What does SQL stand for?

Structured **Q**uery **L**anguage

....used for data definition, manipulation and control of relational databases

What are your expectations out of this training?

Before we jump into SQL...

Let’s talk about DATA..

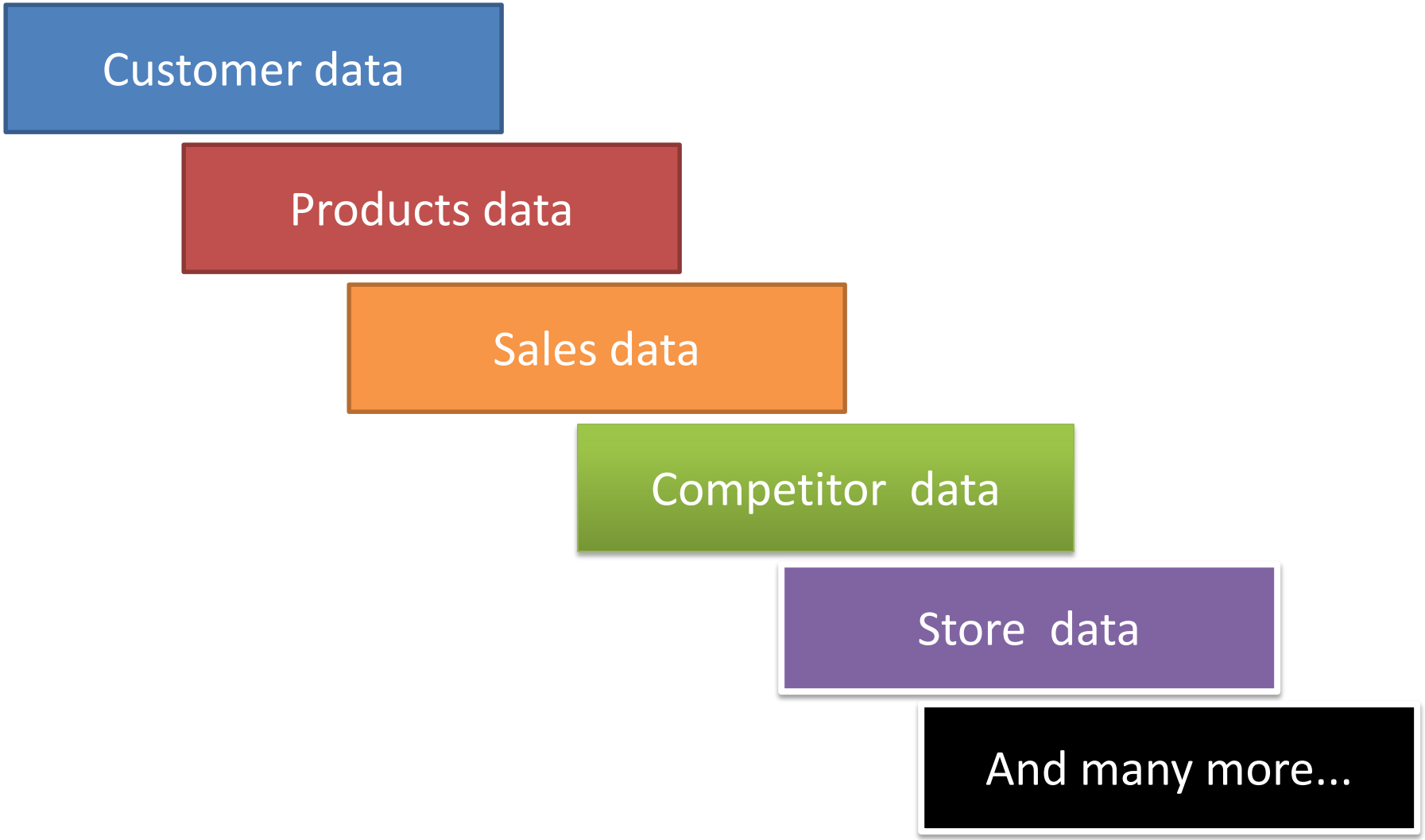
- What is DATA?
- How it is created/ captured?

