

Database Creation and Management

Relational Model

Sasmita Kumari Nayak
CSE Department

Outline

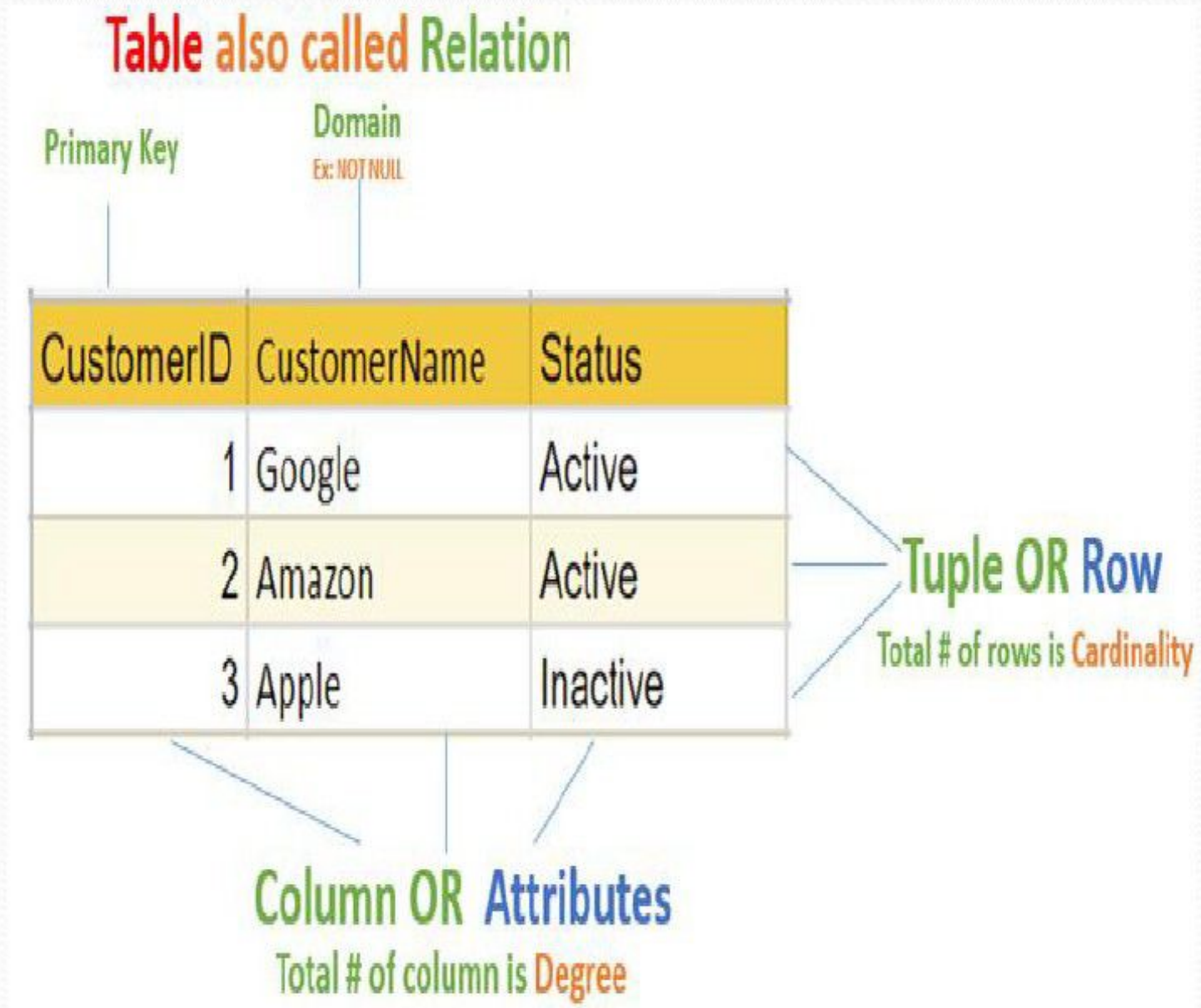
- Relational model
- Relational model concepts
- Relational keys
- Referential integrity
- Foreign keys

Relational model

- This model represents the database as a collection of relations.
- In this model, data is stored in relations (tables) and is represented in form of tuples (rows).
- Relational Database is the most commonly used database these days.
- RDBMS is used to manage Relational database.

Relational model concepts

- Tables
- Attribute
- Attribute domain
- Degree
- Relation Schema
- Column
- Tuple
- Cardinality
- Relation instance
- Relation key



Relational Keys

- A key is a single attribute or a group of attributes which helps you to identify a row (tuple) in a relation (table).
- They are used to establish and identify relationships between tables.
- For example, employee ID is a primary key because it uniquely identifies an employee record. In this table, no other employee can have the same employee ID.

ID	FirstName	LastName
11	Andrew	Johnson
22	Tom	Wood
33	Alex	Hale

Types of Relational Keys

- Super Key
- Primary Key
- Candidate Key
- Alternate Key
- Foreign Key
- Compound Key
- Composite Key
- Surrogate Key

Foreign key

- A foreign key is a column which is added to create a relationship with another table.
- A foreign key is generally a primary key from one table that appears as a field in another where the first table has a relationship to the second. In other words, if we had a table A with a primary key X that linked to a table B where X was a field in B, then X would be a foreign key in B.
- A foreign key help us to maintain data integrity and also allows navigation between two different instances of an entity.

Cont...

- Every relationship in the model needs to be supported by a foreign key.
- This concept is also known as Referential Integrity.
- **Example** : An example might be a student table that contains the `course_id` the student is attending. Another table lists the courses on offer with `course_id` being the primary key. The 2 tables are linked through `course_id` and as such `course_id` would be a foreign key in the student table.

Cont...

<u>studentId</u>	firstName	lastName	courseId
L0002345	Jim	Black	C002
L0001254	James	Harradine	A004
L0002349	Amanda	Holland	C002
L0001198	Simon	McCloud	S042

Foreign Keys

Relationship

Primary Keys

<u>courseId</u>	courseName
A004	Accounts
C002	Computing
P301	History
S042	Short Course