1. **Write a Java program to connect to a MySQL database using JDBC.**

**package** day11\_assign;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.SQLException;

**public** **class** Q1 {

**public** **static** **void** main(String[] args) {

String url="jdbc:mysql://localhost:3306/mydb";

String user="root";

String password="Priya@66";

**try** {

Connection conn = DriverManager.*getConnection*(url, user, password);

System.***out***.println("Connected to database");

conn.close();

} **catch** (SQLException e) {

System.***out***.println("Error"+e.getMessage());

}

}

}

2. 2. Create a Java class to insert student records into a database table.

**package** day11\_assign;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.PreparedStatement;

**import** java.sql.SQLException;

**public** **class** Q2 {

**public** **static** **void** main(String[] args) {

String url="jdbc:mysql://localhost:3306/mydb";

String user="root";

String password="Priya@66";

**try** (Connection con=DriverManager.*getConnection*(url, user, password)) {

String insertSQL="INSERT INTO student (rollno, name, per, email) VALUES (?, ?, ?, ?)";

**try** (

PreparedStatement pstmt=con.prepareStatement(insertSQL)) {

pstmt.setInt(1, 105);

pstmt.setString(2, "Tina");

pstmt.setInt(3, 99);

pstmt.setString(4, "tinaa@gmail.com");

**int** rowInserted=pstmt.executeUpdate();

**if** (rowInserted>0) {

System.***out***.println("New record inserted");

}

}

} **catch** (SQLException e) {

System.***out***.println(e);

}

}

}

3. **3. Write a JDBC program to fetch and display all student records from the database.package** day11\_assign;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.ResultSet;

**import** java.sql.SQLException;

**import** java.sql.Statement;

**public** **class** Q3 {

**public** **static** **void** main(String[] args) {

String url="jdbc:mysql://localhost:3306/mydb";

String user="root";

String password="Priya@66";

**try** (Connection con=DriverManager.*getConnection*(url, user, password);

Statement stmt=con.createStatement();

ResultSet rs=stmt.executeQuery("select \* from Student")) {

System.***out***.println("rollno\tname\tpercent\tEmail");

**while** (rs.next()) {

**int** rollno=rs.getInt("rollno");

String name=rs.getString("name");

**int** per=rs.getInt("per");

String email=rs.getString("email");

System.***out***.println(rollno+" "+name+"\t"+per+"\t"+email);

}

} **catch** (SQLException e) {

System.***out***.println(e);

}

}

}

4. **4. Develop a program to search a student by ID using JDBC.**

**package** day11\_assign;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.PreparedStatement;

**import** java.sql.ResultSet;

**import** java.sql.SQLException;

**import** java.util.Scanner;

**public** **class** Q4 {

**public** **static** **void** main(String[] args) {

String url="jdbc:mysql://localhost:3306/mydb";

String user="root";

String password="Priya@66";

**try** (Connection con=DriverManager.*getConnection*(url, user, password)) {

Scanner scanner=**new** Scanner(System.***in***);

System.***out***.print("Enter student Id");

**int** rollno=scanner.nextInt();

scanner.close();

String query = "select \* from Student where rollno = ?";

**try** (PreparedStatement pstmt = con.prepareStatement(query)) {

pstmt.setInt(1, rollno);

**try** (ResultSet rs=pstmt.executeQuery()) {

**if** (rs.next()) {

System.***out***.println("Student found");

System.***out***.println("Roll No"+rs.getInt("rollno"));

System.***out***.println("Name"+rs.getString("name"));

System.***out***.println("Percentage"+rs.getInt("per"));

System.***out***.println("Email"+ rs.getString("email"));

} **else** {

System.***out***.println("Student not found");

}

}

}

} **catch** (SQLException e) {

System.***out***.println(e);

}

}

}

5. **5. Implement an update operation to modify student details in the database using JDBC.**

**package** day11\_assign;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.PreparedStatement;

**import** java.sql.SQLException;

**public** **class** Q5 {

**public** **static** **void** main(String[] args) {

String url="jdbc:mysql://localhost:3306/mydb";

String user="root";

String password="Priya@66";