Let us talk about a retail supermarket... Say Big Bazaar

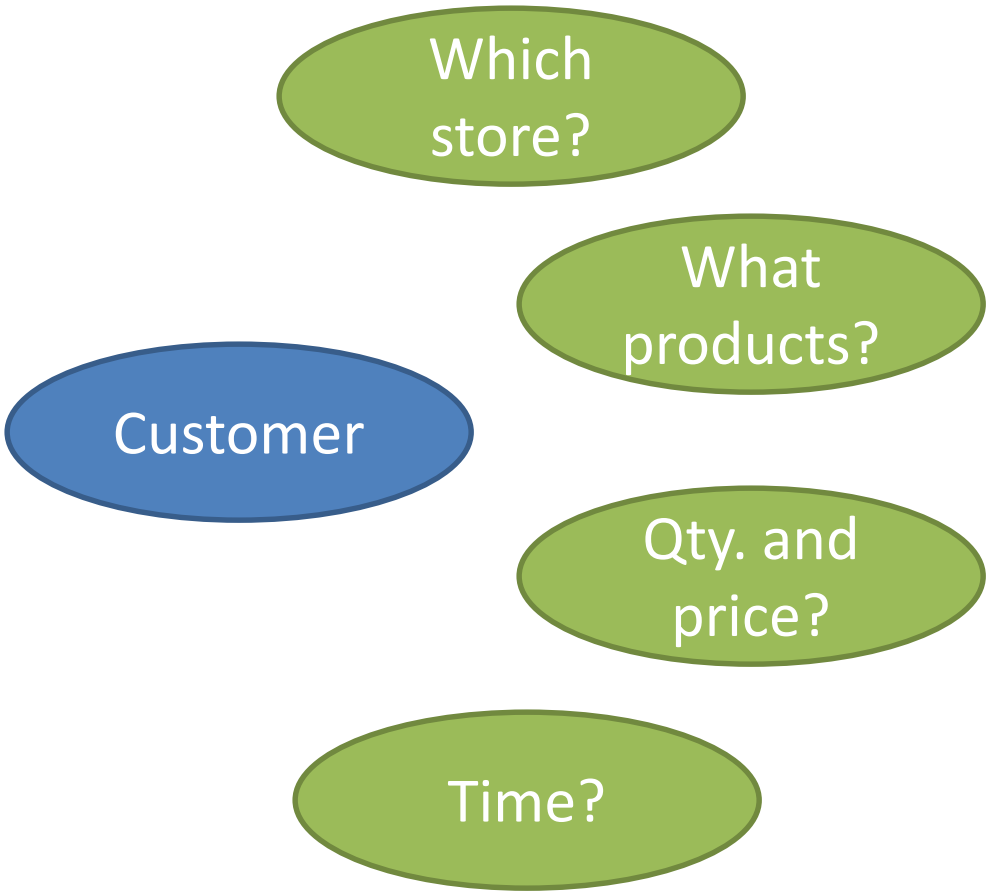
What data is captured by them?

Let’s brainstorm for a while...

So the retailer will have...

