

Spring Boot MVC Application Documentation

1. Project overview :

This documentation provides comprehensive guide to setting up, configuration, and running a spring boot MVC application. This guide includes setting up the development environment, configuring the application, and running the project.

2. Prerequisites:

- Java Development kit(JDK)
- Maven
- IDE(eclipse)
- Git
- Spring initializer

3. Setting up project:

1. Add spring initializer to add dependencies - either we can add spring initializer externally or install spring inside eclipse IDE
2. Create New project in eclipse and choose starter project
3. Create artifact id and group id
4. Choose dependencies which is needed for project
 - a. Spring web – for developing web or rest API
 - b. Spring boot dev tools – for live reload server
 - c. MySQL driver - database
 - d. Validation – for user input restriction
 - e. Lombok – to avoid boiler plate code
 - f. Spring data JPA – to connect mysql
 - g. Thymeleaf – template engine

h. Spring security

4. Configuring the application:

1. After creating a project, to connect spring boot to database add some properties in application properties like database uri, username, password and hibernate for creating a database
2. In main folder create a packages for control, model, service, repository, security configuration, validation
3. Create a entity(user, role, patient, doctor, appointment, medicine) and add some validation to those fields, create repository interface, create service interface and class, create controller class
4. Add custom exception handling and validation
5. Add spring security using role based authentication and authorization for doctor and patient, where patient can book appointment and add their details, doctor can edit, add and update data's for appointment, medicine.
6. Create frontend templates in static → template folder and connect frontend to backend by using thyme leaf template engine

5. Running the Application:

1. Run the main class as java application or we can also run it by right click on the project and run as spring boot app

2. By default the tomcat server is loaded and type a link in website like “localhost:8080/endpoints” to check our application running.

6. Deploying the project using railway:

1. After completing the project, I was creating a demo video of my project.

Here is the link →

[“https://drive.google.com/file/d/15TU2CJsNkn6uyHEmuXQRL08euFG4rpkk/view”](https://drive.google.com/file/d/15TU2CJsNkn6uyHEmuXQRL08euFG4rpkk/view)

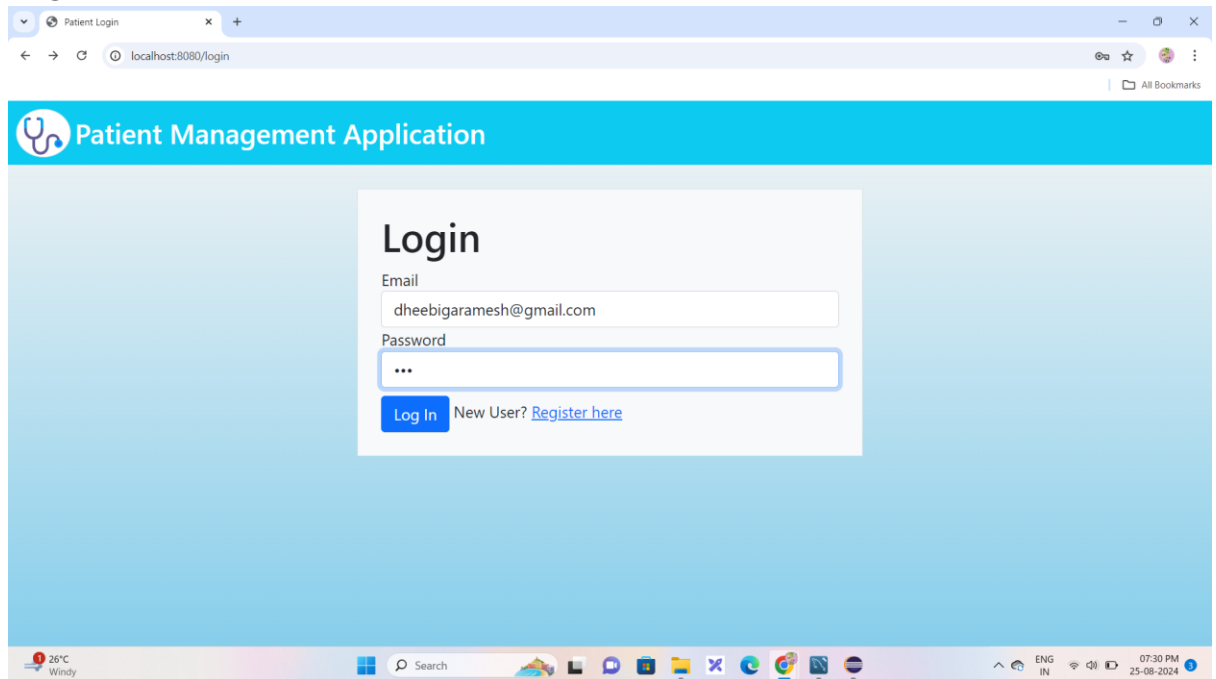
Endpoints:

