Project Report on

E-Health Management System

Submitted to

The Department of Computer Science and Engineering

Bachelor of Technology

in

Computer Science and Engineering

(2023 – 2024)

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January-2024

TABLE OF CONTENTS

ACKNOWLEDGEMENT

We would like to acknowledge and give my warmest thanks to our faculty Dr Prathima mam who made this work possible. Their guidance and advice carried us through all the stages of writing my project. We would also like to thank our classmates for letting our defence be an enjoyable moment, and for your brilliant comments and suggestions, thanks to you. We would also like to give special thanks to our families as a whole for their continuous support and understanding when undertaking my research and writing my project and providing the required equipment. The project would not have been successful without their cooperation and inputs

ABSTRACT

The E-Healthcare Management System is a comprehensive and innovation solution designed to streamline and enhance healthcare service in the digital era. The system leverages cutting edge technology to bridge the gap between healthcare provider and patients, offering a seamless and efficient platform for managing medical information, appointment and communication.

An E-Healthcare Management System (EHMS) is a complex software solution designed to streamline and enhance various aspects of healthcare delivery. The system encompasses a wide range of functionalities, each catering to specific requirements in the healthcare domain. Below are key points outlining the essential requirements of an EHMS:

i. user management
ii. communication
iii. analytic and reporting
iv. Security
v. Scalability and performance
vi. integrations with external System
vii. Emergency and Crisis Management., Etc.

Java plays a significant role in shaping and enhancing E- Healthcare Management Systems (EHMS) in several ways. Its features, frameworks, and libraries contribute to the development of secure, scalable, and efficient systems that meet the complex requirements of healthcare management.

i. Platform Independence
ii. Robust and Secure Development
iii. Extensive Ecosystem
iv. Spring Framework (Architecture)
v. Web Services. Etc.

INTRODUCTION

In the dynamic healthcare landscape, E-Health Management Systems integrate technology to enhance efficiency, patient care, and data-driven decision-making. From electronic health records to telehealth solutions, these systems create a connected healthcare environment. Key components include EHRs for secure information access, telehealth for remote care, HIE for seamless data exchange, and data analytics for insights. Benefits encompass improved outcomes, operational efficiency, accessibility, and cost savings. As healthcare evolves, E-Health Management Systems play a pivotal role, shaping a patient-centric healthcare system. This report explores their components, benefits, and challenges, offering insights into their transformative impact.

The benefits are profound, including improved patient outcomes through better access and remote monitoring, enhanced operational efficiency, increased accessibility to healthcare services, and cost savings through reduced paperwork and optimized resource utilization. As the healthcare landscape evolves, E-Health Management Systems are poised to play a pivotal role in shaping a more connected, efficient, and patient-centric healthcare system, revolutionizing healthcare delivery. This report delves into the components, benefits, and challenges associated with these systems, providing insights into their potential impact on the future of healthcare.

SYSTEM ARICHITECTURE

E-Health Management Systems (EHMS) employ a multi-tier architecture comprising distinct components:

1. Presentation Layer: This layer furnishes the user interface, ensuring an intuitive interaction with the system.

2. Business Logic Layer: Responsible for implementing and governing the system's business rules and processes.

3. Data Access Layer: Manages operations related to data storage and retrieval, optimizing the efficiency of these crucial functions.

4. Database: The database serves as the repository for all system data, housing essential information such as patient records, appointment schedules, prescriptions, and billing details. This centralized storage enhances accessibility and facilitates seamless information management within the EHMS.

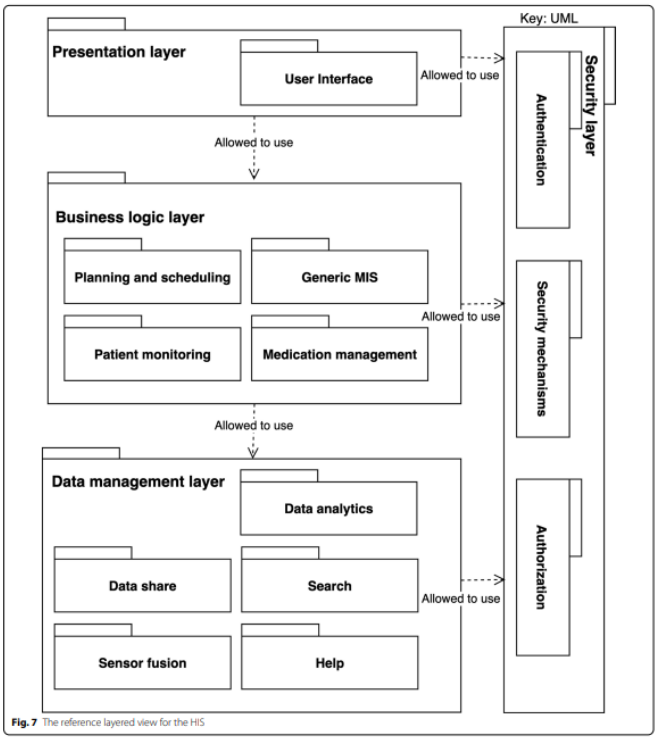


Fig. 7 The reference layered view for the HIS

MODULES:

It is having mainly two modules:

- Administration module:

Administration module mainly deals with the all the Medicare management such as department, ward, staff, inventory management of the Medicare.

