SQL Notes By Ankit Kumar

Sql
1. Structured query language
2. Standard language used access and manipulate data in relational database
3. Sql commands :
DDL - create, alter, drop, truncate
DML - insert, update, delete, select
DCL - grant, revoke
TCL - commit, rollback, save point
Constraints - primary key, foreign key, unique, not null, check, default.

Sequence of all clause :
Select
From
Where
Group by
Having
Order by

Where
Individual data records par condition lagata h

Group
1. Ye do ya do se jyada column ko group kar deta h aur aggregate function perform karta h
2. Identical data ko arrange karta h
SELECT COUNT(order_id), item
FROM Orders
GROUP BY item;

Having
1. Ye group par condition lagata h aur condition ka kaam karta h
2. Group of records par condition lagata h
Select count(name), city
From student
Group by city
Having max(marks) > 90;

Alter table
Table ke structure ko change karta hai jese add new colum, modify old column, Rename column :
Add new column -
Alter table tablename Newcolumnname;
Modify old column -
Alter Table tablename Modify oldcolumnname [<newdatatype><size>]
Rename column -
Alter table change oldcolumnname newcolumnname datatype;

sql application :
CRUD
create, read, update, delete

Relational db
mysql, ms sql server, oracle, postresql

Non relational db
mongoDB, cassandra, mongoodb

Sql database
data tables ki form me store hota h
isme sql ka schema(design) nhi change kar sakte h
ye fixed, static hota
kam db k liye slow or low performance h

nosql database
data key value pairs, document me, graph me, wide column me store hota h
ye dynamic hota h matlab
isme sql ka schema change kar sakte h
sabhi db k liye aasan kam karta h

sql commands
ddl - create alter drop truncate
dml - insert, update, delete, select
dcl - grant, revok persmission dete h aur wapis lete h
tcl - commit, rollback, savepoint
Dql - select

Find nth record in table
Select salary from employee
Order by salary desc limit (n-1,1)
n = jo record nikalna h

database
collection of data hota h jisme data ko organise aur store kiya jaata h

ms excel
koi bhi chala sakta h
excel me limited data stored hote h
automated task nhi hote h jese manual graph, chart banana
excel me data integrity nhi hoti
excel me low search filter hote h

db
database k chalane k liye sikhna padta h
db me large data stored hota h
automated task hote h jisse graph, chart

db me data integrity hoti h
db me high search filter hote h

rdbms, sql ka structure kya h
database -> table -> data -> row & coloumn

db diagram
db diagram me table ka naam aur coloumn k naam hote h jo dusre jo table se connected hote h

datatype
datatype ko coloumn me define karte h konsi value daalni h
coloumn me kis type ka value aana chaiye jese
string: char, varchar, etc
numeric: int, float, bool, etc
data and time: date, dateime, etc

constraints syntax
CREATE TABLE table_name (
column1 datatype constraint,
column2 datatype constraint,
column3 datatype constraint,
...
);

check
jab table banate h tab constraint me condition lagate h ki value itni honi chiaye

create index
database table me data ko index deta h

insert
INSERT INTO table_name (coloumn1, column2, column3, columnN)
VALUES
(value1, value2, value4,...valueN);

update
update customer
SET CustName = 'Xam', Age = 32
WHERE CustID = 4;
SELECT * FROM customer;

Delete
DELETE FROM customer
WHERE custid = 3
SELECT * FROM customer

Alter table

table k structure ko change karta h jisse column me rename, add, modify, delete karte h

Alter TABLE table_name
ADD COLUMN column_name; -> for add

ALTER TABLE table_name
DROP COLUMN column_name; -> for drop

ALTER TABLE table_name
ALTER COLUMN column_name datatype; -> for modify

for rename :
ALTER TABLE change
oldcolumnName NewcolumnName datatype;

delete
Particular row ko delete karte h aur rollback ho sakta h

Truncate
Multiple rows ko delete karte h
Aur rollback nhi ho sakta

drop
table ko complete delete karta h
Aur rollback nhi ho sakta

select
database table me data ko retrieve or select karte h

select all
db table me all data ko retrieve or select karte h

distinct
db table me unique column ko retrieve or select karte h
select distinct country FROM customers

where
select aur from k baad where me condition lagate h
select item, amount from orders
where amount < 500;

operator
reserved words hote h sql me
jise where clause me use kiya jaata h
arithmatic operator
comparson operator
logical operator -> all, in, between, like, or, not, any

bitwise operator -> &, |

limit
limited no. of rows return karta h

order by
data ko ascending, decending order me sort karta h
select customer from shippings
order by customer asc;
select customer from shippings
order by customer desc;

