

MySQL



- computes - takes input from user and gives output
 - origin: latin word - Computare means - to compute or to calculate
 - invented by - Charles Babbage
 - mathematician - born - 1849 -
 - he wanted to calculate the sq. rt. of a lot +
numbers for 10000 - 20 dig. nos. at a time -
 - 1st comp: name - Difference Engine? acronym -
 - it was a mechanical machine
 - it had a piston! Nowadays its electric
- (First, taking, last) info (SS1167) to be*

- | - job | input | , output |
|--|-----------------------|----------|
| - converts date into info | (between 1980 & 2000) | B |
| - info = date, (b), report, and etc, meaningful data | | |
| - new facts copied from internet - info | | |
| - ex: 22021984 - sin ka potentially London no. | | |
| <i>Forward thinking, forward looking, anticipate?</i> | | |
| <i>info</i> | | |
| <i>date on whose basis the management can take a decision</i> | | |
| <i>for what date, it is about 1980 - forward date</i> | | |
| <i>- forward date as forward in its meaning</i> | | |
| <i>forward work done by the comp. to convert date into info.</i> | | |
| <i>that is why info is also called forward date</i> | | |

- Database - collect[~] of **big** amounts of data

- DBMS - database management sys.

- ready made s/w that helps you manage data
- think of excel

- ANSI - org - standardization -

- std. set rules b/w

- acc. to them DBMS - collect[~] of programs

- American National Standards Institute

- gen. MSQL

that allows you to Insert, Update, Delete & Processing

- Various DBMS available on market

- MS Excel, dBase, Foxbase, Foxpro, Clipper, Oracle

- Tally - created using Foxpro

Dataflex, Quattro Pro, DB Vista, Advanced Bentley,
LOTUS 1-2-3, etc.

- MS Excel - 5.3% market of IT industry alone using

- popular in it - known as Macro

- 4000 f.

(VBA programming)

* MySQL

- RDBMS - Relational DBMS
- 1,90,00 ₹
- Oracle costs 40 lac ₹ for 10 users
- DBMS in RDBMS

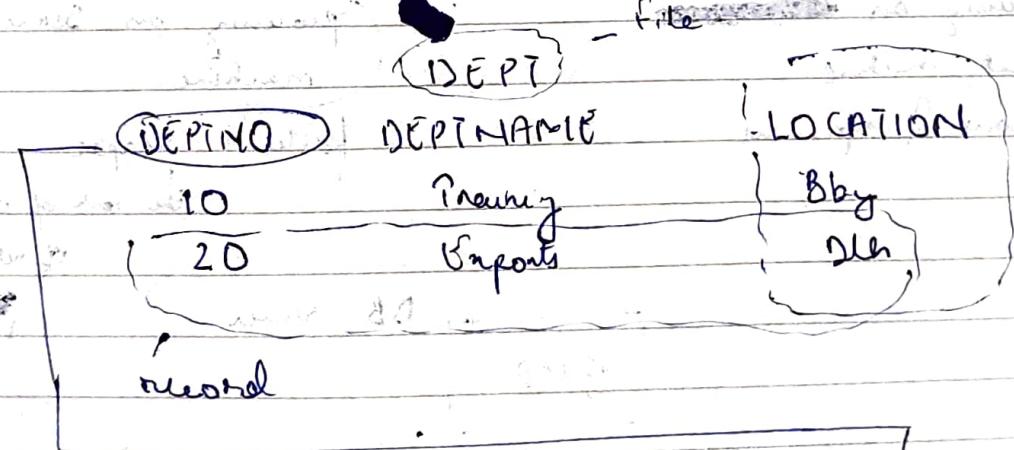
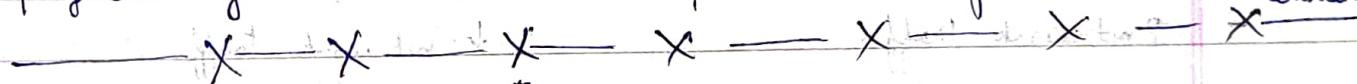
DBMS (inclus, p for pos)

RDBMS (MySQL, Oracle)

- Field
 - Record
 - File
- ↳ nomenclature ↳
- ↳ diff
- ↳ columns, Attribute
Entity, Row, Triple
Table, Relation, Entity class