- Client module:

Client module mainly includes doctors, patients etc**.**

CODE/IMPLEMENTATION

```
package project;


import java.sql.*;
import java.util.ArrayList;
import java.util.List;
import java.util.Scanner;


class Patient {
    private String name;
    private int age;
    private String gender;
    private String medicalHistory;
    private String doctor;
    private int no_visits;


    public Patient (String name, int age, String gender, String medicalHistory, String doctor,
int no_visits) {
        this.name = name;
        this. Age = age;
        this. Gender = gender;
        this. MedicalHistory = medicalHistory;
        this. Doctor=doctor;
        this. No_visits=no_visits;
```

```
    }
    public String get Name() {
        return name;
    }
    public int getAge() {
        return age;
    }
    public String getGender() {
        return gender;
    }

    public String getMedicalHistory() {
        return medicalHistory;
    }
    public String getDoctor() {
          return doctor;
          }
    public int getNo_Visits () {
        return no_visits;
        }
       @Override
    public String toString () {
        return "Name: " + name + "\t Age: " + age + "\t Gender: " + gender + "\t Medical
History: " + medicalHistory +"\t Doctor: "+ doctor +"\t Visited :" +no_visits;
     }
```

```
}


class HealthManagementSystem{
    private List<Patient> patients;
    private Connection connection;


    public HealthManagementSystem() {
        this.patients = new ArrayList<>();
        try {
            // Replace the following with your database connection details
            String url = "jdbc:mysql://localhost:3306/jdbc";
            String username = "root";
            String password = "Sathvik@k1";


            // Load the JDBC driver and establish a connection
            Class.forName("com.mysql.jdbc.Driver");s
            this.connection =
DriverManager.getConnection("jdbc:mysql://localhost/jdbc","root","Sathvik@k1");


            System.out.println("Connected to the database");
        } catch (ClassNotFoundException | SQLException e) {
            e.printStackTrace();
            System.exit(1);
        }
    }
```

