SQL

Structured Query Language

What is SQL?

SQL is structured Query Language which is a computer language for storing, manipulating and retrieving data stored in relational database.

SQL is the standard language for Relation Database System. All relational database management systems like MySQL, MS Access, Oracle, SQL Server uses SQL as standard database language
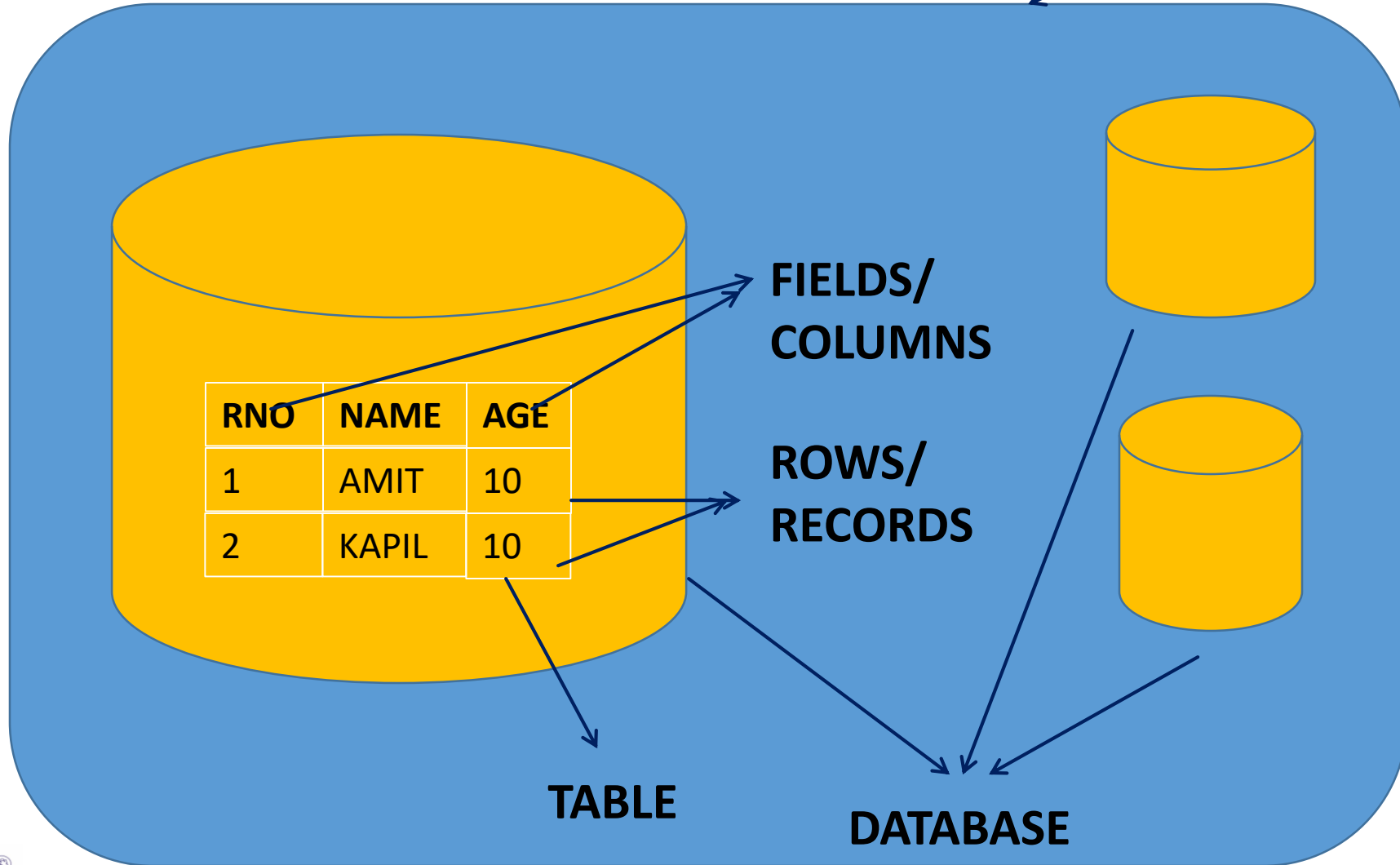
Why SQL?

