s past appointments are still visible

## Appointment Management

### View All Appointments

- [ ] Navigate to “View Appointments” page
- [ ] Verify all appointments are displayed
- [ ] Check each appointment shows:
  - [ ] Patient Name
  - [ ] Doctor Name
  - [ ] Date & Time
  - [ ] Status (Booked/Completed/Cancelled)
  - [ ] Department/Specialization
- [ ] Verify appointments are sorted by date (latest first or upcoming first)

### Filter Appointments

- [ ] Filter appointments by “Upcoming” - should show only future appointments
- [ ] Filter appointments by “Past” - should show only completed/past appointments
- [ ] Filter appointments by “All” - should show all appointments
- [ ] Filter appointments by “Booked” status
- [ ] Filter appointments by “Completed” status
- [ ] Filter appointments by “Cancelled” status
- [ ] Filter appointments by specific date range (if implemented)
- [ ] Filter appointments by specific doctor
- [ ] Filter appointments by specific patient

## Search Functionality

### Search Doctors

- [ ] Use search bar to search doctor by full name
- [ ] Search doctor by partial name (e.g., “John” should find “Dr. John Smith”)
- [ ] Search doctor by specialization (e.g., “Cardiology”)
- [ ] Search doctor by email
- [ ] Verify case-insensitive search works
- [ ] Verify “No results found” message for invalid searches
- [ ] Clear search and verify all doctors reappear

### Search Patients

- [ ] Use search bar to search patient by full name
- [ ] Search patient by partial name
- [ ] Search patient by phone number
- [ ] Search patient by email

- [ ] Search patient by patient ID (if implemented)
- [ ] Verify case-insensitive search works
- [ ] Verify “No results found” message for invalid searches
- [ ] Clear search and verify all patients reappear

## Logout

- [ ] Click “Logout” button in admin portal
  - [ ] Verify logout confirmation (if implemented)
  - [ ] Verify redirect to login page or homepage
  - [ ] Try accessing `/admin/dashboard` after logout - should redirect to login
  - [ ] Verify session is completely cleared
- 

## B. Doctor Portal Testing

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### Login & Authentication

- [ ] Navigate to `/doctor/login`
- [ ] Login with doctor credentials (e.g., `dr.sharma` / `doctor123` )
- [ ] Verify successful login redirects to doctor dashboard
- [ ] Try login with incorrect password - should show error
- [ ] Try login with deleted/blacklisted doctor account - should deny access
- [ ] Verify doctor cannot access admin portal
- [ ] Verify doctor cannot access patient portal

### Dashboard Overview

- [ ] View doctor dashboard at `/doctor/dashboard`
- [ ] Verify “Today’s Appointments” section displays appointments for current day
- [ ] Verify “This Week’s Appointments” section displays appointments for next 7 days
- [ ] Verify “Total Appointments” count shows all assigned appointments
- [ ] Check appointment cards show:
  - [ ] Patient Name
  - [ ] Date & Time
  - [ ] Status
  - [ ] Patient Phone Number
- [ ] Verify dashboard shows only appointments for the logged-in doctor

### Appointment Management

#### View All Upcoming Appointments

- [ ] Navigate to “My Appointments” or “All Appointments” page
- [ ] Verify all upcoming appointments are listed
- [ ] Verify appointments are sorted by date and time
- [ ] Check each appointment shows complete details
- [ ] Filter appointments by “Today”
- [ ] Filter appointments by “This Week”
- [ ] Filter appointments by “All Upcoming”

## View Past Appointments

- [ ] Navigate to “Past Appointments” or filter by “Completed”
- [ ] Verify only completed appointments are shown
- [ ] Verify completed appointments show treatment details
- [ ] Verify cancelled appointments are also visible (if implemented)

## Mark Appointment as Completed

- [ ] Find an upcoming appointment with status “Booked”
- [ ] Click “Complete” or “Mark as Completed” button
- [ ] Verify confirmation dialog appears
- [ ] Confirm completion
- [ ] Verify appointment status changes to “Completed”
- [ ] Verify appointment moves to past/completed section
- [ ] Verify dashboard statistics update correctly

