

# 数据库基础

- 关系型数据库入门





# SQL Language





# Data Definition Language

- Database
  - Create Database
  - Drop Database
  - Alter Database
- Table
  - Create Table
  - Alter Table
  - Drop Table
  - Create Index
  - Create View



# Create tables

```
CREATE TABLE IF NOT EXISTS client(  
  client_id INT NOT NULL PRIMARY KEY,  
  name VARCHAR(100) NOT NULL,  
  type VARCHAR(45) NULL  
);
```

```
CREATE TABLE IF NOT EXISTS product(  
  product_id INT NOT NULL,  
  name varchar(50) NOT NULL,  
  description varchar(255),  
  class varchar(255) NOT NULL,  
  color varchar(45) NOT NULL,  
  clock binary(1),  
  msrp int,  
  primary key (product_id)  
);
```

```
CREATE TABLE IF NOT EXISTS sales(  
  tran_id INT UNSIGNED NOT NULL AUTO_INCREMENT,  
  date DATE NOT NULL,  
  product_id INT,  
  client_id INT,  
  price DECIMAL NOT NULL,  
  quantity INT,  
  
  PRIMARY KEY(tran_id),  
  INDEX (product_id),  
  
  FOREIGN KEY (product_id)  
    REFERENCES product(product_id)  
    ON DELETE NO ACTION  
    ON UPDATE CASCADE  
);
```



## Drop tables

```
drop table if exists sales;
```



## Alter tables

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Used to

- Add/drop/rename columns
- Add/drop/rename indexes
- Add/drop keys
- Add/drop constraints
- Change data type

```
ALTER TABLE sales
  ADD FOREIGN KEY (client_id)
  REFERENCES client (client_id)
  ON DELETE NO ACTION
  ON UPDATE CASCADE
;
```



# Data Manipulation Language

- Insert Into
- Update
- Delete
- Select



# Data Type

MySQL Data Types	
CHAR	String (0 – 255)
VARCHAR	String (0 – 255)
TINYTEXT	String (0 – 255)
TEXT	String (0 – 65535)
BLOB	String (0 – 65535)
MEDIUMTEXT	String (0 – 16777215)
MEDIUMBLOB	String (0 – 16777215)
LONGTEXT	String (0 – 4294967295)
LOBLOB	String (0 – 4294967295)

TINYINT x	Integer (–128 to 127)
SMALLINT x	Integer (–32768 to 32767)
MEDIUMINT x	Integer (–8388608 to 8388607)
INT x	Integer (–2147483648 to 2147483647)
BIGINT x	Integer (–9223372036854–775808 to 922337203685–4775807)
FLOAT	Decimal (precise to 23 digits)
DOUBLE	Decimal (24 to 53 digits)
DECIMAL	"DOUBLE" stored as string

DATE	YYYY–MM–DD
DATETIME	YYYY–MM–DD HH:MM:SS
TIMESTAMP	YYYYMMDDHHMMSS
TIME	HH:MM:SS





## Add Records – INSERT INTO

```
INSERT INTO product
VALUES
(1, 'E-ZIP', 'Zip', 'EVERYDAY', 'GREEN', 'Y', 59.95),
(2, 'E-FLX', 'Flex', 'EVERYDAY', 'BLACK', 'N', 99.95),
(3, 'A-BLZ', 'Blaze', 'ACTIVE', 'PURPLE', 'Y', 199.95),
(4, 'P-SUG', 'Surge', 'PERFORMANCE', 'BLACK', 'Y', 249.95)
;
```

Product_id	Code	Name	Class	Color	Has_clock	msrp
1	E-ZIP	Zip	EVERYDAY	GREEN	Y	59.95
2	E-FLX	Flex	EVERYDAY	BLACK	N	99.95
3	A-BLZ	Blaze	ACTIVE	PURPLE	Y	199.95
4	P-SUG	Surge	PERFORMANCE	BLACK	Y	249.95



## Add Records – INSERT INTO

```
INSERT INTO sales
(date, product_id, client_id, price, quantity)
VALUES
('2016-6-1', 1, 1, 40, 10),
('2016-6-5', 1, 2, 30, 5),
('2016-6-8', 2, 1, 80, 8),
('2016-6-8', 2, 2, 70, 7),
('2016-6-13', 3, 2, 150, 5),
('2016-6-18', 3, 4, 150, 10),
('2016-6-20', 2, 4, 40, 15)
;
```

Tran_id	date	Product_id	Client_id	Price	Quantity
1	2016-06-01	1	1	40	10
2	2016-06-05	1	2	30	5
3	2016-06-08	2	1	80	8
4	2016-06-08	2	2	70	7
5	2016-06-13	3	2	150	5
6	2016-06-18	3	4	150	10
7	2016-06-20	2	4	40	15



# Update Records – UPDATE

## Update one record

```
UPDATE sales
SET date = '2016-06-11', quantity=12
WHERE tran_id=10;
```

Tran_id	date	Product_id	Client_id	price	quantity
10	2016-06-10	1	3	40	15



Tran_id	date	Product_id	Client_id	price	quantity
10	2016-06-11	1	3	40	12

## Update multiple records

```
UPDATE sales
SET date = '2016-6-2'
WHERE date = '2016-6-1' and product_id=1;
```

Tran_id	date	Product_id	Client_id	price	quantity
1	2016-06-01	1	1	40	10
2	2016-06-01	1	2	30	5



Tran_id	date	Product_id	Client_id	price	quantity
1	2016-06-02	1	1	40	10
2	2016-06-02	1	2	30	5



# Delete Records

```
DELETE from product
where product_id = '10';
```

How many rows are affected?

Product:

product id	code	name	desc	class	color	has clock	msrp
2	E-FLX	Flex		EVERYDAY	BLACK	N	99.95
3	A-BLZ	Blaze		ACTIVE	PURPLE	Y	199.95
4	P-SUG	Surge		PERFORMANCE	BLACK	Y	249.95
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Sales:

tran id	date	product id	client id	price	quantity
3	2016-06-01	2	1	80	8
4	2016-06-01	2	2	70	7
5	2016-06-03	3	3	150	5
6	2016-06-03	3	4	150	10
7	2016-06-05	4	2	200	5
8	2016-06-05	4	4	200	10
9	2016-06-08	3	3	150	5
NULL	NULL	NULL	NULL	NULL	NULL



谢谢

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