insert into passenger values ("Amit, 4, "Jaipur", 10,000);

Select * from Passenger

name	id	address	charges
Amit	4	Jaipur	8000

THEORY JDBC and SQL

1) What is JDBC ?

Ans JDBC API is a Set of interfaces to access RDBMS is Called JDBC API

The JDBC API is a Set of classes and Interfaces. It is Used to access tabular data stored in a RDBMS (Relational Database Management System).

2) What is RDBMS ?

An application Can not be developed without a database. The database is Used to Keep User data into tabular format. A table Consist of rows and Colums. Tools

manages data in tabular format are Called RDBMS.

3) What is Tabular data ?

Ans Tabular data is the simpler data you can feed to a machine learning model. its called tabular because it can be represented in a table with rows and colums.

4) What is Database driver ?

Ans Set of implementation classes Provided by database Vendors is Called database driver

5) Who provides the set of implemetation classes in JDBC ?

Ans Database Vendors

6) Key Interfaces of JDBC

Ans 1) java.sql.Connection 2) java.sql.Statement
3) java.sql.PreparedStatement
4) java.sql.CollableStatement
5) java.sql.ResultSet

7) Key classes of JDBC

Ans 1) DriverManager

2) Driver

3) Date

4) TimeStamp

5) SQLException

6) SQLTransientException

8) What is the latest version of JDBC API ?

Ans 4.3

9) What are the different types of driver in JDBC

Ans There are four types of Drivers

1) Type 1 - JDBC ODBC Bridge Drivers.

2) Type 2 - Native Drivers.

3) Type 3 - Middleware Drivers.

9) Type 4 - Pure Java Drivers.

what is type 1 Drivers ?

This driver Consist of Java classes that translet JDBC calls to ODBC calls. And ODBC bridge then calls the ODBC driver of the target Database.

- it is Used Bridging technology
- Requires installation / Configuration on client Machine
- disadvantage -> it is not Recommended for Web application.

10) how to Setup Type 1 drivers?

Ans Control panel -> Admin Tools -> Data Source -> User DSN.

11) What is type 2 drivers

Ans Type two(2) drivers are also called Native API Drivers. It Written Partialy in Java Programming language and Partly in Native Code.

Native drivers use Native client library to Connect with database.

- JDBC Calls are Converted into DBMS Native Calls, Just like ODBC, Native driver must be installed on every client machine to use it

- Requires installation on client Machine

- Used to leverage existing CLI Libraries

- Disadvantages - Usually not thread safe

12) What is type-3 drivers ?

Ans type 3 drivers are also Called Middle-Ware Server. Usually installed at data-base host.

It is very flexible, It allows access to Multiple Database Using One driver.

disadvantage :- is installation of driver is required on a single machine and it is another server Application to install and maintain

13) What is Type 4 drivers ?

- Type 4 driver is a 100% pure Java drivers
- It use Java networking library to talk directly to the database.
- Configuration Requires Only Jar's to be classpath.
  Ex mysqlconnector.jar

14) how driver Manager is Connecting you with Database

Ans Connection Conn = DriverManger.getConnection ("JDBC:MySQL://Localhosh:3306/database_name", "root", "root");

15) Difference b/w Statement and Prepared Statement ?

Ans Prepared Statement preserved parsed Query whereas Statement queries are parsed in every database call.

16) What is ResultSetMetaData and How Can you get it ?

Ans We Can get details of an execute query with the help of ResultSetMetaData object. It Contain details like number of Column, ; Column Size, table name etc.

We Can get by Calling ResultSet.getMetaData() method.

17) Methods of ResultSetMetaData ?

Ans - 1) getCatalogName()

2) getTableName()

3) getColumnCount()

4) getColumnLabel()

5) getColumnTypeName()

6) getColumnDisplaySize()

7) getColumnName()

18) Why do you Use CallableStatement ?

Ans It is Used to execute Stored procedure and function.

19) how do you clean database Resources and why it is required ?

Ans We clean database Resources with the help of close() method.

It is required because closing statement will immediately release the resources occupied by this object.

20) what are the difference b/w Java.sql.Date and Java.Sql.Timestamp ?

Ans- Java.Sql.Date is used only of Date while Java.sql.Timestamp is used for ~~the~~ both date and time.

21) what is batch, how can you execute a batch in JDBC ?

Ans- A batch is a group of SQLs statement. A Batch is sent to a database in a single call to execute all SQLs together.

It reduce the Network traffic and response time of SQLs execution

Excute the batch in JDBC with the help of addBatch() and executeBatch().

22) What is transaction and how do you handle transaction in JDBC

Ans Transaction is an atomic Unit to be Commited and Rolled backed together in a Single attempt

We Can handle transaction With the help of

- Connection.SetAutoCommit(false).
- Connection.Commit()
- Connection.rollback()

23) What is ACID Properties

Ans 1) Atomicity : means all or nothing. All the database changes made by transaction will be Commited or rollback (aborted).

2) Consistancy : it makes Sure that database will be in Consistent state. No matter how many Concurent transaction are running at any given time.