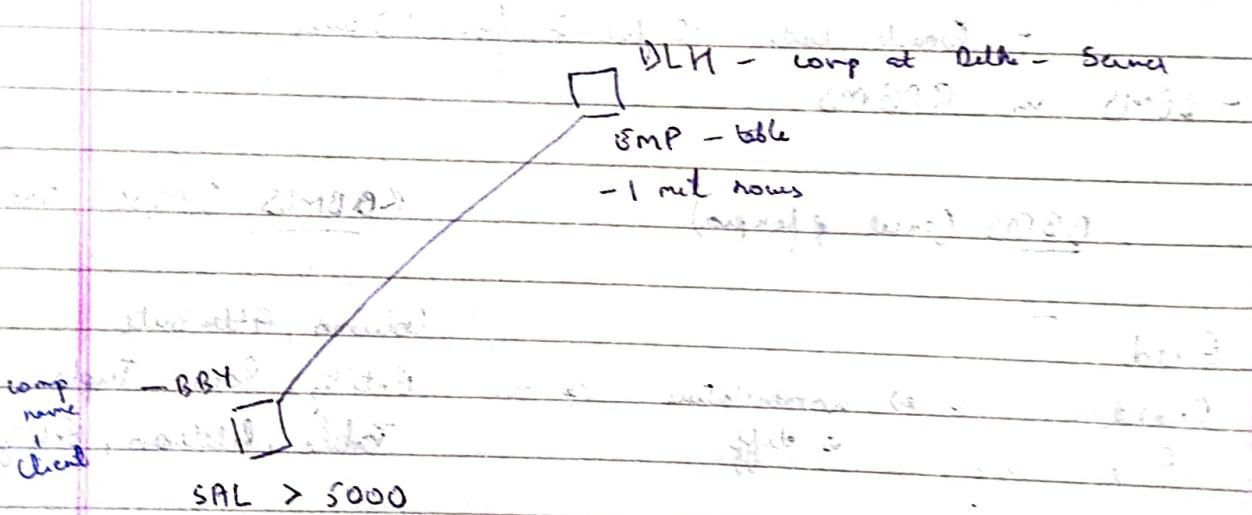
- relationship b/w 2 files is maintained programmatically

relationship b/w 2 tables can be specified
at the time of table creation (using foreign key)

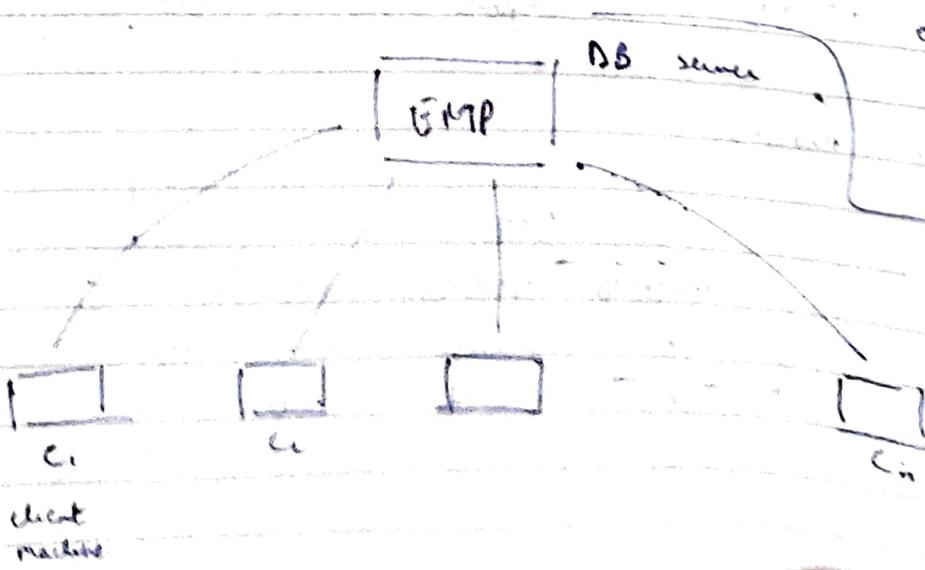
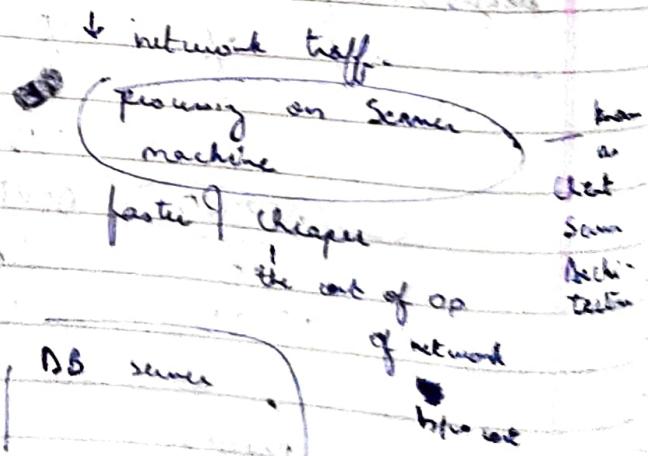


