JDBC :- The JDBC API Contains two major sets of interfaces latest version (7.0)
- JDBC API for application writers
- JDBC driver low-level API for driver writers

Advantages Used to interact with multiple data Sources in a distributed heterogeneous environment

Connecting any database from Java Languages

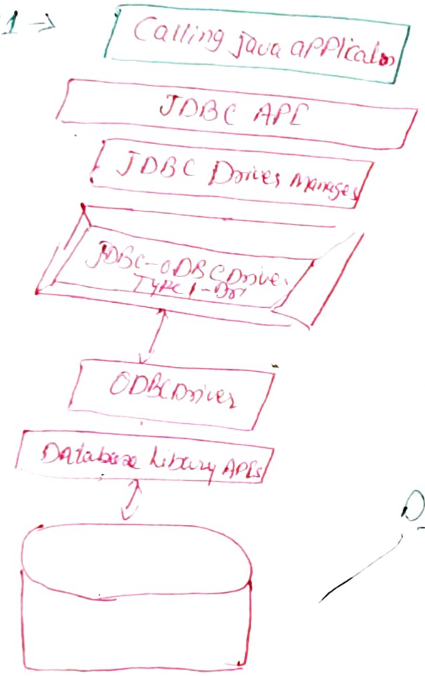
- it can switch over to any backed database without changing Java code

JDBC Drivers :- its a S/w Component enabling a Java application to interact with a database.

4 types JDBC Drivers

(1) JDBC-ODBC Bridge Driver (TYPE1-Driver)
(2) Native API Partly Java Driver (TYPE2-Driver)
(3) Net protocol Pure Java Driver (TYPE 3-Driver)
(4) Native Protocol Pure Java Driver (TYPE 4-Driver)

Type1 ->



Functions :- Translate Query obtained by JDBC into corresponding ODBC Query, which is then Handled by the ODBC Driver.

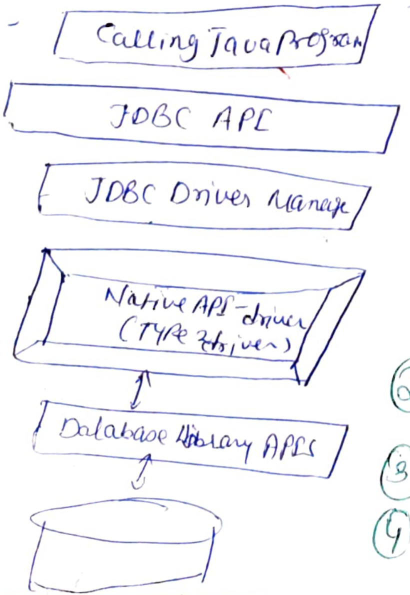
- Sun provides JDBC-ODBC Bridge driver sun. Jdbc. odbc. JdbcOdbcDriver This driver is native Code and not Java.

Adv :-
(1) Almost all databases are accessible
(2) A Type 1 driver is easy to install

Dis Adva :-
(1) The ODBC Driver needs to be installed client M/c
(2) Considering the client-side s/w needed, this is not suitable for applets

class : sun. jdbc. odbc. JdbcOdbcDriver
URL : Jdbc : odbc : dsnname

TYPE2 :-



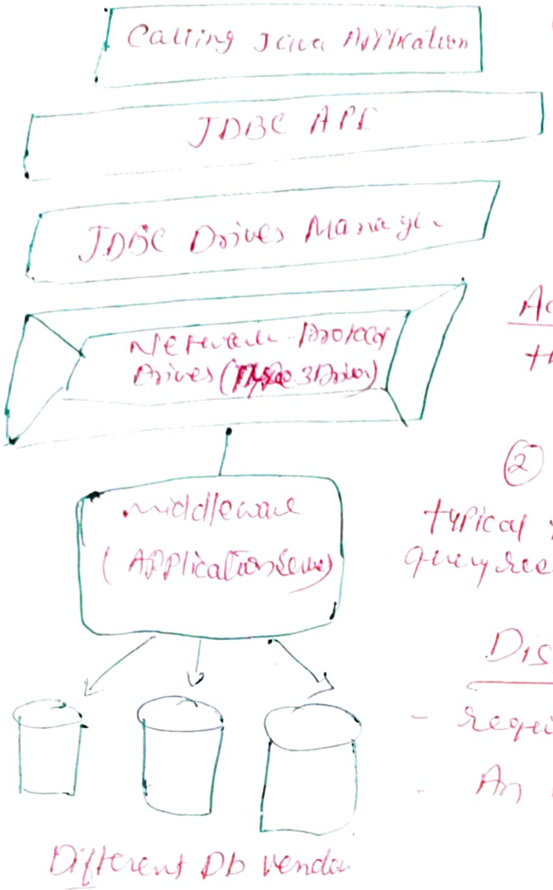
-> is a database driver implementation that uses the Client-side libraries of the database. The driver converts JDBC method calls into native calls of the database API

