

Class - 01

Who am I ?



Md. Taimur Islam

Data Scientist, Banglalink



Work Experience

- 1 Banglalink Digital Communications Ltd.
- 2 DataSoft Systems Bangladesh Limited
- 3 Trainer (Digital Platforms & Corporate offices)



Personal Skills

Data Science



Data Analytics



Python



SQL



Visualization



Public



Achievements

- ✓ Commercial Champion Award.
- ✓ Game Changer Award.



Educational Background

MS, BSc in CSE



Top Respondent

Data Analytics Journey

Turning Data into Actionable Insights



Brain of a Data Analyst

Technical Skills



Visualization



Excel



Statistics



Python



R



Soft Skills



Critical Thinking



Problem Solving



Communication



Story Telling

What is SQL? Why is it important to learn?



Structured Query Language



Data

Data refers to raw, unorganized facts or figures that are collected and stored.

- ✓ Lack of context and meaning.
- ✓ "Dhaka", "30°C", "1000 sales"



Information

Processed data with meaning.

✓ "Temperature of Dhaka is 30°C today."



Knowledge

Insights & patterns based on information

- ✓ Sales increase in December.

Understanding Data



Structured Data



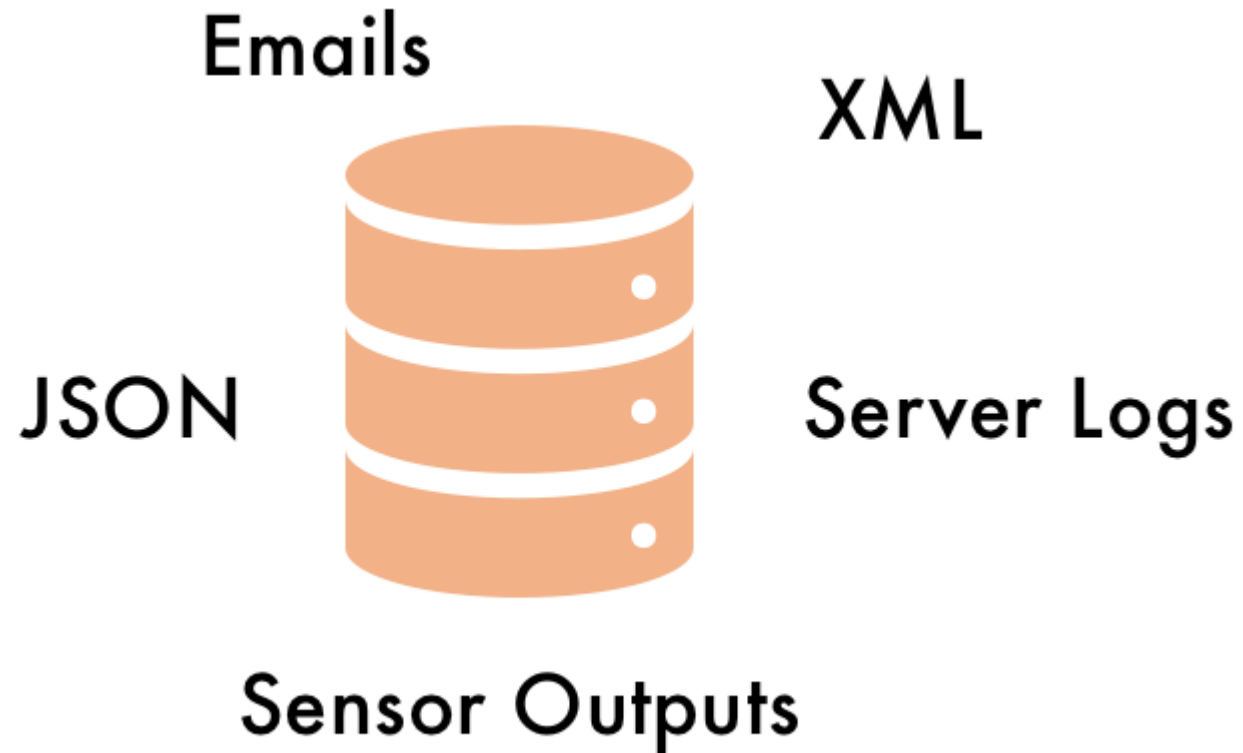
- ✓ Relational Databases.
- ✓ Spreadsheets

Unstructured Data



- ✓ Text Documents
- ✓ Web Content
- ✓ Multimedia

Semi-Structured Data



- ✓ Not like traditional relational databases but still contains tags or markers to separate.