EMP	EMPNO	ENAME	SAL	DEPTNO.
	101	Bhanu	5000	10
	102	Nikita	6000	20
	103	Shreya	7000	40

- more programming
- more time is reqd for develop & testing.
- s/w dev. → less programming

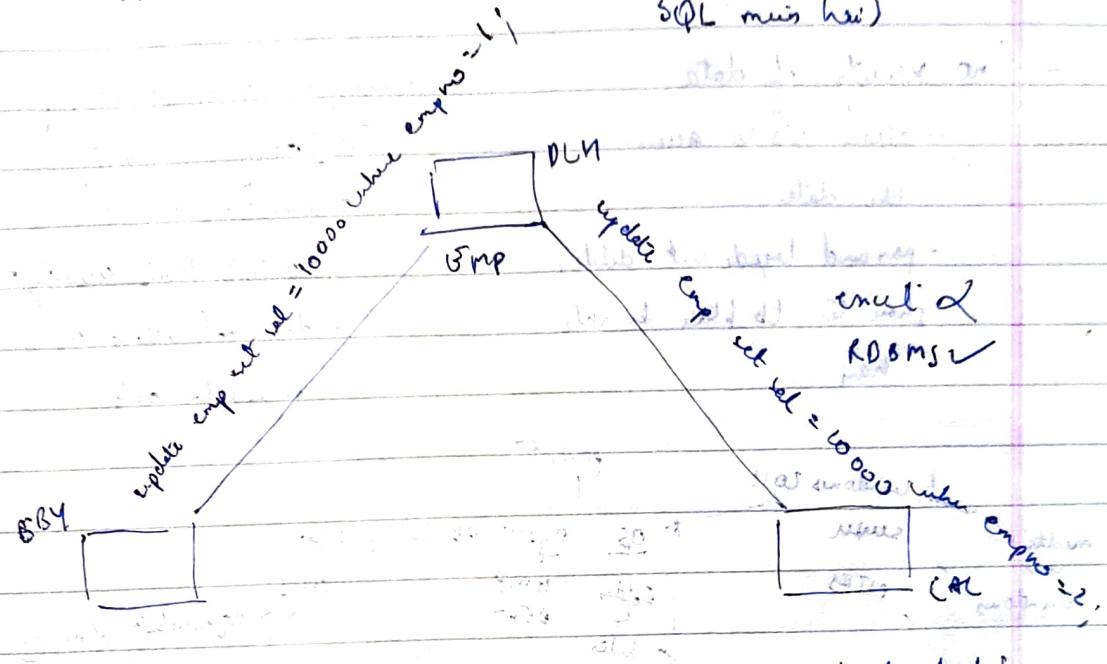


- ↑ network traffic
- passing on [redacted]
- Client machine
- slow & expensive



- Client - Server architecture is not supported

Most of the RDBMS support Client - Server architecture (MySQL uses this)