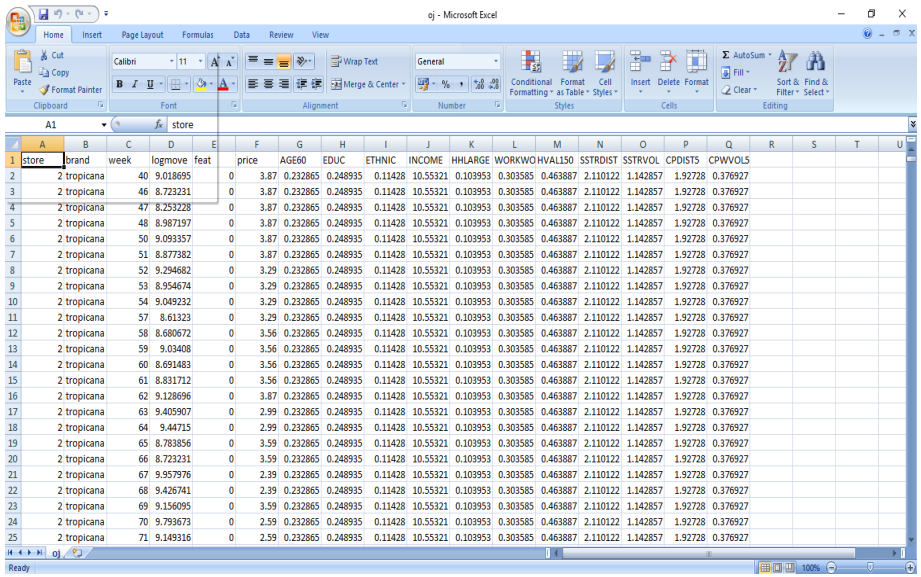


Let’s consider a customer sales data



- How and where to capture this information for all possible transactions happening in a day/ week/ month... across many stores?

Excel?

