BCA SEMESTER - II

0302203
HISTORY OF COMPUTING

UNIT – 4
HISTORY OF DATABASES

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Index

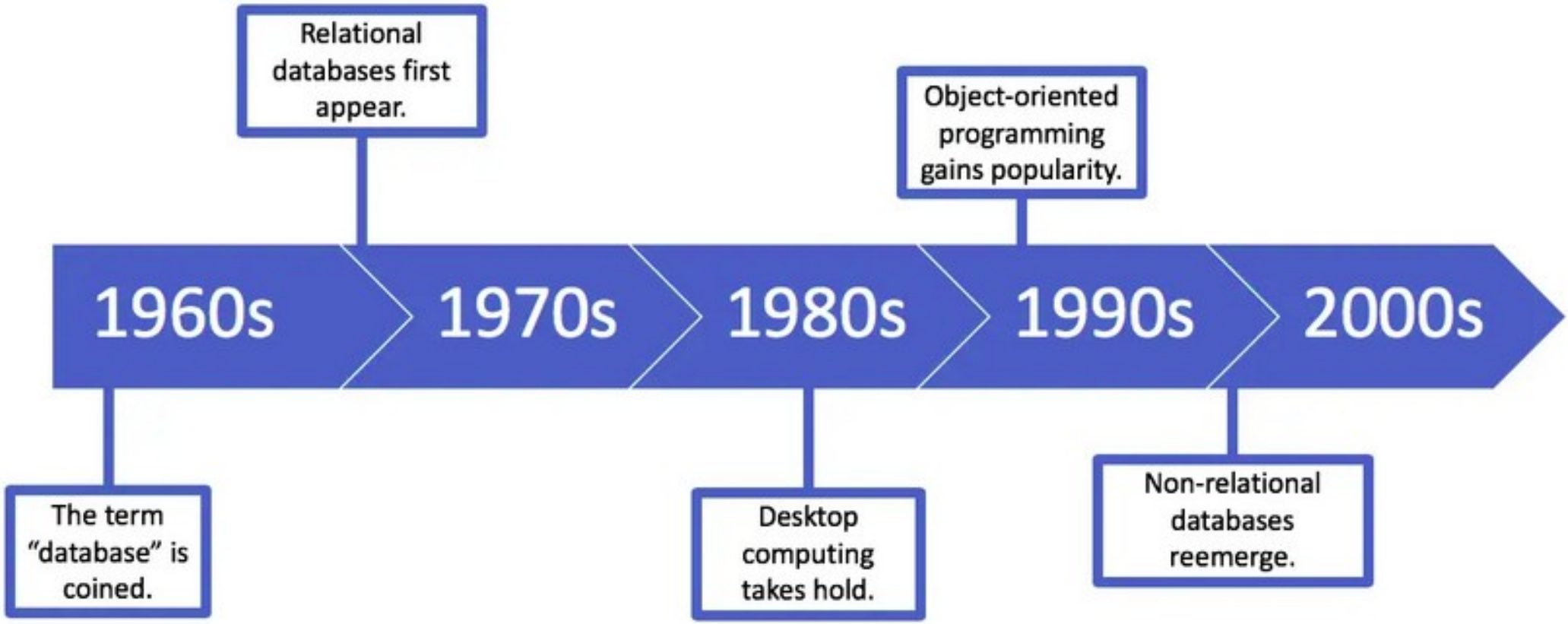
Index

- History of Databases
  - Introduction
  - Hierarchical and Network Models
  - The Relational Model
  - SQL
  - Oracle Database

History of Databases

- Databases are a foundational element of the modern world.
- We interact with them even without knowing it — any time we buy something online, or log in to a service, or access our bank accounts, and so on.
- The concept of a database existed before there were computers.
- Some of us are even old enough to remember the filing cabinets in which your parents kept health records, tax documents, and old family recipes.
- The first computer database was built in the 1960s, but the history of databases as we know them, really begins in 1970.