## Add Treatment Details

- [ ] Click on a completed appointment
- [ ] Navigate to “Add Treatment” or “Treatment Details” form
- [ ] Fill in treatment details:
- [ ] Diagnosis (e.g., “Hypertension”)
- [ ] Prescription (e.g., “Amlodipine 5mg - 1 tablet daily”)
- [ ] Notes (e.g., “Follow-up in 2 weeks”)
- [ ] Treatment Date (auto-filled)
- [ ] Save treatment details
- [ ] Verify success message
- [ ] Verify treatment details are saved and visible
- [ ] Try editing treatment details - should allow updates
- [ ] Verify patient can view these treatment details in their history

## Patient Medical History

- [ ] Click on a patient’s name in appointment list
- [ ] Navigate to “Patient History” or “Medical Records” page
- [ ] Verify all past appointments with this patient are displayed
- [ ] Check each past visit shows:
- [ ] Date of Visit
- [ ] Diagnosis
- [ ] Prescription
- [ ] Doctor’s Notes
- [ ] Verify history is sorted chronologically (latest first)
- [ ] Verify doctor can view full treatment history for informed consultation
- [ ] Verify “No history available” message for new patients

## Availability Management

### Set Availability

- [ ] Navigate to “My Availability” or “Set Availability” page
- [ ] View current availability for next 7 days

- [ ] Set availability for a specific date:
- [ ] Select date
- [ ] Set time slots (e.g., 9:00 AM - 1:00 PM, 3:00 PM - 6:00 PM)
- [ ] Or mark as “Not Available”
- [ ] Save availability settings
- [ ] Verify success message
- [ ] Verify availability is visible to patients when booking

### **Update Availability**

- [ ] Navigate to existing availability settings
- [ ] Modify time slots for an existing date
- [ ] Change availability from “Available” to “Not Available”
- [ ] Change availability from “Not Available” to “Available”
- [ ] Save changes
- [ ] Verify changes are reflected immediately
- [ ] Verify patients see updated availability when booking

### **Profile Management**

- [ ] Navigate to “My Profile” or “Profile Settings”
- [ ] View personal information:
- [ ] Name
- [ ] Email
- [ ] Specialization
- [ ] Qualification
- [ ] Experience
- [ ] Phone Number
- [ ] Click “Edit Profile”
- [ ] Modify phone number
- [ ] Modify qualification/experience
- [ ] Try modifying email (should be allowed or restricted for security)
- [ ] Save changes
- [ ] Verify success message
- [ ] Verify changes are reflected in profile

### **Logout**

- [ ] Click “Logout” button in doctor portal
- [ ] Verify redirect to login page
- [ ] Try accessing `/doctor/dashboard` after logout - should redirect to login
- [ ] Verify session is cleared

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## **C. Patient Portal Testing**

### **Registration**

- [ ] Navigate to `/patient/register`
- [ ] Fill in registration form:

- [ ] Full Name (e.g., "Alice Johnson")
- [ ] Email (e.g., "alice.johnson@email.com")
- [ ] Password (minimum 6 characters)
- [ ] Confirm Password
- [ ] Phone Number
- [ ] Date of Birth
- [ ] Gender
- [ ] Blood Group (optional)
- [ ] Address (optional)
- [ ] Submit registration form
- [ ] Verify success message
- [ ] Verify automatic login after registration
- [ ] Verify redirect to patient dashboard
- [ ] Try registering with existing email - should show error
- [ ] Try registering with mismatched passwords - should show error
- [ ] Try registering with invalid email format - should show validation error

## Login & Authentication

- [ ] Navigate to `/patient/login`
- [ ] Login with patient credentials
- [ ] Verify successful login redirects to patient dashboard
- [ ] Try login with incorrect password - should show error
- [ ] Try login with non-existent email - should show error
- [ ] Verify patient cannot access admin portal
- [ ] Verify patient cannot access doctor portal

## Profile Management

### View Profile

- [ ] Navigate to "My Profile" or "Profile Settings"
- [ ] Verify all personal information is displayed:
  - [ ] Name
  - [ ] Email
  - [ ] Phone Number
  - [ ] Date of Birth
  - [ ] Age (calculated from DOB)
  - [ ] Gender
  - [ ] Blood Group
  - [ ] Address