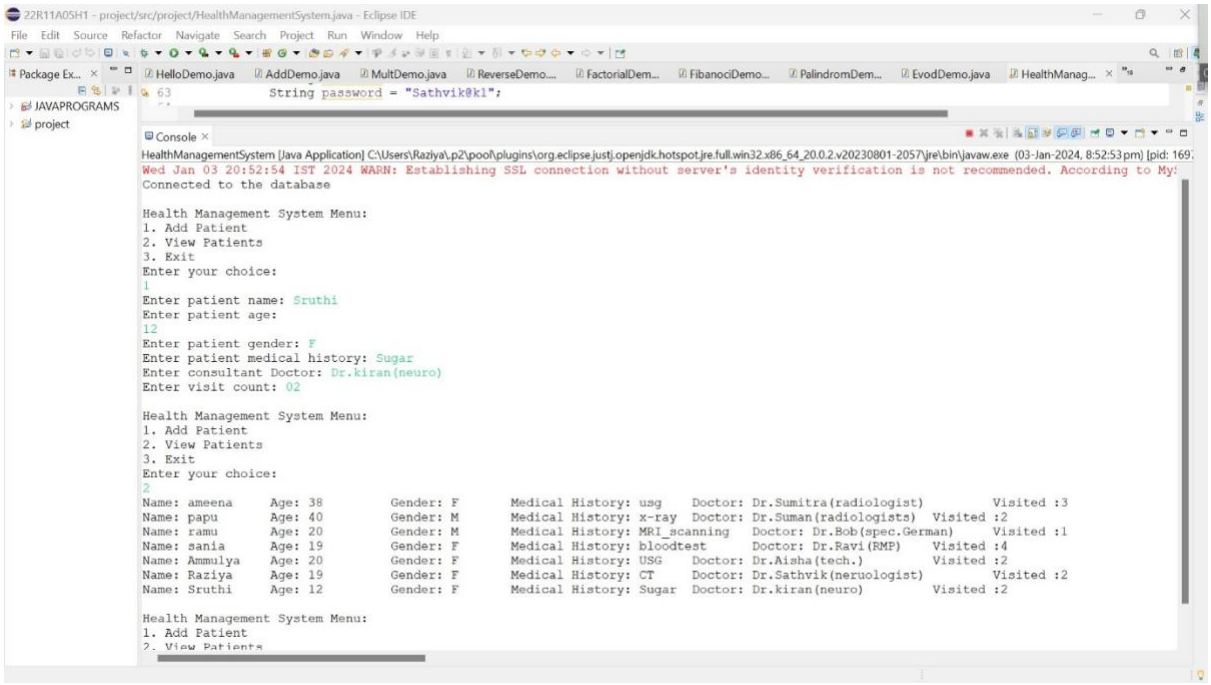
```
    public void addPatient(Patient patient) {
        try (PreparedStatement statement = connection.prepareStatement(
                "INSERT INTO patients (name, age, gender, medical_history, doctor, no_visits,)
VALUES (?, ?, ?, ?, ?, ?)",
                Statement.RETURN_GENERATED_KEYS)) {
            statement.setString(1, patient.getName());
            statement.setInt(2, patient.getAge());
            statement.setString(3, patient.getGender());
            statement.setString(4, patient.getMedicalHistory());
            statement.setString(5, patient.getDoctor());
            statement.setInt(6, patient.getNo_Visits());

            int rowsAffected = statement.executeUpdate();
            if (rowsAffected > 0) {
                try (ResultSet generatedKeys = statement.getGeneratedKeys()) {
                    if (generatedKeys.next()) {
                        int generatedId = generatedKeys.getInt(1);
                        System.out.println("Patient added successfully with ID: " + generatedId);
                    }
                }
            } else {
                System.out.println("Failed to add patient.");
            }
        } catch (SQLException e) {
```

```
            e.printStackTrace();
        }
    }

    public void viewPatients() {
        try (Statement statement = connection.createStatement();
             ResultSet resultSet = statement.executeQuery("SELECT * FROM patients")) {
            while (resultSet.next()) {
                String name = resultSet.getString("name");
                int age = resultSet.getInt("age");
                String gender = resultSet.getString("gender");
                String medicalHistory = resultSet.getString("medical_history");
                String doctor  = resultSet.getString("doctor");
                int no_visits = resultSet.getInt("no_visits");

                Patient patient = new Patient(name, age, gender, medicalHistory, doctor, no_visits);
                patients.add(patient);

                System.out.println(patient);
            }
