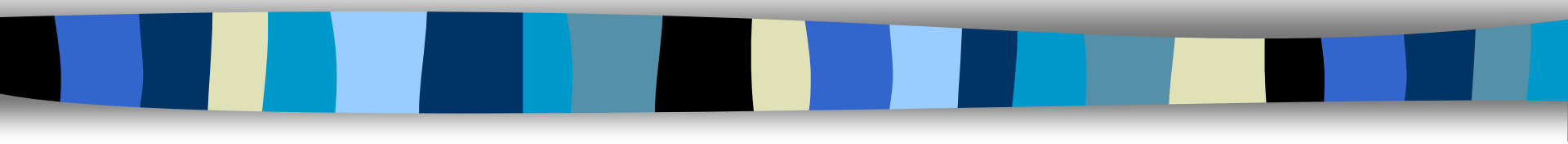
Lecture 3



Introduction to RDBMS and Relational Model - 2

Monday, September 10, 2001

Terms in Relational Model

- Candidate key
  - **General definition:**
    - **A set of attributes which can uniquely identify each row in the table**
  - **Relational Model Definition:**
    - **Let *R* be a relation. Then candidate key for *R* is a subset of the set of attributes of *R* say *K*, such that:**

1 **Uniqueness Property:**

no two distinct tuples of *R* have the same value for *K*.

2 **Irreducibility property:**

no proper subset of *K* has the uniqueness propert.

ID	Name	Age	Department	NIC
S1	Ahmad	23	Sales	245-77-245367
S2	Salman	34	Marketing	234-66-245368
S3	Karim	21	Sales	255-79-256369
S4	Tariq	29	Admin	245-71-325370
S5	Sadiq	32	Sales	245-68-345371

Possible Candidate Keys:

- **ID**
- **NIC**

Terms in Relational Model

- Primary key
  - **is a unique identifier for the table, that is , a column or column combination with the property that, at any given time, no two rows of the table contain same value in that column or column combination.**
  - **One of the candidate keys**
- Alternate Keys
  - **All candidate keys other than primary key are called alternate keys**

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S1	Ahmad	23	Sales	245-77-245367
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S4	Tariq	29	Admin	245-71-325370
S5	Sadiq	32	Sales	245-68-345371

Primary Key: ID

Alternate Key: NIC

Terms in Relational Model

- Foreign key
  - **General definition:**
    - **A set of attributes in a table whose values are taken from the values of candidate key of some other table**
  - **Relational Model Definition:**
    - **Let *R2* be a relation. Then a foreign key in *R2* is a subset is a subset of the set of attributes of *R2,* say *FK*, such that:**

    1 **there exists a base relation *R1* (*R1* and *R2* not necessarily distinct) with a candidate key *CK* and**

    2 **for all time, each value of *FK* in the current value of *R2* is identical to the value of *CK* in some tuple in the current value of *R1***