### Edit Profile

- [ ] Click "Edit Profile" button
- [ ] Modify phone number
- [ ] Modify address
- [ ] Modify blood group
- [ ] Try modifying email (should be restricted or require verification)
- [ ] Try modifying date of birth (should be restricted)



- ☐ Save changes
- ☐ Verify success message
- ☐ Verify changes are reflected immediately in profile

## Doctor Search

### Search by Specialization

- ☐ Navigate to “Find Doctors” or “Book Appointment” page
- ☐ View list of all specializations/departments
- ☐ Click on a specialization (e.g., “Cardiology”)
- ☐ Verify only doctors with that specialization are shown
- ☐ Use search/filter to find specific specialization
- ☐ Verify search is case-insensitive
- ☐ Try searching for non-existent specialization - should show “No doctors found”

### Search by Doctor Name

- ☐ Use search bar to find doctor by name
- ☐ Search by partial name
- ☐ Verify search results show matching doctors
- ☐ Verify each doctor card shows:
  - ☐ Name
  - ☐ Specialization
  - ☐ Qualification
  - ☐ Experience
- ☐ “View Availability” or “Book Appointment” button

### View Doctor Details

- ☐ Click on a doctor card or “View Details” button
- ☐ View complete doctor profile:
  - ☐ Full Name
  - ☐ Specialization
  - ☐ Qualification
  - ☐ Experience
  - ☐ Available time slots for next 7 days
- ☐ Verify availability is clearly indicated (available/not available)
- ☐ Verify “Book Appointment” option is visible for available slots

## Appointment Booking

### View Doctor Availability

- ☐ Select a doctor
- ☐ View availability calendar/schedule for next 7 days
- ☐ Verify available dates are highlighted or marked clearly
- ☐ Verify unavailable dates are grayed out or marked as “Not Available”
- ☐ Verify available time slots are shown for each date

### Book Appointment

- ☐ Select a doctor with available slots
- ☐ Choose an available date

- [ ] Choose an available time slot
- [ ] Add appointment reason/description (optional)
- [ ] Submit booking request
- [ ] Verify success message: "Appointment booked successfully"
- [ ] Verify appointment appears in "My Appointments" list
- [ ] Verify appointment status is "Booked"
- [ ] Verify email notification is sent (if email configured)
- [ ] Try booking same slot again - should show "Slot already booked" error

## **My Appointments**

### **View Upcoming Appointments**

- [ ] Navigate to "My Appointments" page
- [ ] View all upcoming appointments
- [ ] Verify each appointment shows:
  - [ ] Doctor Name
  - [ ] Specialization
  - [ ] Date & Time
  - [ ] Status (Booked)
  - [ ] Appointment ID
  - [ ] Options: Reschedule, Cancel
- [ ] Verify appointments are sorted by date (earliest first)
- [ ] Filter appointments by "Upcoming"
- [ ] Verify only future appointments are shown

### **Reschedule Appointment**

- [ ] Click "Reschedule" button for an upcoming appointment
- [ ] Select new date from available slots
- [ ] Select new time slot
- [ ] Confirm rescheduling
- [ ] Verify success message
- [ ] Verify appointment date/time is updated
- [ ] Verify old slot becomes available again
- [ ] Verify email notification is sent (if configured)
- [ ] Try rescheduling to an already booked slot - should show error

### **Cancel Appointment**

- [ ] Click "Cancel" button for an upcoming appointment
- [ ] Verify confirmation dialog: "Are you sure you want to cancel?"
- [ ] Confirm cancellation
- [ ] Verify success message: "Appointment cancelled"
- [ ] Verify appointment status changes to "Cancelled"
- [ ] Verify cancelled appointment moves to history
- [ ] Verify time slot becomes available for other patients
- [ ] Verify email notification is sent (if configured)
- [ ] Try cancelling already cancelled appointment - should show error or hide option

## Appointment History

### View Past Appointments

- [ ] Navigate to “Appointment History” or filter by “Past”
- [ ] View all completed appointments
- [ ] Verify each appointment shows:
  - [ ] Doctor Name
  - [ ] Date & Time
  - [ ] Status (Completed)
  - [ ] “View Details” button
- [ ] Verify appointments are sorted chronologically (latest first)