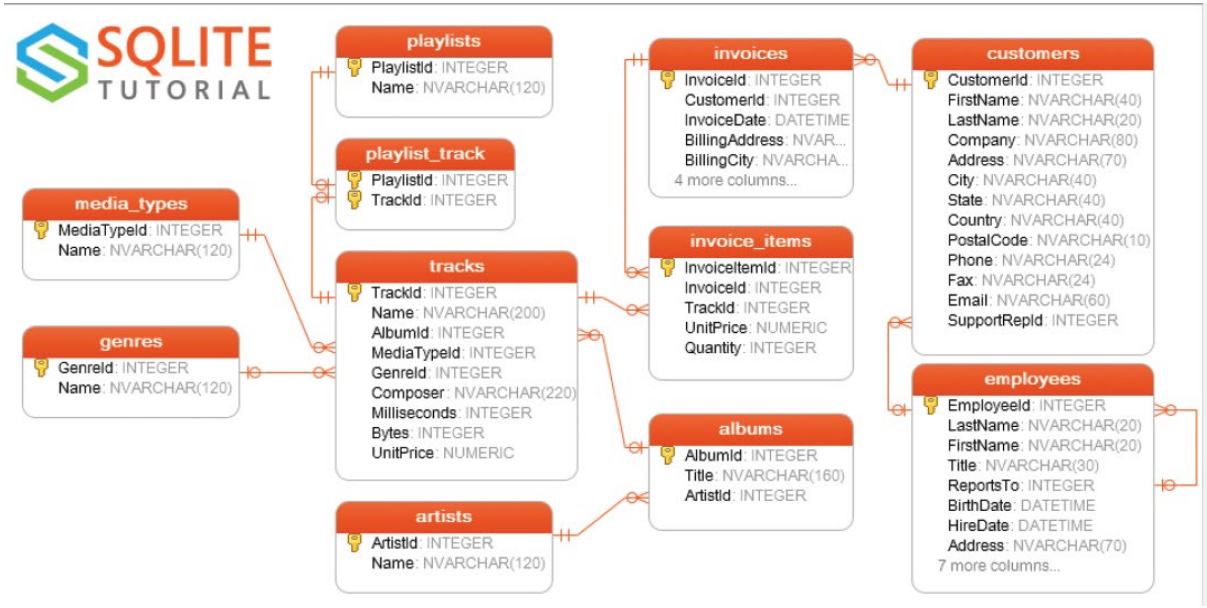


	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	store	brand	week	logmove	feat	price	AGE60	EDUC	ETHNIC	INCOME	HHLARGE	WORKWO	HVAL150	SSTRDIST	SSTRVOL	CPDISTS	CPWVOL5
2	2	tropicana	40	9.018695	0	3.87	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
3	2	tropicana	46	8.723231	0	3.87	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
4	2	tropicana	47	8.253228	0	3.87	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
5	2	tropicana	48	8.987197	0	3.87	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
6	2	tropicana	50	9.093357	0	3.87	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
7	2	tropicana	51	8.877382	0	3.87	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
8	2	tropicana	52	9.294682	0	3.29	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
9	2	tropicana	53	8.954674	0	3.29	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
10	2	tropicana	54	9.049232	0	3.29	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
11	2	tropicana	57	8.61323	0	3.29	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
12	2	tropicana	58	8.680672	0	3.56	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
13	2	tropicana	59	9.03408	0	3.56	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
14	2	tropicana	60	8.691483	0	3.56	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
15	2	tropicana	61	8.831712	0	3.56	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
16	2	tropicana	62	9.128696	0	3.87	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
17	2	tropicana	63	9.405907	0	2.99	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
18	2	tropicana	64	9.44715	0	2.99	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
19	2	tropicana	65	8.783856	0	3.59	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
20	2	tropicana	66	8.723231	0	3.59	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
21	2	tropicana	67	9.957976	0	2.39	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
22	2	tropicana	68	9.426741	0	2.39	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
23	2	tropicana	69	9.156095	0	3.59	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
24	2	tropicana	70	9.793673	0	2.59	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927
25	2	tropicana	71	9.149316	0	2.59	0.232865	0.248935	0.11428	10.55321	0.103953	0.303585	0.463887	2.110122	1.142857	1.92728	0.376927

- What if 100 or more people want to modify the file?
- What if the number of transactions cross a million?
- How do you manage a million pieces of information?

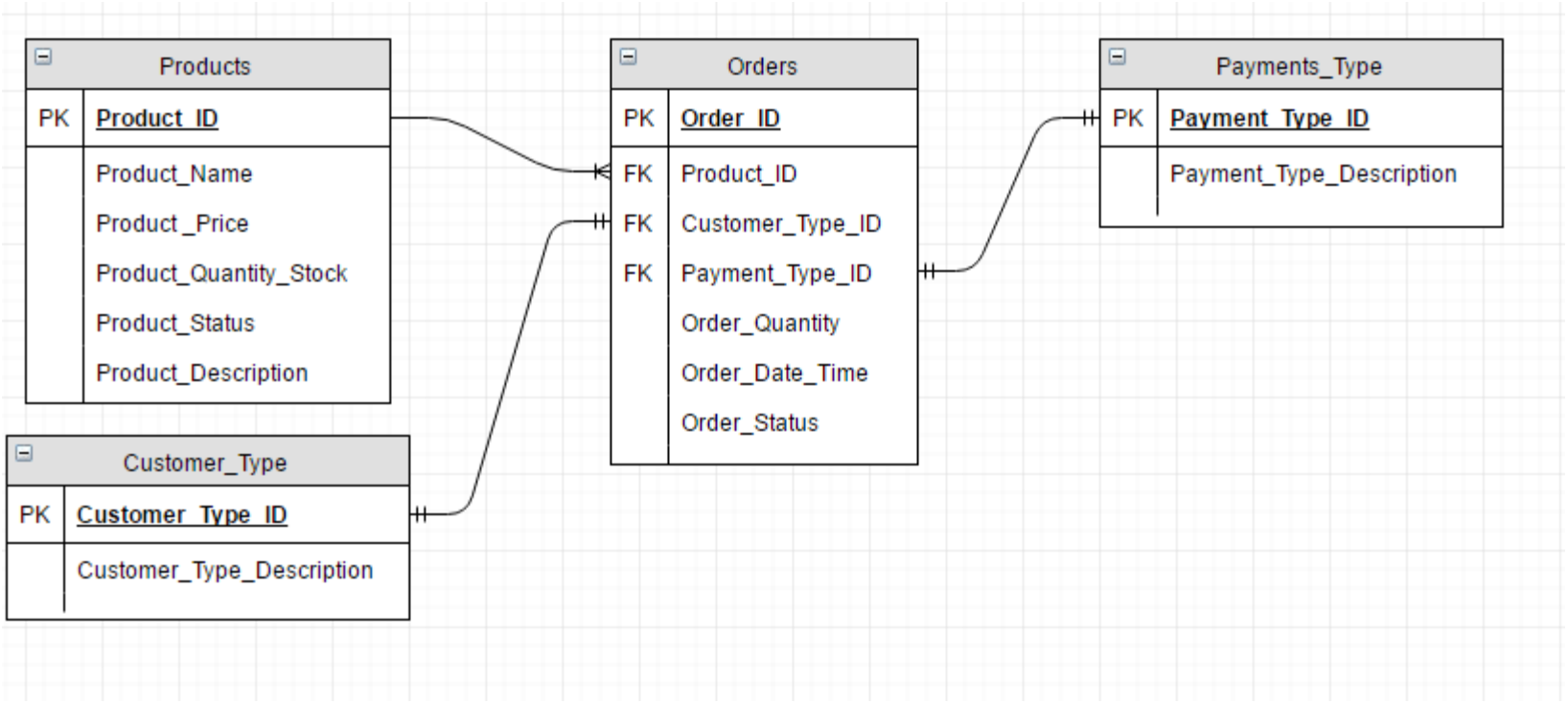
- **An Excel document is clearly not the right choice for storing information in a transactional environment**
- What we need is a file system which can
  - Hold multiple tables of information
  - Do not run out of space
  - **Allow multiple people to access and modify the information simultaneously**