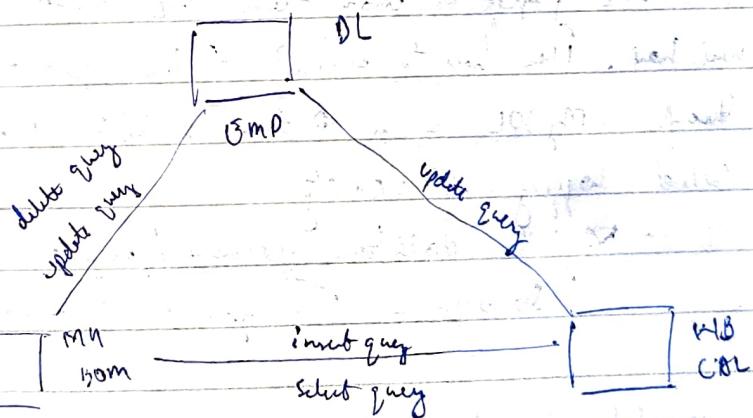


- file level locking
- not suitable for multi user

now level locking
suitable for multi user

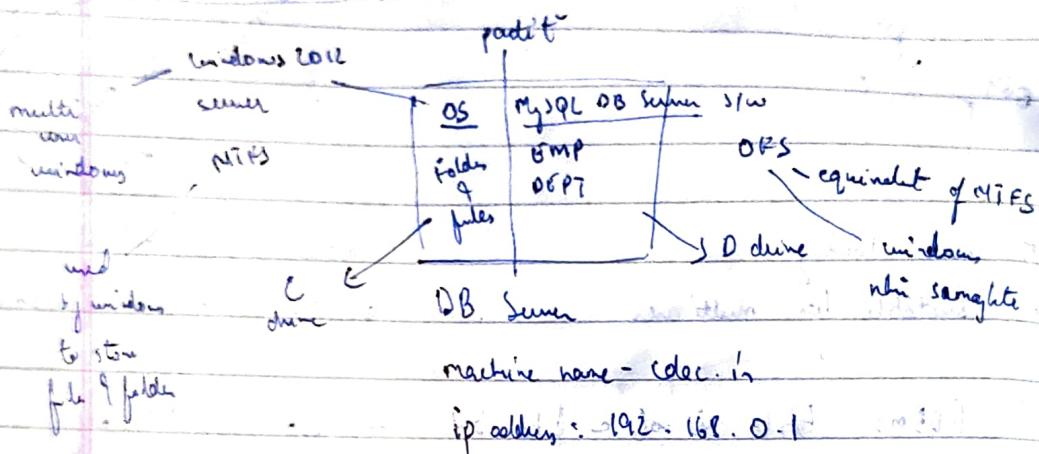
In RDBMS table is not a file but may now is (intervals)

⇒ Table is a folder



- a distributed database

- Distributed databases are not supported
- Distributed databases are supported
- no security of data
 - allows OS to access the data
 - password required to delete, show to the table in site
 - has
- multiple levels of security
 - Logging-in security
 - command level
 - object level security
 - does not allow OS to access the data



D drive (copy to another) or windows OS security in which. Then how to access? - On client machine through MySQL access D drive & tables. That my friends is called Logging-in security

MySQL database username / password

So w/o  you can't access

knowledge to issue  to the MySQL commands like: create table, create procedure etc. for some 80 commands in MySQL. As a student we do not have permission to all. can't of other username

PRAGNYA



SHITAL



BMP ← only when pedigree
has stored it
w/ sketch

To access the tables of other users

Various RDBMS available

Informix - fastest in terms of processing speed BUT the programming is complex

Oracle - most popular - its programming is very easy

to be in assembly lang.

Span

MS SQL Server

Informix

Postgres

Unify

DB2

CICS

TELON

DBMS

MS Access

Paradox

Virtum (AC)

mySQL

etc

DB Server - mainframe (Super computer)

< 200 GB RAM min

C/C++ invented Parrot

Single user DBMS

the layout program in ORACLE - a legacy

product of Oracle Corporation (1977)

www.oracle.com

Central part of DBMS part.

PAGE
DATE

- #1 DB SW company in the world
- #1 overall largest SW company in the world
- (Microsoft to switch, Now? why?) growth rapidly in it, it is very easy
- works on MS OS

Sybase

- going down
- recently acquired by SAP

SSMS

- good RDBMS from Microsoft
- Sybase with developers to update Microsoft at (copy) paste bridge
- but only works in Windows OS

- 63% of world commercial DB market in the Client - Server environment (amazon, paypal, etc)
- 86% of world commercial DB in the Internet environment (facebook, twitters, etc)

- 16% market share

Postgres

- Oracle Mumbai
- open source

DB2 - DBMS

- requires DB server

MS Access

- good RDBMS from Microsoft
- formerly used by Bank of America
- cost - 70,000

single user & tiny Oracle vs Oracle Lite

- single user edition
- free
- for mobile phones
- for desktop we have Personal

Oracle



single user software Banane hat desktop / mobile hängt, to
use Oracle. Free dan!

MySQL

- launched by a Swedish comp. in 1995
- its name is a comb of "my" - name of co-founder Michael Hägglund's daughter, and "SQL"
- Open source RDBMS
- most widely used open-source RDBMS
- 42% of world open source DB market
 - facebook, twitter, etc use this though not for websites
- free SQL open source proj. that require a full-featured database management system use MySQL
- Facebook

for searching Google use Database called Big Table

In every column is a file unlike RDBMS
where every row is a file

- don't compare w Oracle. We commercial big

hai. Then we make it free

- don't compare w Oracle

Oracle

MySQL

- top 10/10 comp. w Oracle

- MySQL part w ~~Oracle~~

- >90% of fortune 500 comp. use

- part of the widely used LAMP open-source
web app sw stack (9 other "AMP" stacks)

L — Linux

A — Apache

M — MySQL

P — PHP, Python, Perl, Java

⇒ MySQL - part of ~~LAMP~~ LAMP stack

W — Windows

A } same

M } same

P }

M — Mac OS

A } same

M } same

P }

X — user platform

A } same

M } compatible

P } with multiple OS

- Sun Microsystems acquired MySQL in 2008

- Oracle acquired ~~MySQL~~ in 2010

↳ MySQL bhi Oracle ka.