- ✓ /login
- ✓ /logout
- ✓ /registration
- ✓ /doctorScreen
- ✓ /dashboard
- ✓ /doctorScreen/datalist
- ✓ /doctorScreen/doctors
- ✓ /doctorScreen/updatedoctor/id
- ✓ /doctorScreen/deletedoctor/id
- ✓ /doctorScreen/schedulelist
- ✓ /doctorScreen/schedules
- ✓ /doctorScreen/updateschedule/id
- ✓ /doctorScreen/medicinelist
- ✓ /doctorScreen/medicines
- ✓ /doctorScreen/updatemedicine/id
- ✓ /dashboard
- ✓ /dashboard/patientlist
- ✓ /dashboard/patients
- ✓ /dashboard/updatepatient/id
- ✓ /dashboard/medicinelist

- ✓ /dashboard/schedulelist
- ✓ /dashboard/patienthistory/id

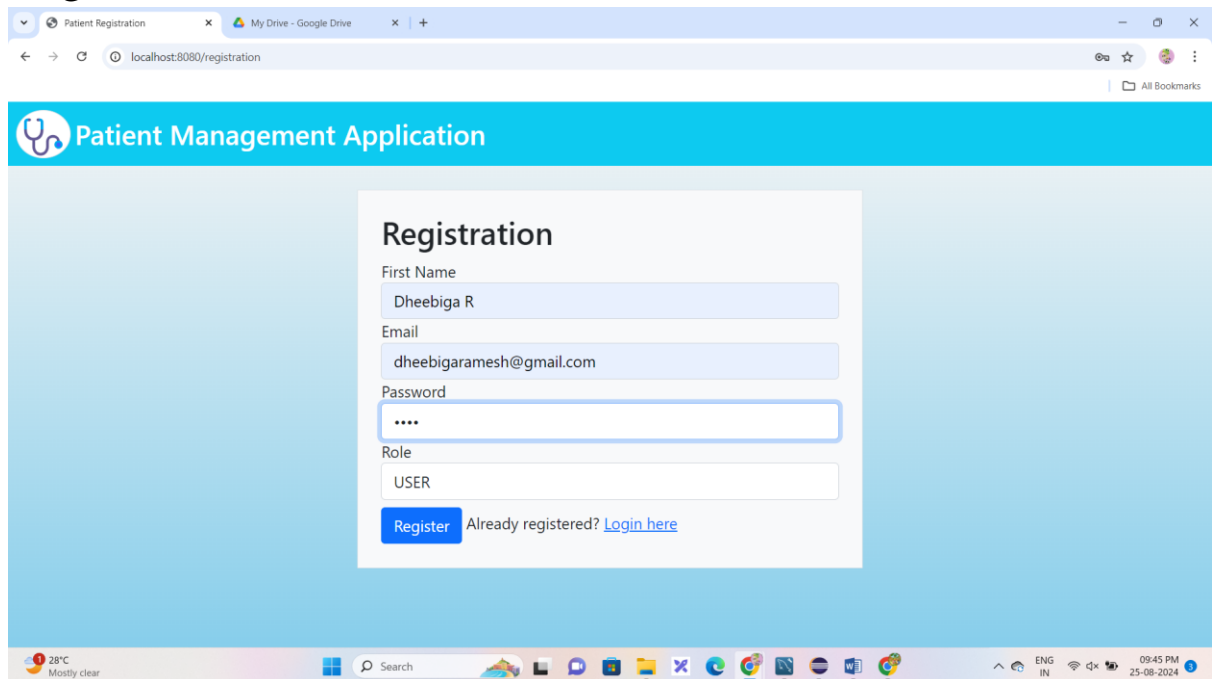
Sample pictures:

1. login



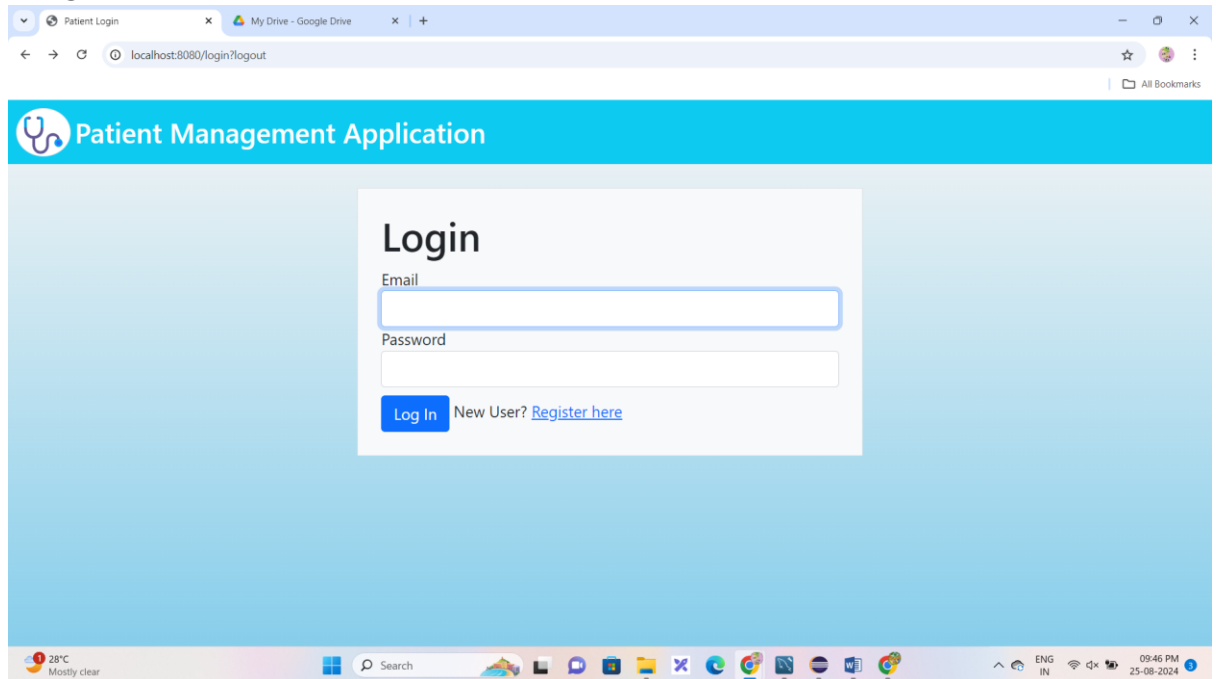
The screenshot shows a web browser window with the title "Patient Login" and the URL "localhost:8080/login". The page features a blue header with the "Patient Management Application" logo and name. The main content area has a light blue background. In the center, there is a white box titled "Login" containing two input fields: "Email" with the value "dheebigaramesh@gmail.com" and "Password" with masked characters "...". Below the password field is a blue "Log In" button and a link "New User? Register here". The Windows taskbar at the bottom shows the date and time as 07:30 PM on 25-08-2024.