**int** rollno=105;

String name="tina";

**int** per=60;

String email="tina@gmail.com";

**try** (Connection con=DriverManager.*getConnection*(url, user, password)) {

String query="update Student set name=?, per=?, email=? where rollno =?";

**try** (PreparedStatement pstmt = con.prepareStatement(query)) {

pstmt.setString(1, name);

pstmt.setInt(2, per);

pstmt.setString(3, email);

pstmt.setInt(4, rollno);

**int** rowsUpdated = pstmt.executeUpdate();

**if** (rowsUpdated>0) {

System.***out***.println("Student details updated");

} **else** {

System.***out***.println("Student not found");

}

}

} **catch** (SQLException e) {

System.***out***.println(e);

}

}

}

6 6. Write a Java program to delete a student record from the database using JDBC.

**package** day11\_assign;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.PreparedStatement;

**import** java.sql.SQLException;

**public** **class** Q6 {

**public** **static** **void** main(String[] args) {

String url="jdbc:mysql://localhost:3306/mydb";

String user="root";

String password="Priya@66";

**int** rollno=104;

**try** (Connection con=DriverManager.*getConnection*(url, user, password)) {

String query = "delete from Student where rollno = ?";

**try** (PreparedStatement pstmt=con.prepareStatement(query)) {

pstmt.setInt(1, rollno);

**int** rowsDeleted=pstmt.executeUpdate();

**if** (rowsDeleted>0) {

System.***out***.println("Student record deleted");

} **else** {

System.***out***.println("Student not found");

}

}

} **catch** (SQLException e) {

System.***out***.println(e);

}

}

}

7. **7. Design a Java application to perform all CRUD (Create, Read, Update, Delete) operations on an Employee table using JDBC.**

**package** day11\_assign;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.PreparedStatement;

**import** java.sql.ResultSet;

**import** java.sql.SQLException;

**public** **class** Q7 {

**public** **static** **void** main(String[] args) {

String url = "jdbc:mysql://localhost:3306/mydb";

String user = "root";

String password = "Priya@66";

**try** (Connection con = DriverManager.*getConnection*(url, user, password)) {

*createTable*(con);

*insertEmployee*(con,1,"A", 60000,"development","delhi");

*insertEmployee*(con,2,"B", 30000, "testing","hyd");

*insertEmployee*(con,3,"C", 90000,"management","banglore");

*insertEmployee*(con,4,"D", 40000,"development","mumbai");

*insertEmployee*(con,5,"E", 60000, "testing","pune");

System.***out***.println("All Employees:");

*displayEmployees*(con);

System.***out***.println("\nUpdate Employee:");

*updateEmployee*(con,2,"B Updated",35000,"testing updated","hyd updated",9000001);

*displayEmployees*(con);

System.***out***.println("\nDelete Employee:");

*deleteEmployee*(con, 3);

*displayEmployees*(con);

} **catch** (SQLException e) {

System.***out***.println(e);

}

}

**public** **static** **void** createTable(Connection con) **throws** SQLException {

String query = "create table if not exists Emp12 (id int, name varchar(50), salary int, department varchar(50), city varchar(50))";

**try** (PreparedStatement pstmt=con.prepareStatement(query)) {

pstmt.executeUpdate();

}

}

**public** **static** **void** insertEmployee(Connection con, **int** id, String name, **int** salary, String department, String city) **throws** SQLException {

String query = "insert into Emp12 values (?, ?, ?, ?, ?)";

**try** (PreparedStatement pstmt=con.prepareStatement(query)) {

pstmt.setInt(1, id);

pstmt.setString(2, name);

pstmt.setInt(3, salary);

pstmt.setString(4, department);

pstmt.setString(5, city);

pstmt.executeUpdate();

}

}

**public** **static** **void** displayEmployees(Connection con) **throws** SQLException {

String query="select \* from Emp12";

**try** (PreparedStatement pstmt=con.prepareStatement(query);

ResultSet rs=pstmt.executeQuery()) {

**while** (rs.next()) {

System.***out***.println(rs.getInt("id")+" "+rs.getString("name")+" "+rs.getInt("salary")+" "+rs.getString("department")+" "+rs.getString("city"));