        } catch (SQLException e) {
            e.printStackTrace();
        }
    }
```

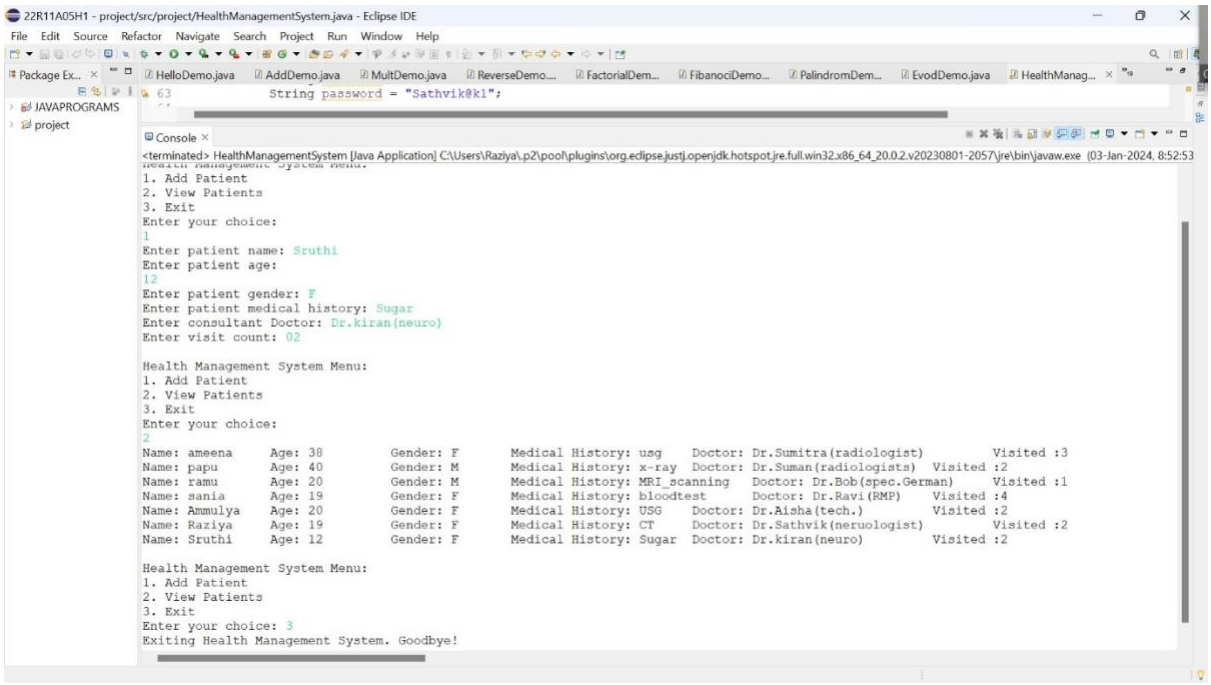
```
    public static void main (String [] args) {
        HealthManagementSystem healthManagementSystem = new
HealthManagementSystem();
        Scanner scanner = new Scanner (System.in);

        while (true) {
            System.out.println("\nHealth Management System Menu:");
            System.out.println("1. Add Patient");
            System.out.println("2. View Patients");
            System.out.println("3. Exit");
            System.out.print("Enter your choice: ");

            int choice = scanner.nextInt();
            scanner.nextLine();  // Consume the newline character

            switch (choice) {
                case 1:
                    System.out.print("Enter patient name: ");
                    String name = scanner.nextLine();
                    System.out.print("Enter patient age: ");
                    int age = scanner.nextInt();
                    scanner.nextLine();  // Consume the newline character
                    System.out.print("Enter patient gender: ");
                    String gender = scanner.nextLine();
```

```
                System.out.print("Enter patient medical history: ");
                String medicalHistory = scanner.nextLine();
                System.out.print("Enter consultant Doctor: ");
                String doctor = scanner.nextLine();
                System.out.print("Enter visit count: ");
                int no_visits = scanner.nextInt();
                Patient newPatient = new Patient(name, age, gender, medicalHistory, doctor,
no_visits);
                healthManagementSystem.addPatient(newPatient);
                break;

            case 2:
                healthManagementSystem.viewPatients();
                break;

            case 3:
                System.out.println("Exiting Health Management System. Goodbye!");
                System.exit(0);

            default:
                System.out.println("Invalid choice. Please enter a valid option.");
        }
    }
}}
```