2. Registration

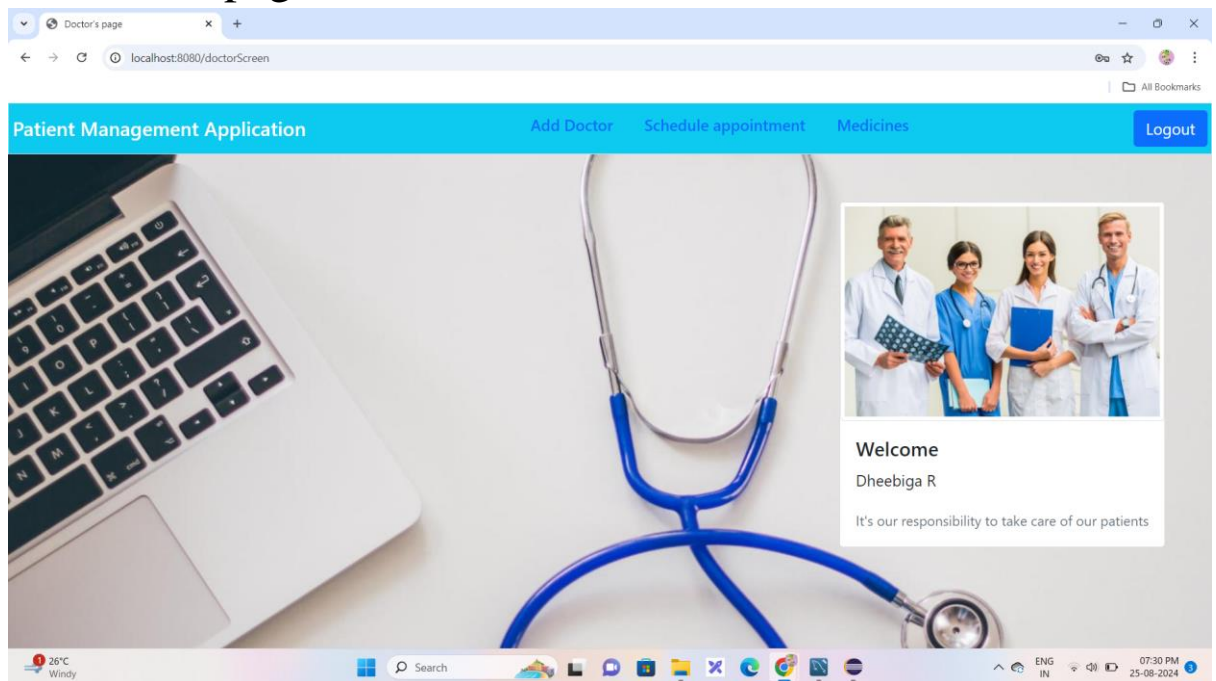


The screenshot shows a web browser window with the title "Patient Registration" and the URL "localhost:8080/registration". The page features a blue header with the "Patient Management Application" logo and name. The main content area has a light blue background. In the center, there is a white box titled "Registration" containing four input fields: "First Name" with the value "Dheebiga R", "Email" with the value "dheebigaramesh@gmail.com", "Password" with masked characters "....", and "Role" with the value "USER". Below the role field is a blue "Register" button and a link "Already registered? Login here". The Windows taskbar at the bottom shows the date and time as 09:45 PM on 25-08-2024.