- Allow users to access data in relational database management systems.

- Allow users to describe the data.

- Allow users to define the data in database and manipulate that data.

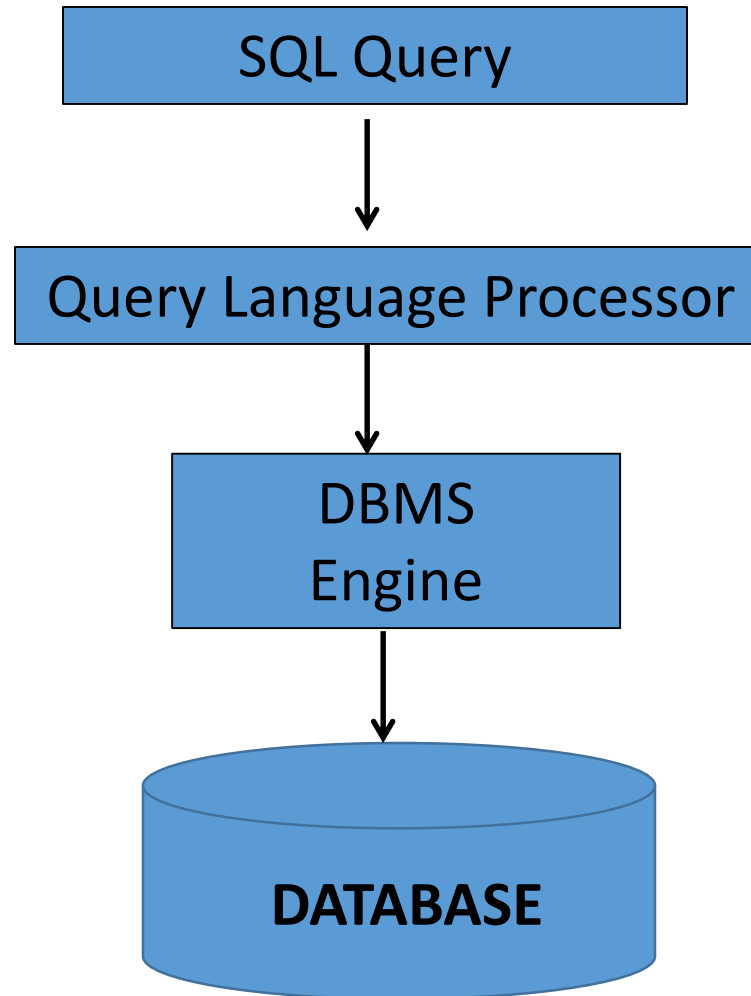- Allow users to create and drop databases and tables.