}

}

}

**public** **static** **void** updateEmployee(Connection con, **int** id, String name, **int** salary, String department, String city, **long** phone) **throws** SQLException {

String query = "update Emp12 set name=?, salary=?, department=?, city=? where id=?";

**try** (PreparedStatement pstmt = con.prepareStatement(query)) {

pstmt.setString(1, name);

pstmt.setInt(2, salary);

pstmt.setString(3, department);

pstmt.setString(4, city);

pstmt.setInt(5, id);

pstmt.executeUpdate();

}

}

**public** **static** **void** deleteEmployee(Connection con, **int** id) **throws** SQLException {

String query = "delete from Emp12 where id=?";

**try** (PreparedStatement pstmt=con.prepareStatement(query)) {

pstmt.setInt(1, id);

pstmt.executeUpdate();

}

}

}

8 8. Create a JDBC-based program to count the total number of rows in a table.**package** day11\_assign;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.PreparedStatement;

**import** java.sql.ResultSet;

**import** java.sql.SQLException;

**public** **class** Q8 {

**public** **static** **void** main(String[] args) {

String url="jdbc:mysql://localhost:3306/mydb";

String user="root";

String password="Priya@66";

String tableName="Emp12";

**try** (Connection con=DriverManager.*getConnection*(url, user, password)) {

**int** rowCount=*countRows*(con, tableName);

System.***out***.println("Total rows in"+tableName+rowCount);

} **catch** (SQLException e) {

System.***out***.println(e);

}

}

**public** **static** **int** countRows(Connection con, String tableName) **throws** SQLException {

String query = "Sselect count(\*) from"+tableName;

**try** (PreparedStatement pstmt=con.prepareStatement(query);

ResultSet rs=pstmt.executeQuery()) {

**if** (rs.next()) {

**return** rs.getInt(1);

} **else** {

**return** 0;

}

}

}

}

9 9. Develop a program to sort student data in ascending order by name using SQL in JDBC.

**package** day11\_assign;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.PreparedStatement;

**import** java.sql.ResultSet;

**import** java.sql.SQLException;

**public** **class** Q9 {

**public** **static** **void** main(String[] args) {

String url="jdbc:mysql://localhost:3306/mydb";

String user="root";

String password="Priya@66";

String tableName="Student";

**try** (Connection con = DriverManager.*getConnection*(url, user, password)) {

System.***out***.println("Students in ascendingby name:");

*displayStudents*(con, tableName);

} **catch** (SQLException e) {

System.***out***.println(e);

}

}

**public** **static** **void** displayStudents(Connection con, String tableName) **throws** SQLException {

String query = "select \* from"+tableName+"order by name ASC";

**try** (PreparedStatement pstmt=con.prepareStatement(query);

ResultSet rs=pstmt.executeQuery()) {

**while** (rs.next()) {

System.***out***.println(rs.getInt("rollno")+" "+rs.getString("name")+" "+rs.getInt("per")+" "+rs.getString("email"));

}

}

}

}

10. **10. Write a program to display all students whose percentage is greater than 75 using JDBC and SQL WHERE clause.**

**package** day11\_assign;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.PreparedStatement;

**import** java.sql.ResultSet;

**import** java.sql.SQLException;

**public** **class** Q10 {

**public** **static** **void** main(String[] args) {

String url="jdbc:mysql://localhost:3306/mydb";

String user="root";

String password="Priya@66";

String tableName="Student";

**try** (Connection con=DriverManager.*getConnection*(url, user, password)) {

System.***out***.println("Students with percentage greater75");

*displayStudents*(con, tableName);

} **catch** (SQLException e) {

System.***out***.println(e);

}

}

**public** **static** **void** displayStudents(Connection con, String tableName) **throws** SQLException {

String q="select \* from"+tableName+"where per>75";

**try** (PreparedStatement pstmt=con.prepareStatement(q);

ResultSet rs=pstmt.executeQuery()) {

**while** (rs.next()) {

System.***out***.println(rs.getInt("rollno")+" "+rs.getString("name")+rs.getInt("per")+rs.getString("email"));

}

}

}

}

11 11. Use PreparedStatement to insert multiple student records into the database.