### View Treatment Details

- [ ] Click on a completed appointment
- [ ] View treatment details:
  - [ ] Date of Visit
  - [ ] Doctor Name
  - [ ] Diagnosis
  - [ ] Prescription/Medicines
  - [ ] Doctor’s Notes
  - [ ] Follow-up instructions (if any)
- [ ] Verify all treatment information is displayed correctly
- [ ] Verify patient can download/print treatment details (if implemented)
- [ ] Verify “No treatment details available” message if doctor hasn’t added details

### View Full Medical History

- [ ] Navigate to “Medical History” page
- [ ] View complete medical history across all doctors
- [ ] Verify history includes:
  - [ ] All past appointments
  - [ ] All diagnoses
  - [ ] All prescriptions
  - [ ] All treatments received
- [ ] Verify history is sorted chronologically
- [ ] Verify patient can search/filter medical history
- [ ] Verify patient can export medical history (if implemented)

## Logout

- [ ] Click “Logout” button in patient portal
  - [ ] Verify redirect to homepage or login page
  - [ ] Try accessing `/patient/dashboard` after logout - should redirect to login
  - [ ] Verify session is cleared
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## D. REST API Testing

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### Prerequisites

- [ ] Install Postman, Insomnia, or use `curl` command
- [ ] Application is running
- [ ] You have valid authentication credentials

### API Authentication

- [ ] Test API endpoints without authentication - should return 401 Unauthorized
- [ ] Test API endpoints with invalid token - should return 401 Unauthorized
- [ ] Test API endpoints with valid token - should return success

### GET Endpoints

#### GET /api/doctors

- [ ] Send GET request to `http://127.0.0.1:5000/api/doctors`
- [ ] Verify response status: 200 OK
- [ ] Verify response format: JSON
- [ ] Verify response includes list of doctors
- [ ] Verify each doctor object contains:
  - [ ] id
  - [ ] name
  - [ ] specialization
  - [ ] email
  - [ ] qualification
  - [ ] experience
- [ ] Test with query parameters: `/api/doctors?specialization=Cardiology`
- [ ] Verify pagination (if implemented): `/api/doctors?page=1&limit=10`

#### Example `curl` command:

```
curl -X GET http://127.0.0.1:5000/api/doctors
```

#### GET /api/patients

- [ ] Send GET request to `http://127.0.0.1:5000/api/patients`
- [ ] Verify requires admin authentication
- [ ] Verify response status: 200 OK
- [ ] Verify response format: JSON
- [ ] Verify response includes list of patients
- [ ] Verify each patient object contains:
  - [ ] id
  - [ ] name
  - [ ] email
  - [ ] phone
  - [ ] age
  - [ ] gender

#### Example `curl` command:

```
curl -X GET http://127.0.0.1:5000/api/patients \
-H "Authorization: Bearer YOUR_TOKEN"
```

## GET /api/appointments

- [ ] Send GET request to `http://127.0.0.1:5000/api/appointments`
- [ ] Verify requires authentication
- [ ] Verify response status: 200 OK
- [ ] Verify response format: JSON
- [ ] Verify response includes list of appointments
- [ ] Verify each appointment object contains:
  - [ ] id
  - [ ] patient\_id
  - [ ] doctor\_id
  - [ ] date
  - [ ] time
  - [ ] status
- [ ] Test with filters: `/api/appointments?status=booked`
- [ ] Test with date filter: `/api/appointments?date=2025-11-15`

## GET /api/stats (Admin Only)

- [ ] Send GET request to `http://127.0.0.1:5000/api/stats`
- [ ] Verify requires admin authentication
- [ ] Verify response status: 200 OK
- [ ] Verify response includes:
  - [ ] total\_doctors
  - [ ] total\_patients
  - [ ] total\_appointments
  - [ ] appointments\_today
  - [ ] appointments\_by\_status (breakdown)
- [ ] Test access with non-admin user - should return 403 Forbidden

### Example `curl` command:

```
curl -X GET http://127.0.0.1:5000/api/stats \
-H "Authorization: Bearer ADMIN_TOKEN"
```

