Chapter 5

How to insert, update, and delete data

Objectives

Applied

- Create a copy of a table that can be used for testing INSERT, UPDATE, and DELETE statements.
- Given the specifications for an action that modifies data, code the INSERT, UPDATE, or DELETE statement for doing the action.

Knowledge

- Describe MySQL's default behavior when you execute an INSERT, UPDATE, or DELETE statement.
- Explain how to handle null values and default values when coding INSERT and UPDATE statements.

The syntax of the CREATE TABLE AS statement

```
CREATE TABLE table_name AS select_statement
```

Create a complete copy of the Invoices table

```
CREATE TABLE invoices_copy AS
SELECT *
FROM invoices
```

Create a partial copy of the Invoices table

```
CREATE TABLE old_invoices AS
SELECT *
FROM invoices
WHERE invoice_total - payment_total - credit_total = 0
```

Create a table with summary rows from the Invoices table

```
CREATE TABLE vendor_balances AS
SELECT vendor_id, SUM(invoice_total) AS sum_of_invoices
FROM invoices
WHERE (invoice_total - payment_total - credit_total) <> 0
GROUP BY vendor_id
```

Delete a table

```
DROP TABLE old_invoices
```

Warnings

- When you use the CREATE TABLE AS statement to create a table, only the column definitions and data are copied.
- Definitions of primary keys, foreign keys, indexes, and so on are not included in the new table.

The syntax of the INSERT statement

```
INSERT [INTO] table_name [(column_list)]
VALUES (expression_1[, expression_2]...)[,
       (expression_1[, expression_2]...)]...
```

The column definitions for the Invoices table

```
invoice_id          INT               NOT NULL
                    AUTO_INCREMENT,
vendor_id           INT               NOT NULL,
invoice_number      VARCHAR(50)       NOT NULL,
invoice_date        DATE              NOT NULL,
invoice_total       DECIMAL(9,2)      NOT NULL,
payment_total       DECIMAL(9,2)      NOT NULL
                    DEFAULT 0,
credit_total        DECIMAL(9,2)      NOT NULL
                    DEFAULT 0,
terms_id            INT               NOT NULL,
invoice_due_date    DATE              NOT NULL,
payment_date        DATE
```

Insert a single row without using a column list

```
INSERT INTO invoices VALUES
(115, 97, '456789', '2014-08-01', 8344.50, 0, 0, 1,
'2014-08-31', NULL)
```

```
(1 row affected)
```

Insert a single row using a column list

```
INSERT INTO invoices
    (vendor_id, invoice_number, invoice_total, terms_id,
    invoice_date, invoice_due_date)
VALUES
    (97, '456789', 8344.50, 1, '2014-08-01',
    '2014-08-31')
```

```
(1 row affected)
```

Insert multiple rows

```
INSERT INTO invoices VALUES
    (116, 97, '456701', '2014-08-02', 270.50, 0, 0, 1,
    '2014-09-01', NULL),
    (117, 97, '456791', '2014-08-03', 4390.00, 0, 0, 1,
     '2014-09-02', NULL),
    (118, 97, '456792', '2014-08-03', 565.60, 0, 0, 1,
    '2014-09-02', NULL)
```

```
(3 rows affected)
```

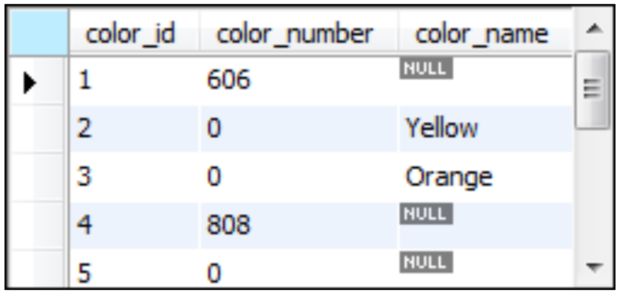
The column definitions for the Color_Sample table

```
color_id        INT            NOT NULL     AUTO_INCREMENT,
color_number    INT            NOT NULL     DEFAULT 0,
color_name      VARCHAR(50)
```