3) Isolation - It means transaction are independent Isolation brings benifits of hiding Uncommitted changes of a transaction from other Concurrent transaction.

4) Durability - It means Commited data never lost. or you can say that if system is affected by a system crash or a power outage. the all Unfinished Commited transactions may be replayed

24 Methods of JDBC ?

Ans) 1) getConnection ()
2) getResultSet ()
3) getMetaData ()
4) ExcuteUpdate ()
5) ExcuteQuery ()
6) ExcuteBatch ()
7) AddBatch ()
8) Execute()

25) What is dirty Read ?

Ans If Uncommited data from a Transaction is accesible to another transaction then it is called dirty Read.

26) What is non-repeatable Read ?

Ans when a transaction reads a row twice and get different data due to changes made by transaction is called non repeatable Read.

27) What is phantom Read ?

Ans when transaction A retrieve a set of row satisfying a given Condition, transaction B insert or Update a row such that the row now meets the Condition in trasaction A, and trasaction A later Repeats the Conditional Retrival. Transaction A now sees an additional row. This row is Refferred to as phantom.

28) What is transaction Isolation ?

Ans One transaction will never Overlap another transaction.

29) What is stored / procedure / function and How do you Call it from JDBC ?

Ans A method Stored inside the database is Called stored procedure or Stored function.
It Can be Called by Callable Statement.

30) What are IN, OUT and INOUT parameters of a Stored procedure or function ?

Ans IN : This parameter is Used to Send the parameter Values to Stored procedure and function

OUT : This parameter is Used to receive the parameter Value from Stored procedure / function

INOUT :- This parameter is Used to Send and Receive the parameter Value from stored procedure / function.

31) Whats are the disadvantage of Stored procedur or function ?

Ans It will make ~~data~~ application database Independent.

32) What are the Scenarios when you will use stored procedure Or function in your application

Ans it is used for Reporting Purpose.

33) Why do you Use RegisterOutParameter() of CallableStatement ?

Ans Register The Out parameter with the specified name to the given JDBC type and type name.

34) How Can you Retrieve Multiple Resultsets from CallableStatement ?

Ans With the help of getResultSet() method.

35) how you Can Retrieve a String Values from CallableStatement ?

Ans With the help of getString() method.

36) What is MetaData and how you Can get it?

Ans Data about data is Called MetaData & we Can get it with the help of Resutset.getMetadata().

37) What is Data Connection Pool ?

Ans It shares the pooled Connection among Multiple Users. It avoids Creation and destruction of Connection again and again that will increase the performance of our application.

38) Advantages of DCP ?

Ans 1) Connection Reusability and limit of Maximum Connection are provided by data Connection Pool

2) It avoid Creation and distruction of Connection again and again that will increase the performance of our application

39) How do you Configure DCP in Web.xml ?

Ans With the help of <datasource> in Web.xml.

40) What are the parameters of DCP ?

Ans 1) SetDriverClass 2) SetJDBCUrl 3) SetUser

5) SetPassword 6) SetMaxPoolSize 7) SetMinPoolSize

8) SetInitialPoolSize 9) SetAcquireIncrement.

41) What is Singleton class ?

Ans The class who have only One Instance in their lifetime are Called Singleton class.

42) How you Create a Singleton class ?

Ans 1) Make class final So that child Can not be Created for Single class.

2) Make default Constructor Private so that no One other class Can instantiate Single class.

3) declare a Static Variable of Self type in Single class. Static Variable have Only One Copy in their lifetime

4) Make a getInstance() Static Method in Singleton class that will return a instance of same Single class.

43) Which library Jars you have Used to Create DCP?

Ans c3p0 (0.9.2.1. Jar) and mchange-Commons.Java (0.2.3.4.jar)

44) How Can you Configure DCP in desktop application?

Ans Yes, we can Configure Using DCP open Source API.

45) Which library did you Used for JDBC?

Ans MySQLConnector.jar

46) Why dou you use CallableStatement?

Ans It is Used to ~~excelu~~ execute stored procedure & function.

47) which design Pattern followed by JDBC Api?

Ans Bridge Design Pattern and factory design Pattern

48) which design Pattern followed by DriverManager.getConnection()?

Ans Factory Design Pattern

49) Which design Pattern followed by Class.forName()?

Ans Factory Design pattern

50) Why JDBC following Bridge Design Pattern?

Ans Because JDBC is a set of Interface like statement, preparedStatement, ResultSet etc. and we will get the implementation classes in driver jar file (MySQLConnector.jar).

51) If an application is connected with Multiple database than how many DCPs will be created?

Ans One DCP for One Database.

52) What is Business Primary Key?

Ans Business Primary Key is a Key which contains Business information

53) What is NoN Business Primary Key?

Ans it is an auto increment Integer Column. It does not have any business Value. it is selected for primary Key. it is Used to Maintain Referential integrity of the database.

54) What is Refecential integrity?

Ans It shows the Relation between two tables Using primary key and foreign key.

55) Disadvantages of business primary key ?

Ans Business Primary Contains the Business information like rollno., Mobile no email etc. If we Update or change the primary key then foreign key become invalid and produce disintegrated data.