SQL Structure

RDBMS

**FIELDS/
COLUMNS**

RNO	NAME	AGE
1	AMIT	10
2	KAPIL	10

**ROWS/
RECORDS**

TABLE

DATABASE

SQL Process

```
┌─────────────────────────────┐
│          SQL Query          │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│  Query Language Processor   │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│            DBMS             │
│           Engine            │
└─────────────────────────────┘
              │
              ▼
       ╔═══════════════╗
       ║   DATABASE    ║
       ╚═══════════════╝
```
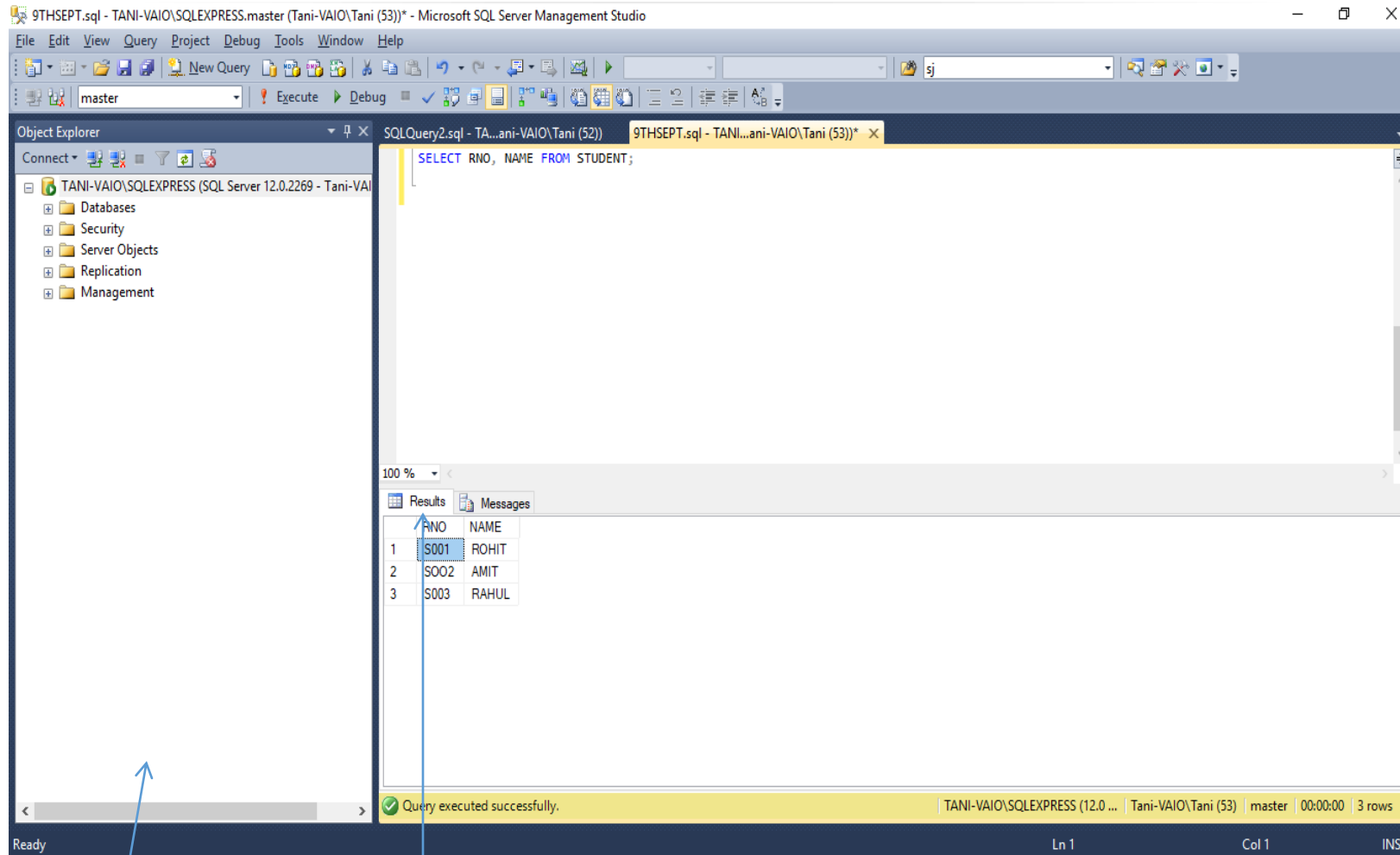
Introduction

