A Beginner's Guide
To
Structured **Q**uery **L**anguage

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Hello **world !**

I am **Ayon Roy**

B.Tech CSE (2017-2021)

Go-to Guy for **Data Science, ML, AI, Hackathons**

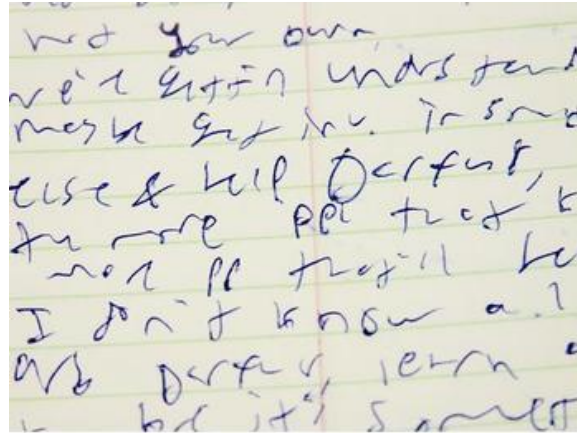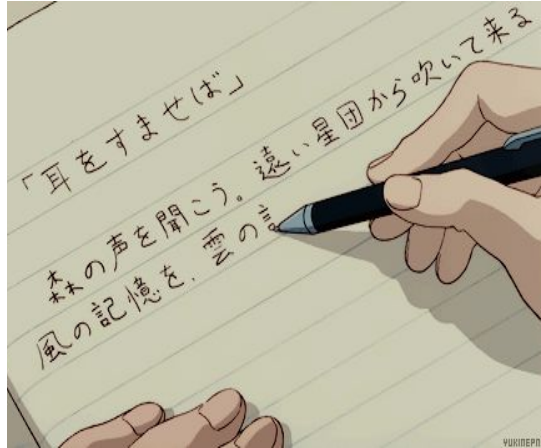Data Science Intern at Lulu Intl. Exchange (**World's Leading Financial Services Company**)

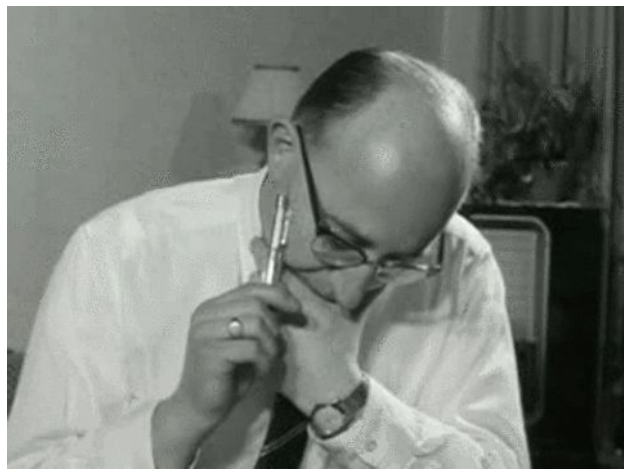Organizer @ **Kaggle Days Meetup Delhi NCR**

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Agenda (29-2-2020)

- Discussing the _What, Why_ of a Database

- Introduction to Basic Concepts of Database, SQL

- Introduction to the basic queries of SQL

- Introduction to a bit complex queries SQL

- BONUS : How to crack a Data Science Internship

Why a Database was required ?

