1. i) JDBC applications enjoy the platform independence of Java, which lends itself to Internet applications. ODBC applications, ~~ODBC appli~~ must, at a minimum, be recompiled to run on a different OS/hardware combination.

ii) JDBC does not require software on each client system, which itself well for Internet applications.

iii) JDBC is simpler & easier to learn than ODBC

iv) JDBC is not primarily targeted for desktop application development, which makes for faster implementation outside the Windows environment & is frequently used in enterprise class applications.

2. ~~Resources~~ i) Class loader of an applications loads all classes.

ii) Class.forName returns the reference of class Objects for specified class name.

3. i) DSN :-

1. Connect to DSN
2. Write SQL statement query
3. Fetch data from database
4. Close the connection.

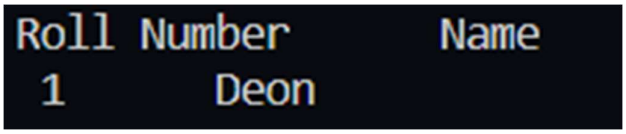
ii) DSN Less :-

1. Create instance of the connection object.

2. Define connection string, specify database driver.
3. Write the SQL statement query.
4. Continue with step 3 & 4 while there are records & move to next record
5. Close the connection & record set objects freeing up resources.

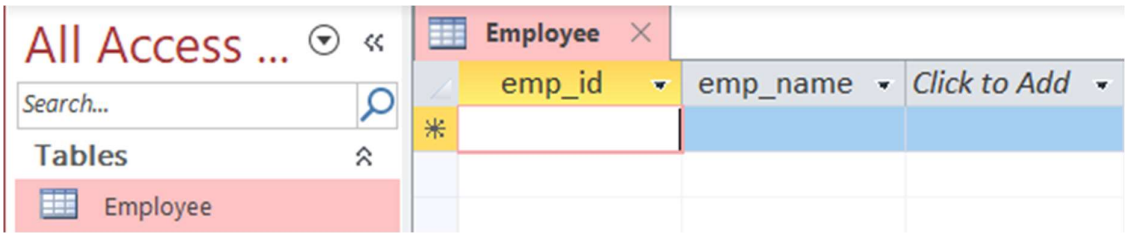
```
import java.sql.*;

class Exp18a {
   public String database = "C:\\Users\\deong\\College\\Java\\Manual-
Programs\\Experiment18\\SampleDatabase.accdb";

   private Connection conn;

   // Create Connection
   public void createConnection() {
      try {
         conn = DriverManager.getConnection("jdbc:ucanaccess://" + database);
      } catch (SQLException e) {
         System.out.println("Connection Failed");
         System.exit(1);
      }
   }

   public void closeConnection() {
      try {
         conn.close();
      } catch (SQLException e) {
         System.out.println("Close Connection Failed ?");
      }
   }

   public void updateQuery(String query) {
      try {
         Statement statement = conn.createStatement();
         statement.executeUpdate(query);
      } catch (SQLException e) {
         System.out.println("Error in updateQuery()");
      }
   }

   public static void main(String[] args) {
      Exp18a dbconn = new Exp18a();
      try {
         Class.forName("net.ucanaccess.jdbc.UcanaccessDriver");
      } catch (Exception e) {
         System.out.println("Error in Loading Driver");
      }
      dbconn.createConnection();
      // dbconn.updateQuery("DROP TABLE Student;");
      dbconn.updateQuery("CREATE TABLE Student (rollno COUNTER PRIMARY KEY, name
TEXT(50));");
      dbconn.updateQuery("INSERT INTO Student (name) VALUES( 'Deon')");
      dbconn.updateQuery("INSERT INTO Student (name) VALUES( 'Agares')");
   }
}
```

```
import java.sql.*;

public class Exp18b {
   public String database = "C:\\Users\\deong\\College\\Java\\Manual-
Programs\\Experiment18\\SampleDatabase.accdb";

   private Connection conn;

   // Create Connection
   public void createConnection() {
      try {
         conn = DriverManager.getConnection("jdbc:ucanaccess://" + database);
      } catch (SQLException e) {
         System.out.println("Connection Failed");
         System.exit(1);
      }
   }

   public void closeConnection() {
      try {
         conn.close();
      } catch (SQLException e) {
         System.out.println("Close Connection Failed ?");
      }
   }

   public void query() throws SQLException {
      Statement st = conn.createStatement();
      String str = "select * from student";
      ResultSet rs = st.executeQuery(str);
      String text = " ";
      System.out.println("Roll Number \t Name");
      while (rs.next()) {
         text = text + rs.getInt(1) + "\t" + rs.getString(2) + "\n";
      }
      System.out.print(text);
   }

   public static void main(String[] args) throws SQLException {

      Exp18b dbconn = new Exp18b();
      try {
         Class.forName("net.ucanaccess.jdbc.UcanaccessDriver");
      } catch (Exception e) {
         System.out.println("Error in Loading Driver");
      }
      dbconn.createConnection();
      System.out.println("Connection to the database created");
      dbconn.query();
   }
}
```




```
import java.sql.*;

class Exp18c {
   public String database = "C:\\Users\\deong\\College\\Java\\Manual-
Programs\\Experiment18\\SampleDatabase.accdb";

   private Connection conn;

   // Create Connection
   public void createConnection() {
      try {
         conn = DriverManager.getConnection("jdbc:ucanaccess://" + database);
      } catch (SQLException e) {
         System.out.println("Connection Failed");
         System.exit(1);
      }
   }

   public void closeConnection() {
      try {
         conn.close();
      } catch (SQLException e) {
         System.out.println("Close Connection Failed ?");
      }
   }

   public void updateQuery(String query) {
      try {
         Statement statement = conn.createStatement();
         statement.executeUpdate(query);
      } catch (SQLException e) {
         System.out.println("Error in updateQuery()");
      }
   }

   public static void main(String[] args) {
      Exp18c dbconn = new Exp18c();
      try {
         Class.forName("net.ucanaccess.jdbc.UcanaccessDriver");
      } catch (Exception e) {
         System.out.println("Error in Loading Driver");
      }
      dbconn.createConnection();
      dbconn.updateQuery("DROP TABLE Employee;");
      dbconn.updateQuery("CREATE TABLE Employee (emp_id INTEGER PRIMARY KEY, emp_name
VARCHAR(50));");
   }
```