INSERT statements for the Color_Sample table

```
INSERT INTO color_sample (color_number)
VALUES (606)

INSERT INTO color_sample (color_name)
VALUES ('Yellow')

INSERT INTO color_sample
VALUES (DEFAULT, DEFAULT, 'Orange')

INSERT INTO color_sample
VALUES (DEFAULT, 808, NULL)

INSERT INTO color_sample
VALUES (DEFAULT, DEFAULT, NULL)
```

The Color_Sample table with the inserted rows



color_id	color_number	color_name
1	606	NULL
2	0	Yellow
3	0	Orange
4	808	NULL
5	0	NULL

The syntax for using a subquery to insert one or more rows

```
INSERT [INTO] table_name [(column_list)] select_statement
```

Insert paid invoices into the Invoice_Archive table

```
INSERT INTO invoice_archive
SELECT *
FROM invoices
WHERE invoice_total - payment_total - credit_total = 0
```

```
(103 rows affected)
```

The same statement with a column list

```
INSERT INTO invoice_archive
    (invoice_id, vendor_id, invoice_number,
    invoice_total, credit_total, payment_total, terms_id,
    invoice_date, invoice_due_date)
SELECT
    invoice_id, vendor_id, invoice_number,
    invoice_total, credit_total, payment_total, terms_id,
    invoice_date, invoice_due_date
FROM invoices
WHERE invoice_total - payment_total - credit_total = 0
```

```
(103 rows affected)
```

The syntax of the UPDATE statement

```
UPDATE table_name
SET column_name_1 = expression_1
 [, column_name_2 = expression_2]...
[WHERE search_condition]
```

Update two columns for a single row

```
UPDATE invoices
SET payment_date = '2014-09-21',
    payment_total = 19351.18
WHERE invoice_number = '97/522'
```

```
(1 row affected)
```

Update one column for multiple rows

```
UPDATE invoices
SET terms_id = 1
WHERE vendor_id = 95
```

```
(6 rows affected)
```

Update one column for one row

```
UPDATE invoices
SET credit_total = credit_total + 100
WHERE invoice_number = '97/522'
```

```
(1 row affected)
```

Safe update mode in MySQL Workbench

- By default, MySQL Workbench runs in safe update mode.
- Safe update mode prevents you from updating rows if the WHERE clause is omitted or doesn’t refer to a primary key or foreign key column.
- You can turn safe update mode off by selecting the Edit→Preferences command, selecting the SQL Editor tab, changing the “safe update” option, and restarting MySQL Workbench.

Warning

- If you turn off safe update mode and omit the WHERE clause, all rows in the table will be updated.

Update all invoices for a vendor

```
UPDATE invoices
SET terms_id = 1
WHERE vendor_id =
   (SELECT vendor_id
    FROM vendors
    WHERE vendor_name = 'Pacific Bell')
```

```
(6 rows affected)
```

Update the terms for all invoices for vendors in three states

```
UPDATE invoices
SET terms_id = 1
WHERE vendor_id IN
   (SELECT vendor_id
    FROM vendors
    WHERE vendor_state IN ('CA', 'AZ', 'NV'))
```

```
(40 rows affected)
```

The syntax of the DELETE statement

```
DELETE FROM table_name
[WHERE search_condition]
```

Delete one row

```
DELETE FROM general_ledger_accounts
WHERE account_number = 306
```

```
(1 row affected)
```

Delete one row using a compound condition

```
DELETE FROM invoice_line_items
WHERE invoice_id = 78 AND invoice_sequence = 2
```

```
(1 row affected)
```

Delete multiple rows

```
DELETE FROM invoice_line_items
WHERE invoice_id = 12
```

```
(4 rows affected)
```

Use a subquery in a DELETE statement

```
DELETE FROM invoice_line_items
WHERE invoice_id IN
    (SELECT invoice_id
     FROM invoices
     WHERE vendor_id = 115)
```

```
(4 rows affected)
```

Warning

- If you turn safe update mode off in MySQL Workbench and omit the WHERE clause from a DELETE statement, all the rows in the table will be deleted.