3. Logout



4. Doctor's page



5.Add doctor's

The image shows two screenshots of a web application. The top screenshot displays the 'Doctors list' page, which has a blue header with the title 'Patient Management Application'. Below the header, there are two buttons: 'Home page' and 'Add Doctor'. The main content area is titled 'Doctor's List' and contains a table with the following columns: 'Id', 'Name', 'Qualification', 'Experience', 'Specialist', and 'Actions'. The table is currently empty. The bottom screenshot shows the 'Add Doctor's information' page, which has a blue header with the title 'Add Doctor's information'. The main content area is titled 'Add New Doctor' and contains a form with the following fields: 'Name' (with the value 'Sarah Kim'), 'Qualification' (with the value 'M.D., FACR'), 'Experience' (with the value '22'), and 'Specialist' (with the value 'Rheumatologist'). There is a 'Submit' button at the bottom of the form. Both screenshots show a Windows taskbar at the bottom with various application icons and a system tray showing the date and time.

Doctors list

localhost:8080/doctorScreen/doctorlist

Patient Management Application

Doctor's List

Home page Add Doctor

Id	Name	Qualification	Experience	Specialist	Actions
----	------	---------------	------------	------------	---------

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Search

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Add Doctor

localhost:8080/doctorScreen/doctors

Add Doctor's information

Add New Doctor

Name:

Sarah Kim

Qualification:

M.D., FACR

Experience:

22

Specialist:

Rheumatologist

Submit

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Search

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07:40 PM 25-08-2024

Patient Management Application

Doctor's List

[Home page](#)[Add Doctor](#)

Id	Name	Qualification	Experience	Specialist	Actions
1	Jane Smith	M.D., FACC	10	Cardiologist	Update Delete
2	John Doe	M.D., FAAOS	12	Orthopedic Surgeon	Update Delete
3	Emily Johnson	M.D., FAAN	7	Neurologist	Update Delete
4	Michael Brown	M.D., FACP	6	Oncologist	Update Delete
5	Linda Garcia	M.D., FAAP	10	Pediatrician	Update Delete
6	Robert Lee	M.D., FACE	4	Endocrinologist	Update Delete
7	Patricia Wilson	M.D., FAAD	23	Dermatologist	Update Delete

Update Doctor Details

Update Doctor

Name:

Qualification:

Experience:

Specialist:

[Update](#)[Microsoft Store](#)

6.Schedule appointment

Appointment list

localhost:8080/doctorScreen/schedulelist

All Bookmarks

Patient Management Application

Appointment's List

Home page

Add Appointment

Id	Date	Time	Disease	Doctor	Actions
1	2024-08-26	10:42	pulmonologist	William Clark	<div>Update</div> <div>Delete</div>
2	2024-08-26	11:43	Gastroenterologist	David Martinez	<div>Update</div> <div>Delete</div>
3	2024-08-26	13:44	Rheumatologist	Sarah Kim	<div>Update</div> <div>Delete</div>
4	2024-08-27	15:50	Dermatologist	Patricia Wilson	<div>Update</div> <div>Delete</div>
5	2024-08-26	14:40	Endocrinologist	Robert Lee	<div>Update</div> <div>Delete</div>
6	2024-08-28	10:29	Pediatrician	Linda Garcia	<div>Update</div> <div>Delete</div>
7	2024-08-30	11:50	Neuroloaist	Emilv Johnson	<div>Update</div> <div>Delete</div>

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Update schedule

localhost:8080/doctorScreen/updateschedule/1

All Bookmarks

Update Schedule Details

Update schedule

Date:

26-08-2024

Time:

10:00 AM

Disease:

pulmonologist

Doctor:

William Clark

Update

26°C Windy

Search

07:49 PM 25-08-2024

Medicine's List

localhost:8080/doctorScreen/medicines

All Bookmarks

Add Medicine Details

Schedule appointment

Medicine Name:

Levothyroxine

Manufacturing Date:

02-08-2024

Expired date:

23-10-2024

Medicine for:

Hypothyroidism

Submit

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Search

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7.Add, edit, delete medicine

Medicine list

localhost:8080/doctorScreen/medicinelist

All Bookmarks

Patient Management Application

Medicine's List

Home page

Add medicine

Id	Medicine Name	Manufacturing Date	Expired Date	Medicine For	Actions
1	Lisinopril,Amlodipine	2024-08-01	2025-01-01	Heart problems	<div>Update</div> <div>Delete</div>
2	Ibuprofen,Acetaminophen, Duloxetine	2024-01-25	2024-08-05	Bones and joints	<div>Update</div> <div>Delete</div>
3	Copaxone ,Avonex	2024-06-26	2024-12-26	Nervous disorders	<div>Update</div> <div>Delete</div>
4	Tamoxifen,Herceptin	2025-01-03	2025-10-01	Breast Cancer	<div>Update</div> <div>Delete</div>
5	Cisplatin,Tarceva	2024-02-07	2024-05-29	Lung cancer	<div>Update</div> <div>Delete</div>
6	Albuterol,Fluticasone	2024-10-16	2024-12-11	Asthma	<div>Update</div> <div>Delete</div>
7	Amoxicillin	2024-12-16	2025-02-18	Ear infections	<div>Update</div> <div>Delete</div>

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25-08-2024

Update medicine

localhost:8080/doctorScreen/updatedmedicine/1

All Bookmarks

Update medicine Details

Update medicine

Medicine Name:

Lisinopril,Amlodipine

Manufacturing Date:

09-08-2024

Expired date:

01-01-2025

Medicine for:

Heart problems

Update

26°C
Mostly clear

Search

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25-08-2024

8.Patient dashboard

The image displays two screenshots of a web browser showing the Patient Management Application interface. The browser's address bar indicates the application is running on localhost:8080.