They Oracle ka cost 40,00,000 \$

against MySQL ka 1,00,000 \$

so Oracle pe Zarur 40 times

Various抒情詩詩歌

- various s/w dev. tools from MySQL

- MySQL database

- SQL

- MySQL - PL

- " Command Line Client

- " Workbench

- Connectors

- for Email

- Notifiers

- Enterprise Backups

- Enterprise High Availability

- " Encrypt

- " Monitor

- Query Analyzer

- etc.

- MySQL database

- MySQL database s/w

- store table date, retrieve table date, secure table date, etc.

- SQL

- structured query lang.

- commonly pronounced as 'Sequel'

- create, drop, alter } tech

- insert, update, delete }

- grant, revoke, refresh }

- conforms to ANSI standard

- 1 char = 1 byte of storage

- also conforms to ISO standards for Q/A

- international

- common for all RDBMS
- Declan is Not a product of MySQL
- Initially funded by IBM (1975-77)
 - (some code was written by them in C, C++ (S01) & Assembly (01))
- at this time they were not a software company, it was a hardware comp.
- earlier was known as RQBE (Relational Query by Example)
- Indian origin lady
- Larry, Thomas, Scott, Chris, Kara, Brian
 - the 6 people who wrote the source code for SQL
- IBM gave RQBE free of cost to ANSI
- Now controlled by ANSI
- ANSI renamed RQBE to SQL
 - hence it is common for all RDBMS
- In 2005, ANSI rewrote the source code of SQL in Java (100%.)
 - That's why Oracle acquired MicroSoft microsystems!

What happened to these 6 people! They got together after realizing what they had made was the foundation for what we today call - **ORACLE Corp**

Weak word

Search Larry Ellison

- MySQL - PL

- MySQL progs long
- for MySQL
- used for database programming
 - ex: NRA calc., tax calc., attendance calc.

- MySQL Command Line Client

- MySQL Client s/w (MySQL database is a server s/w)
- used to connect to the ~~database~~ MySQL, database
 - run SQL commands & MySQL-PL programs
 - character based (no UI) (text based)

- MySQL Workbench

- up-to-date equivalent but w UI

- NW - go to www.mysql.com

read documentation

= explore

- get info of all other products

NW

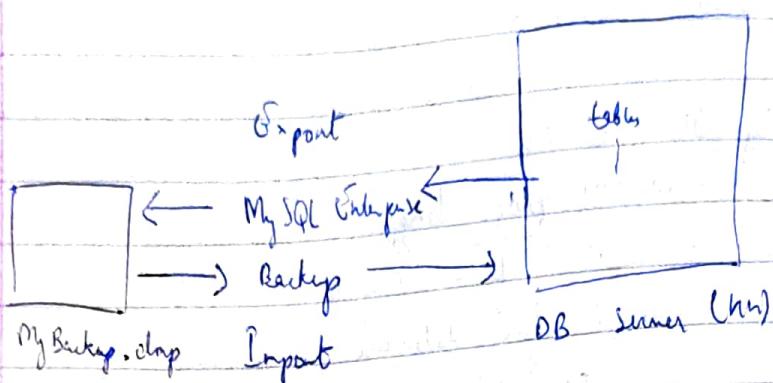
- Print out of notes of DBT.txt file
- do not share w anyone else

- MySQL Enterprise Backup

- used to copy tables data

- used to take backups of tables of no common table from the backup

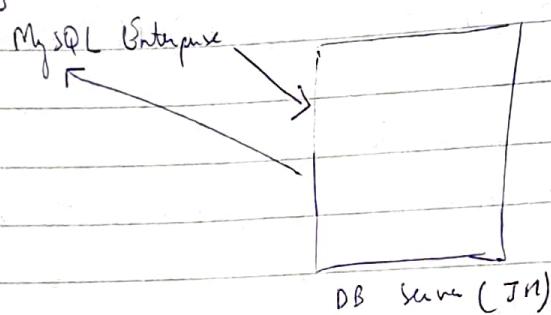
- why don't I have Workbench



for now

Take backup here bcz you just change ur table
are not fully go perdict mei store hoga jyie such
Ur hoga you need this.