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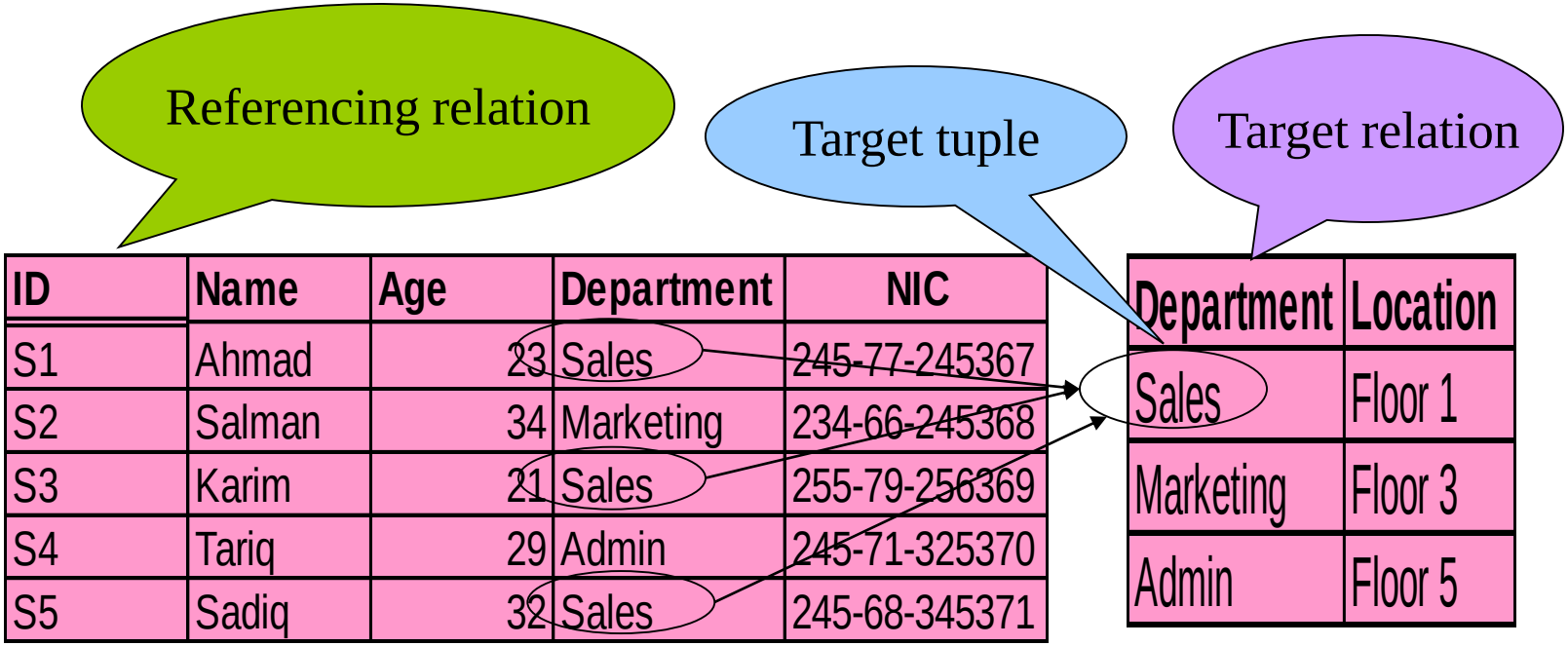
S5	Sadiq	32	Sales	245-68-345371

Department	Location
Sales	Floor 1
Marketing	Floor 3
Admin	Floor 5

Same values

Terms in Relational Model

- Referenced tuple or Target tuple
- Referencing relation
- Referenced relation or Target relation
- Simple key vs Composite key



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Department	Location
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Marketing	Floor 3
Admin	Floor 5

Terms in Relational Model

- Foreign key rules
  - **Restricted**
  - **Cascade**
  - **possible cases: update, delete**
- Integrity

  accuracy or correctness of data in database
- Integrity Rules
  - **inform DBMS of certain constraints in the real world.**
    - **Weights cant be naegative**
    - **if city is Lahore then code is 042**
- Referential integrity

  database must not contain any unmatced foreign key values
- Nulls
  - **candidate keys shouldn't have null values**

Assignment # 2

- Consider the relations given below. Provide following information for each of them:

  name of relation, heading of relation, cardinality, degree, domain of each attribute.
- What would be the maximum number of elements in the domain of an attribute in a relation if its cardinality is 13.

Parts

P#	P.Name	Color	Weight	City
P1	Nut	Red	12	Lahore
P2	Bolt	Green	17	Karachi
P3	Screw	Blue	17	Multan
P4	Screw	Red	14	Lahore
P5	Cam	Blue	12	Karachi
P6	Cog	Red	19	Lahore

Supplies

S#	P#	Qty
S1	P1	300
S1	P2	200
S1	P3	400
S1	P4	200
S1	P5	100
S1	P6	100
S2	P1	300
S2	P2	400
S3	P2	200
S4	P2	200
S4	P4	300
S4	P5	400