Top Screenshot: Patient Login

The page title is "Patient Management Application". The main heading is "Login". The form includes:

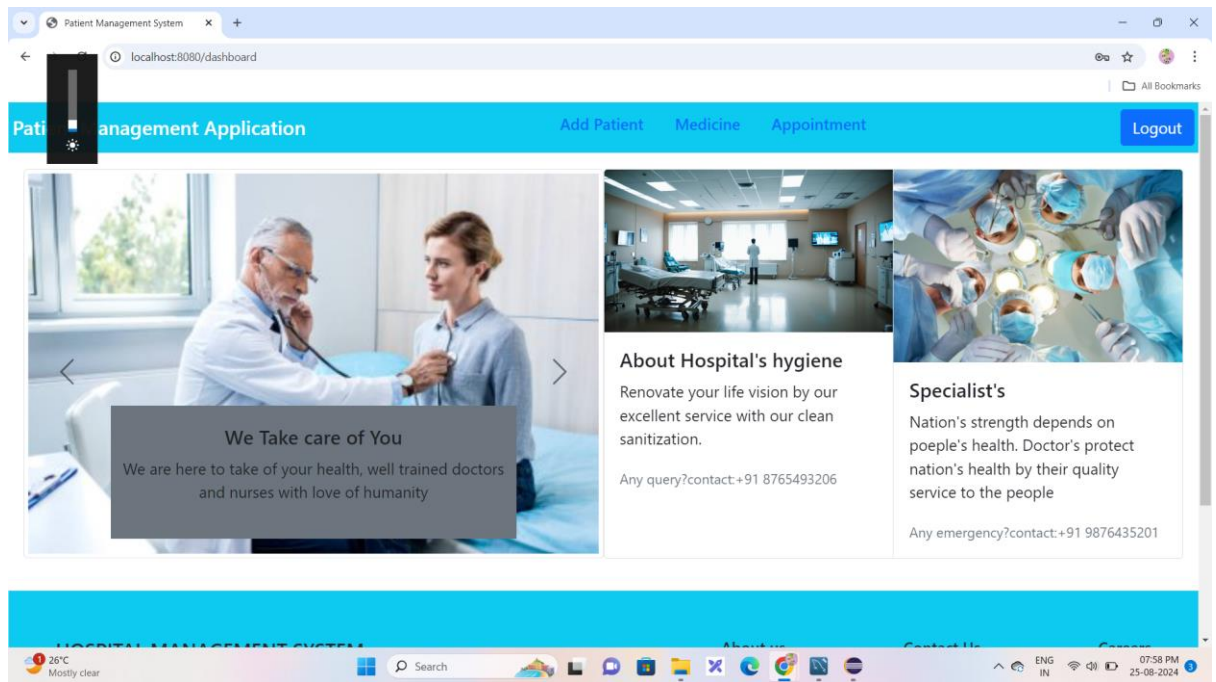
- Email:
- Password:
- Buttons: "Log In" and "New User? [Register here](#)"

Bottom Screenshot: Patient Registration

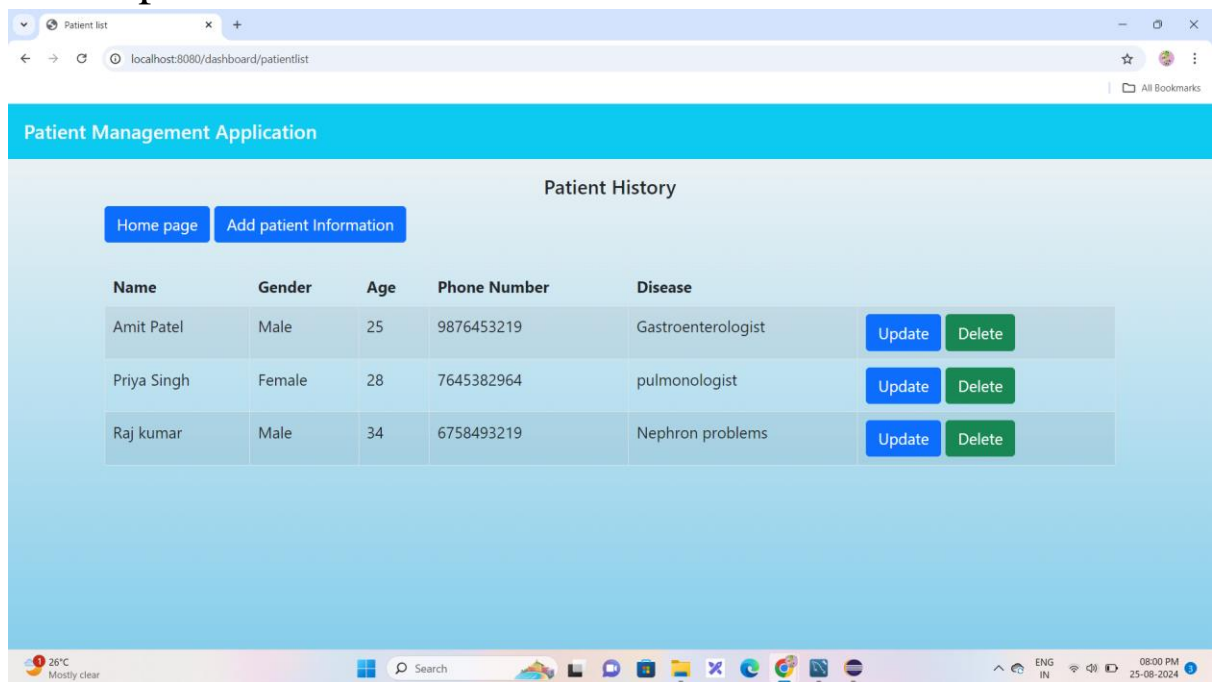
The page title is "Patient Management Application". The main heading is "Registration". The form includes:

