MySQL, SQLite - case insensitive

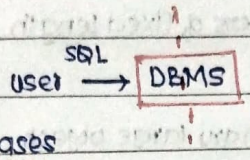
Oracle, postgres - case sensitive

Python - case sensitive

RANKA
DATE / /
PAGE

Database : collection of data (Digital format) that can be easily accessed

A software application used to manage our DB is called DBMS



Types of Databases

Relational	Non-Relational
Data stored in tables	Data not stored in tables
MySQL, Oracle, SQL server, PostgreSQL	MongoDB :

SQL - Structured Query language - used to interact with relational databases

used to perform crud operations - create, read, update, delete.

SEQUEL - Structured English Query language - IBM later changed to SQL.

create our first Database :

```
create database d1;
drop database d1;
```

use databasename; ✓

creating our First Table

```
create table student (
    id int primary key,
    name varchar(50),
    age int not null,
);
```

```
insert into student values (1, 'Sofia', 24);
insert into student values (2, 'Gk', 26);

select * from student;
```

char - If we declare char(50) it takes up all memory upto 50 bytes even if we store 2 characters

varchar - it takes up only the bytes of memory which is needed.

RANKA
DATE / /
PAGE

SQL Datatypes

CHAR	0-255 characters of fixed length	char(50)
varchar	0-255 "	varchar(50)
BLOb	0-65535 binary large object	blob(1000)
int	integer	int
Tinyint	integer (-128 to 127)	tinyint
bigint	integer	Bigint
Float	decimal - 23 precision digits	Float
Double	decimal 24 to 53 digits	Double
boolean	boolean values 0 or 1	Boolean
Date	YYYY-MM-DD	Date
Year	4 digit format 1901 to 2155	Year

Signed and unsigned

Tinyint unsigned (0 to 255)

Tiny int (-128 to 127)

Types of SQL commands

DDL - Data Definition Language - create, alter, rename, truncate, drop

DML - Data Manipulation language - insert, update, delete

DQL - Data Query Language - select

DCL - Data control language - grant, revoke

TCL - Transaction control Language - start transaction, commit, rollback

Keys

Primary key - It is a column (or set of columns) in a column in a table that uniquely identifies each row

There is only 1Pk and its value is not null.

RANKA
DATE / /
PAGE

Foreign key

A foreign key is a column (or a set of columns) in a table that refers to the primary key

There can be multiple FK's

FK's can have duplicate & null values.

constraints

SQL constraints are used to specify rules for data in a table

NOT NULL - columns cannot have null values' col1 int not null

UNIQUE - all values in column are different col2 int unique

PRIMARY KEY - makes a column unique & not null but used only for one.

```
id int primary key
```

```
create table temp(
    id int not null,
    primary key(id),
);
```

check - It can limit the values allowed in a column

```
create table city(
    id int primary key,
    city varchar(50),
    age int,
    constraint age_check check(age >=18 and city = "Delhi")
);
```

Where clause :

We can use operators in where

Arithmetic - +, -, *, /, %.

comparison - =, !=, >, >=, <, <=

logical - AND, OR, NOT, IN, BETWEEN, ALL, LIKE, ANY

Bitwise - &, |

RANKA
DATE / /
PAGE

limit clause

select * from students limit 3;

orderby clause

Sort in ASC or sort in DESC.

select * from student order by DESC;

Aggregate Functions

Aggregate functions perform a calculation on a set of values, and return a single value.

* count()
* MAX() select max(marks) from student;
* MIN()
* SUM() select avg(marks) from student;
* AVG()

Group by clause

Groups rows that have the same values into summary rows.

collects data from multiple records and groups the result by one or more column.

select city, count(name) from student group by city;

Having Clause

Select columns
from table-name
where condition
~~having~~ group by condition
having condition
order by columns asc;

RANKA
DATE / /
PAGE

Update

update student set grade = "O" where grade = "A";

To turn off the safe mode in MySQL workbench:

SET-SQL-SAFE-UPDATES=0;

* Alter

Add column → alter table table_name add column column-name datatype constraint;

Drop column → alter table table-name drop column column-name;

Rename table → alter table table-name rename to new-table-name;

change column (Rename)

Alter table table-name

change column old-name new-name new-datatype new-constrain

Modify column (Modify datatype/constraint)

After table table-name

modify col-name new-datatype new-constraint;

* Truncate → Deletes the data of table

RANKA
DATE / /
PAGE

JOINS

Joins is used to combine rows from two or more tables, based on a related column between them.

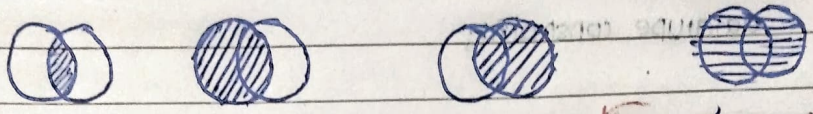
Employee

id	name
101	
102	

Salary

id	salary
102	
103	

Inner Join Left Join Right Join Full Join

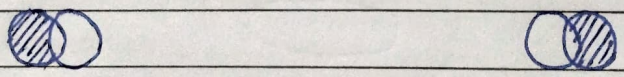


outer Joins

In mysql - union is used to perform full join

```
select * from student as a
Left join course as b
on a.id = b.id
 Union
 select * from student as a
 Right Join course as b
  on a.id = b.id
```

Left Exclusive Join Right Exclusive Join



```
Select *
from student as a
left join course as b
on a.id = b.id
where b.id is NULL;
```

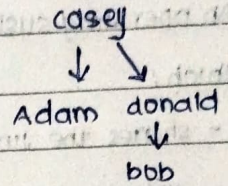
RANKA
DATE / /
PAGE

Self Join

Example

Employee

id	name	manager_id
101	adam	103
102	bob	104
103	casey	null
104	donald	103




```
select a.name as manager_name, b.name
from Employee as a
 Join Employee as b
 on a.id = b.manager_id;
```

Union

It is used to combine the result-set of two or more select statements

Gives UNIQUE records

Syntax

```
select columns from tableA
union
 select columns from tableB
```

SQL sub Queries

A subquery or Inner query or a Nested Query is a query within another SQL query.

It involves 2 select statements

Mysql views

A view is a virtual table based on the result-set of an SQL statement.

```
Create view view1 as
 select rollno, name from student;
select * from view1;
```