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Date:

RDBMS → Relational DB database
↳ It is called so because it is based on the relational model introduced by E.F. Codd

Products of RDBMS
- teradata
- Amazon RDS
- IBM DB2
- Microsoft SQL Server
- Oracle database
- My SQL
- Postgre SQL
- Snowflake
- SAP

SQL → Structured Query language.
↳ It is globalised.

⇒ SQL
- SQL lets you access and manipulate databases.
- It became a standard of the (ANSI) in 1986 & of the ISO in 1987
- It can execute queries against a database.
- SQL can retrieve data from a DB
- SQL can can insert records in DB.
- It can update records in DB
- can delete records in DB
- can create new database
- can create new tables in DB
- Can create stored procedures in DB

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- Can create views in DB
- Can set permission on tables, procedures & views

→ Create, Drop, Alter, Truncate

DDL

CREATE

Query

Create table table-name
(Column_name datatype 1,
Column_name 2 datatype 2,
column_name n datatype n);

Syntax

Eg:- Create table student
(Roll number,
nme ~~char~~ char(20),
mobile number,
per number);

→ description

desc student 20;

insert into table_name
values (1, 'sita', 98.9, 86);

Select * from student;

* Queries are not case-sensitive => SELECT, select
* Data's are case sensitive => radha, Radha

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Q. Retrive the information of the student whose rollno. is 6

=> select * from student20
where Roll = 6;

Q Retrieve the information of the student who has percentage greater than 70.

=> select * from student20
where per > 70;

Want only 2 columns to be displayed
↳ select roll, nme from student20
where per > 70;

=> insert into student20 (roll, nme, per) values (9, 'Sai', 89);

→ Remove a record.
↳ delete from student20
where roll = 5;

dele from student20
where name = 'geet';

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DDL

Alter
- add → add a column
- drop → delete a column
- Rename → change (rename a column
- modify → change capacity of datatype.

```
alter table student20
add column aadhar number ----> add dob date;
```

desc student 20;

```
alter table student20
modify nme char(40);
```

```
alter table student20
drop column email;
```

```
alter table student20
rename column per to percentage
```

```
truncate table student20;
```

```
drop table student20; ---> whole structure is deleted
```

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DML :- → insert, update, delete, call, Explain call, lock

TCL :- commit, savepoint, Rollback, Set transaction, Set constraint

5 oct 25

commit → way to save database. It saves irrespective of the place.
Query is not saved (prgrm)
commit

savepoint → While running ~~the~~ a prgrm which consist imp data. savepoint is used to save such data at a particular interval of time /

```
create table emp
( ename varchar (10),
  eid number constraint pke primary key;
  sex char,
  sal number (8,2),
  dob date,
  addr varchar (50),
  supeid number,
  deptno number );

create table dpt
( dname varchar (10),
  dnum number constraint pkd primary key,
  hodeid number constraint fkd references emp(eid);
  hodstdate date);

alter table emp add constraint fke foreign key
(deptno) references dept (nom);
alter table emp add constraint fke_eid
foreign key (supeid) references emp (eid);

create table stud
( snam varchar (15)
  usn number constraint pks primary key,
  sem number check (sem >=1 and sem <=10),
```

* If the table is already created then drop it
  => drop table emp cascade constraints ;

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insert into emp values ('ABC', 123, 'F', 2343,
'23-oct-2022', 'dfgdfg', null, null);

Oct.

SQL aggregate functions are functions where the values of multiple rows are grouped as input on certain criteria to form a single value result of more significant meaning

SQL Aggregate functions are mostly used with the GROUP BY clause of the SELECT statement

Various Aggregate Functions
1. Count ()
2. Sum ()
3. Avg ()
4. Min ()
5. Max ().

Display the total number of students
select count (usn) from stud;

Display total number of students present in d.no 20.
select count (usn) from stud
where dno = 20;