- export, import tables



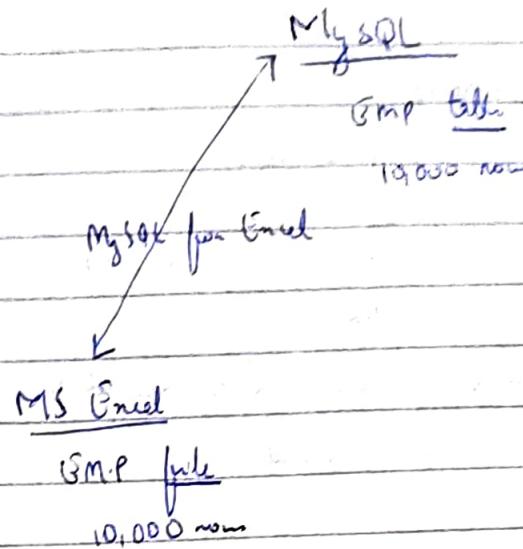
- also used to transfer the tables

from 1 MySQL date base to another
MySQL date base

- MySQL for [REDACTED] Excel

- import report of ur MySQL date
using Microsoft Excel

now
- graphs & pie chart in Excel

**HW**

- Sign up for MySQL, Java & Oracle Newsletter & their magazines
- all are free
- Go through the (d) stand by in to readem

MySQL - SQL

- only 9 words in SQL. But broken up into 4 divs
 - DDL (Data Definition Lang.) (Create, Drop, Alter)
 - DML (Data Manipulation Lang.) (Insert, Update, Delete)
 - DCL (Data Control Lang.) (Grant, Revoke)
 - DQL ("Query") (Select)

(basically query better here)

- 5th comp. of SQL - DIL/TCL

- not an ANSI std.
- exists in MySQL & Oracle
- Data Integrity Lang. / Transaction Control Lang.
- Goods under this:
 - Commit
 - Rollback
 - Snapshot

- other DDL commands in MySQL

- rename: table
- truncate: combo of delete all rows + commit

- enter DML commands in Oracle
 - Merge → the date of 2 tables
 - Updtrt - update + insert
 - if the row doesn't exist then it will insert a new row
 - if the row already exists then the form will be outdated
- So, tot = 16 = 9 + 5 + 2 = oracle only
 - all + MySQL + Oracle
 - LOSMs

Rules for table names

- max 30 characters
- A-Z, a-z, 0-9 allowed
- can insensitive - windows
- can sensitive - Unix / Linux
- best to begin w/ alphabet
- allowed special char - 3 → \$, #, -
- in MySQL, to use reserved characters such as # in table / column name - enclose it in back-quot;
- reserved words that are not allowed in table name
 - for a command whi
 - tot - 13 or 4 char.

MySQL documentation / book shelf

- ~~for bookmark in~~ Oracle

MySQL Datatypes

1- Char

1 char is 1 byte - ANSI character

2- Varchar

1.

- allows any character (could be alpha-numeric also)
- max 255 characters
- uses ~~bytes~~ of ND space but
- ~~= searching will be in fact kyunhi max fixed bytes~~
~~for any back back to fact to retrieve for large~~

2.

- variable character
- allows any character (" " , " " , " " , " ")
- max 65,535 characters (64 kb - 1)
- consumes ND space as searching will be slow
- Diff b/w the 2 - char var. if declared for a length of x
if you give it a val of length y ($y < x$) then remaining
length is wasted but not in varchar as char max space
wastage

3. Text - allows any character (variable length)

3.a tiny text

b text

c medium text

d long text

a.

- allows any character (variable length) max 255 characters

b.

- max 255 characters

c.

- max 65,535 characters ($64k_6 - 1$)

- min 16,777,215 ($16m_6 - 1$)

d.

- 4,124,967,65 ($4k_6 - 1$)

- width doesn't have to be specified for the above ~~for~~ data types

- stored outside the table

- " away from " "

- " outside the row "

- " away from " "

- this may be growing speed of other column is not affected

SS 1170

for all

datatype

under type

3 (text)

- MySQL maintains a LOCATOR (HP, pointer) for reading

- used for those columns that will not be used off (but used)

- a " " " " that are only for storage & file

- en: comments, experience etc

4. Binary

- fixed length binary string
- max 255 bytes of binary data
- en: barcodes, qr codes ...
- width need not be specified

both datatypes are

stored as strings
of 1s & 0s

5. Varbinary

- variable length binary string
 - max 65,535 bytes of binary data
 - en: icons, emojis
 - width has to be specified
- diff b/w width & length?

