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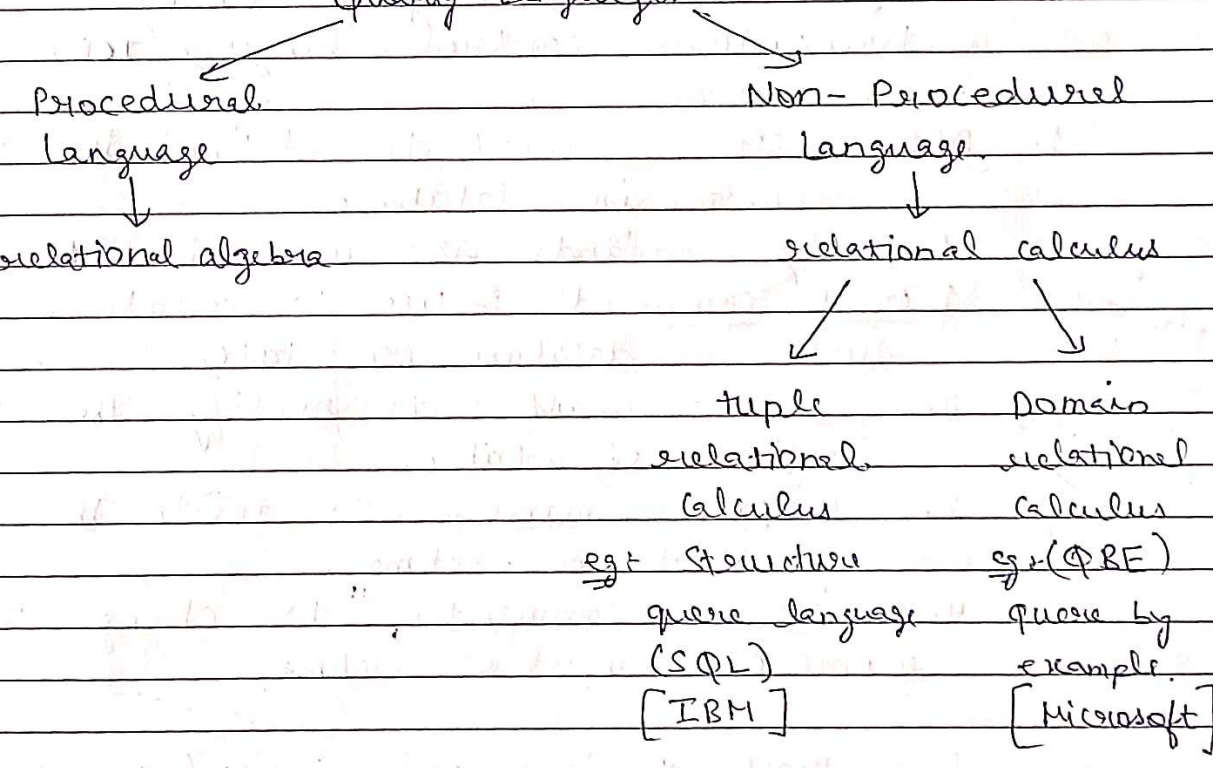
Fundamental of null :- * In relational model null means nothing.
* A null value is not like zero.
* Null value is not the empty string value.

Behind value is not known there we use NULL

Quarry language :-



⇒ Quarry lang. * It is a formula used to ecess required data from data-base
* It is devided into procedural language and non-procedural language.
* procedural language gives the formula of what to retrive data from the database.
* non-procedural language gives the formula of what to retrieve the data from database.

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⇒ SQL :- * It is simple query language used to perform various operation like - delete, create, insert, select, update on a data in a database.

* It is non-procedural language.
* The SQL is categories into following -
  - data definition language (DDL)
  - data manipulation language (DML)
  - data control language (DCL)
  - transaction control language (TCL)

1. DDL :- * It is used to define the object or schema in database.
   * following commands are used in DDL -
   1. create command :- use to create a object such as database or table.
   2. alter command :- to modify the structure (definition) of a table.
   3. drop command :- to delete the definition of object or schema.
   4. rename command :- to change the name of object or schema.

DDL commands are always written in small letter
create ✓
Create ✗

object can be table, view, table, etc.

⇒ Data types :- * Each column value or constant in SQL has data type which is associated with storage format constraint and valid range of value.
   * It specify the type of data that can hold numbers, characters, date, time so on.

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	Data type	description	Maximum Size
1.	char (size)	fixed length character data of length size in byte	2000 Byte min 1 byte
2.	Varchar(size)	variable length character data.	2000 byte min 1 byte
3.	Varchar2 (size)	variable length character data	4000 Byte min 1 byte
4.	nchar(size)	fixed length national character set	2000 Byte min 1 Byte
5.	nvarchar2 (size)	variable length. national Character	4000 Byte min 1 Byte
6.	LONG	char. data of variable length. It is bigger version of varchar2	min 1 Byte max 2 GB
7.	RAW	Binary data of length size Byte.	2000 Byte min 1 Byte

Constraints :- • Constraints are used to prevent entery of invalid information in a table.
• These are used to insure correctness and accuracy in the table. In other words constraints mainly define as set of rules or restrictions on table or set of column so it can be categorised as column level constraints and table level constraints.