- Data

- DataBase

- RDBMS

- SQL

SQL Environment

- Editor

- Result

- Message

- Object Explorer

SQL Environment

Object Explorer

Result Tab

Categories of SQL Statements

Data Definition Language (DDL)	→	CREATE, ALTER, DROP
Data Manipulation Language (DML*)	→	INSERT, UPDATE, DELETE
Data Query Language (DQL)	→	SELECT
Data Control Language (DCL)	→	GRANT , REVOKE
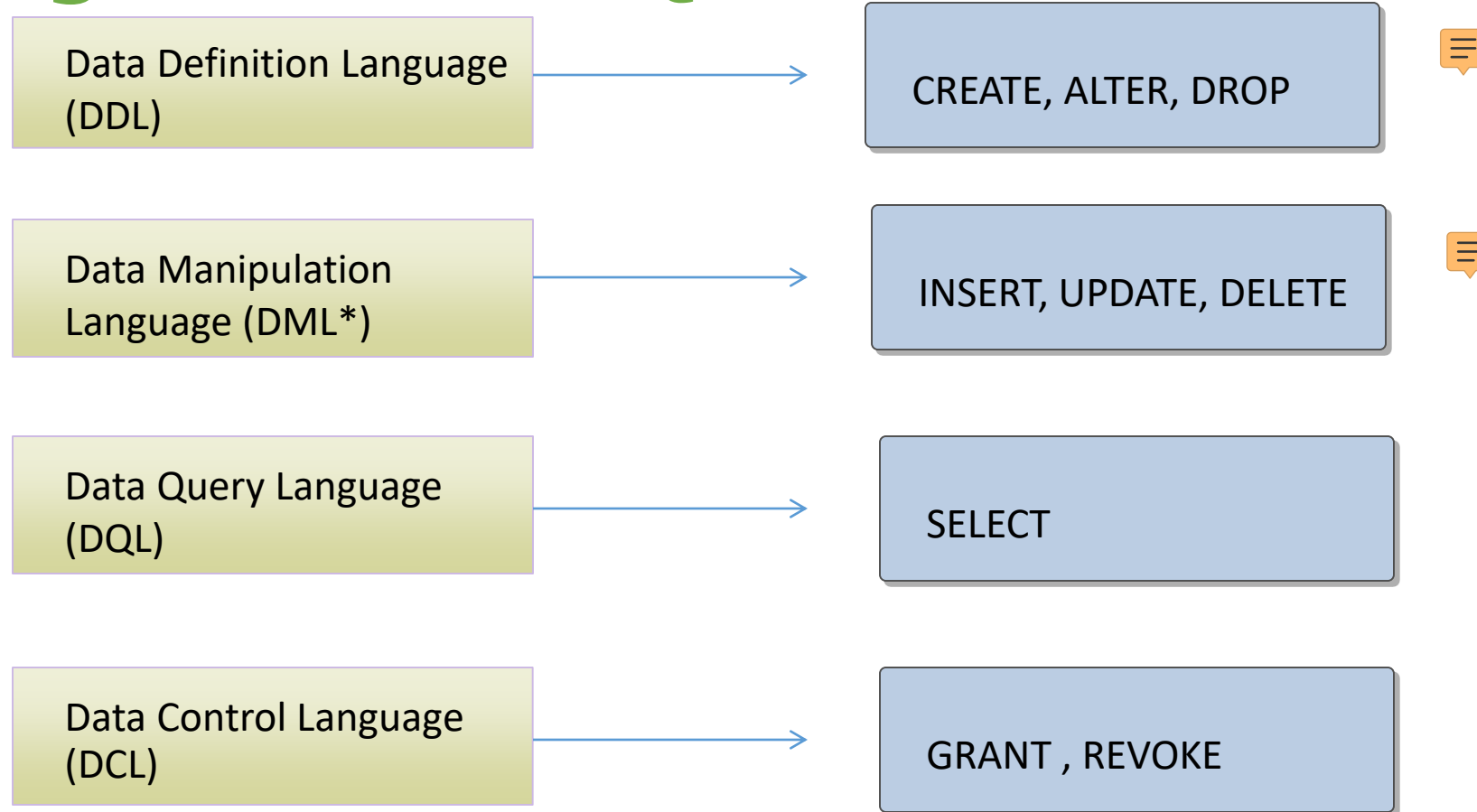
TCL : Transactional Query Language

RDBMS Concepts

```
+----+---------+-----+---------+---------+ ---------+
| ID | NAME    | AGE | ADDRESS          | SALARY   |
+----+---------+-----+---------+---------+ ---------+
|  1 | Ramesh  |  32 | Ahmedabad        |  2000.00 |
|  2 | Khilan  |  25 | Delhi            |  1500.00 |
|  3 | kaushik |  23 | Kota             |  2000.00 |
|  4 | Chaitali|  25 | Mumbai           |  6500.00 |
|  5 | Hardik  |  27 | Bhopal           |  8500.00 |
|  6 | Komal   |  22 | MP               |  4500.00 |
|  7 | Muffy   |  24 | Indore           | 10000.00 |
+----+---------+-----+---------+---------+ ---------+
```

Create Statement DDL

CREATE DATABASE Statement

CREATE DATABASE <DATABASE EID>;

create database test;
use test;

Create Statement DDL

CREATE TABLE Statement

CREATE TABLE table_EID(

column1 datatype (Size),

column2 datatype (Size),

column3 datatype,

.....

columnN datatype);

Create Statement   DDL

CREATE TABLE Statement

CREATE TABLE EMP (
  RNO char (5),
  EID CHAR (20),
  AGE INT ,
  CLASS CHAR(10),
);