**package** day11\_assign;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.PreparedStatement;

**import** java.sql.SQLException;

**public** **class** Q11 {

**public** **static** **void** main(String[] args) {

String url="jdbc:mysql://localhost:3306/mydb";

String user="root";

String password="Priya@66";

String tableN="Student";

**try** (Connection con=DriverManager.*getConnection*(url,user,password)) {

*insertStudents*(con,tableN);

} **catch** (SQLException e) {

System.***out***.println(e);

}

}

**public** **static** **void** insertStudents(Connection con, String tableN) **throws** SQLException {

String query="insert into"+tableN+"values(?, ?, ?, ?)";

**try** (PreparedStatement pstmt=con.prepareStatement(query)) {

con.setAutoCommit(**false**);

pstmt.setInt(1, 106);

pstmt.setString(2, "R");

pstmt.setInt(3, 90);

pstmt.setString(4, "r@gmail.com");

pstmt.addBatch();

pstmt.setInt(1, 107);

pstmt.setString(2, "reena");

pstmt.setInt(3, 85);

pstmt.setString(4, "reena@gmail.com");

pstmt.addBatch();

pstmt.setInt(1, 108);

pstmt.setString(2, "Riya");

pstmt.setInt(3, 95);

pstmt.setString(4, "riya@gmail.com");

pstmt.addBatch();

pstmt.executeBatch();

con.commit();

System.***out***.println("Multiplerecords inserted");

} **catch** (SQLException e) {

con.rollback();

**throw** e;

}

}

}

12. 12. Implement a program using transaction management in JDBC (i.e., commit and rollback). **package** day11\_assign;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.PreparedStatement;

**import** java.sql.SQLException;

**public** **class** Q12 {

**public** **static** **void** main(String[] args) {

String url="jdbc:mysql://localhost:3306/mydb";

String user="root";

String password="Priya@66";

String tableName="Student";

**try** (Connection con=DriverManager.*getConnection*(url, user, password)) {

con.setAutoCommit(**false**);

**try** {

*insertStudent*(con, tableName,109,"R", 90,"r@gmail.com");

*insertStudent*(con,tableName, 110,"Riya",95,"riya@gmail.com");

System.***out***.println("Transaction committed successfully.");

} **catch** (SQLException e) {

con.rollback();

System.***out***.println("error"+e.getMessage());

}

} **catch** (SQLException e) {

System.***out***.println(e);

}

}

**public** **static** **void** insertStudent(Connection con, String tableName, **int** rollno, String name, **int** per, String email) **throws** SQLException {

String query = "insert into"+tableName+"values(?, ?, ?, ?)";

**try** (PreparedStatement pstmt=con.prepareStatement(query)) {

pstmt.setInt(1, rollno);

pstmt.setString(2, name);

pstmt.setInt(3, per);

pstmt.setString(4, email);

pstmt.executeUpdate();

}

}

}

13 13. Write a JDBC program to handle exceptions (like invalid ID, connection errors) gracefully.

**package** day11\_assign;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.PreparedStatement;

**import** java.sql.ResultSet;

**import** java.sql.SQLException;

**public** **class** Q13 {

**public** **static** **void** main(String[] args) {

String url="jdbc:mysql://localhost:3306/mydb";

String user="root";

String password="Priya@66";

String tableName="Student";

**int** rollno = 101;

**try** (Connection con = DriverManager.*getConnection*(url, user, password)) {

*displayStudent*(con, tableName, rollno);

} **catch** (SQLException e) {

*handleSQLException*(e);

} **catch** (Exception e) {

System.***out***.println("error"+e.getMessage());

}

}

**public** **static** **void** displayStudent(Connection con, String tableName, **int** rollno) **throws** SQLException {

String query="select \* from"+tableName+"where rollno = ?";

**try** (PreparedStatement pstmt=con.prepareStatement(query)) {

pstmt.setInt(1, rollno);

**try** (ResultSet rs = pstmt.executeQuery()) {

**if** (rs.next()) {

System.***out***.println("Student found:");