6. Blob - ~~tiny blob~~ Binary Large Object - var. len. binary string

a) Tiny blob

b) Blob

c) Mediumblob

d) Long blob

- width does not have to be specified in all of the above datatypes
- stored outside the row
- .. away from " "
- .. outside the table
- .. away from " "

- MySQL maintains a LOCATOR (MDS pointer) from the blob column to the Blob data
- SS 1173
- used for those columns that will not be used for searching
- ex: photographs, maps, charts ~~etc.~~, sound, music, videos etc.

7. Integer Types (Exact value)

- signed or unsigned - ?
- by def. it is signed

7.a

- tinyint (1 Byte) (ex: AUB int unsigned)
- smallint (2)
- mediumint (3)
- int (4)
- bigint (8)

8. Floating-Point Types (Approx. values)

- rounding takes place
- 8.a. - float (upto 7 decimal)

8.b - Double (upto 15 decimal)

9. Fixed-Point Types (Exact val.)

9.a - Decimal

- stores double as a string
- max no. of digits - 65
- used when precision is imp. ex: monetary

date

9.6 - Boolean

- logical datatype
- True / false eval to 1 / 0 respective
- can meet True, False, 1 or 0 but output always show 1 or 0

10. Date & Time

10.a Date

- range: 1st Jan 1000 AD to 31st Dec 9999 AD
- no prob. of 172K in MySQL
- YYYY-MM-DD - def. format
- YYYY-MM-DD
 - year rel. in range 20-99 are converted to 1970 to 1999
 - " " " " 00-69 " " " " 2000-2069
- date1 - date2 → returns no. of days b/w the 2 dates
- how does SQL calc? - 1st Jan 1000 AD - 1st Apr 1005 AD = 17214
- implies stored as numbers internally (fixed len. no.)

10.b Datetime (it occupies 7 bytes of storage)

10.b Time

- 'hh:mm:ss' or 'MM:MM:SS'
- range: -899:59:59 to 899:59:59

10.c Datetime

- YYYY-MM-DD hh:mm:ss
- range 1000-01-01 00:00:00 to 9999-12-31 23:59:59
- datetime1 - datetime2 → Returns no. of days b/w the 2 & the remainder hours, min, sec

- def. val - 12 am midnight

10.d Year

- 4444

-

- In MySQL you can have max 4096 columns per table (Oracle max limit - 1000) provided the row size $\leq 65,535$ Bytes
- no limit on no. of rows per table provided the table size $\leq 64TB$
- largest table in the world is the ORDERS table of the amazon.com
- to size: 100s TB daily
- so amazon uses Oracle because has upper limit!!
- Internally MySQL has 78 formats for date

- Create table word

CREATE TABLE word

Emp_no char(4),

First_name varchar(15),

Sel float

City varchar(15),

Dob date

)
-- delimiter - signifies end of word

SQL words are case insensitive

table & column names are case sensitive - MySQL - Windows

an - Unix / Linux

date

values inside won't be readable

INSER into emp

→ input into emp

way 1 { values ('l', 'Ankit', 5000, 'Mumbai', '1995-01-5');

- enter date in single quotes for char, varchar, date, time & datetime

- Why upto 69 at 2069? { beyond it 1910 - 1999?

way 2 { input into emp (eno, sal, cname, city, dob)
values ('l', 6000, 'Kig', 'Delhi', '1990-01-10');

- way 2 is recommended

- flexible

- more readable

- scalable - in future if you alter the table (e.g.: column added) the

input into emp (eno, sal)

values ('l', 1000);

it will still work. because null just says there is no value
here under the new column. But
way 1 is more aggregate
it is impacting a 6th new row.

- null means nothing

- " " is having ASCII val = 0

- special treatment to null in all RDBMS

- null nature - independent of datatype

you can insert a null val. for a column of any
datatype

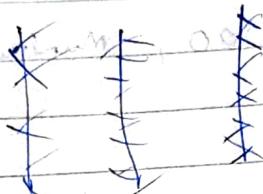
- null val. only occupies 1 Byte of storage

- but if the row is ending w/ null values then DBMS

then columns prone to null values will be kept at last

X	7	2	1	
1	a	abc	null	0 byte
2	b	null	null	
3	c	null	d	1 byte

the more place it is, the later is the column will come.