Let's walk through a story

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Here comes the DATABASE
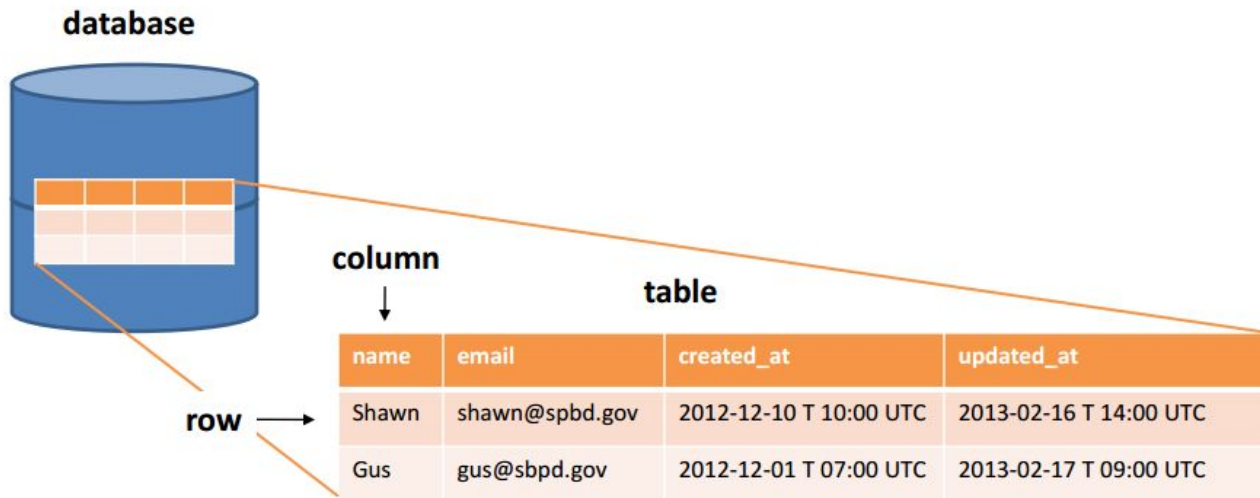
But, what is a DataBase ?

Database, is any collection of data, that is specially organized for rapid search and retrieval by a computer. They are structured to facilitate the storage, retrieval, modification, and deletion of data in conjunction with various data-processing operations.

What is a Relational DataBase ?

A relational database (RDB) is the organization of data in the form of tables, records and columns.

And what's RDBMS? It is a product that presents a view of data as a collection of rows and columns.

What's SQL ?

RDBs use **Structured Query Language (SQL)**, which is a standard user application that provides an easy programming interface for database interaction.

A database management system (DBMS) extracts information from the database in response to queries.

Applications of SQL ?

- Allows users to access data in the RDBMS.
- Allows users to describe the data.
- Allows users to define the data in a database and manipulate that data.
- Allows users to create and drop databases and tables.
- Allows users to create view, stored procedure, functions in a database.
- Allows users to set permissions on tables, procedures and views.

What's a SQL Statement ?

UPDATE clause   {UPDATE country

SET clause   {SET population = population + 1   (expression)

WHERE clause   {WHERE name = 'USA' ;   (expression) (predicate)
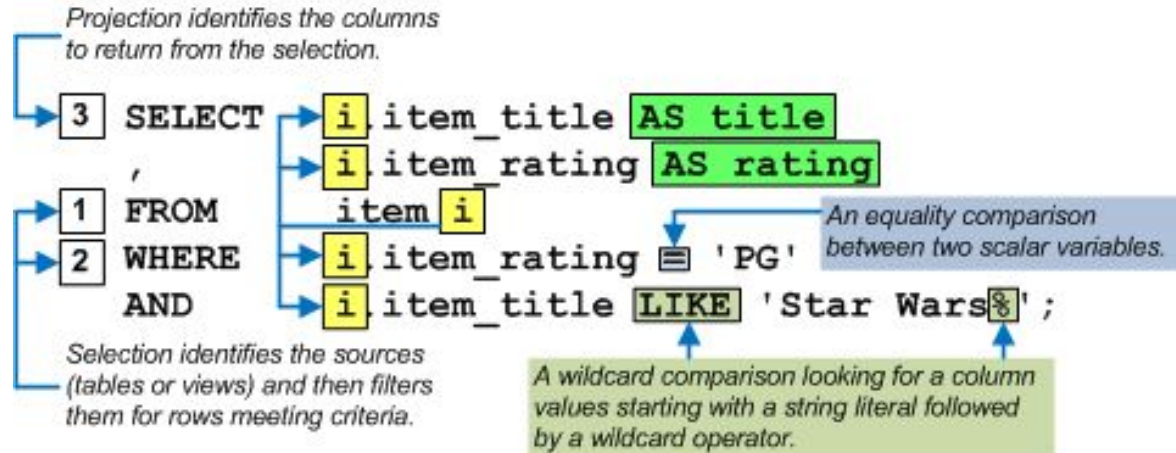
} statement

- **Clauses**, which are constituent components of statements and queries. (Optional)
- **Expressions**, which can produce either scalar values, or tables consisting of columns and rows of data
- **Predicates**, which specify conditions that can be evaluated to true/false/unknown
- **Statements**, which may have a persistent effect on schemata and data, or may control transactions, program flow, connections, sessions, or diagnostics.
- SQL statements also include the semicolon (";") statement terminator.