System.***out***.println("Roll No: "+rs.getInt("rollno"));

System.***out***.println("Name"+rs.getString("name"));

System.***out***.println("Percentage"+rs.getInt("per"));

System.***out***.println("Email"+rs.getString("email"));

} **else** {

System.***out***.println("not found"+rollno);

}

}

}

}

**public** **static** **void** handleSQLException(SQLException e) {

System.***out***.println("Exception occurred:");

}

}

14. **14. Create a login system using JDBC where user credentials are verified from the database.**

**package** day11\_assign;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.PreparedStatement;

**import** java.sql.ResultSet;

**import** java.sql.SQLException;

**import** java.util.Scanner;

**public** **class** Q14 {

**public** **static** **void** main(String[] args) {

String url="jdbc:mysql://localhost:3306/mydb";

String user="root";

String password="Priya@66";

String tableName="Users";

**try** (Connection con=DriverManager.*getConnection*(url,user,password)) {

Scanner scanner=**new** Scanner(System.***in***);

System.***out***.print("Enter username");

String username=scanner.nextLine();

System.***out***.print("Enter password");

String pwd=scanner.nextLine();

**if** (*verifyCredentials*(con, tableName, username, pwd)) {

System.***out***.println("login successful!");

} **else** {

System.***out***.println("Invalid");

}

} **catch** (SQLException e) {

System.***out***.println(e);

}

}

**public** **static** **boolean** verifyCredentials(Connection con, String tableName, String username, String password) **throws** SQLException {

String query = "select \* from"+tableName + "where username=? and password=?";

**try** (PreparedStatement pstmt=con.prepareStatement(query)) {

pstmt.setString(1, username);

pstmt.setString(2, password);

**try** (ResultSet rs = pstmt.executeQuery()) {

**return** rs.next();

}

}

}

}

15 15. Implement a Java application to take dynamic input from the user and perform insertion, search, or update using menu-driven logic.

**package** day11\_assign;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.PreparedStatement;

**import** java.sql.ResultSet;

**import** java.sql.SQLException;

**import** java.util.Scanner;

**public** **class** Q15 {

**public** **static** **void** main(String[] args) {

String url="jdbc:mysql://localhost:3306/mydb";

String user="root";

String password="Priya@66";

String tableName="Student";

**try** (Connection con=DriverManager.*getConnection*(url, user, password);

Scanner scanner=**new** Scanner(System.***in***)) {

**while** (**true**) {

System.***out***.println("Menu");

System.***out***.println("Insert Student");

System.***out***.println("Search Student");

System.***out***.println("Update Student");

System.***out***.println("Exit");

System.***out***.print("Choose an option");

**int** option = scanner.nextInt();

scanner.nextLine();

**switch** (option) {

**case** 1:

*insertStudent*(con,tableName,scanner);

**break**;

**case** 2:

*searchStudent*(con,tableName,scanner);

**break**;

**case** 3:

*updateStudent*(con,tableName,scanner);

**break**;

**case** 4:

System.***out***.println("Exiting");

**return**;

**default**:

System.***out***.println("invalid option.");

}

}

} **catch** (SQLException e) {

System.***out***.println(e);

}

}

**public** **static** **void** insertStudent(Connection con, String tableName, Scanner scanner) **throws** SQLException {

System.***out***.print("Enter rollno");

**int** rollno = scanner.nextInt();

scanner.nextLine();

System.***out***.print("Enter name");

String name = scanner.nextLine();

System.***out***.print("Enter percentage");

**int** per = scanner.nextInt();

scanner.nextLine();

System.***out***.print("Enter email");

String email = scanner.nextLine();

String query="insert into"+tableName +"values(?, ?, ?, ?)";

**try** (PreparedStatement pstmt = con.prepareStatement(query)) {

pstmt.setInt(1, rollno);

pstmt.setString(2, name);

pstmt.setInt(3, per);

pstmt.setString(4, email);

pstmt.executeUpdate();

System.***out***.println("Student inserted");

}

}

**public** **static** **void** searchStudent(Connection con, String tableName, Scanner scanner) **throws** SQLException {

