Assignment no. 6

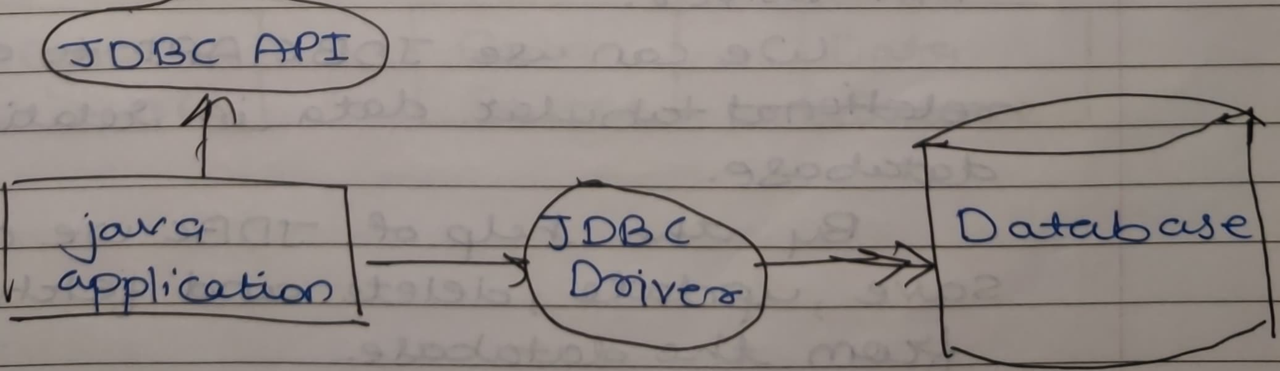
Q.1> How JDBC is used in Database Connectivity in Java?

→ JDBC stands for Java Database Connecti~~on~~vity. JDBC is an API to connect and execute the query with database. It is a part of JavaSE.

JDBC API uses JDBC drivers to connect with database. There are 4 types of JDBC drivers which are used for Database Connectivity:-

a> JDBC-ODBC Bridge Driver.
b> Native Driver.
c> Network protocol Driver.
d> thin driver.

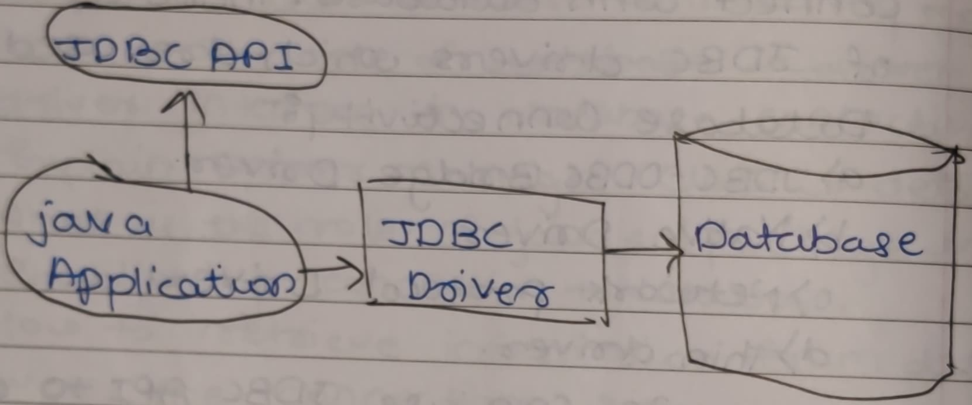
We can use JDBC API to access tabular data stored in any relational database. By the help of JDBC API, we can save, update, delete and fetch data from database. It is like open database connectivity. ODBC provided by Microsoft.



Q.2) Explain following in details:-

a) JDBC:-

JDBC stands for Java Database Connectivity. JDBC in java API to connect and execute query with database. It is a part of java SE.



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- JDBC-ODBC bridge driver.
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We can use JDBC API to access ~~relational~~ tabular data in relational database.