History of Databases



The 1960s – beginnings

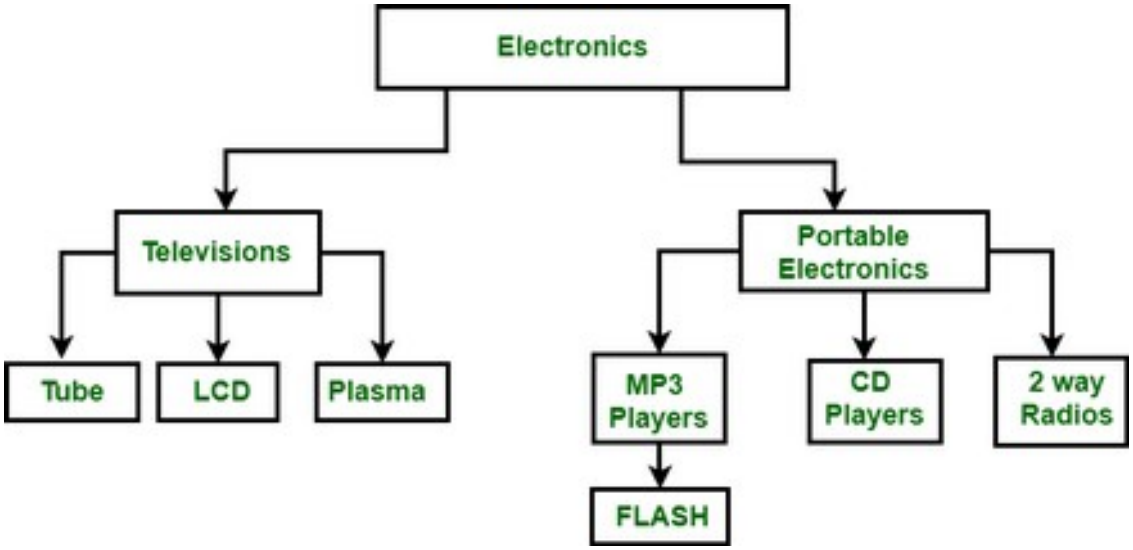
- The history of databases begins with the two earliest computerised examples.
- Charles Bachman designed the first computerised database in the early 1960s.
- This first database was known as the Integrated Data Store, or IDS.
- This was shortly followed by the Information Management System, a database created by IBM.
- Both databases were forerunners of the ‘navigational database’.

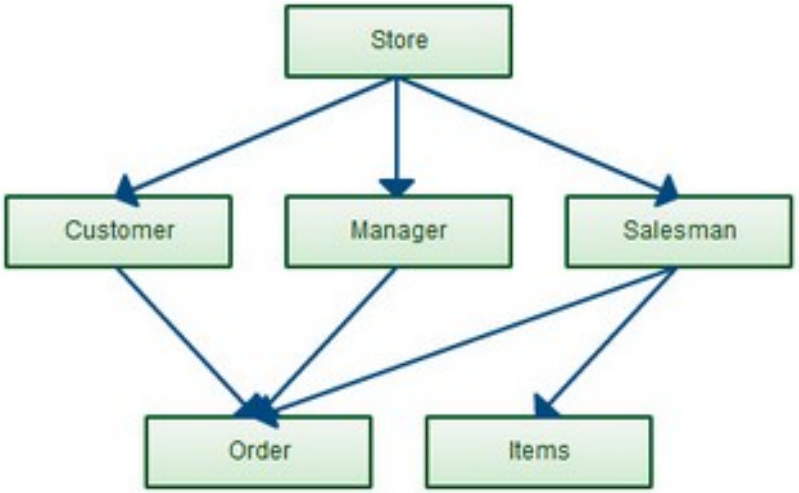
Hierarchical & Network Models

- Navigational databases required users to navigate through the entire database to find the information they wanted.
- There were two main models of this:
  - the hierarchical model,
  - and the network model.

Hierarchical & Network Models

- The hierarchical model was developed by IBM.
- In it, data is organised like a family tree.
- Each data entry has a parent record, starting with a root record.
- The network model, meanwhile, was released at the Conference on Data Systems Languages (CODASYL).
- It differed from the hierarchical model in that it allowed a record to have more than one parent and child record.