- SS 1174

insert into emp
values ('4', 'Stl');

insert into emp
values ('4', 'Stl', null, null, null);

- null is a reserved keyword

insert into emp
values ('3', null, 5000, null, null);

- To insert multiple rows in a table simultaneously

insert into emp less values
null ('1', 'Ankit', 5000, 'Mumbai', '1995-01-15'),
('2', 'Kaj', 6000, 'Delhi', '1990-02-10'),
('3', null, 7000, null, null);

insert into eng(empsal) values

('1', 8000),
('2', 6000),
('3', 2000);

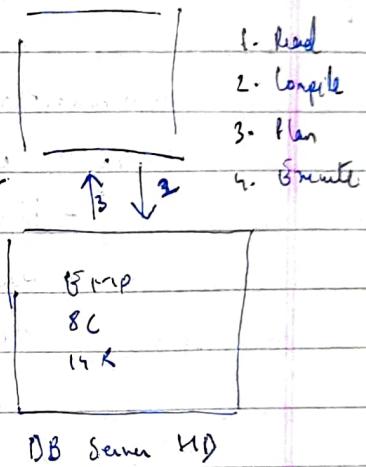
ff 0 be ASCII val - 48

PAGE
DATE

SELECT

select * from emp;
select * from dept;

Server RDBM



Client machine

- '*' - meta character meaning all columns

- To restrict the columns

select empno, ename from emp

- searching of the mentioned columns takes place in server hard disk (HD)

SS1175

select dname, job, ename & sal from emp;

- the position of columns in select clause will determine the order in "output" - SS1176

+ this you write acc. to user/dict request.

in ~~the~~ DB indexing starts from 1

PAGE:

DATE: / /

- To see all the columns

way 1 - select * from emp;

OR

way 2 - select * empno, ename, sal ... from emp

- recommended?

- way 2 coz:

- flexible

- readable

- scalable - in future, even if you alter the table,
if you add a column it'll still
show the same output

- To restrict the rows

WHERE clause :-

select * from emp

where deptno = 10;

- SQL

- the where clause is used to restrict

- search takes place in DB ND

- where clause is used to restrict the no. of rows

-

from Db Server M to Server HAM

select * from emp
where sal > 2000;

Relational Operators

1. $>$
2. \geq
3. $<$
4. \leq
5. \neq or $<>$
6. $=$

- above jis order mein like hai true order mein
unto precedence milti hai

select ename, job, sal from emp
where sal > 2000;

select * from emp
where sal > 2000;

select * from emp
where sal > 2000 and sal < 3000;

- 'and' is a logical operator

Logical Operators

1. NOT - satisfy neither
2. AND - in both
3. OR - in 1 of both

- query jis order mein like hua uski order mein precedence

select * from emp
where deptno = 10 or sal > 2000 and sal < 3000;

select * from emp
where (deptno = 10 or sal > 2000) and sal < 3000;

select * from emp
where sal > 2000 or sal < 3000

select * from emp
where job = 'MANAGER';

- for char, varchar, datetime & date-time we have to use single quotes

same output
in MySQL

select * from emp
where job = 'manager';

- in MySQL while searching the data is case insensitive. But in some DBMS it's case sensitive
- in other RDBMS it's case sensitive in searching too.
- to make queries case sensitive in MySQL, you can make use of ASCII value & check for uppercase & lowercase

a computed column

it will return sal multiplied by 12

select ename, sal, (sal * 12)

from emp;

SS 1178

or calculated or virtual or pseudo

- computed columns are not saved on the table
 coz it's a waste of space. As when reqd, you can
 select

- query will happen in memory & not in DB SS 1179

Arithmetic Operations

1 ()

2 /

3 *

4 +

5 -

minic word - many - other name

alias only used in select, from, where

select ename, sal, sal * 12 as "ANNUAL"

SS 1180

from emp;

SS 1181

OR

select ename, sal, sal * 12 "ANNUAL"

from emp;

OR

select ename, sal, sal * 12 "annual"

from emp;

but display main

annual header Capital

select ename, sal, sal * 12 "ANNUAL" } main usage

from emp; } also when column name has spaces in b/w

- double quotes are recommended
- we can use alias for any column (computed or normal)
- cannot use alias in where clause because NO men & RAM actual name are same
- cannot use alias in express

select job from emp;

To remove duplicates

select distinct job from emp;

- whenever you use DISTINCT, Sorting takes place internally
- so if you have large no. of rows, then this SELECT statement will be slow, because that much Sorting has to take place in the ~~RAM~~ ^{Server} RAM

select distinct job, ename from emp;

- DISTINCT will operate on combination of all columns together, that are present in SELECT statement.

select (distinct job), ename from emp;

error

* unit

- exit cmd commits of the units. Seeds band kde to find some who have
- aijk scan scan tools that run txt file