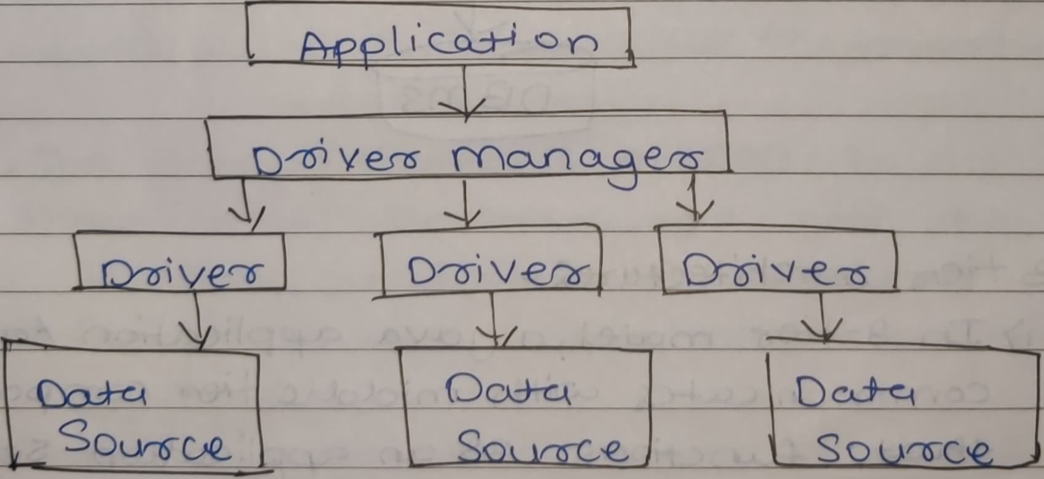
By the help of JDBC we can save, update, delete and fetch data from the database.

b) ODBC :-

ODBC stands for open databcese connectivity. It is open standard application programming interface (API) that allow programmers to acless any database.

The main proponent and suppliers of ODBC programming support is microsoft, but ODBC is based on closely aligned with open grouped standared. It is structured Query Language.

The open group Architecture framework. In additional to CLI specification from the open grouped ODBC also ~~ass~~ aligns with IOS IES for database API.

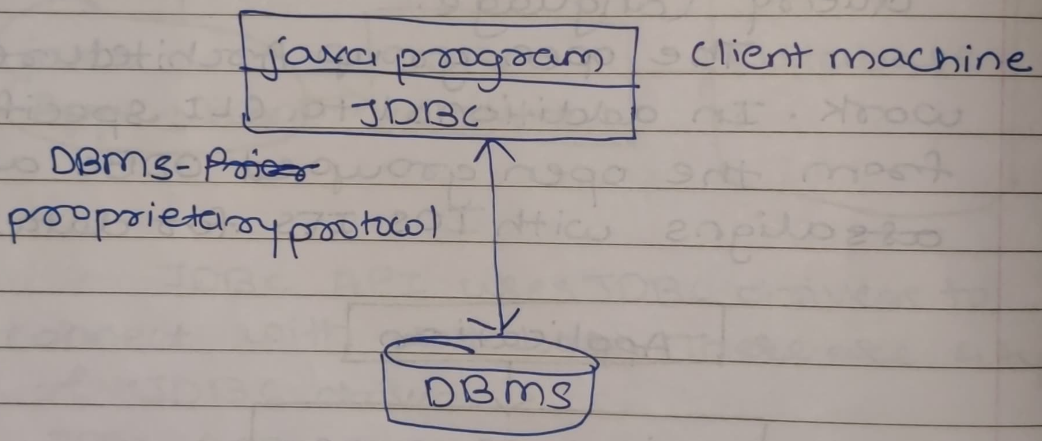


c) Database Connectivity:-

- 2-tier Architecture:-

1) In 2-tier architecture your Java application/applet directly communicates with database via JDBC driver.