Ad.

Better Performance than type 1 Driver

Dis Ad.
(i) the client Library needs to be installed on client m/c
(2) Cannot be used in web-based application due the client Side S/W needed
(3) Not all database have a client side library
(4) Driver is Plateform dependent

3 Driver – Network Protocol Driver :- also known as the Pure Java Driver for Database Middleware.


Calling Java Application
JDBC API
JDBC Driver Manager
Network Protocol Driver (Type 3 Driver)
middleware (Application Server)
Different Db vendor

Functions: ① follows a three tier communication approach

② Can interface to multiple database

③ The JDBC Client driver written in Java communication with middleware net-server using a database independent protocol

④ Client → JDBC Driver → Middleware - Net Servers → Any database

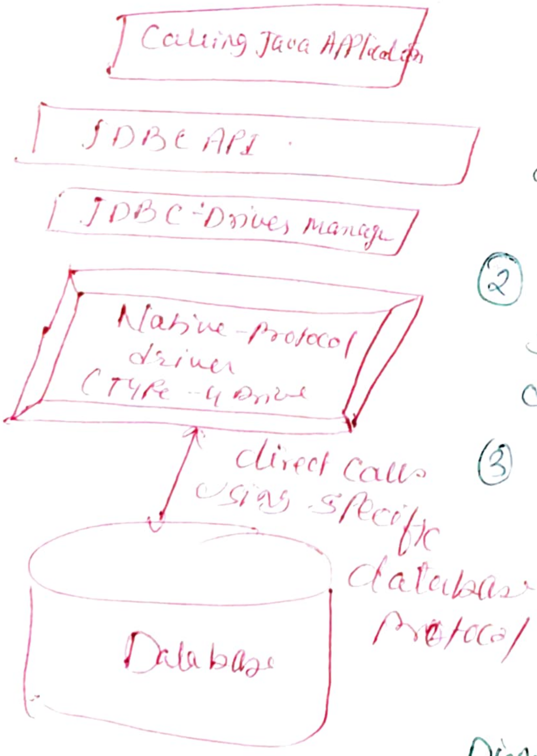
Adva: ① Since Commun is database independent there is no need vendor db library on the client M/C

② Middleware Server (Which ~~ca~~ can provide typical middleware services like caching (Connections, query results, and so on), load balancing, logging, auditing, etc.

Dis Adv

- required database - Specific Coding.
- An extra layer added may result in a time-bottleneck

TYPE 4 - Driver - Native Protocol Driver :- also known as Direct to Database Pure Java Driver, ~~etc~~.


Calling Java Application
JDBC API
JDBC-Driver Manager
Native-protocol driver (Type-4 Driver)
direct calls using specific database protocol
Database

Function:-

① entirely written in Java that communicate directly through vendor's database, usually through socket connections

② The drivers converts JDBC calls into the vendor-specific database protocol so that client can directly communicate with db server

③ Client → Native Protocol JDBC → Database server

Adva:-

① All aspects of the application to database connection can be managed within the JVM; this can facilitates easier debugging

DisAdv

① At client side, a seperate driver is needed for each database

Loding Driver

Class.forName (Java.lang.String Driver Class) or Register Driver (Driver driver)

- Step to connect database?

Class.forName (the Class name of a specific Driver)

Connection C = Drivermanager.getConnection(url of specific Driver, userName, Password)

Statement S = C.CreateStatement();

or

Preparestatement P = C.Preparestatement();

or

Callablestatement cal = C.PrepareCall();

Depending upon requirement

Jdbc Exception

① BatchUpdateException ② DataTruncation ③ SQLException ④ SQLwarning