- First Name:
- Email:
- Password:
- Role:
- Buttons: "Register" and "Already registered? [Login here](#)"

Both screenshots show a Windows taskbar at the bottom with the system clock at 07:57 PM on 25-08-2024.



9.Add patient's info



Browser: Add Doctor | localhost:8080/dashboard/patients

Add Patient information

Add patient

Name:

Gender:

Age:

Experience:

Disease:

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10. Medicines

Browser: Medicine list | localhost:8080/dashboard/medicinelist

Patient Management Application

Medicine's List

[Home page](#)

Id	Medicine Name	Manufacturing Date	Expired Date	Medicine For
1	Lisinopril,Amlodipine	2024-08-09	2025-01-01	Heart problems
2	Ibuprofen,Acetaminophen, Duloxetine	2024-01-25	2024-08-05	Bones and joints
3	Copaxone ,Avonex	2024-06-26	2024-12-26	Nervous disorders
4	Tamoxifen,Herceptin	2025-01-03	2025-10-01	Breast Cancer
5	Cisplatin,Tarceva	2024-02-07	2024-05-29	Lung cancer
6	Albuterol,Fluticasone	2024-10-16	2024-12-11	Asthma
7	Amoxicillin	2024-12-16	2025-02-18	Ear infections
8	Metformin, Glipizide	2024-08-14	2024-12-01	Diabetes
9	Levothyroxine	2024-08-02	2024-10-23	Hypothyroidism

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11. Book appointment Medicines

Appointment list

localhost:8080/dashboard/schedulelist

Patient Management Application

Appointment's List

Home page

Id	Date	Time	Disease	Doctor	Actions
1	2024-08-26	10:00	pulmonologist	William Clark	<div>Book</div>
2	2024-08-26	11:43	Gastroenterologist	David Martinez	<div>Book</div>
3	2024-08-26	13:44	Rheumatologist	Sarah Kim	<div>Book</div>
4	2024-08-27	15:50	Dermatologist	Patricia Wilson	<div>Book</div>
5	2024-08-26	14:40	Endocrinologist	Robert Lee	<div>Book</div>
6	2024-08-28	10:29	Pediatrician	Linda Garcia	<div>Book</div>

localhost:8080/dashboard/patienthistory/2

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Add Doctor

localhost:8080/dashboard/patienthistory/2

Booking details

Home page

Patients are requested to take screenshot for reference

Your appointment booked successfully

You are requested to visit David Martinez doctor at 11:43 on 2024-08-26

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Search

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12. Database storage

The image displays two screenshots of the MySQL Workbench interface, illustrating database storage and query execution.

Top Screenshot:

- Navigator:** Shows the database schema with tables including `appointment`, `doctor`, `medicine`, `patient`, `roles`, `users`, and `users_roles`.
- Table: doctor:** Columns include `id` (bigint AI PK), `working_experience` (int), `doctor_name` (varchar(255)), `doctor_qualification` (varchar(255)), and `specialist` (varchar(255)).
- Query 1:** SQL script showing updates and truncations, followed by a series of SELECT statements from various tables.
- Result Grid:** Displays the results of the queries, showing columns `id` and `role` with values 1 (USER) and 2 (ADMIN).
- Output:** Shows the execution progress and results, including messages like "1 row(s) affected" and "2 row(s) returned".

Bottom Screenshot:

- Navigator:** Similar to the top screenshot, showing the database schema.
- Table: doctor:** Same column definitions as the top screenshot.
- Query 1:** SQL script showing updates and truncations, followed by a series of SELECT statements from various tables.
- Result Grid:** Displays the results of the queries, showing columns `id`, `email`, `name`, and `password` with values for two users.
- Output:** Shows the execution progress and results, including messages like "2 row(s) returned" and "2 row(s) returned".

MySQL Workbench

Local instance MySQL80 - W...

