Unit: III
Lecture: 2
Relational Constraints

These are the rules or constraints applied to the database to keep data stable, accurate or consistent.
To keep database consistent we have to follow some rules known as integrity rules or integrity constraints or relational constraints.

- **Entity Integrity Rule (Integrity Rule 1):**
  - Primary key or a part of it in any relation **cannot be null**.
  - Suppose A be the attribute in relation R which is taken as primary key then A must not be null.

Employee

EID	Name	Salary	Department
1	Ram	6000	Accounts
2	Sham	10000	Computer
	Mohan	15000	Accounts
4	Rohan	9000	Electrical
5	Sohan	4000	Civil

This is not allowed because EID is a primary key

Fig: Integrity Rule(1): EID as Primary Key

- **Referential Integrity Rule (Integrity Rule 2):**
  - A foreign key can be either null or it can have only those values which are present in the primary key with which it is related.
  - Referential integrity ensures that all the values in the foreign key match the values in the primary key.
  - Referential integrity ensures that the data in the database remains uniformly consistent, accurate and usable even after the data in it has been changed.

Employee

EID	Name	Salary	Dept-ID
1	Ram	6000	1A
2	Sham	10000	2C
3	Mohan	15000	4F
4	Rohan	9000	3E
5	Sohan	4000	-

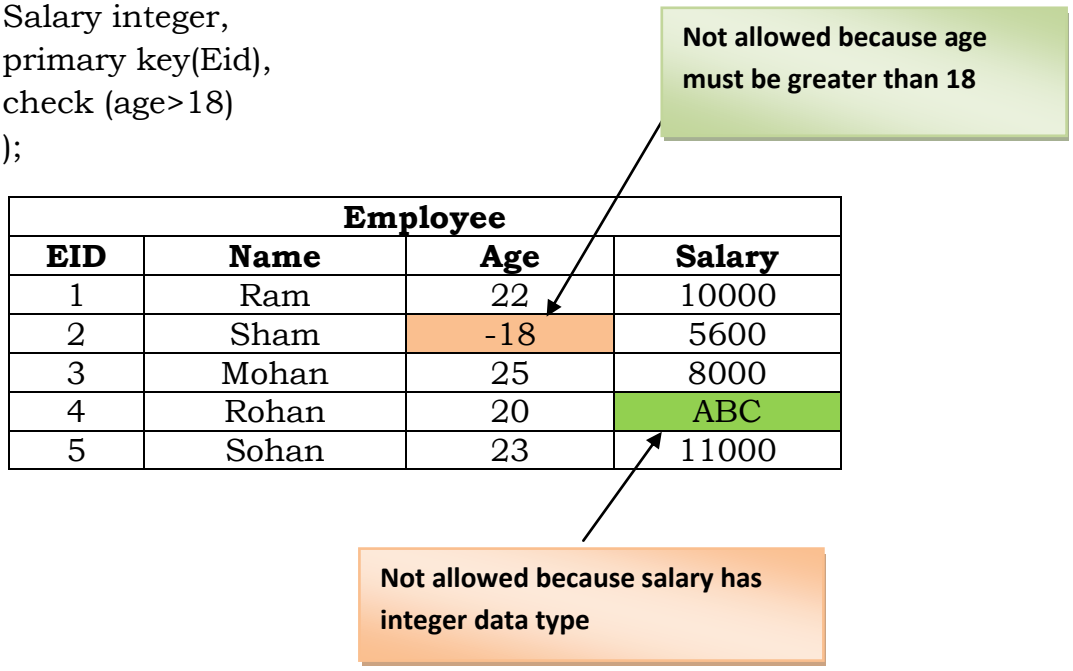
Department

Dept-ID	Dept-Name
1A	Accounts
2C	Computer
3E	Electrical
4C	Civil

Null Value is allowed.

This is not allowed because Dept-ID is a foreign key and value 4F is not present in attribute Dept-ID of relation Department.

- **Domain Constraints:**
  - The restrictions which we apply on domain are known as domain constraints. These restrictions are applied to every value of attribute.
  - By following these constraints, we can keep consistency in database. These restrictions include data types(integer, varchar, char, time format, date format etc), size of variables, checks (like value not null etc).
  - Domain integrity ensures that only a valid range of values are allowed to be stored in a column.
  - e.g. create table employee
    (
    Eid char(4),
    Name char(20),
    Age integer(2),
    Salary integer,
    primary key(Eid),
    check (age>18)
    );



Employee			
EID	**Name**	**Age**	**Salary**
1	Ram	22	10000
2	Sham	-18	5600
3	Mohan	25	8000
4	Rohan	20	ABC
5	Sohan	23	11000

- **Key Constraints:** In any relation R, if attribute A is primary key then A must have unique value or we can say that primary key attribute must have unique value. Duplicate values in primary key are invalid.
- **Tuple Uniqueness Constraints:** In any relation R, all tuples in relation R must have distinct values. In other words, duplicate tuples within a single relation are not allowed.