## POST Endpoints

### POST /api/doctors (Admin Only)

- [ ] Send POST request to `http://127.0.0.1:5000/api/doctors`
- [ ] Set Content-Type header: `application/json`
- [ ] Send request body:

```
{
  "name": "Dr. Test User",
  "email": "test.doctor@hospital.com",
  "password": "testpass123",
  "specialization": "Dermatology",
  "qualification": "MBBS, MD",
  "experience": "5 years",
  "phone": "9876543210"
}
```

- [ ] Verify response status: 201 Created
- [ ] Verify response includes created doctor object
- [ ] Verify doctor is added to database
- [ ] Try creating duplicate email - should return 400 Bad Request
- [ ] Try with missing required fields - should return 400 Bad Request

#### Example `curl` command:

```
curl -X POST http://127.0.0.1:5000/api/doctors \
  -H "Content-Type: application/json" \
  -H "Authorization: Bearer ADMIN_TOKEN" \
  -d '{"name":"Dr. Test", "email":"test@hospital.com", "password":"test123", "specialization":"Dermatology", "qualification":"MBBS", "experience":"5", "phone":"9876543210"}'
```

### POST /api/appointments

- [ ] Send POST request to `http://127.0.0.1:5000/api/appointments`
- [ ] Set Content-Type header: `application/json`
- [ ] Send request body:

```
{
  "patient_id": 1,
  "doctor_id": 2,
  "date": "2025-11-20",
  "time": "10:00",
  "reason": "Regular checkup"
}
```

- [ ] Verify response status: 201 Created
- [ ] Verify response includes created appointment object
- [ ] Verify appointment is added to database
- [ ] Try booking same slot - should return 400 Bad Request
- [ ] Try booking in the past - should return 400 Bad Request
- [ ] Try with invalid doctor\_id - should return 404 Not Found

#### Example `curl` command:

```
curl -X POST http://127.0.0.1:5000/api/appointments \
  -H "Content-Type: application/json" \
  -H "Authorization: Bearer PATIENT_TOKEN" \
  -d '{"patient_id":1,"doctor_id":2,"date":"2025-11-20","time":"10:00","reason":"Checkup"}'
```

## PUT/PATCH Endpoints (if implemented)

### UPDATE /api/appointments/:id

- [ ] Send PUT/PATCH request to `http://127.0.0.1:5000/api/appointments/1`
- [ ] Update appointment status to "Completed"
- [ ] Verify response status: 200 OK
- [ ] Verify appointment is updated in database
- [ ] Try updating with invalid status - should return 400 Bad Request

## DELETE Endpoints (if implemented)

### DELETE /api/appointments/:id

- [ ] Send DELETE request to `http://127.0.0.1:5000/api/appointments/1`
- [ ] Verify response status: 200 OK or 204 No Content
- [ ] Verify appointment is deleted/cancelled in database
- [ ] Try deleting non-existent appointment - should return 404 Not Found

## Error Handling

- [ ] Test API with malformed JSON - should return 400 Bad Request
- [ ] Test API with wrong HTTP method - should return 405 Method Not Allowed
- [ ] Test API with non-existent endpoint - should return 404 Not Found
- [ ] Verify all error responses include meaningful error messages
- [ ] Verify all error responses are in JSON format

## E. Edge Cases & Validations

### Double Booking Prevention

- [ ] Login as two different patients in two browser tabs
- [ ] Both try to book the same doctor at the same date/time simultaneously
- [ ] Verify only one booking succeeds
- [ ] Verify the other gets "Slot already booked" error
- [ ] Verify database integrity (no duplicate bookings)

### Past Date Validation

- [ ] Try booking appointment for a date in the past
- [ ] Verify error message: "Cannot book appointment in the past"
- [ ] Try rescheduling to a past date
- [ ] Verify system prevents past date selection
- [ ] Verify date picker disables past dates

### Invalid Login Attempts

- [ ] Try admin login with patient credentials - should fail
- [ ] Try doctor login with admin credentials - should fail
- [ ] Try patient login with doctor credentials - should fail
- [ ] Try logging in with SQL injection attempts (e.g., `' OR '1'='1'`)
- [ ] Verify system prevents unauthorized access