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

- login_system
- mongo_db
- my_practice
- onetime
- patient_database
 - Tables
 - appointment
 - doctor
 - medicine
 - patient
 - roles
 - users
 - users_roles
 - Views
 - Stored Procedures
 - Functions
- patient_db
- product_db
- nrsnort info rh
- Administration Schemas

Information

Table: doctor

Columns:

- id: bigint AI PK
- working_experience: int
- doctor_name: varchar(255)
- doctor_qualification: varchar(255)
- specialist: varchar(255)

Object Info Session

26°C Mostly clear

Query 1

```
95 * INSERT INTO roles VALUES(2,"PATIENT");
96
97 * UPDATE roles SET role="USER" WHERE id=1;
98 * SET foreign_key_checks = 1;
99 * Truncate table users_roles;
100 * SELECT * FROM roles;
101 * SELECT * FROM users;
102 * SELECT * FROM appointment;
103 * SELECT * FROM doctor;
104 * SELECT * FROM medicine;
105 * SELECT * FROM patient;
106 * SELECT * FROM users_roles;
107
```

Result Grid

users_id	roles_id
1	2

users_roles 26 x

Output

Action Output

#	Time	Action	Message	Duration / Fetch
57	20:04:35	insert into users_roles values(2,1)	1 row(s) affected	0.000 sec
58	20:04:42	SELECT * FROM users_roles LIMIT 0, 1000	2 row(s) returned	0.000 sec / 0.000 sec

ENG IN 08:04 PM 25-08-2024

MySQL Workbench

Local instance MySQL80 - W...

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

- login_system
- mongo_db
- my_practice
- onetime
- patient_database
 - Tables
 - appointment
 - doctor
 - medicine
 - patient
 - roles
 - users
 - users_roles
 - Views
 - Stored Procedures
 - Functions
- patient_db
- product_db
- nrsnort info rh
- Administration Schemas

Information

Table: doctor

Columns:

- id: bigint AI PK
- working_experience: int
- doctor_name: varchar(255)
- doctor_qualification: varchar(255)
- specialist: varchar(255)

Object Info Session

26°C Mostly clear

Query 1

```
94 * INSERT INTO roles VALUES(1,"DOCTOR");
95 * INSERT INTO roles VALUES(2,"PATIENT");
96
97 * UPDATE roles SET role="USER" WHERE id=1;
98 * SET foreign_key_checks = 1;
99 * Truncate table users_roles;
100 * SELECT * FROM roles;
101 * SELECT * FROM users;
102 * SELECT * FROM appointment;
103 * SELECT * FROM doctor;
104 * SELECT * FROM medicine;
105 * SELECT * FROM patient;
106 * SELECT * FROM users_roles;
107
```

Result Grid

id	working_experience	doctor_name	doctor_qualification	specialist
1	10	Jane Smith	M.D., FACC	Cardiologist
2	19	John Doe	M.D., FAOS	Orthopedic Surgeon
3	7	Emily Johnson	M.D., FAAN	Neurologist
4	6	Michael Brown	M.D., FACP	Oncologist
5	10	Linda Garcia	M.D., FAAP	Pediatrician
6	4	Robert Lee	M.D., FACE	Endocrinologist
7	23	Patricia Wilson	M.D., FAAD	Dermatologist
8	15	David Martinez	M.D., FAGG	Gastroenterologist
9	22	Sarah Kim	M.D., FACR	Rheumatologist
10	20	William Clark	M.D., FCCP	Pulmonologist

doctor 27 x

Output

Action Output

#	Time	Action	Message	Duration / Fetch
58	20:04:42	SELECT * FROM users_roles LIMIT 0, 1000	2 row(s) returned	0.000 sec / 0.000 sec

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MySQL Workbench

Local instance MySQL80 - W...

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHMAS

Filter objects

- login_system
- mongo_db
- my_practice
- onetone
- patient_database
 - Tables
 - appointment
 - doctor
 - medicine
 - patient
 - roles
 - users
 - users_roles
 - Views
 - Stored Procedures
 - Functions
- patient_db
- product_db
- nrrndr info rh
- Administration
- Schemas

Information

Table: doctor

Columns:

- id: bigint AI PK
- working_experience: int
- doctor_name: varchar(255)
- doctor_qualification: varchar(255)
- specialist: varchar(255)

Query 1

```
93 * INSERT INTO users VALUES(1,"cmc@gmail.com","CMCDocor","CMC@123");
94 * INSERT INTO roles VALUES(1,"DOCTOR");
95 * INSERT INTO roles VALUES(2,"PATIENT");
96
97 * UPDATE roles SET role="USER" WHERE id=1;
98 * SET foreign_key_checks = 1;
99 * Truncate table users_roles;
100 * SELECT * FROM roles;
101 * SELECT * FROM users;
102 * SELECT * FROM appointment;
103 * SELECT * FROM doctor;
104 * SELECT * FROM medicine;
105 * SELECT * FROM patient;
106 * SELECT * FROM users_roles;
```

Result Grid

id	patient_age	patient_disease	patient_gender	patient_name	patient_phone_no
1	25	Gastroenterologist	Male	Amit Patel	9876453219
2	28	pulmonologist	Female	Priya Singh	7645320964
3	34	Nephron problems	Male	Raj kumar	6789453219

patient 28 x

Output

Action Output

Message

Duration / Fetch

0.000 sec / 0.000 sec

26°C Mostly clear

Search

ENG IN

08:05 PM 25-08-2024

MySQL Workbench

Local instance MySQL80 - W...