System.***out***.print("Enter rollno to search: ");

**int** rollno = scanner.nextInt();

scanner.nextLine();

String query = "select \* from"+tableName+"where rollno = ?";

**try** (PreparedStatement pstmt = con.prepareStatement(query)) {

pstmt.setInt(1, rollno);

**try** (ResultSet rs = pstmt.executeQuery()) {

**if** (rs.next()) {

System.***out***.println("Student found");

System.***out***.println("roll no"+rs.getInt("rollno"));

System.***out***.println("Name"+rs.getString("name"));

System.***out***.println("Percentage"+rs.getInt("per"));

System.***out***.println("Email"+rs.getString("email"));

} **else** {

System.***out***.println("Student not found.");

}

}

}

}

**public** **static** **void** updateStudent(Connection con, String tableName, Scanner scanner) **throws** SQLException {

System.***out***.print("enter rollno to update");

**int** rollno = scanner.nextInt();

scanner.nextLine();

System.***out***.print("enter new name");

String name = scanner.nextLine();

System.***out***.print("enter new percentage");

**int** per = scanner.nextInt();

scanner.nextLine();

System.***out***.print("Enter new email");

String email = scanner.nextLine();

String query="update"+tableName+"set name=?, per=?, email=? where rollno=?";

**try** (PreparedStatement pstmt =con.prepareStatement(query)) {

pstmt.setString(1,name);

pstmt.setInt(2, per);

pstmt.setString(3,email);

pstmt.setInt(4, rollno);

pstmt.executeUpdate();

System.***out***.println("Student updated");

}

}

}

16 16. Design the schema for a Library Management System and write JDBC programs for:

· Adding a book

· Viewing all books

· Issuing a book to a member

· Returning a book

**package** day11\_assign;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.PreparedStatement;

**import** java.sql.ResultSet;

**import** java.sql.SQLException;

**import** java.util.Scanner;

**public** **class** Q16 {

**public** **static** **void** main(String[] args) {

String url="jdbc:mysql://localhost:3306/mydb";

String user="root";

String password="Priya@66";

**try** (Connection con = DriverManager.*getConnection*(url, user, password);

Scanner scanner = **new** Scanner(System.***in***)) {

**while** (**true**) {

System.***out***.println("Menu");

System.***out***.println("Add a book");

System.***out***.println("View all books");

System.***out***.println("Issue a book to a member");

System.***out***.println("Return a book");

System.***out***.println("Exit");

System.***out***.print("Choose an option: ");

**int** option = scanner.nextInt();

scanner.nextLine();

**switch** (option) {

**case** 1:

*addBook*(con,scanner);

**break**;

**case** 2:

*viewAllBooks*(con);

**break**;

**case** 3:

*issueBook*(con,scanner);

**break**;

**case** 4:

*returnBook*(con, scanner);

**break**;

**case** 5:

System.***out***.println("Exiting");

**return**;

**default**:

System.***out***.println("Invalid option");

}

}

} **catch** (SQLException e) {

System.***out***.println(e);

}

}

**public** **static** **void** addBook(Connection con, Scanner scanner) **throws** SQLException {

System.***out***.print("Enter book ID: ");

**int** bookId = scanner.nextInt();

scanner.nextLine(); // Consume newline left-over

System.***out***.print("Enter book title: ");

String title = scanner.nextLine();

System.***out***.print("Enter book author: ");

String author = scanner.nextLine();

System.***out***.print("Enter publication year: ");

**int** publicationYear = scanner.nextInt();

scanner.nextLine(); // Consume newline left-over

String query = "INSERT INTO Books (book\_id, title, author, publication\_year) VALUES (?, ?, ?, ?)";

**try** (PreparedStatement pstmt = con.prepareStatement(query)) {

pstmt.setInt(1, bookId);

pstmt.setString(2, title);

pstmt.setString(3, author);

pstmt.setInt(4, publicationYear);

pstmt.executeUpdate();

System.***out***.println("Book added successfully.");

}

}

**public** **static** **void** viewAllBooks(Connection con) **throws** SQLException {

String query = "SELECT \* FROM Books";