- ☐ Verify proper error messages without revealing security info

## Unauthorized Access Prevention

- ☐ Logout from patient portal
- ☐ Try accessing `/patient/dashboard` directly via URL
- ☐ Verify redirect to login page
- ☐ Try accessing `/admin/dashboard` as a patient
- ☐ Verify “Access Denied” or redirect to patient portal
- ☐ Try accessing `/doctor/dashboard` as a patient
- ☐ Verify “Access Denied” or redirect to patient portal
- ☐ Try accessing other users’ data via URL manipulation (e.g., `/patient/profile/2` )
- ☐ Verify users can only access their own data

## Form Validation

### Empty Fields

- ☐ Submit login form with empty username
- ☐ Submit login form with empty password
- ☐ Submit registration form with missing required fields
- ☐ Submit doctor add form with empty specialization
- ☐ Verify appropriate error messages appear
- ☐ Verify form highlights invalid fields

### Invalid Data Formats

- ☐ Enter invalid email format (e.g., “notanemail”)
- ☐ Enter phone number with letters (e.g., “abcd1234”)
- ☐ Enter phone number with less than 10 digits
- ☐ Enter password less than minimum length
- ☐ Enter future date of birth
- ☐ Verify validation errors appear
- ☐ Verify form doesn’t submit with invalid data

### Password Mismatch

- ☐ Register patient with mismatched password and confirm password
- ☐ Change password with mismatched new password and confirm
- ☐ Verify error message: “Passwords do not match”
- ☐ Verify form doesn’t submit

## Session Management

- ☐ Login in one browser tab
- ☐ Logout in another browser tab
- ☐ Try performing action in first tab
- ☐ Verify user is logged out everywhere
- ☐ Test session timeout (if implemented)
- ☐ Verify session persistence after browser close (if “Remember Me” is implemented)

## Responsive Design Testing

- ☐ Open application on desktop (1920x1080)



- ☐ Verify layout looks clean and professional
- ☐ Open application on tablet size (768x1024)
- ☐ Verify layout adjusts properly
- ☐ Open application on mobile size (375x667)
- ☐ Verify layout is mobile-friendly
- ☐ Test navigation menu on mobile (hamburger menu if implemented)
- ☐ Test forms on mobile devices
- ☐ Test tables on mobile (should scroll or stack)
- ☐ Verify all buttons are easily clickable on touch screens

## **Data Integrity**

- ☐ Delete a doctor who has upcoming appointments
- ☐ Verify appointments are handled correctly (cancelled or reassigned)
- ☐ Delete a patient who has past appointments
- ☐ Verify appointment history is preserved
- ☐ Complete an appointment and add treatment
- ☐ Delete the doctor later
- ☐ Verify treatment history remains accessible to patient

## **Concurrent Operations**

- ☐ Login as admin in one tab
- ☐ Login as doctor in another tab
- ☐ Admin edits doctor's details
- ☐ Doctor tries to update profile simultaneously
- ☐ Verify no data conflicts occur
- ☐ Verify latest changes are saved correctly

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## **F. Email Notifications (If Configured)**

### **Appointment Booking Email**

- ☐ Book a new appointment as patient
- ☐ Check patient's email inbox
- ☐ Verify appointment confirmation email received
- ☐ Verify email contains:
  - ☐ Patient name
  - ☐ Doctor name
  - ☐ Appointment date and time
  - ☐ Department/Specialization
  - ☐ Appointment ID
  - ☐ Hospital contact information
- ☐ Check doctor's email inbox (if doctor notifications are enabled)
- ☐ Verify doctor receives new appointment notification

## Appointment Cancellation Email

- ☐ Cancel an appointment as patient
- ☐ Check patient's email inbox
- ☐ Verify cancellation confirmation email received
- ☐ Verify email contains:
  - ☐ Appointment details
  - ☐ Cancellation confirmation
  - ☐ Refund policy (if applicable)
- ☐ Check doctor's email inbox
- ☐ Verify doctor receives cancellation notification

## Appointment Rescheduling Email

- ☐ Reschedule an appointment as patient
- ☐ Check patient's email inbox
- ☐ Verify rescheduling confirmation email received
- ☐ Verify email shows old and new date/time
- ☐ Check doctor's email inbox
- ☐ Verify doctor receives rescheduling notification