Create copy of table
Data with schema
Create table new_table select * from old_table;
Only schema
Create table new like old

copy customer(cusomer_id, firstname, email, address_id)
from 'F:\customer.csv'
Delimiter ',' -> becoz this is csv file
csv header; -> file ka header

function in sql
sql k keyword ya objects hote h jo sql k andar phele se hote h kuch specific
task ko complete karne k liye

system defined function / charcter manipulation function
jo built in function hote h jese rand(), round(), lower(), count(), sum(), max()
, etc.

user defined function
jo khud se function banate h aur call karte h

string functions
functions ko string k upar perform karte h
upper()
select upper(first_name) from customers
lower()
select lower(first_name) from customers
length()
select length(first_name) from customers
initcap()
Phele letter capital baad me sab small
substring()
select substring(first_name,1,3) from customers -> ank return karega (1-3 tak string)
concat()
select CONCAT(first_name, last_name), first_name, last_name from customers;

replace()
select replace(first_name,'John','Ankit'),first_name from customers;
trim() -> extra spaces ko remove karta h
now(), format(), etc.

aggregate functions
group by aur select k saath use hota h
multiple rows ko ek saath group karna aur phir mathematical operation lagate h jese sum, min, max, avg, count

count() -> select count(age) from customers;
sum() -> select sum(amount) from Orders;
avg() -> select avg(amount) from Orders;
max() -> select max(amount) from Orders;
min() -> select min(amount) from Orders;
round() -> select round(avg(amount),2) from Orders;

group by statement
row me same values hoti h unhe group kar deta h
aur aggregate function k saath use hota h

```
select item, sum(amount) as total
from orders
group by item
order by total asc;
```

having clause
me condition lagate h, ise group of records par condition lagate h

where
me condition lagate h ise select k saath use karte h

timestamp
ek datatype h jisme date aur time hota h
TIME HH:MM:SS
DATE YYYY-MM-DD
YEAR YYYY OR YY
TIMESTAMP YYYY-MM-DD HH:MI:SS
TIMESTAMPTZ contain date, time, and timezone
timestamp functions / operators
SHOW TIMEZONE
SELECT NOW()
SELECT TIMEOFDAY()
SELECT CURRENT_TIME
SELECT CURRENT_DATE

extract function
kisi bhi data ya time k part ko extract karne k liye use hota h

YEAR, QUARTER, MONTH, WEEK, DAY, HOUR, MINUTE, DOW, DOY

join
me 2 or 2 se jyaada tables ko jodte h row wise agar ek dusre se related column h

types join
inner join, left join, right join, full joint

AS
sql me alias hota h jo column ko temprory naam deta h

self join
regular join hota h jo khud se join hota h
row k column k value ko compare karta h same table me

union
2 aur 2 se jyaada tables ko jodte h column wise excluding duplicate value
select kiye hue no. of row aur coloumn same hona chaiye
same datatype hona chaiye aur same order me hona chiaye

union all
do aur do se jyaada columns ko combine karte h isme saara data concatenate hota h including duplicate data bhi

sub query
inner query or nested query me query k andar query chalate h

dql / drl
data query language / data retrieval language

Char
Variable length fixed hoti h
Varchar
Variable length fixed nhi hoti h

In
Multiple or ka kaam karta h
ya to ye condition Karo nhi dusri condition Karo

Exist
Record h y nhi wo return karta h
Record h to true nhi to false

Minus
Do table h a aur b A-B
B ka Sara data a me se hatate h

Intersect

Dono table me common data ko nikalte h

Pattern matching
Me like clause ka use Kiya jata h
% 0 aur more character ko replace karta h
_ 1 charcher ko replace karta h
% jab character pata nhi ho tab use
_ jab fixed character pata h tab use

jiska naam pa se start hota h to
select name
from student
where name like "pa%";
jiska naam pa se start hota h or naam me sirf 3 character h

View
1. View ek virtual table hoti h jo physically exist nhi karti ye logically exist karti h
2. view always show up to date data
3. Isme insert, delete, or modify operation ka use nhi hota kyuki ye group function contain nhi karta

Advantages
1. Insert, primary key, not null phele se included hote h
2. Ye aggregate function, group by, having, distinct clauses define nhi karta
3. Virtual column cannot be generated