Further it can be divided into 3 types entity
- Entity intigrity constraints
- Domain intigrity constraints
- Refrential intigrity constraints

⇒ Constraints available in SQL are-
- NOT NULL
- UNIQUE
- PRIMARY KEY
- CHECK
- DEFAULT
- FORETGN KEY

1. NOT NULL :-

→ desc student / Create Table Student
[
name varchar(20) NOT NULL,
Roll_No number(5) NOT NULL,
Class varchar(20),
Mobile_No. number(10)
];

2. DEFAULT :-

Create table Student
[
name varchar(20),
Roll_no number(5) CHECK(ROLL NO > 100);
Class varchar(20) DEFAULT "BSc"
Mobile_No. number(10)
];

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3. FOREIGN KEY :-

Create table Student
(
name varchar(20)
Roll_No number(5)
class varchar(20)
Mobile_No. number(10)
);

→ Create table employee having attribute employee Id, employee name, salary

Creat table employee
(
emp_Id int number(5) Primary key,
emp_name varchar(20) NOT NULL,
emp_salary number(10,2)
);

emp_ID	emp_name	emp_salary

employee

4. UNIQUE KEY :-

Create table Student
(
name varchar(20) NOT NULL,
ROLL_No number(5) UNIQUE,
Class varchar(20),
mobile_no number(10)
);

5. PRIMARY KEY :- NOT NULL + UNIQUE both make primary key

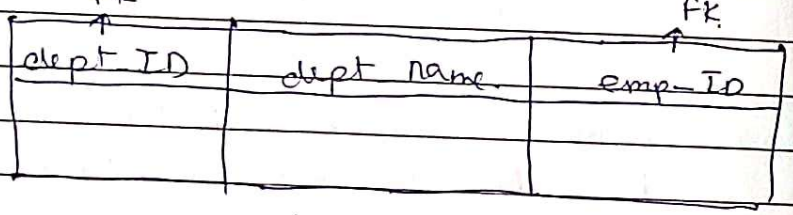
Create table Student
(
name varchar(20)
Roll_No number(5),
Class varchar(20),
mobile_no. number(10)
);

Unique + Not Null

foreign key

→ Create a table of department having attributes department_Id, department_name, and employee referring to primary key of employee table.

```
Create table department
(
    dept_ID  Int Primary key,
    dept_Name  varchar(20),
    emp_ID  Int NOT NULL,
    Foreign key (emp_Id) References
    employee (emp_ID)
);
```



department

6. CHECK CONSTRAINTS :-

```
Create a table Student
(
    name  Varchar(20),
    Roll_no  number(5)  (CHECK roll_no>100)
    Class  Varchar(20)
    mobile_no  number(10)
);
```

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alter command :-

After creating a table, user may need to change the definition or structure of a table. then user can change it with the help of alter command.

For example — to add new column, remove a column, to change the data type of column and so on.

To add a new column in a table :-

Syntax → alter table table_name
ADD column_name Datatype ;

For eg :- (i) add a new column "address" in an existing table student

alter table student
ADD address varchar(20) ;

→ (ii) add two new column 'address' and mobile_No. in an existing table Student,

alter table Student
ADD (address varchar(20),
mobile_No number(10));

→ To modify the column width in an existing table,

Syntax → alter table table_name
Modify column_name Datatype ;

for eg:- roll_no column have width 10 byte in an existing table student update its width 15 byte

```
alter table Student
Modify roll_no. number(15);
```

→ To modify the datatype of a column :-

Syntax :- alter table table_name
Modify column_name Datatype;

for eg:- change the datatype of Student name from varchar to varchar2.

```
alter table Student
modify student_name varchar2(20);
```

→ To add constraints in an existing table :-

Syntax :- alter table table_name
Add constraints_name (column_name);

for eg:- add a constraint primary key to column roll_no. in an existing student table.

```
alter table Student
Add Primary key (roll_no.);
```

→ To drop a column in an existing table :-

Syntax :- alter table table_name
drop column column_name;

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for eg: delete a column name address in an existing student table.

```
alter table Student
drop column address;
```

→ To drop the constraints in an existing table :-

Syntax: alter table table_name
drop constraint name;

for eg: delete a constraint primary key in existing student table.

```
alter table Student
drop primary key;
```

drop command: The drop command is used to remove the table from the database. This command is also used to remove one or more table definition and all data such as - index, trigger, constraint of a table.

Syntax: drop table table_name;

for eg: drop table Student;

rename command: This command is used to rename the table name.

Syntax: - rename <oldname> to <newname>

* If we apply drop command we can never regain the data.

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Other method →

alter table <oldname>
rename to <newname>

→ Write a command to rename the column in an existing table.

alter table table_name
rename column oldname to newcolumn name

alter table <Student>
rename to <Student2>

Truncate :- This command is used to delete all the rows from table and free the space containing the table.

The truncate command remove all the row from table but table structure and its column, constraints, index and so on remain in the table definition.

Syntax :- truncate table table_name

Eg :-

Name	Roll no.	class
AB	101	B.Sc
BC	102	B.Sc

Student

if we apply truncate command all the data deleted ...

truncate table student

Name	Rollno.	class

student