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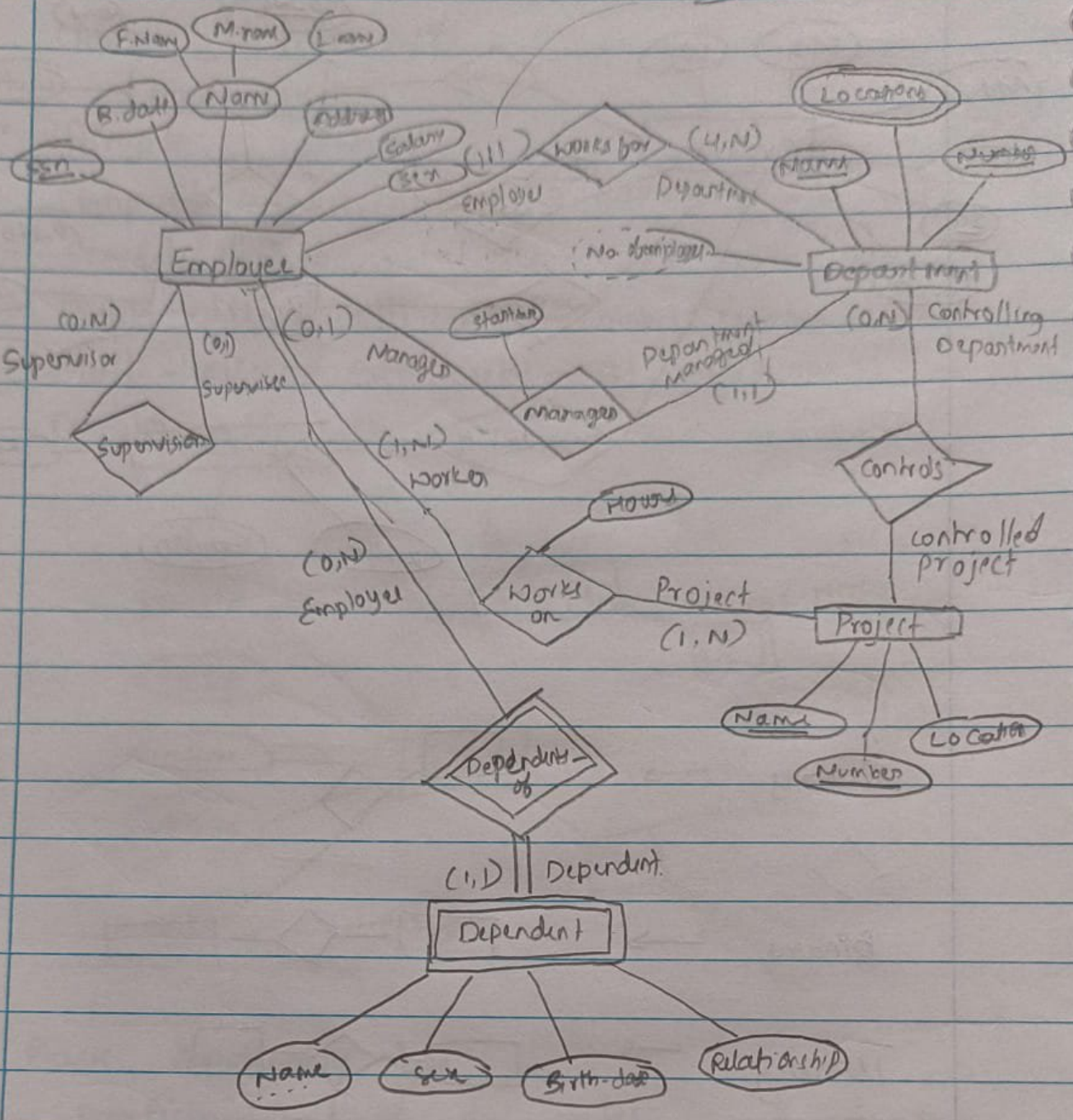
Cardinalities



* Interpreter → Right to Left → DBMS

compiler → C program

Assembler → ASC → low level language

dob date
address varchar(50),
dno number constraint fks references dept(dnum)
);

create table course
(cname varchar(15),
ccode char(15) constraint pkc primary key,
credit number(3,1),
deptno number constraint fkc references dept(dnum)
);

create table teaches
(empid number constraint fkt1 references emps(eid),
code char(5) constraint fkt2 references course(ccode),
constraint pkt primary key (empid, code)
);

create table result.
(susn number constraint fkr1 references stud(usn),
code char(5) constraint fkr2 references course(ccode),
grade char,
constraint pkr primary key (susn, code)
);

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datatype (machine dependent)

Datatypes are the keywords which helps for memory allocation & to store particular information.

- character datatypes
  - ↳ CHAR
  - ↳ NCHAR
  - ↳ VARCHAR2 & VARCHAR (flexible)
  - ↳ NVARCHAR
  - ↳ CLOB
  - ↳ NCLOB
  - ↳ LONG
- Number datatype
- Date datatype
- binary datatype
  - ↳ BLOB
  - ↳ BFILE
  - ↳ RAW
  - ↳ LONG RAW
- time stamp

+ select sysdate from dual;

update ~~table~~ students
set dob = '20-oct-2025'
where roll_no = 1;

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select systimestamp from dual;

Constraints are used to limit the type of data that can go into a table. This ensures the accuracy & reliability of data in the table. If there is any violation bw the constraint & the data action, the action is aborted.