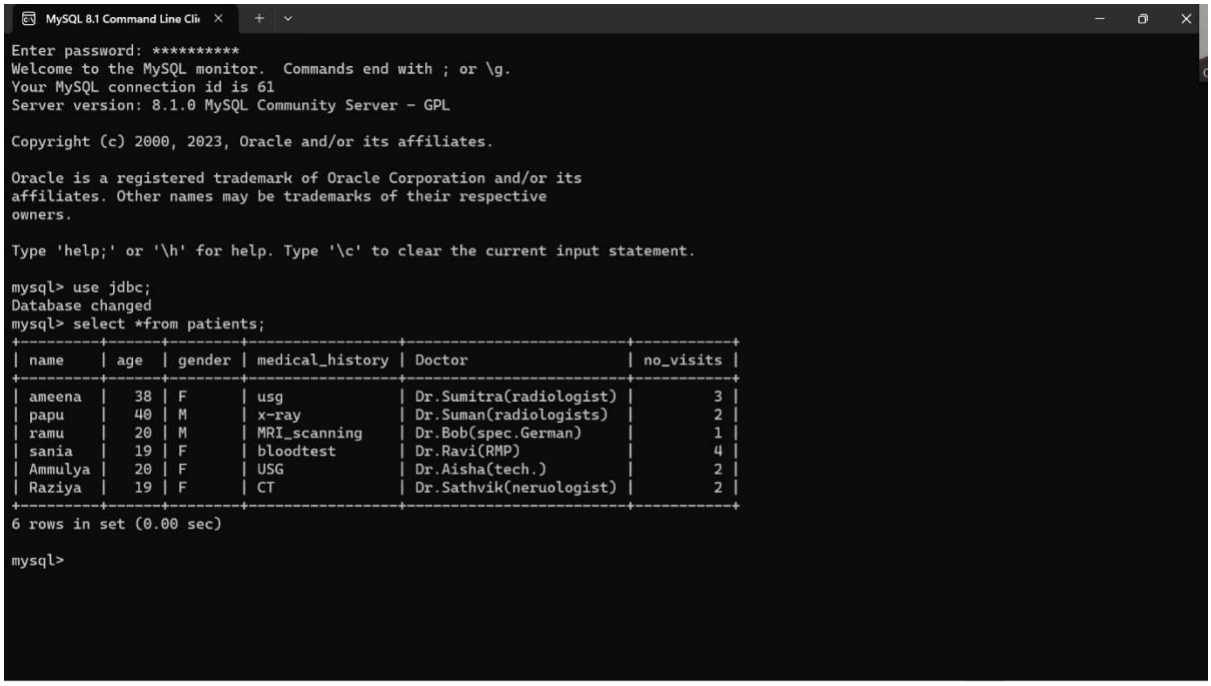
RESULT/OUTPUT SCREENS

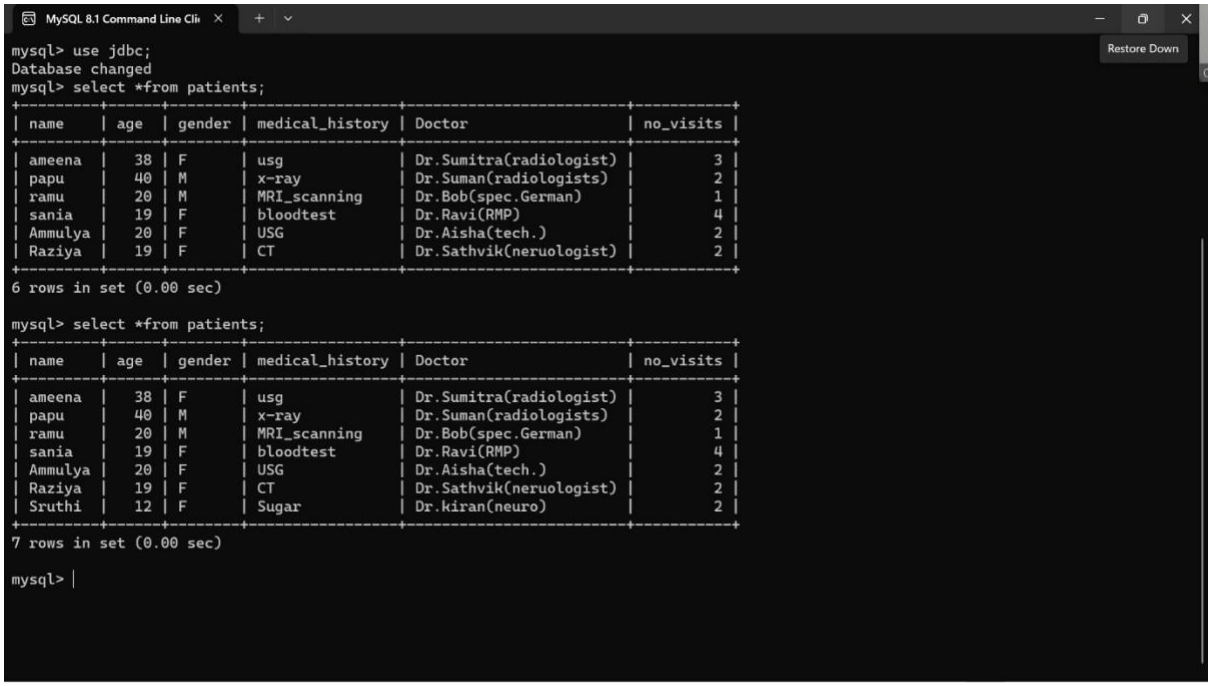


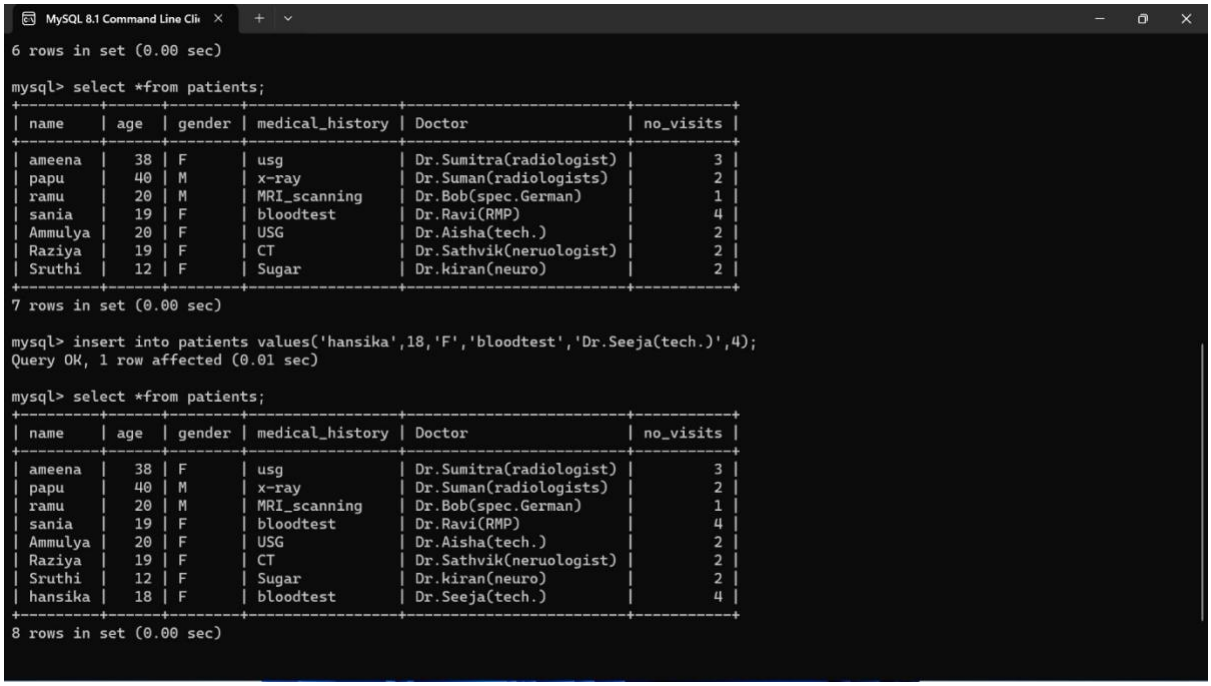
```
String password = "Sathvik@kl";

HealthManagementSystem [Java Application] C:\Users\Raziya\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_20.0.2.v20230801-2057\jre\bin\javaw.exe (03-Jan-2024, 8:52:53 pm) [pid: 169
Wed Jan 03 20:52:54 IST 2024 WARN: Establishing SSL connection without server's identity verification is not recommended. According to My
Connected to the database

Health Management System Menu:
1. Add Patient
2. View Patients
3. Exit
Enter your choice:
1
Enter patient name: Sruthi
Enter patient age:
12
Enter patient gender: F
Enter patient medical history: Sugar
Enter consultant Doctor: Dr.kiran(neuro)
Enter visit count: 02

Health Management System Menu:
1. Add Patient
2. View Patients
3. Exit
Enter your choice:
2
Name: ameena     Age: 38         Gender: F       Medical History: usg     Doctor: Dr.Sumitra(radiologist)          Visited :3
Name: papu       Age: 40         Gender: M       Medical History: x-ray   Doctor: Dr.Suman(radiologists)   Visited :2
Name: ramu       Age: 20         Gender: M       Medical History: MRI_scanning    Doctor: Dr.Bob(spec.German)      Visited :1
Name: sania      Age: 19         Gender: F       Medical History: bloodtest       Doctor: Dr.Ravi(RMP)     Visited :4
Name: Ammulya    Age: 20         Gender: F       Medical History: USG     Doctor: Dr.Aisha(tech.)          Visited :2
Name: Raziya     Age: 19         Gender: F       Medical History: CT      Doctor: Dr.Sathvik(neruologist)          Visited :2
Name: Sruthi     Age: 12         Gender: F       Medical History: Sugar   Doctor: Dr.kiran(neuro)          Visited :2

Health Management System Menu:
1. Add Patient
2. View Patients
```



