

How to deal with the possible violation

- Cancel the operation that causes the violation is to **REJECT** the operation
- OR
- Execute a user-specified error-correction routine

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Delete Operation



```
DELETE FROM table_name
WHERE conditions;
```

- Delete may violate any of the constraints:
 - **Domain constraint:**
 - NO Violation
 - **Key constraint:**
 - NO Violation
 - **Referential integrity:**
 - If the primary key value of the tuple being deleted is referenced from other tuples in the database
 - **Entity integrity:**
 - NO Violation

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STUDENTS				RESULTS			
SID	FIRST	LAST	...	SID	CAT	ENO	POINTS
101	Ann	Smith	...	101	H	1	10
102	Michael	Jones	...	101	H	2	8
103	Richard	Turner	...	102	H	1	9
104	Maria	Brown	...	102	H	2	9
				103	H	1	5

Example

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How to deal with the possible violation

- Can be remedied by several actions: RESTRICT, CASCADE, SET NULL
- **RESTRICT option: reject the deletion**
 - **CASCADE option:** propagate the new primary key value into the foreign keys of the referencing tuples
 - **SET NULL option:** set the foreign keys of the referencing tuples to NULL

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Update Operation

```

UPDATE clause {UPDATE country
               {SET population =  $\underbrace{\text{population}+1}_{\text{expression}}$  } statement
               {WHERE name =  $\underbrace{\text{'USA'}}_{\text{predicate}}$  ;}
  
```

- Any of the other constraints may also be violated, depending on the attribute being updated
- **Domain constraint:**
 - Updating an ordinary attribute (neither PK nor FK):
- **Key constraint:**
 - Updating the primary key (PK)
 - Similar to a DELETE followed by an INSERT
- **Referential integrity:**
 - Updating a foreign key (FK):
- **Entity integrity:**
 - Updating the primary key with Null Value
- **UPDATE may violate domain constraint and NOT NULL constraint on an attribute being modified**

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How to deal with the possible violation

- Can be remedied by several actions: RESTRICT, CASCADE, SET NULL
- **RESTRICT option: reject the deletion**
 - **CASCADE option:** propagate the new primary key value into the foreign keys of the referencing tuples
 - **SET NULL option:** set the foreign keys of the referencing tuples to NULL
 - Same as Delete

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