INSERT Statement 🗨

- INSERT INTO table_EID (column1, column2....columnN) VALUES (value1, value2....valueN);

- INSERT INTO TABLE_EID VALUES (value1,value2,value3,...valueN);

Select * from table_name

SQL SELECT Statement   DQL

- SELECT column1, column2….columnN FROM   table_EID

- SELECT * FROM table_EID;

SQL Data Types

Numeric Data Types:

DATA TYPE	FROM	TO
Int	-2,147,483,648	2,147,483,647
Small Int	-32,768	32,767
Decimal	$-10^{38} +1$	$10^{38} +1$
Money	-922,337,203,685,477.5808	+922,337,203,685,477.5807
Float	$-1.79E + 308$	$1.79E + 308$

Character Data Types: 📝

DATA TYPE	FROM	TO
Char	Char	Maximum length of 8,000 characters.
Varchar	Varchar	Maximum length of 8,000 characters.
Text	text	maximum length of 2,147,483,647 characters.

SQL Data Types

Date & Time Data Types:

DATA TYPE	FROM	TO
Datetime	Jan 1, 1753	Dec 31, 9999
smalldatetime	Jan 1, 1900	Jun 6, 2079
Date	Stores a date like June 30, 1991	
Time	Stores a time of day like 12:30 P.M.	

Misc Data Types:

DATA TYPE	FROM	TO
Image	Maximum length of 2,147,483,647 bytes. (Variable length Binary Data)	

ASSIGNMENT

- Table creation

- Inserting data

- Verifying the data

ASSIGNMENT - 1

Create a database DEMO

Create table EMP with the following fields:

EID NAME ADDR CITY DOB PHONE NO. EMAIL. EID should be like 'E0001'

Insert 10 appropriate records in the Emp table

Use SELECT command to view the contents of emp table

Installing SQL Server

Click SQL Server 2014 to download SQL Server 2014

Check the below two files from the list:

SERVER File: **Express 64BIT\SQLEXPR_x64_ENU.exe**

MANAGEMENT STUDIO File: MgmtStudio 64BIT\SQLManagementStudio_x64_ENU.exe

Click on NEXT the download will start automatically.

Once downloaded first install the Server file and then Management Studio file.

The installation wizard is simple you just need to follow on screen instructions.

Download link : https://www.microsoft.com/en-in/download/details.aspx?id=42299

SQL CLAUSES

SQL WHERE Clause:

SELECT column1, column2....columnN FROM   table_EID WHERE CONDITION;

SQL LIKEClause:

for pattern matching

SELECT column1, column2....columnN FROM
  table_EID WHERE column LIKE 'XXXX%'

value start with XXXX and then any no char

SELECT FROM table_EID WHERE column LIKE 'XXXX_'

value starts with XXXX then last value can be any char

There are two wildcards used in conjunction with the LIKE operator:

1. The percent sign (%)   represents any no of charraters
2. The underscore (_)   represents single char

SQL TOP Clause:

SELECT `TOP` number|percent column_EID(s) FROM table_EID WHERE [condition]

SQL UPDATE Statement: DML

UPDATE table_EID

SET column1 = value1, column2 = value2 ....columnN=valueN

[WHERE CONDITION];

SQL DELETE Statement: DML

- **DELETE** FROM table_EID WHERE {CONDITION};

- **DELETE** FROM table_EID

- **DELETE** table_EID

SQL ALTER TABLE Statement: DDL

- ALTER TABLE table_EID
   ADD
   column_EID {data_type};

- ALTER TABLE table_EID
  DROP Column
   column_EID   ;

- ALTER TABLE table_EID
  ALTER Column
   column_EID {data_type};

SQL DROP TABLE Statement: DDL

- DROP TABLE table_EID;

- DROP DATABASE database_EID; we cant drop data base when we are using that same DB, so we need to USE another DB then use DROP Database old_db

SQL TRUNCATE TABLE Statement :

DDL: because it drops and recreate table. Which is much faster than delete command which delete data by row by row.

so if u need to delete entire table data use truncate

TRUNCATE TABLE table_EID;

SQL COMMIT Statement: TQL

COMMIT;

SQL ROLLBACK Statement :

ROLLBACK;