What's a Query in SQL ?

- **A query is a question**.
- A database query can be either a select question or an action query.
- A select query is an information recovery query, while an activity query requests extra tasks on the information, for example, addition, refreshing or deletion.

- *Queries*, retrieve the data from the database based on specific criteria.

A few basic Queries in SQL ?

```sql
CREATE TABLE Apps (

    AppID int,

    AppName varchar(255),

    CreatorName varchar(255),

    AppCategory varchar(255),

    AppPrice int

);
```


Projection identifies the columns to return from the selection.

```
3   SELECT → i item_title AS title
            , → i item_rating AS rating
1   FROM      item i
2   WHERE → i item_rating ☰ 'PG'
    AND   → i item_title LIKE 'Star Wars%';
```

An equality comparison between two scalar variables.

Selection identifies the sources (tables or views) and then filters them for rows meeting criteria.

A wildcard comparison looking for a column values starting with a string literal followed by a wildcard operator.

```sql
select EmpName, SUM(EmpSalary) as EmpSalary from Employee
GROUP BY EmpName
HAVING SUM(EmpSalary) < 30000
order by EmpName desc
```

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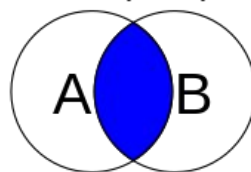
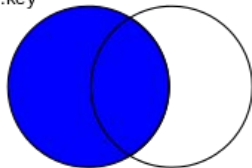|	EmpName	EmpSalary
1	Smith	18000
2	Rohatash	16000
3	Meths	11000

```sql
SELECT ProductID,
        Name,
        ListPrice
FROM    production.Product
WHERE   ListPrice > (SELECT AVG(ListPrice)
        FROM    Production.Product)
```
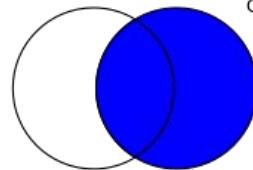
subquery

SELECT <fields>
FROM TableA A
INNER JOIN TableB B
ON A.key = B.key

SELECT <fields>
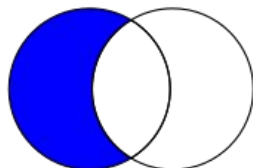FROM TableA A
LEFT JOIN TableB B
ON A.key = B.key

SELECT <fields>
FROM TableA A
RIGHT JOIN TableB B
ON A.key = B.key

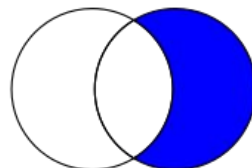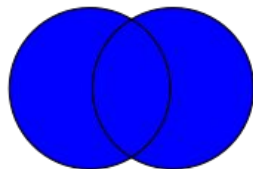A B

SQL

JOINS

SELECT <fields>
FROM TableA A
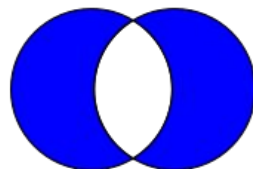LEFT JOIN TableB B
ON A.key = B.key
WHERE B.key IS NULL

SELECT <fields>
FROM TableA A
RIGHT JOIN TableB B
ON A.key = B.key
WHERE A.key IS NULL