Electronics
Televisions
Portable Electronics
Tube
LCD
Plasma
MP3 Players
CD Players
2 way Radios
FLASH

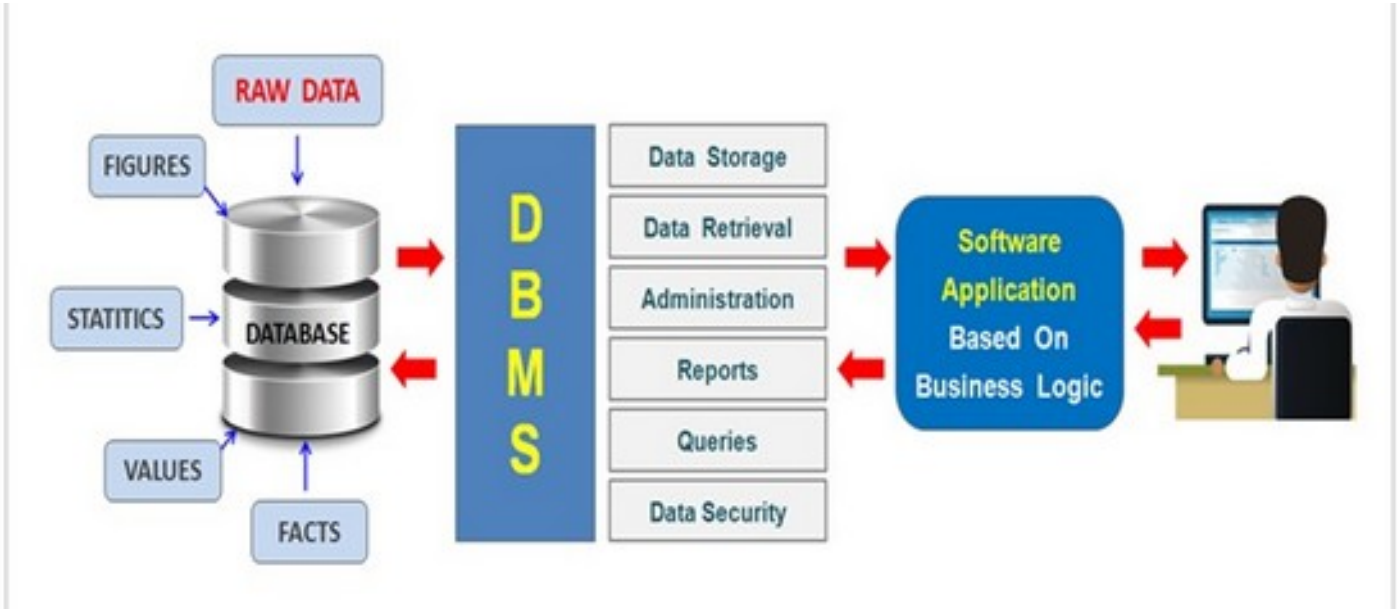

Store
Customer
Manager
Salesman
Order
Items

The 1970s – Relational databases

- Perhaps one of the most influential events in the history of databases came in the 1970s.
- It was in this decade that E. F. Codd would release his paper “A Relational Model of Data for Large Shared Data Banks”.
- This paper coined the term ‘relational database’ at the start of the decade, and sparked development of this new way to store and access data.
- A relational database is one that shows the relationship between different data records.
- Unlike their navigational counterparts, relational databases would be searchable.
- They would also be more space-efficient, meaning reduced data storage costs.

The 1970s – relational databases

- What followed was the creation of INGRES by Michael Stonebreaker and Eugene Wong at the University of California, Berkeley.
- INGRES, short for Interactive Graphics and Retrieval System, was a relational database model, proving the viability of Codd's ideas.
- INGRES used a query language called QUEL.
- IBM then released their take on a relational database.
- Known as System R, it was the first in the history of databases to use structured query language (SQL).