Understanding Data ...

Unstructured data

The university has 5600 students.
John's ID is number 1, he is 18 years old and already holds a B.Sc. degree.
David's ID is number 2, he is 31 years old and holds a Ph.D. degree. Robert's ID is number 3, he is 51 years old and also holds the same degree as David, a Ph.D. degree.

Semi-structured data

```
<University>
  <Student ID="1">
    <Name>John</Name>
    <Age>18</Age>
    <Degree>B.Sc.</Degree>
  </Student>
  <Student ID="2">
    <Name>David</Name>
    <Age>31</Age>
    <Degree>Ph.D. </Degree>
  </Student>
  ....
</University>
```

Structured data

ID	Name	Age	Degree
1	John	18	B.Sc.
2	David	31	Ph.D.
3	Robert	51	Ph.D.
4	Rick	26	M.Sc.
5	Michael	19	B.Sc.

Database



A database is a structured collection of data.

Databases can store many types of data

- ✓ Text
- ✓ Numbers
- ✓ Images
- ✓ Audio/Videos
- ✓ Files

Database Management System

A Database Management System (DBMS) is software that helps users efficiently create, manage, and interact with databases.

Functions of a DBMS:

- ✓ **Data Storage & Retrieval** – Allows users to save and fetch data easily.
- ✓ **Data Security** – Controls access to prevent unauthorized modifications.
- ✓ **Data Integrity** – Ensures accuracy and consistency of stored data.
- ✓ **Concurrency Control** – Allows multiple users to work on the database simultaneously.
- ✓ **Backup & Recovery** – Protects data against accidental loss.

Types of DBMS

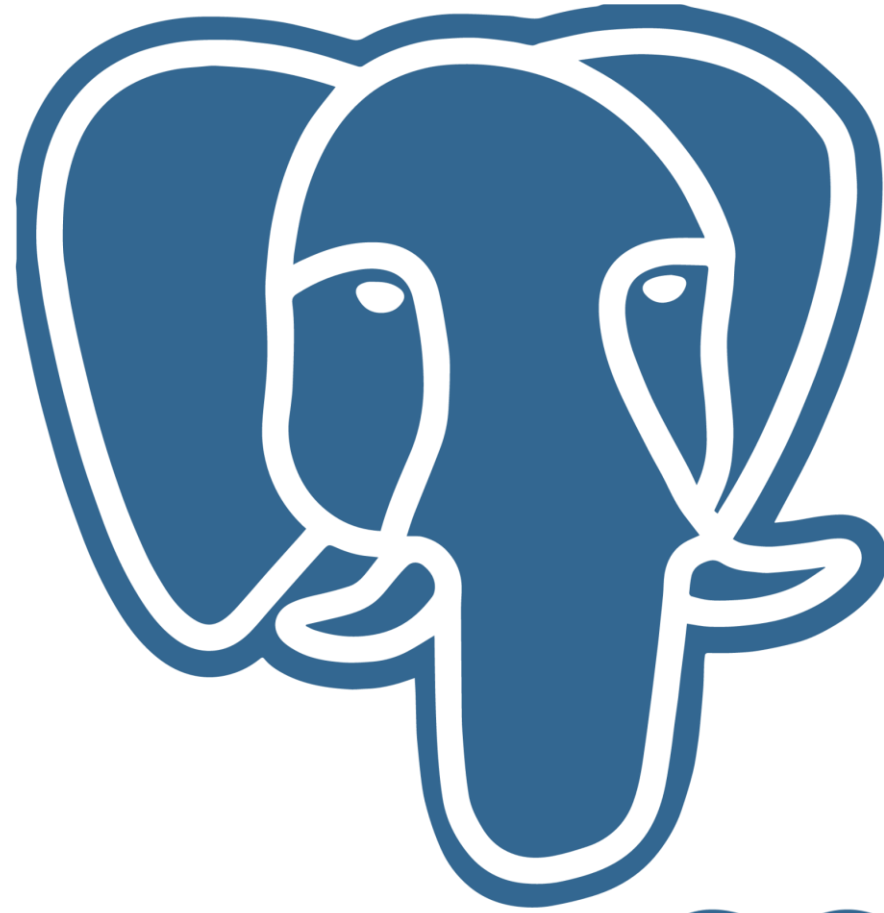
Relational Database Management System (RDBMS) – Stores data in tables with rows and columns (SQL-based).