}




```
import java.sql.*;

class Exp18d {
   public String database = "C:\\Users\\deong\\College\\Java\\Manual-
Programs\\Experiment18\\SampleDatabase.accdb";

   private Connection conn;

   // Create Connection
   public void createConnection() {
      try {
         conn = DriverManager.getConnection("jdbc:ucanaccess://" + database);
      } catch (SQLException e) {
         System.out.println("Connection Failed");
         System.exit(1);
      }
   }

   public void closeConnection() {
      try {
         conn.close();
      } catch (SQLException e) {
         System.out.println("Close Connection Failed ?");
      }
   }

   public void printStudents(String where) {
      try {
         Statement statement = conn.createStatement();
         ResultSet resultSet = statement.executeQuery("SELECT * FROM Students WHERE " + where +
";");

         while (resultSet.next()) {
            String employee = "Student " + resultSet.getString("ID") + ":" + "\n\tName : "
                  + resultSet.getString("name") + "\n\tPercentage : " + resultSet.getString("percentage");
            System.out.println(employee);
         }
      } catch (SQLException e) {
         System.out.println("Error in Printing Employees With WHERE Condition");
      }
   }
```

```
    public static void main(String[] args) {
        Exp18d dbconn = new Exp18d();
        try {
            Class.forName("net.ucanaccess.jdbc.UcanaccessDriver");
        } catch (Exception e) {
            System.out.println("Error in Loading Driver");
        }
        dbconn.createConnection();
        dbconn.printStudents("percentage > 70");
    }
}
```