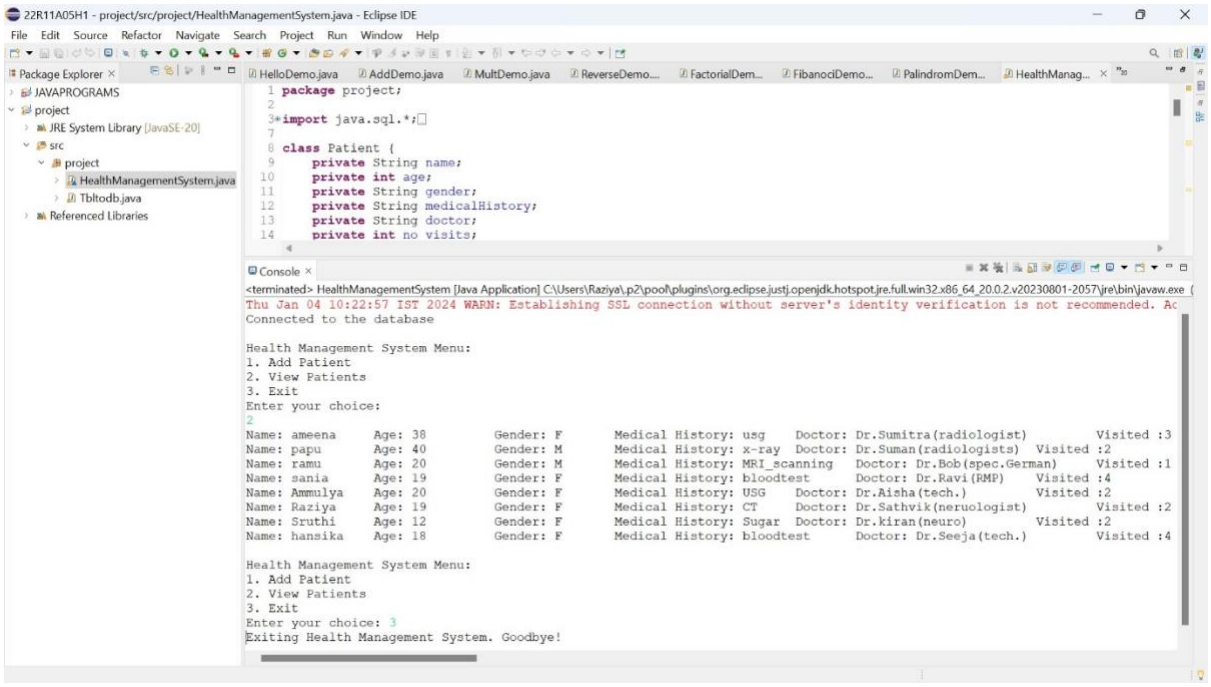
```
String password = "Sathvik@kl";

<terminated> HealthManagementSystem [Java Application] C:\Users\Raziya\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_20.0.2.v20230801-2057\jre\bin\javaw.exe (03-Jan-2024, 8:52:53
1. Add Patient
2. View Patients
3. Exit
Enter your choice:
1
Enter patient name: Sruthi
Enter patient age:
12
Enter patient gender: F
Enter patient medical history: Sugar
Enter consultant Doctor: Dr.kiran(neuro)
Enter visit count: 02

Health Management System Menu:
1. Add Patient
2. View Patients
3. Exit
Enter your choice:
2
Name: ameena     Age: 38         Gender: F       Medical History: usg     Doctor: Dr.Sumitra(radiologist)          Visited :3
Name: papu       Age: 40         Gender: M       Medical History: x-ray   Doctor: Dr.Suman(radiologists)   Visited :2
Name: ramu       Age: 20         Gender: M       Medical History: MRI_scanning    Doctor: Dr.Bob(spec.German)      Visited :1
Name: sania      Age: 19         Gender: F       Medical History: bloodtest       Doctor: Dr.Ravi(RMP)     Visited :4
Name: Ammulya    Age: 20         Gender: F       Medical History: USG     Doctor: Dr.Aisha(tech.)          Visited :2
Name: Raziya     Age: 19         Gender: F       Medical History: CT      Doctor: Dr.Sathvik(neruologist)          Visited :2
Name: Sruthi     Age: 12         Gender: F       Medical History: Sugar   Doctor: Dr.kiran(neuro)          Visited :2

Health Management System Menu:
1. Add Patient
2. View Patients
3. Exit
Enter your choice: 3
Exiting Health Management System. Goodbye!
```


MySQL 8.1 Command Line Cli
Enter password: **********
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 61
Server version: 8.1.0 MySQL Community Server - GPL
Copyright (c) 2000, 2023, Oracle and/or its affiliates.
Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
mysql> use jdbc;
Database changed
mysql> select *from patients;
name	age	gender	medical_history	Doctor	no_visits
ameena	38	F	usg	Dr.Sumitra(radiologist)	3
papu	40	M	x-ray	Dr.Suman(radiologists)	2
ramu	20	M	MRI_scanning	Dr.Bob(spec.German)	1
sania	19	F	bloodtest	Dr.Ravi(RMP)	4
Ammulya	20	F	USG	Dr.Aisha(tech.)	2
Raziya	19	F	CT	Dr.Sathvik(neruologist)	2
6 rows in set (0.00 sec)
mysql>