Constraints can be column level, table level, db.
Column level constraints apply to column & table level apply to the whole table

Constraints used in SQL

- NOT NULL :- Ensures that a column cannot have a NULL value
- UNIQUE :- Ensure that all values in column are different
- PRIMARY KEY :- A combination of a NOT NULL & UNIQUE. Uniquely identifies each row in a table. (entity integrity constraint)
- Foreign key :- Prevents action that would destroy links b/w tables
- CHECK :- Ensures that the values in column satisfies a specific condtn.
- DEFAULT :- Sets a default value for a column if no value is specified

→ One table

P. key F. key

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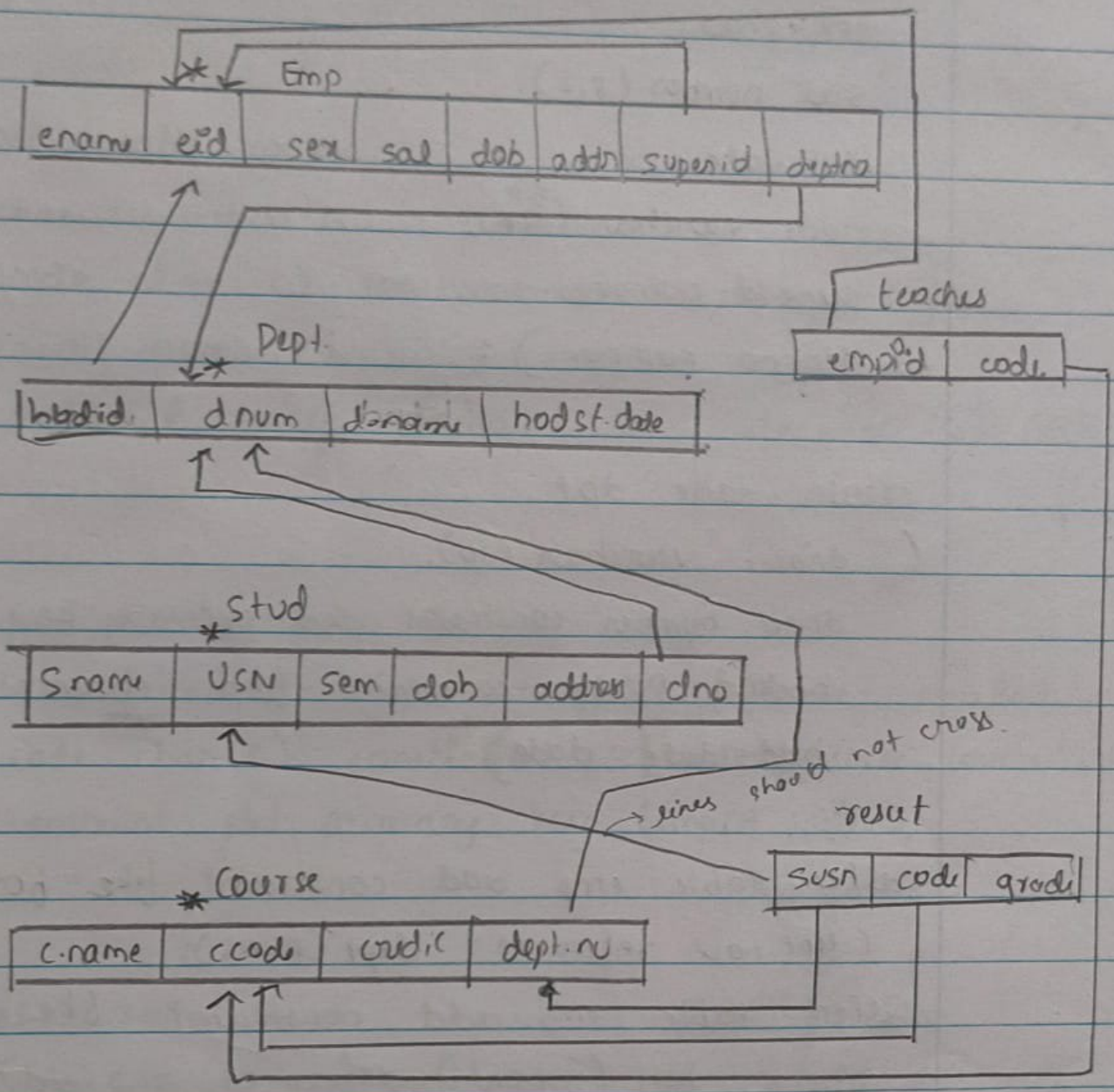
Emp Relation Schema (Schema Diagram)



Primary key can be foreign key when it is in combination

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NOT null

```
alter table students
MODIFY per number not null;
```

unique

```
alter table students
add constraint U_K unique (mobile);
```

→ If there are many same rows then delete them

primary key

```
alter table students
add constraint P_K primary key (roll_no);
```

remove constraint

```
alter table students
drop constraint U_K ;
```

* Foreign key can be ~~zero~~ null Primary key cannot be NULL

Eg: CEO id will not be there

Referential

Integrity constraint → Foreign key

Unique constraint → Primary key.