**try** (PreparedStatement pstmt = con.prepareStatement(query);

ResultSet rs = pstmt.executeQuery()) {

**while** (rs.next()) {

System.***out***.println("Book ID: " + rs.getInt("book\_id"));

System.***out***.println("Title: " + rs.getString("title"));

System.***out***.println("Author: " + rs.getString("author"));

System.***out***.println("Publication Year: " + rs.getInt("publication\_year"));

System.***out***.println("Status: " + rs.getString("status"));

System.***out***.println();

}

}

}

**public** **static** **void** issueBook(Connection con, Scanner scanner) **throws** SQLException {

System.***out***.print("Enter book ID: ");

**int** bookId = scanner.nextInt();

scanner.nextLine(); // Consume newline left-over

System.***out***.print("Enter member ID: ");

**int** memberId = scanner.nextInt();

scanner.nextLine(); // Consume newline left-over

String query = "SELECT \* FROM Books WHERE book\_id = ? AND status = 'Available'";

**try** (PreparedStatement pstmt = con.prepareStatement(query)) {

pstmt.setInt(1, bookId);

**try** (ResultSet rs = pstmt.executeQuery()) {

**if** (rs.next()) {

String updateQuery = "UPDATE Books SET status = 'Issued' WHERE book\_id = ?";

**try** (PreparedStatement updatePstmt = con.prepareStatement(updateQuery)) {

updatePstmt.setInt(1, bookId);

updatePstmt.executeUpdate();

}

String insertQuery = "INSERT INTO Borrowings (book\_id, member\_id, issue\_date) VALUES (?, ?, CURDATE())";

**try** (PreparedStatement insertPstmt = con.prepareStatement(insertQuery)) {

insertPstmt.setInt(1, bookId);

insertPstmt.setInt(2, memberId);

insertPstmt.executeUpdate();

}

System.***out***.println("Book issued successfully.");

} **else** {

System.***out***.println("Book is not available.");

}

}

}

}

**public** **static** **void** returnBook(Connection con, Scanner scanner) **throws** SQLException {

System.***out***.print("Enter book ID: ");

**int** bookId = scanner.nextInt();

scanner.nextLine(); // Consume newline left-over

String query = "UPDATE Books SET status = 'Available' WHERE book\_id = ?";

**try** (PreparedStatement pstmt = con.prepareStatement(query)) {

pstmt.setInt(1, bookId);

pstmt.executeUpdate();

}

String updateQuery = "UPDATE Borrowings SET return\_date = CURDATE() WHERE book\_id = ? AND return\_date IS NULL";

**try** (PreparedStatement updatePstmt = con.prepareStatement(updateQuery)) {

updatePstmt.setInt(1, bookId);

updatePstmt.executeUpdate();

}

System.***out***.println("Book returned successfully.");

}

}

17 17. Create a Hospital Management System database. Using JDBC, implement:

· Register new patient

· Assign doctor

· Generate billing

**package** day11\_assign;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.PreparedStatement;

**import** java.sql.ResultSet;

**import** java.sql.SQLException;

**import** java.util.Scanner;

**public** **class** Q17 {

**public** **static** **void** main(String[] args) {

String url="jdbc:mysql://localhost:3306/mydb";

String user="root";

String password="Priya@66";

**try** (Connection con=DriverManager.*getConnection*(url, user, password);

Scanner scanner=**new** Scanner(System.***in***)) {

**while** (**true**) {

System.***out***.println("Menu");

System.***out***.println("Register new patient");

System.***out***.println("Assign doctor");

System.***out***.println("Generate billing");

System.***out***.println("Exit");

System.***out***.print("Choose an option: ");

**int** option = scanner.nextInt();

scanner.nextLine();

**switch** (option) {

**case** 1:

*registerP*(con, scanner);

**break**;

**case** 2:

*assignD*(con, scanner);

**break**;

**case** 3:

*generateB*(con, scanner);

**break**;

**case** 4:

System.***out***.println("Exiting");

**return**;

**default**:

System.***out***.println("Invalid option");

