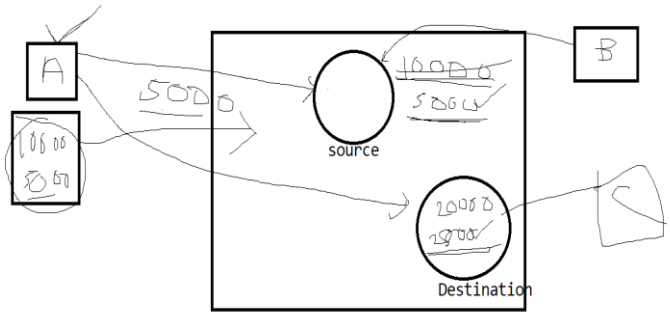
Database Technologies

To store the data in persistent storage device there are 2 ways

1. Files-→ these are sequential read and write is needed so manipulation of data is tedious.
2. DataBase-→
    - Reading and manipulating data is faster and easy than files.
    - Sharing of data is possible.
    - The security is also good.
    - It follows ACID property; hence good transaction control is also there.
    1. Atomicity-→every transaction should be executed as a single unit, mean all the steps should happen or none should happen
    2. Consistency-→ After every transaction data should be in correct state.
    3. Isolation→ any user read data when logs in should read same data.

    When the transaction is happening then the changes are visible to only person who is performing the transaction, till it is getting completed.
    The changes will be visible to all users when the transaction completes



    4. Durability--→ longer period of times there should be consistency and correctness in data.

Types of databases

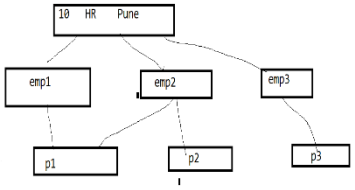
1. SQL database-→ oracle, mysql, SQL server, postgresql
    a. The data is stored in structured format.
    b. The data is stored in table format
    c. It also allows to stores relations between table, hence it is called RDBMS
2. NoSQL-→MongoDB, Cassandra, Couchbase DB, firebase
    a. It is unstructured database.
    b. It is usually used in less secure application.
    c. Faster than SQL database
    d. Scalable
3. GraphDB→ Neo4j
    a. It shows data in graph format.
    b. Useful when you want to show data in network form.

4. Memory Database-→ MemDB, VoltDB
    a. The data is stored in RAM; hence size of data is very small, but very fast to access
    b. Usually used by researchers

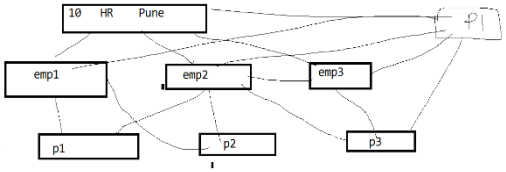
MySQL-→ it is a SQL Database, It is a RDBMS

In database the data is stored by using 3 model

1. Hierarchical



2. Network



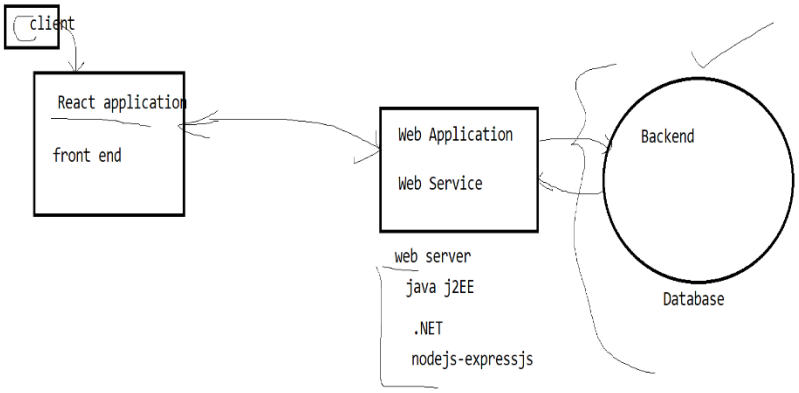
Employee

empid	ename	salary	deptno
12	cccc	5566	10
13	vvvv	4567	20
14	hhh	5678	20

Dept

Deptno	dname	dloc
10	HR	Pune
20	Account	Mumbai

Full stack application



acno	Acname	Custid	Type	Email	Mobile	balance
1	Kishori	100	saving	kkk@gmail.com	33333	50000
2	Kishori	100	current	kkk@gmail.com	2222	400000
3	Kishori	100	Demat	kkk@gmail.com	2222	400000
4	Revati	101	saving	rrrr@gmail.com	55555	600000

acno	Cid	Type	balance
1	100	saving	50000
2	100	current	400000
3	100	Demat	400000
4	101	saving	600000
5	101		

Acname	Custid	Email	Mobile
Kishori	100	kkk@gmail.com	3333
Revati	101	rrrr@gmail.com	55555

Student

Sid	Sname	Address	cpoursename
100			
200			

Marks

Studid	courseid	marks
100	java	67
100	C++	67
200	java	66
200	C++	88

roomno	rloc	email	charges	From date	To date
1	xxx	ff	4000	25 sept	30 sept
1	xxxx	cc	4000	1 oct	4 th oct
1	xxx	ff	4000	5 oct	10 oct

Employee table

empid	ename	address	Adhar card	Email	Mobile	passport	desg
					22221		

Primary key-→ empid

Alternate key-→ adhar num, email, passportno, mobile

Candidate key--→ empid, adhar num, email, passportno, mobile

Keys in database

1. Primary key
    - Minimal set of attributes, which identifies the row uniquely is called as primary key,
    - If the primary key is single attribute, then it is called as simple primary key

- But if it contains more than one attributes then it is called as composite primary key
- It should not contain null values.

2. Alternate key—all candidate keys which are not chosen as primary key are alternate key

3. Candidate key---Any minimal set of attributes which identifies the row uniquely is a candidate key
   Employee table
   Empid , adhar num, email,passportno,mpbile

4. Super Key-→ any combination which identifies the row uniquely is called as super key.
5. Unique key---→the attribute whose values should be unique, but it is not primary key, It may contain null values at multiple places.
6. Foreign key--→any column which references other column of the same table or different table, and the other column should be primary key.

MySQL

We are using

SQL--→(Structured query language)

Plsql-→procedural structured query language

Types of statement

Type	description	statements
DQL	Data query language	select
DDL	Data definition language	Create, Alter, drop,truncate
DML	Data manipulation language	Insert, delete, update
TCL	transaction control language	Commit, rollback, save point
DCL	Data control language	Grant, revoke

To download and install mysql

https://dev.mysql.com/downloads/windows/installer/8.0.html

in windows start button search mysql command line client and open it

or

open cmd prompt

c:\system32>mysql -u root -p

enter password:

It will open the prompt

Mysql>create database iacsd9023

Or

Mysql>create database if not exists iacsd0923

In mysql you may create any number of databases but in oracle at a time only

one database will be there on the server. Hence create database command is not work in oracle.

Mysql> source D:\mysql_databse\demobld.sql

Mysql>select * from emp

Mysql>select * from dept

Mysql>select * from salgrade

In mysql you can use

Arithmetic operators

+, -, /, %

Relational operators

<, > , =, <=,>=

Logical operators

and , or, not

In databases string should be enclosed in single quotes

Every query should end with ;

In oracle default date fomat is

dd-MMM-yy

in mysql the date format is 'yyyy-mm-dd'

operators in mysql

[Not] Between … and	Useful to check the range of values or dates
[not] in	It is used to check with multiple values in the same column