Business Information is bound to be change in future so we do not ~~#~~ select a business Column as a Primary key.

56) How do you handle exception in stored procedure ?

Ans MYSQL - With the help of Declare Handler statement

Oracle - Exception Block

MS sql Server - Try-Catch Block.

57) What is Normalization ?

Ans Achieve Atomic Column, Primary Key & removing Data Redundancy is Called Normalization.

58) how Many type of normalization forms are available

Ans 1) 1NF - each Column has atomic Value

2) 2NF - each table should have Primary Key.

3) 3NF - Removing Data Redundancy with the help of Primary Key and Foreign Key.

4) BCNF - Every table must have Super Key

5) 4NF - It has No MultiValue dependency. It follows BCNF.

6) 5NF - It has No JOIN Dependency. It follows 4NF.

59) What is BCNF ?

Ans it stands for Boyce Codd normal form,

every table Must have Super Key.

60) What is Multivalue dependency ?

Ans - Multivalued dependency Occurs when two attribute in a table are independent of each other but, both depend on third attribute.

- A Multivalued dependency Consist of atleast two attributes that are are dependent on third attributes that's why it always requires at least Three Column - attribute.

61) What is Join dependency ?

Ans Join dependency is a Constraint which is Similar to functional dependency or Multivalued dependency. It is Satisfied if and Only if the relation Concerned is the join of a certain number of projections. Such type of Constraint is Called Join dependency

62) What is functional dependency ?

Ans functional dependency is a relationship b/w two attributes, typically between the PK and other non-key attributes with in a table.

63) What is De-normalization

Ans When we deviate from Normalization and duplicate data in Multiple tables it is called De-normalization.

64) When do you Use deNormaliozation ?

Ans For optimizing time Critical report performance de-normalization is done it will increase report response time.

65) Difference blw stored Procedure and Stored function ?

Ans Stored function have Return type where as stored procedure does not not have any Return type.

66) What is the default port of different databases

Ans 1) MySql - 3306

2) Oracle - 1521

3) MSSql - 1433

4) MongoDb - 27017.

67) How Can you Change the port No of different database

Ans 1) MySQL my.ini (search Port No.).

2) Oracle - listener.Ora

68) what is the User Name and Password of different database

Ans 1) MYSQL - "root", "root".

2) Oracle - "scott", "tiger".

3) MS SQL - "Sa", ""

69) how to load the driver in different database?

Ans 1) MYSQL - class.forName("Com.mySQL.JDB.Driver")

2) Oracle - class.forName("Oracle.JDBC.driver.~~Jdbc~~ Oracle Driver");

3) MSAccess - class.forName("Sun.JDbc.Odbc.JDBCODBC Driver");

4) SqlServer - class.forName("Com.MicrosoftSqlServer.jdbc.sqlserver Driver");

70) What are the SQL, DDL, DML, DCL statements?

Ans 1) SQL - Sql stands for structured query language. it is a standardized Syntax for accessing a Relational database.

2) DML - DML stands for data manupulating language. it has a statements for Crud operation.

3) DDL - DDL stands for Data Defination language. it has a statements for defining and deleting table

4) DCL - Data Control language it has a statements of Commit, rollback & Savepoint.

71) Equi join v/s outer join v/s inner join?

Ans 1) Equi Join: equi Join internally use equal operator to fetch the data from both table

2) Outer Join - it gives all the row of both the table either they matched or not.

3) Inner Join - It gives Common data of both the table

72) what is left Join and Right Join ?

Ans Left Join - Return all records from left table and Matching data from Right table.

Right Join - Return all records from Right table and Matching data of Left table.

73) What is Self Join ?

Ans It is Used to Join the Table itself.

74) What is trigger ?

Ans It is a Special Kind of stored procedure that Called on SQL query event.

Event when a trigger is called

1) Before Insert 3) Before Update 5) Before Delete

2) After Insert 4) After Update 6) After Delete

75) What is Indexes ?

Ans index is the pointer to table row in Ascending or decending Orders.

Advantages of index

1) One index can be applied to one or more Column.

2) One table may have one or more indexes.

76) What is View ?

Ans it is a Virtual table. it can be associated with two or more table. table can be updated by its View

77) What is Primary Key ?

Ans Primary Key is used to Uniquely identify a row in a table. It should be unique and Not Null.

78) What is foreign Key ?

Ans Field of a table that is a primary Key of

another Table.

79) what is Composite Key ?

Ans It is a Combination of two or more Columns in a table that can be Used to Uniquely identify each Row in a table.

80) what is Unique Key ?

Ans Unique Key is just like a Primary Key but it can Contain one null Value.

81) what is Candidate Key ?

Ans Candidate Key is a Candidate for Primary Key And it can not be null.

82) what is Alternate Key ?

Ans Alternate Key just like a Candidate Key which is alternate for primary key. It must be Unique.

83) What is Super Key ?

Ans Super Key is a Combination of one ore more attribute (Columns) that can be Unsiquely identify

- Create table Employe (ID int not null, name (20), email Varchar (50), CONSTRAINT SuperKey Primary KEY (ID, name)) ;