}

}

} **catch** (SQLException e) {

System.***out***.println(e);

}

}

**public** **static** **void** registerP(Connection con, Scanner scanner) **throws** SQLException {

System.***out***.print("Enter patient id");

**int** patientId = scanner.nextInt();

scanner.nextLine();

System.***out***.print("Enter patient name");

String name = scanner.nextLine();

System.***out***.print("Enter patient age");

**int** age = scanner.nextInt();

scanner.nextLine();

System.***out***.print("Enter patient contact number");

String contactNumber = scanner.nextLine();

String query = "insert into patients(patient\_id, name, age, contact\_number) values(?, ?, ?, ?)";

**try** (PreparedStatement pstmt = con.prepareStatement(query)) {

pstmt.setInt(1, patientId);

pstmt.setString(2, name);

pstmt.setInt(3, age);

pstmt.setString(4, contactNumber);

pstmt.executeUpdate();

System.***out***.println("Patient registered");

}

}

**public** **static** **void** assignD(Connection con, Scanner scanner) **throws** SQLException {

System.***out***.print("Enter patient id");

**int** patientId = scanner.nextInt();

scanner.nextLine();

System.***out***.print("Enter doctor ID: ");

**int** doctorId = scanner.nextInt();

scanner.nextLine();

String query = "insert into Patient\_Doctor(patient\_id, doctor\_id) values(?, ?)";

**try** (PreparedStatement pstmt =con.prepareStatement(query)) {

pstmt.setInt(1, patientId);

pstmt.setInt(2, doctorId);

pstmt.executeUpdate();

System.***out***.println("Doctor assigned");

}

}

**public** **static** **void** generateB(Connection con, Scanner scanner) **throws** SQLException {

System.***out***.print("Enter patient id");

**int** patientId = scanner.nextInt();

scanner.nextLine();

System.***out***.print("Enter bill amount: ");

**double** amount = scanner.nextDouble();

scanner.nextLine();

System.***out***.print("Enter payment status: ");

String paymentStatus = scanner.nextLine();

String query = "insert into Billing (patient\_id, amount, payment\_status) values(?, ?, ?)";

**try** (PreparedStatement pstmt = con.prepareStatement(query)) {

pstmt.setInt(1, patientId);

pstmt.setDouble(2, amount);

pstmt.setString(3, paymentStatus);

pstmt.executeUpdate();

System.***out***.println("Bill generated ");

}

}

}

18. 18. Write a JDBC-based report generator that exports data from a MySQL table to a text or CSV file.

**package** day11\_assign;

**import** java.io.FileWriter;

**import** java.io.IOException;

**import** java.sql.Connection;

**import** java.sql.DriverManager;

**import** java.sql.ResultSet;

**import** java.sql.SQLException;

**import** java.sql.Statement;

**public** **class** Q18 {

**public** **static** **void** main(String[] args) {

String url ="jdbc:mysql://localhost:3306/mydb";

String user="root";

String password="Priya@66";

String tableName="Student";

String outputFile="student\_report.csv";

**try** (Connection con=DriverManager.*getConnection*(url, user, password)) {

*generateReport*(con,tableName,outputFile);

} **catch** (SQLException e) {

System.***out***.println(e);

}

}

**public** **static** **void** generateReport(Connection con, String tableName, String outputFile) **throws** SQLException {

String query ="select \* from"+tableName;

**try** (Statement stmt=con.createStatement();

ResultSet rs =stmt.executeQuery(query);

FileWriter writer=**new** FileWriter(outputFile)) {

**int** columnCount=rs.getMetaData().getColumnCount();

**for** (**int** i = 1; i <= columnCount; i++) {

writer.write(rs.getMetaData().getColumnName(i));

**if** (i < columnCount) {

writer.write(",");

}

}

writer.write("\n");

**while** (rs.next()) {

**for** (**int** i=1;i<=columnCount; i++) {

writer.write(rs.getString(i));

**if** (i <columnCount) {

writer.write(",");

}

}

writer.write("\n");

}

System.***out***.println("Report generated");

} **catch** (IOException e) {

System.***out***.println("Error"+e.getMessage());

}

}}