Oracle - (most popular RDBMS) (best s/w development tool)
- makes programming very easy.
- product of oracle corporation 1977.
- Largest DB software company in the world.
- 63% of World's commercial database market.
  (in client server environment)
- 86% of world commercial database market

Sybase: (going down) (SAP acquired Sybase)

MS SQL server - good RDBMS
- competition for oracle.
- very popular with 'Net programmer.
- works only with windows o.s.
- occupied 16% of total database market.

character base
Ingress, postgres, Unify :- only work with Linux & Unix o.s

★ DB server has to be a mainframe (supercomputer).
  DB2 (good RDBMS from IBM) (pure University uses)
  CICS
  PE LON
  IDMS

★ single user RDBMS
  client -server architecture not supported.
  MS Access (RDBMS from microsoft.)
  Paradox
  Vatcom SQL

MySQL :- Launched by swedish company in 1995.
  (C and C++ source code)
  - It's name is a combination of "my", the name
  of co-founder michael widenius' daughter and

- Open source RDBMs. → when we purchase → we get source code of it
- most widely used
- free RDBMs (42% of world free database market)
- part of the widely used LAMP open source web application software stack (and other "AMP" stacks)

L → Linux
A → Apache
M → MySQL
P → pen / python / PHP

- eg. Facebook, whatApp, Twitter, Flickr, youtube

software development Tool for MySQL:
MySQL command line client.
MySQL workbench.
MySQL connectors.
MySQL for excel.
MySQL Notifier.
MySQL Enterprise Backup.
MySQL Enterprise high availability.
MySQL Enterprise monitor.

SQL commands:
create, Drop, Alter, Insert, update, delete, grant, revoke
- confirms to ANSI Standard.
- conforms to ISO standard.
- common for all RDBMs.

• MySQL comman line client
   MySQL client s/w
   - used for running SQL, MySQL commans.

• MySQL workbench
   - GUI base.

- MYSQL PL: Programming language.
  - MYSQL PL used for database programming.

Subdivision of SQL

DDL : Data Definition Language (create, Drop, Alter)
DML : Data Manipulation Language (Insert, update, delete)
DCL : Data control Language (Grant, Revoke)
DQL : Data Query (select)

Not ANSI Standard:
5th component of SQL.
DTL/TCL: Data Transaction Languge / Transaction control
          (commit, Rollback, savepoint)

DDL : Rename, Truncate

Extra in oracle:
DML : updsert (update + insert)

- Rules for tablename:
  - max 30 characters.
  - A-Z, a-z, 0-9 allowed.
  - Has to begin with alphabet.   EMP2021 ✓
  - special characters $, _ allowed.   2021EMP ✗
  - in mysql if you want to use special character #
    in table, enclose it in back-quotes.
       eg `Emp#`

- Datatypes:
  - char   Date
  - varchar   time
  - longtext   Datetime
  - longblob   year
  - Int   etc.
  - float

- **char:** allows any character, could be alphanumeric also.
  max upto 255 character
  fixed length character data.
  eg- Roll No.

- **vanhar:** variable length character.
  allows any character, could be alphanumeric also.
  max upto 65,535 chara.
  conserve on HD space

- **Longtext :** (allows any character)
  max 4,294,967,295 character
  eg- Resume, Experience or remarks of employee
  - variable length

- **Longblob :** binary large object
  Allows binary data
  max upto 4 billion bytes of binary data.
  eg- photos, charts, graphs, maps, sound, music.
  - multimedia data type

- **Date** - 1st Jan 1000 - 31st Dec 9999 AD
  default date format is YYYY-mm-DD

- **Time :-** default format (hh-mm-ss) or (HHH-mm-ss)
  - time values may range from (-838:59:5
    to '838:59:59)

- **Datetime: -** date and time is stored together
  Default YYYY-mm-DD hh:mm:ss
  ('1000-01-01 00:00:00 to 9999 AD-12-31
  23:59:59)

- **Year :-** YYYY (1901 to 2155)
  no limit on number of rows per table provided
  table size $\leq$ 64 Terabytes.

```
create table Emp
(
    Emp no    char(4),
    f name    varchar (25),
    Sal       float (7,2),
    city      varchar (15),
    Dob       date
);
```

7 → precision
2 → scale
eg. 8325849.52

* Inserting Values:

insert into emp values ('1', 'king', 5000, 'mumbai',
'1990 -10-15');

for char, varchar, date, use ' '

- year values in the range of 70-99 are automatically converted to 1970 - 1999.
- year values in the range 00-69 are automatically converted to 2000 - 2069.

insert into emp values ('1', 'king', 5000, 'mumbai',
'1990-10-15');

- NULL means nothing
- NULL value is having ASCII value 0.
- special treatment given to NULL value in all RDBMS.
- NULL value is independent of datatype.
- NULL value occupies only 1 byte.
- if row is ending with NULL's, those column will not occupy any space

* select:

select * from emp.