MySQL 8.1 Command Line Cli
Restore Down
mysql> use jdbc;
Database changed
mysql> select *from patients;
name	age	gender	medical_history	Doctor	no_visits
ameena	38	F	usg	Dr.Sumitra(radiologist)	3
papu	40	M	x-ray	Dr.Suman(radiologists)	2
ramu	20	M	MRI_scanning	Dr.Bob(spec.German)	1
sania	19	F	bloodtest	Dr.Ravi(RMP)	4
Ammulya	20	F	USG	Dr.Aisha(tech.)	2
Raziya	19	F	CT	Dr.Sathvik(neruologist)	2
6 rows in set (0.00 sec)
mysql> select *from patients;
name	age	gender	medical_history	Doctor	no_visits
ameena	38	F	usg	Dr.Sumitra(radiologist)	3
papu	40	M	x-ray	Dr.Suman(radiologists)	2
ramu	20	M	MRI_scanning	Dr.Bob(spec.German)	1
sania	19	F	bloodtest	Dr.Ravi(RMP)	4
Ammulya	20	F	USG	Dr.Aisha(tech.)	2
Raziya	19	F	CT	Dr.Sathvik(neruologist)	2
Sruthi	12	F	Sugar	Dr.kiran(neuro)	2
7 rows in set (0.00 sec)
mysql>



```
MySQL 8.1 Command Line Cli

6 rows in set (0.00 sec)

mysql> select *from patients;
+---------+------+--------+-----------------+-------------------------+-----------+
| name    | age  | gender | medical_history | Doctor                  | no_visits |
+---------+------+--------+-----------------+-------------------------+-----------+
| ameena  |   38 | F      | usg             | Dr.Sumitra(radiologist) |         3 |
| papu    |   40 | M      | x-ray           | Dr.Suman(radiologists)  |         2 |
| ramu    |   20 | M      | MRI_scanning    | Dr.Bob(spec.German)     |         1 |
| sania   |   19 | F      | bloodtest       | Dr.Ravi(RMP)            |         4 |
| Ammulya |   20 | F      | USG             | Dr.Aisha(tech.)         |         2 |
| Raziya  |   19 | F      | CT              | Dr.Sathvik(neruologist) |         2 |
| Sruthi  |   12 | F      | Sugar           | Dr.kiran(neuro)         |         2 |
+---------+------+--------+-----------------+-------------------------+-----------+
7 rows in set (0.00 sec)

mysql> insert into patients values('hansika',18,'F','bloodtest','Dr.Seeja(tech.)',4);
Query OK, 1 row affected (0.01 sec)

mysql> select *from patients;
+---------+------+--------+-----------------+-------------------------+-----------+
| name    | age  | gender | medical_history | Doctor                  | no_visits |
+---------+------+--------+-----------------+-------------------------+-----------+
| ameena  |   38 | F      | usg             | Dr.Sumitra(radiologist) |         3 |
| papu    |   40 | M      | x-ray           | Dr.Suman(radiologists)  |         2 |
| ramu    |   20 | M      | MRI_scanning    | Dr.Bob(spec.German)     |         1 |
| sania   |   19 | F      | bloodtest       | Dr.Ravi(RMP)            |         4 |
| Ammulya |   20 | F      | USG             | Dr.Aisha(tech.)         |         2 |
| Raziya  |   19 | F      | CT              | Dr.Sathvik(neruologist) |         2 |
| Sruthi  |   12 | F      | Sugar           | Dr.kiran(neuro)         |         2 |
| hansika |   18 | F      | bloodtest       | Dr.Seeja(tech.)         |         4 |
+---------+------+--------+-----------------+-------------------------+-----------+
8 rows in set (0.00 sec)
```



22R11A05H1 - project/src/project/HealthManagementSystem.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer

- JAVAPROGRAMS
- project
  - JRE System Library [JavaSE-20]
  - src
    - project
      - HealthManagementSystem.java
      - Tbltodb.java
  - Referenced Libraries

HelloDemo.java | AddDemo.java | MultDemo.java | ReverseDemo... | FactorialDem... | FibanociDemo... | PalindromDem... | HealthManag...

```
1  package project;
2
3* import java.sql.*;
7
8  class Patient {
9      private String name;
10     private int age;
11     private String gender;
12     private String medicalHistory;
13     private String doctor;
14     private int no visits;
```

Console

```
<terminated> HealthManagementSystem [Java Application] C:\Users\Raziya\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_20.0.2.v20230801-2057\jre\bin\javaw.exe (
Thu Jan 04 10:22:57 IST 2024 WARN: Establishing SSL connection without server's identity verification is not recommended. Ac
Connected to the database

Health Management System Menu:
1. Add Patient
2. View Patients
3. Exit
Enter your choice:
2
Name: ameena     Age: 38         Gender: F       Medical History: usg    Doctor: Dr.Sumitra(radiologist)         Visited :3
Name: papu       Age: 40         Gender: M       Medical History: x-ray  Doctor: Dr.Suman(radiologists)  Visited :2
Name: ramu       Age: 20         Gender: M       Medical History: MRI_scanning   Doctor: Dr.Bob(spec.German)     Visited :1
Name: sania      Age: 19         Gender: F       Medical History: bloodtest      Doctor: Dr.Ravi(RMP)    Visited :4
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Name: Raziya     Age: 19         Gender: F       Medical History: CT     Doctor: Dr.Sathvik(neruologist)         Visited :2
Name: Sruthi     Age: 12         Gender: F       Medical History: Sugar  Doctor: Dr.kiran(neuro)         Visited :2
Name: hansika    Age: 18         Gender: F       Medical History: bloodtest      Doctor: Dr.Seeja(tech.)         Visited :4

Health Management System Menu:
1. Add Patient
2. View Patients
3. Exit
Enter your choice: 3
Exiting Health Management System. Goodbye!
```

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- **www.omg.org**