✓ **Examples:** PostgreSQL, MySQL, SQL Server, Oracle

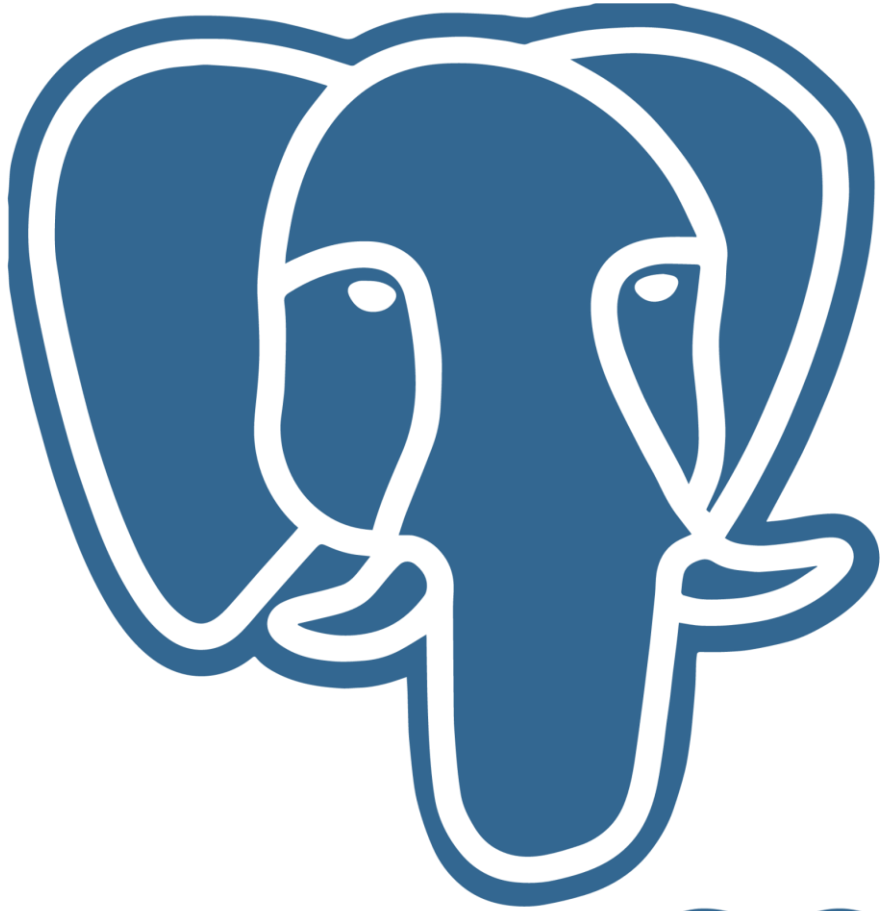
NoSQL Databases – Stores unstructured or semi-structured data (key-value, document-based, columnar, or graph).

✓ **Examples:** MongoDB, Cassandra, Redis, Neo4j

PostgreSQL Installation



PostgreSQL



PostgreSQL

Why PostgreSQL?

- ✓ Better for complex queries & analytics
- ✓ Advanced indexing
- ✓ Full ACID compliance with better concurrency
- ✓ Best JSON & NoSQL support (JSONB)
- ✓ Parallel queries for faster execution
- ✓ More scalable for write-heavy applications