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHMAS

Filter objects

- login_system
- mongo_db
- my_practice
- onetone
- patient_database
 - Tables
 - appointment
 - doctor
 - medicine
 - patient
 - roles
 - users
 - users_roles
 - Views
 - Stored Procedures
 - Functions
- patient_db
- product_db
- nrrndr info rh
- Administration
- Schemas

Information

Table: doctor

Columns:

- id: bigint AI PK
- working_experience: int
- doctor_name: varchar(255)
- doctor_qualification: varchar(255)
- specialist: varchar(255)

Query 1

```
93 * INSERT INTO users VALUES(1,"cmc@gmail.com","CMCDocor","CMC@123");
94 * INSERT INTO roles VALUES(1,"DOCTOR");
95 * INSERT INTO roles VALUES(2,"PATIENT");
96
97 * UPDATE roles SET role="USER" WHERE id=1;
98 * SET foreign_key_checks = 1;
99 * Truncate table users_roles;
100 * SELECT * FROM roles;
101 * SELECT * FROM users;
102 * SELECT * FROM appointment;
103 * SELECT * FROM doctor;
104 * SELECT * FROM medicine;
105 * SELECT * FROM patient;
106 * SELECT * FROM users_roles;
```

Result Grid

id	date	doctor	time	disease
1	2024-08-26	William Clark	10:00	pulmonologist
2	2024-08-26	David Martinez	11:43	Gastroenterologist
3	2024-08-26	Sarah Kim	13:44	Rheumatologist
4	2024-08-27	Patrice Wilson	15:50	Dermatologist
5	2024-08-26	Robert Lee	14:40	Endocrinologist
6	2024-08-28	Linda Garcia	10:29	Pediatrician
7	2024-08-30	Emily Johnson	11:50	Neurologist
8	2024-08-28	Jane Smith	10:00	Cardiologist

appointment 29 x

Output

Action Output

Message

Duration / Fetch

0.000 sec / 0.000 sec

26°C Mostly clear

Search

ENG IN

08:05 PM 25-08-2024

MySQL Workbench

Local instance MySQL80 - W... x

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHMAS

Filter objects

- login_system
- mongo_db
- my_practice
- onetoone
- patient_database
 - Tables
 - appointment
 - doctor
 - medicine
 - patient
 - roles
 - users
 - users_roles
 - Views
 - Stored Procedures
 - Functions
- patient_db
- product_db
- reporting_info_db
- Administration
- Schemas

Information

Table: doctor

Columns:

- id: bigint AI PK
- working_experience: int
- doctor_name: varchar(255)
- doctor_qualification: varchar(255)
- specialist: varchar(255)

Query 1

```
93 * INSERT INTO users VALUES(1,"onc@gmail.com","ONCDirector","ONC@123");
94 * INSERT INTO roles VALUES(1,"DOCTOR");
95 * INSERT INTO roles VALUES(2,"PATIENT");
96
97 * UPDATE roles SET role="USER" WHERE id=1;
98 * SET foreign_key_checks = 1;
99 * Truncate table users_roles;
100 * SELECT * FROM roles;
101 * SELECT * FROM users;
102 * SELECT * FROM appointment;
103 * SELECT * FROM doctor;
104 * SELECT * FROM medicine;
105 * SELECT * FROM patient;
106 * SELECT * FROM users_roles;
```

Result Grid

	id	expire_date	medicine_for	medicine_name	manufacturer_date
▶	1	2025-01-01	Heart problems	Lisinopril,Amlodipine	Lisinopril,Amlodipine_09
	2	2024-08-05	Bones and joints	Ibuprofen,Acetaminophen,Diclofenac	2024-01-25
	3	2024-12-26	Nervous disorders	Copaxone,Avonex	2024-06-26
	4	2025-10-01	Breast Cancer	Tamoxifen,Herceptin	2025-01-03
	5	2024-05-29	Lung cancer	Cisplatin,Tarceva	2024-02-07
	6	2024-12-11	Asthma	Albuterol,Fluticasone	2024-10-16
	7	2025-02-18	Ear infections	Amoxicillin	2024-12-16
	8	2024-12-01	Diabetes	Metformin,Glipizide	2024-08-14
	9	2024-10-23	Hypothyroidism	Levothyroxine	2024-08-02
✱	1000	1000	1000	1000	1000

medicine 30 x

Output

Action Output

Time Action

61 20:05:07 SELECT * FROM appointment LIMIT 0, 1000

Message

8 row(s) returned

Duration / Fetch

0.000 sec / 0.000 sec

Object Info Session

26°C Mostly clear

Search

ENG IN

08:05 PM 25-08-2024

SQLAdditions

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.