Database Modifications

Database Modifications

- A modification command does not return a result as a query does, but it changes the database in some way.

- There are three kinds of modifications:
  1. *Insert* a tuple or tuples.
  2. *Delete* a tuple or tuples.
  3. *Update* the value(s) of an existing tuple or tuples.

Insertion

- To insert a single tuple:

  INSERT INTO <relation>

  VALUES (<list of values>);

Example

- Consider **MovieExec**(name, address, cert#, netWorth)

```
INSERT INTO MovieExec
VALUES('Melanie Griffith', '34 Boston Blvd', 700, 300000);
```

Specifying Attributes in INSERT

- We may add to the relation name a list of attributes.

```
INSERT INTO MovieExec(name, address, cert, netWorth)
VALUES('Melanie Griffith', NULL, 700, 3000000);
```

- There are two reasons to do so:
  1. We forget the standard order of attributes for the relation.
  2. We don’t have values for all attributes.

Inserting Many Tuples

- We may insert the entire result of a query into a relation, using the form:

```
INSERT INTO <relation>
<query>;
```

Example

```
CREATE TABLE DisneyMovies(
    name VARCHAR2(25),
    year INT
 );

INSERT INTO DisneyMovies
        SELECT title, year
        FROM Movie
        WHERE studioName = 'Disney';
```

Deletion

- To delete tuples satisfying a condition from some relation:

```
DELETE FROM <relation>
WHERE <condition>;
```

Example

- Delete from the **Movie** table the Disney's movies:

```
DELETE FROM Movie
WHERE studioName ='Disney';
```

Example: Delete all Tuples

- Make the relation Movie empty:

```
DELETE FROM Movie;
```

- No WHERE clause needed here.

Updates

- To change certain attributes in certain tuples of a relation:

```
UPDATE <relation>
SET <list of attribute assignments>
WHERE <condition on tuples>;
```

Example

- Change the length of 'Godzilla' to 200.

```
UPDATE Movies
SET length = 200
WHERE title = 'Godzilla';
```

Another Example

- Suppose that Tom Cruise's movies have approximately 20 min of info before starting.
- So, let's take that 20 min off.

```
UPDATE Movies
SET length = length - 20
WHERE (title, year) IN
    (SELECT title, year
    FROM StarsIn
    WHERE starname = 'Tom Cruise');
```

Exercise

Product(maker, model, type)

PC(model, speed, ram, hd, rd, price)

Laptop(model, speed, ram, hd, screen, price)

Printer(model, color, type, price)

a) Using two INSERT statements, store in the database the fact that PC model 1100 is made by manufacturer C, has speed 1800, RAM 64g, hard disk 2t, and sells for $2000.

b) Insert the facts that for every PC there is a laptop with the same manufacturer, speed, RAM and hard disk, a 15-inch screen, a model number 1000 greater, and a price $500 more.

c) Delete all PC's with less than 500 GB of hard disk.

d) Delete all laptops made by a manufacturer that doesn't make printers.

e) Manufacturer A buys manufacturer B. Change all products made by B so they are now made by A.

f) For each PC, double the amount of RAM and add 1t to the amount of hard disk.

g) For each laptop made by manufacturer B, add one inch to the screen size and subtract $100 from the price.

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Laptop(model, speed, ram, hd, screen, price)

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(a) Using two INSERT statements, store in the database the fact that PC model 1100 is made by manufacturer C, has speed 1800, RAM 64g, hard disk 2t, and sells for $2000.

Product(maker, model, type)

PC(model, speed, ram, hd, rd, price)

Laptop(model, speed, ram, hd, screen, price)

Printer(model, color, type, price)

(b) Insert the facts that for every PC there is a laptop with the same manufacturer, speed, RAM and hard disk, a 15-inch screen, a model number 1000 greater, and a price $500 more.

Product(maker, model, type)

PC(model, speed, ram, hd, rd, price)

Laptop(model, speed, ram, hd, screen, price)

Printer(model, color, type, price)

(c) Delete all PC's with less than 500 GB of hard disk.

Product(maker, model, type)

PC(model, speed, ram, hd, rd, price)

Laptop(model, speed, ram, hd, screen, price)

Printer(model, color, type, price)

(d) Delete all laptops made by a manufacturer that doesn't make printers.

Product(maker, model, type)

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(g) For each laptop made by manufacturer B, add one inch to the screen size and subtract $100 from the price.