Assignment – 22

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Task 1:

Establishing Database Connections:

Write a Java program that connects to a SQLite database and prints out the connection object to confirm successful connection.

Program:

```java
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;

public class ConnectionEstablish {

    public static void main(String[] args) {

        Connection con=null;
        try {
            DriverManager.registerDriver(new
                    com.mysql.cj.jdbc.Driver());

con=DriverManager.getConnection("jdbc:mysql://localhost:3306/
                            practicedb", "root", "Sys@123");
            System.out.println("Successfully connected: "+con);
        } catch (SQLException e) {
            // TODO Auto-generated catch block
            e.printStackTrace();
        }
        finally {
            try {
                con.close();
            } catch (SQLException e) {
                // TODO Auto-generated catch block
                e.printStackTrace();
            }
        }
    }
}
```

Output:

Successfully connected: com.mysql.cj.jdbc.ConnectionImpl@747edf66

Task 2:

SQL Queries using JDBC:

Create a table 'User' with a following schema 'User ID' and 'Password' stored as hash format (note you have research on how to generate hash from a string), accept ""User ID"" and ""Password"" as input and check in the table if they match to confirm whether user access is allowed or not.

Program:

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
public class SQLQueriesUsingJDBC {
        public static void main(String[] args) {
                String actualhashpassword = null;
                String expectedhashpassword = null;
                try {
                        DriverManager.registerDriver(
                                new com.mysql.cj.jdbc.Driver());
                        Connection con = DriverManager.getConnection(
                                "jdbc:mysql://localhost:3306/practicedb",
                                        "root", "Sys@123");
                        String select = "select md5(userid),md5(password)
                                from user where userid=? AND password=?";
                        String select1 = "select md5(password) from user
                                                where userid=?";
                        PreparedStatement pstmt = con.prepareStatement
                                                (select);
                        PreparedStatement pstmt1 = con.prepareStatement
```

```java
                                        (select1);
            pstmt.setString(1, "teja");
            pstmt.setString(2, "teja001");
            pstmt1.setString(1, "teja");
            ResultSet rs = pstmt.executeQuery();
            ResultSet rs1 = pstmt1.executeQuery();
            while (rs1.next()) {
            expectedhashpassword=rs1.getString("md5(password)");
            }
            while (rs.next()) {
                    actualhashpassword =
                            rs.getString("md5(password)");
                    break;
            }

        } catch (SQLException e) {
                e.printStackTrace();
        }
        try {
                if (expectedhashpassword.equals(actualhashpassword)) {
                System.out.println("User access is Allowed..");
                }
                if(!expectedhashpassword.equals(actualhashpassword))
                {
                System.out.println("User access is  Not Allowed..");
                }
        } catch (NullPointerException e) {
        }
    }
}
```

Output:

User access is Allowed..

Task 3:
Prepared Statement:
Modify the SELECT query program to use PreparedStatement to parameterize the query and prevent SQL injection.
Program:
```java
import java.sql.Connection;
import java.sql.Date;
```

```java
import java.sql.DriverManager;
import java.sql.SQLException;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
public class ConnectionEstablish {
	public static void main(String[] args) {
		Connection con=null;
		try {
			DriverManager.registerDriver(
				new com.myql.cj.jdbc.Driver());
			con=DriverManager.getConnection
				("jdbc:mysql://localhost:3306/
						practicedb", "root", "Sys@123");
			String query="select * from customer where cid= ? ";
			PreparedStatement pstmt=con.prepareStatement(query);
			pstmt.setInt(1, 102);
			ResultSet rs=pstmt.executeQuery();
			while(rs.next()) {
				int cid=rs.getInt("cid");
				String cname=rs.getString("cname");
				String address=rs.getString("address");
				Date date=rs.getDate("dob");
				System.out.println(cid+" "+cname+" "+address+"
						"+date);
			}
		} catch (SQLException e) {
			e.printStackTrace();
		}
		finally {
			try {
				con.close();
			} catch (SQLException e) {
				e.printStackTrace();
			}
		}
	}
}
```

Output:

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