## Email Formatting

- ☐ Verify emails have professional HTML formatting
  - ☐ Verify emails have proper subject lines
  - ☐ Verify emails have hospital logo (if implemented)
  - ☐ Verify all links in emails work correctly
  - ☐ Verify emails are mobile-responsive
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## G. Performance & UI Testing

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### Page Load Times

- ☐ Measure homepage load time (should be < 2 seconds)
- ☐ Measure dashboard load time (should be < 3 seconds)
- ☐ Measure doctors list load time with 50+ doctors
- ☐ Measure appointments list load time with 100+ appointments
- ☐ Verify no significant lag during navigation

### Database Performance

- ☐ Add 100+ doctors and verify list loads quickly
- ☐ Add 500+ appointments and verify filtering works smoothly
- ☐ Perform complex searches and verify response time
- ☐ Check if pagination improves performance for large datasets

### Browser Compatibility

- ☐ Test on Google Chrome (latest version)
- ☐ Test on Mozilla Firefox (latest version)

- ☐ Test on Microsoft Edge (latest version)
- ☐ Test on Safari (macOS/iOS)
- ☐ Verify consistent appearance across browsers
- ☐ Verify all features work on each browser

## UI/UX Quality

- ☐ Verify consistent color scheme throughout application
- ☐ Verify consistent font styles and sizes
- ☐ Verify proper spacing and alignment
- ☐ Verify all buttons have hover effects
- ☐ Verify all forms have clear labels
- ☐ Verify error messages are user-friendly
- ☐ Verify success messages are prominent
- ☐ Verify loading spinners appear during operations
- ☐ Verify navigation is intuitive and logical
- ☐ Verify accessibility (keyboard navigation, screen reader support if implemented)

## JavaScript Console

- ☐ Open browser developer tools (F12)
- ☐ Navigate through all pages
- ☐ Check console for JavaScript errors
- ☐ Verify no 404 errors for CSS/JS files
- ☐ Verify no CORS errors
- ☐ Verify no deprecation warnings

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## Final Testing Summary

After completing all tests, fill out this summary:

### Total Tests Conducted

- ☐ Admin Portal: \_ / \_\_\_ passed
- ☐ Doctor Portal: \_ / \_\_\_ passed
- ☐ Patient Portal: \_ / \_\_\_ passed
- ☐ API Endpoints: \_ / \_\_\_ passed
- ☐ Edge Cases: \_ / \_\_\_ passed
- ☐ Email Tests: \_ / \_\_\_ passed
- ☐ Performance Tests: \_ / \_\_\_ passed

### Known Issues


List any issues found during testing:

1.

2.

3.

## Critical Bugs (Must Fix Before Submission)

- ☐ None found 
- ☐ Bug 1: \_\_\_\_\_
- ☐ Bug 2: \_\_\_\_\_

## Minor Issues (Optional to Fix)

- ☐ Issue 1: \_\_\_\_\_
- ☐ Issue 2: \_\_\_\_\_

## Testing Completion

- ☐ All core features tested and working
- ☐ All API endpoints tested and working
- ☐ No critical bugs remaining
- ☐ Application is ready for submission

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## Testing Tips

1. **Test Methodically:** Complete one section at a time rather than jumping around
2. **Document Issues:** Note down any bugs immediately with steps to reproduce
3. **Use Multiple Browsers:** Don't just test on one browser
4. **Test with Real Data:** Use realistic names, emails, and data
5. **Test Edge Cases:** Don't just test the happy path
6. **Clear Browser Cache:** Clear cache between major tests to avoid cached data issues
7. **Use Incognito Mode:** Test in incognito/private mode to simulate fresh user sessions
8. **Test with Friends:** Have someone else test your application for unbiased feedback
9. **Record Test Results:** Keep a log of what worked and what didn't
10. **Retest After Fixes:** After fixing bugs, retest the affected features

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## Need Help?

If you encounter issues during testing:

- Refer to `TROUBLESHOOTING.md` for common problems and solutions
- Check the application logs in the terminal where Flask is running
- Review the browser console for JavaScript errors
- Check the database file ( `hospital.db` ) for data integrity

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**Testing completed on:** \_\_\_\_ (Date)

**Tested by:** \_\_\_\_ (Your Name/Roll Number)

**Ready for submission:** ☐ Yes ☐ No

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**Good luck with your testing!** 