What is RDBMS?



- A database is just a location to store and retrieve data
- A relational database is one which treats all of its data as a collection of relations
- Each table in a relational database has unique key (also referred to as the primary key)
- This primary key can also be present in another table as a foreign key and in process creates a relation between two tables

Understanding Relationship Diagram of a database



Source: https://www.tutorialjinni.com/entity-relationship-diagram-erd-for-point-of-sale-system-pos.html

Let’s get back to SQL...why we need it?

- SQL is the standard language for communicating with relational database management systems
- SQL statements are used to perform tasks such as update data on a database, or retrieve data from a database
- Although most database systems use SQL, most of them also have their own additional proprietary extensions that are usually only used on their system
- However the standard SQL commands can be used to accomplish almost everything one needs

DDL

1. **DDL(Data Definition Language) :** DDL or Data Definition Language actually consists of the SQL commands that can be used to define the database schema. It simply deals with descriptions of the database schema and is used to create and modify the structure of database objects in database.

   Examples of DDL commands:

   - **CREATE** – is used to create the database or its objects (like table, index, function, views, store procedure and triggers).
   - **DROP** – is used to delete objects from the database.
   - **ALTER**-is used to alter the structure of the database.
   - **TRUNCATE**–is used to remove all records from a table, including all spaces allocated for the records are removed.
   - **COMMENT** –is used to add comments to the data dictionary.
   - **RENAME** –is used to rename an object existing in the database.

Snip Source: https://www.geeksforgeeks.org/sql-ddl-dml-dcl-tcl-commands/

DML

2. **DML(Data Manipulation Language) :** The SQL commands that deals with the manipulation of data present in database belong to DML or Data Manipulation Language and this includes most of the SQL statements.

   Examples of DML:

   - **SELECT** – is used to retrieve data from the a database.
   - **INSERT** – is used to insert data into a table.
   - **UPDATE** – is used to update existing data within a table.
   - **DELETE** – is used to delete records from a database table.

Snip Source: https://www.geeksforgeeks.org/sql-ddl-dml-dcl-tcl-commands/

DCL & TCL (not in our scope of training)

3. **DCL(Data Control Language) :** DCL includes commands such as GRANT and REVOKE which mainly deals with the rights, permissions and other controls of the database system.

   Examples of DCL commands:

   - **GRANT**-gives user's access privileges to database.
   - **REVOKE**-withdraw user's access privileges given by using the GRANT command.

4. **TCL(transaction Control Language) :** TCL commands deals with the transaction within the database.

   Examples of TCL commands:

   - **COMMIT**– commits a Transaction.
   - **ROLLBACK**– rollbacks a transaction in case of any error occurs.
   - **SAVEPOINT**–sets a savepoint within a transaction.
   - **SET TRANSACTION**–specify characteristics for the transaction.

Snip Source: https://www.geeksforgeeks.org/sql-ddl-dml-dcl-tcl-commands/

It’s the time you all have been waiting for...

Let’s get into some coding