RAW DATA
FIGURES
STATITICS
DATABASE
VALUES
FACTS
D
B
M
S
Data Storage
Data Retrieval
Administration
Reports
Queries
Data Security
Software
Application
Based On
Business Logic

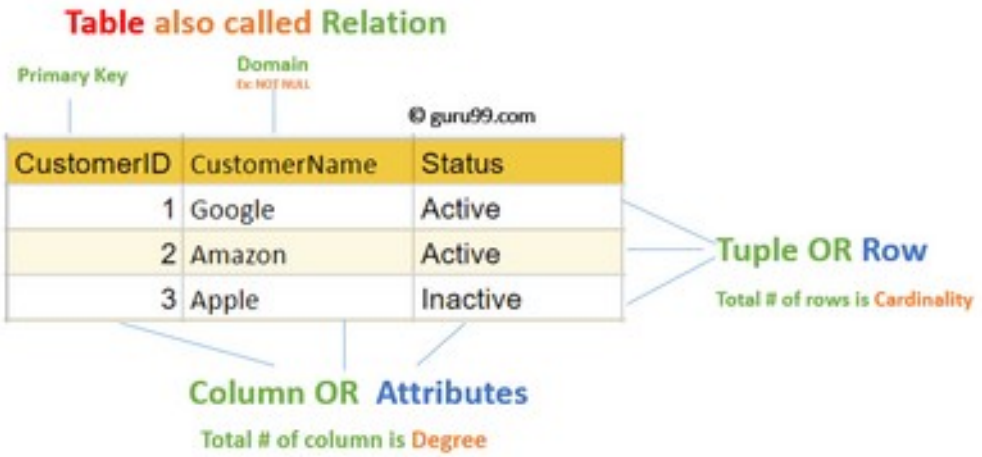


Table also called Relation
Primary Key
Domain
Ex: NOT NULL
© guru99.com
CustomerID
CustomerName
Status
1
Google
Active
2
Amazon
Active
3
Apple
Inactive
Tuple OR Row
Total # of rows is Cardinality
Column OR Attributes
Total # of column is Degree

The 1980s – growth and standardisation

- The 1980s in the history of databases marked a time of growth.
- Particularly, it was the time of growth for the relational database model.
- Earlier navigational models faded, while the commercialisation of relational systems saw this type of database rise in use and popularity.
- The 1980s also saw SQL become the standard language used for databases, which we still use today.

The 1980s – growth and standardisation

- Another noteworthy event for the history of databases was the emergence of Object-oriented database management systems (OODBMS).
- This concept appeared in the mid-80s. Object databases would view data as ‘objects’.
- They would work with programming languages that supported the ‘object-oriented’ approach.

The 1990s – the internet

- The early days of object-oriented database management did not see the idea as a popular one.
- This was partially due to the costs and time it would take to rewrite existing databases to support the approach.
- However, object oriented database systems grow more popular in the 90s.
- Another key event impacting the history of databases in the 90s was the creation of the World Wide Web.
- High investments in online businesses fuelled demand for client-server database systems.
- As such, the internet helped to power exponential growth of the database industry in the 1990s.

The 1990s – the internet

- A notable outcome of this was the creation of MySQL in 1995, which was open source.
- This meant that it provided an alternative to the database systems offered by big companies like Oracle and Microsoft.
- MySQL is still used by many today.

The 2000s – NoSQL

- In 1998, the term NoSQL (not only structured query language) was coined.
- It refers to databases that use query language other than SQL to store and retrieve data.
- NoSQL databases are useful for unstructured data, and they saw a growth in the 2000s.
- This is a notable development in the history of databases because NoSQL allowed for faster processing of larger, more varied datasets.
- NoSQL databases are more flexible than the traditional relational databases that had risen the decade before.

Oracle Database

- Oracle database is a relational database management system.
- It is also called OracleDB, or simply Oracle.
- It is produced and marketed by Oracle Corporation.
- It was created in 1977 by Lawrence Ellison and other engineers.
- It is one of the most popular relational database engines in the IT market for storing, organizing, and retrieving data.

Oracle Database

- Oracle database was the first DB that designed for enterprise grid computing and data warehousing.
- Enterprise grid computing provides the most flexible and cost-effective way to manage information and applications.
- It uses SQL queries as a language for interacting with the database.