SELECT <fields>
FROM TableA A
FULL OUTER JOIN TableB B
ON A.key = B.key

SELECT <fields>
FROM TableA A
FULL OUTER JOIN TableB B
ON A.key = B.key
WHERE A.key IS NULL
OR B.key IS NULL

```sql
UPDATE table_name
SET column1 = value1, column2 = value2, ...
WHERE condition;


UPDATE Apps
SET CreatorName = 'Tony Stark', AppName= 'IronSpider'
WHERE AppID = 1
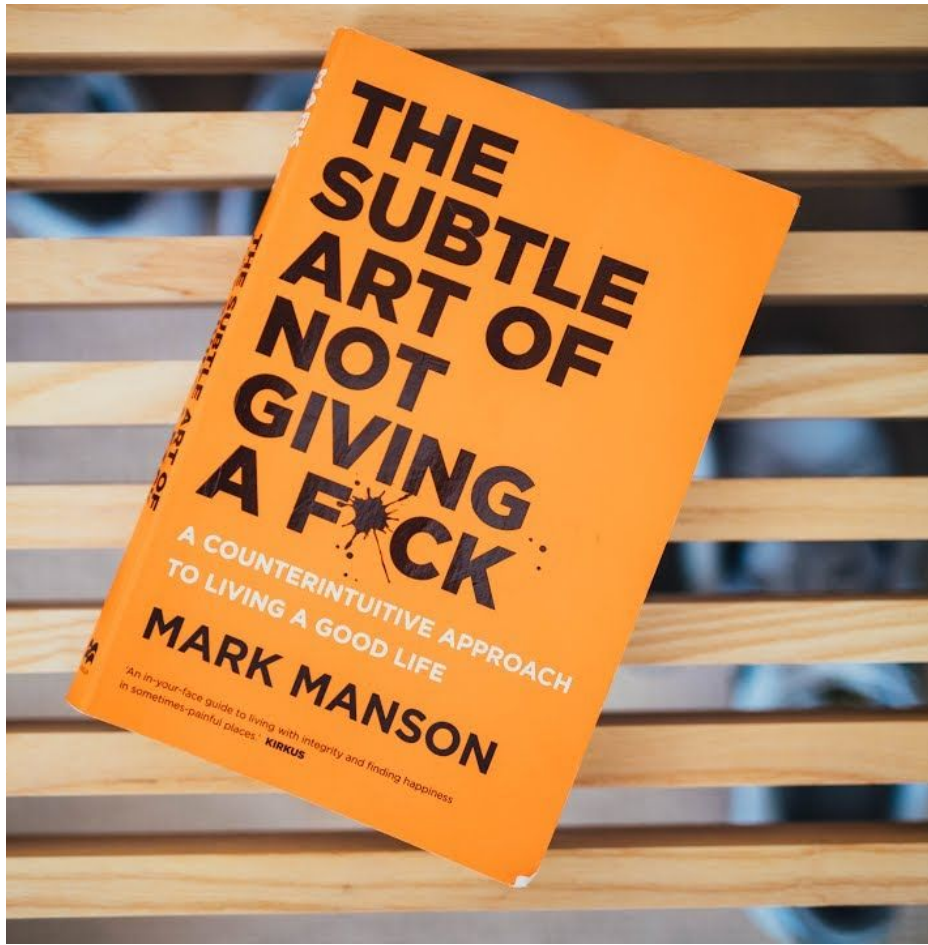```

```sql
DELETE FROM table

WHERE [condition];


DELETE FROM Products

WHERE ProductName = 'AFTERGAME SNEAKER'
```

```sql
INSERT INTO Apps (AppID,`AppName`,`CreatorName`,`AppCategory`,`AppPrice`)
VALUES
(2, 'Escrow', 'LVVM', 'Fashion', 60 ),
(3, 'KGB', 'MJ', 'Music', 70 ),
(4, 'Moscow', 'Mayor', 'Area', 80 ),
(5, 'MoneyControl', 'Mukesh', 'Investment', 90 ),
(6, 'Investing', 'Bill', 'Stocks', 100 )
```

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The Subtle Art of Not Giving a
Miss to Data Science Internship

All discussion, nothing in Slides !!

How many thought of this ?

Read this ?

Let me answer your Questions now.

Finally, it's your time to speak.

Danke Scheon

Questions ? Any Feedbacks ? Did you like the talk?
Tell me about it.

If you think I can help you,
connect with me via

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