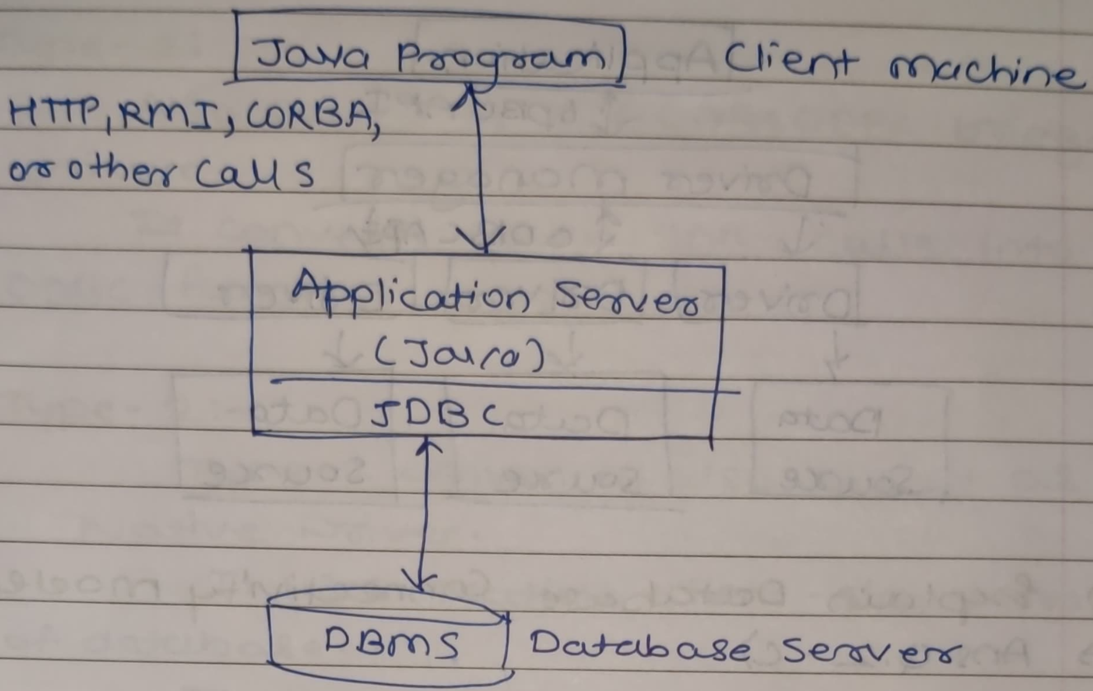
2) The java application/applets can be on same machine or other database can be on server and application can be on client machine using any network protocol.



- 3-tier architecture:-

1) In 3-tier model, a java application/applet communicates with middle tier component that functions as an application server.

2) The application server talks to database using JDBC.



Q.3) How ODBC used is Database Connectivity?

→ ODBC consists of four components working together to enable functions. ODBC allows programers to use SQL request that access database without knowing the priority.

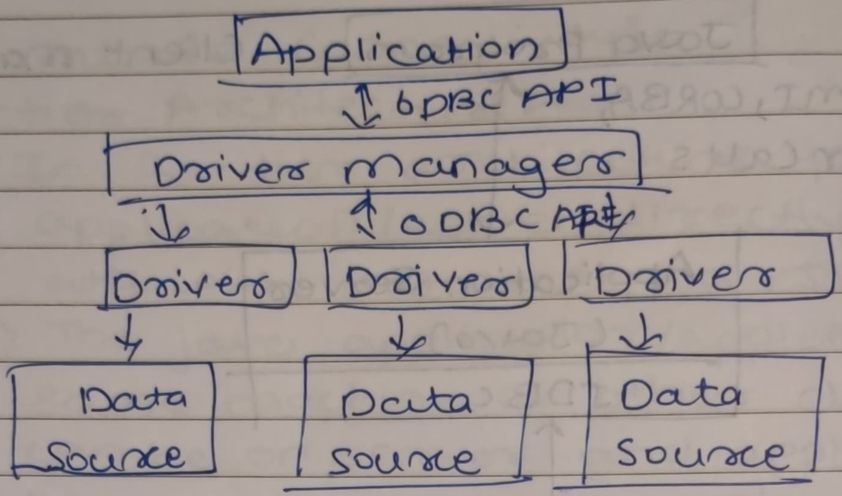
- The four components of ODBC:-

a) Application:- Processes and calls the ODBC function and submits SQL statements.

b) Driver manager:- Loads driver for each application.

c) Driver:- Handles ODBC function calls, and then submits each SQL request to a data and source.

d) Data Source:- The data being accessed and its database management system OS.



Q.4) Explain Database Connectivity models?

