SQL data types, insert, update, delete

Agenda

- Basic Data Types in MySQL

- Inserting Data

- Updating Data

- Deleting Data

Basic Data Types in MySQL

Basic Data Types in MySQL

- MySQL includes a number of data types such as:

  o VARCHAR*(size)* - variable-length string

  o CHAR*(size)* - fixed-length string

Basic Data Types in MySQL

- MySQL includes a number of data types such as:

  o DOUBLE([size, [d]]) - a large number with floating point number

  o FLOAT([size, [d]]) - a number with floating point number

  o DECIMAL(size, d) - a double stored as a string

Basic Data Types in MySQL

- MySQL includes a number of data types such as:

  o BIGINT(size) - large integer (8 bytes)

  o INT(size) - integer (4 bytes)

  o MEDIUMINT(size) - medium sized integer (3 bytes)

  o SMALLINT(size) - small integer (2 bytes)

Basic Data Types in MySQL

- MySQL includes a number of data types such as:

  o TEXT - large block of text

  o BLOB - binary data

Basic Data Types in MySQL

- MySQL includes a number of data types such as:

  o DATE - date

  o TIMESTAMP - date and time

Updating, Inserting and Deleting Data

Inserting Data in the Tables

Inserting data

- `INSERT` command
  - `INSERT INTO <table> VALUES (<values>)`
  - `INSERT INTO <table>(<columns>) VALUES (<values>)`
  - `INSERT INTO <table> SELECT <values>`

```
INSERT INTO COUNTRY
VALUES ('1', 'Bulgaria', 'Sofia')

INSERT INTO COUNTRY(NAME, CAPITAL)
VALUES ('Bulgaria', 'Sofia')

INSERT INTO COUNTRY(COUNTRY_ID, NAME, CAPITAL)
SELECT NULL, COUNTRY, CAPITAL FROM CAPITALS
```

Inserting data

- We can insert into a table data selected from other SQL query

  o The columns, their type and order should match

```
INSERT INTO REGIONS(REGION_ID, REGION_NAME)
   SELECT 1000+EMPLOYEE_ID,
     LAST_NAME || '''s region'
   FROM EMPLOYEES


SELECT * FROM REGIONS
```

REGION_ID	REGION_NAME
1100	King's region
1101	John's region
…	…

Inserting data

- When some of the columns in an insert statement are omitted then they are given either:

  o A NULL value

  o A DEFAULT VALUE (if defined for the column)

- If a value for a column is not defined and the column has a NOT NULL constraint (and no default value is defined) - the insert statement fails to execute

Updating, Inserting and Deleting Data

Updating Data in the Tables

Updating data

- `UPDATE` command

    - `UPDATE <table> SET <column=expression> WHERE <condition>`

    - Note: Don't forget the WHERE clause!

```
UPDATE PERSONS
SET NAME = 'Updated Name'
WHERE PERSON_ID = 1

UPDATE EMPLOYEES
SET SALARY = SALARY * 1.10
WHERE DEPARTMENT_ID = 3
```

Updating data

- Updating joined tables is done by nested `SELECT`

```
UPDATE
   (SELECT SALARY
    FROM EMPLOYEES E INNER JOIN DEPARTMENTS D
    ON E.DEPARTMENT_ID = D.DEPARTMENT_ID
    WHERE D.NAME = 'Accounting')
SET SALARY = SALARY * 1.10
```

Updating, Inserting and Deleting Data

Deleting Data from Tables

Deleting data

- Deleting rows from a table

  - `DELETE FROM <table> WHERE <condition>`

    ```
    DELETE FROM PERSONS WHERE PERSON_ID = 1

    DELETE FROM PERSONS WHERE NAME LIKE 'S%'
    ```

  - Note: Don't forget the `WHERE` clause!

- Delete all rows from a table at once

  - `TRUNCATE TABLE <table>`

    ```
    TRUNCATE TABLE PERSONS
    ```

Deleting data

- Deleting from joined tables is done by nested `SELECT`
- Example: fire the entire IT staff

```
DELETE FROM EMPLOYEES
WHERE EMPLOYEE_ID IN
   (SELECT E.EMPLOYEE_ID
    FROM EMPLOYEES E JOIN DEPARTMENTS D
      ON (E.DEPARTMENT_ID=D.DEPARTMENT_ID)
    WHERE D.DEPARTMENT_NAME='IT')
```

Questions ?

Exercises (1)

1. What types do we have in MySQL ?

2. What is the BLOB type ?

3. Insert a new employee with name 'Richard Stone'

4. Change the e-mail of the employee 'Richard Stone' to 'rstone@sample.com'

5. Delete all employees whose family name starts with 'St'