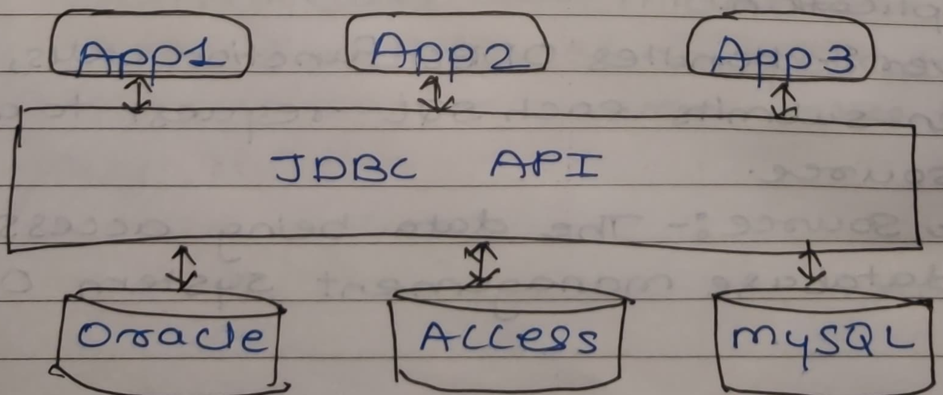
→ Ans. Q.2. c).

Q 5) What are the roles of Driver Interface in Database Connectivity?

→ JDBC drivers are client-side adapters that converts Java programs to a protocol, that the DBMS can understand.

There are 4 types of Drivers:-

1. Type-1 (JDBC-ODBC Bridge Driver).
2. Type-2 (Native Driver).
3. Type-3 (Network Protocol Driver).
4. Type-4 (Thin Driver).



• Type-1:-

Also called as JDBC-~~OB~~ODBC bridge driver.

It converts your JDBC calls into ODBC function calls.

• Type-2:-

Type-2 driver is also called as Native Driver.

It uses ~~Native~~ client-side libraries of database.

It converts JDBC method calls into native calls of database API.

• Type-3:-

Also called as Network Protocol Driver.

It converts your JDBC calls directly or indirectly with specific database.

• Type-4:-

Also called as Thin Driver.

It is like Native Driver but cannot use Native Libraries.

Q.6) Explain Driver Manager Class in details.

→ The Driver Manager class act as an interface between user and driver.

It keeps track of the drivers that are available and handles establishing connection between database and appropriate driver.

The driver manager class maintains a list of driver classes that have registered themselves by calling method DriverManager. registerDriver() .

There are many methods of Driver manager class.

- Useful methods of Driver managerclass:-

a) public static void registerDriver (Driver):-
It is used to register the given driver with the DriverManager.

b) public static void deregisterDriver (Driver, driver):-
It is used to deregister the given driver.

c) public static void connection getConnection (String URL);

It is used to establish connection.

Q.7) What is the role of java.sql. package in establishing connection?

→ After you have installed appropriate driver it is time to establish database connection using JDBC.

The programming involved to establish JDBC connection is fairly simple. Here are simple 5 steps:-

- import jdbc package:- Add import statement to your java program to import required classes in java code.

• Register JDBC Driver:-
This step causes the JVM to load the desired driver implementation into memory so it can fulfil your JDBC requests.

• Database URL formulation:-
This step create properly formatted address that points to the database to which you wish to connect.

• Create connection object:-
Finally a code calls to DriverManager object's getConnection() method to establish actual database connection.

Q.9) What is connection interface in details?

→ • A connection interface is the session between application and database.

• The connection interface is a factory of statement prepared statement and databasetadata.

• Object of connection can be used to get the object of statement and database metadata.

• Connection interface provides many methods for transaction like rollback(), commit(), etc.

• Commonly used methods in connection interface:-

a) public statement createStatement():-
creating statement that can be used to execute query.

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2) public Statement createStatement (resulttype, int ResultSet concurrency).

3) public void setAutoCommit (Boolean Status).

4) public void commit ().

5) public void Rollback ().

6) public void close ():- close the connection and release JDBC.

Q.10) What is Statement Interface?.

→ • The Statement Interface provides methods to execute queries with the database. The statement interface is factory of Resultset.

• It provides factory method to get the object of a Resultset.

• Commonly used methods in Statement Interface:-

1) public Resultset executeQuery (String SQL):-
It is used to execute SELECT query. It returns the object of Resultset.

2) public int executeUpdate (String SQL):-
It is used to execute specified query, It may be create, drop, insert, update, delete, etc.

3) public boolean execute (String SQL):-
It is used to execute queries that may return multiple Result.

4) public int[] executeBatch ():-
It is used to execute Batch of commands.