

```
mysql> SELECT ORDERNUMBER,STATUS FROM ORDERS WHERE ORDERNUMBER>10320 AND STATUS!='SHIPPED';
+-----+-----+
| ORDERNUMBER | STATUS      |
+-----+-----+
| 10327 | Resolved   |
| 10334 | On Hold    |
| 10367 | Resolved   |
| 10386 | Resolved   |
| 10401 | On Hold    |
| 10406 | Disputed   |
| 10407 | On Hold    |
| 10414 | On Hold    |
| 10415 | Disputed   |
| 10417 | Disputed   |
| 10420 | In Process |
| 10421 | In Process |
| 10422 | In Process |
| 10423 | In Process |
| 10424 | In Process |
| 10425 | In Process |
+-----+-----+
16 rows in set (0.00 sec)
```

```
mysql> SELECT ORDERNUMBER,STATUS FROM ORDERS WHERE ORDERNUMBER>10320 AND STATUS NOT IN ('SHIPPED','IN PROCESS');
+-----+-----+
| ORDERNUMBER | STATUS      |
+-----+-----+
| 10327      | Resolved   |
| 10334      | On Hold    |
| 10367      | Resolved   |
| 10386      | Resolved   |
| 10401      | On Hold    |
| 10406      | Disputed   |
| 10407      | On Hold    |
| 10414      | On Hold    |
| 10415      | Disputed   |
| 10417      | Disputed   |
+-----+-----+
10 rows in set (0.00 sec)
```

a primary key is a specific choice of a minimal set of columns that uniquely specify a row in a table.

<u>student id</u>	<u>name</u>	<u>major</u>
1	Jack	Biology
2	Kate	Sociology
3	Claire	English
4	Jack	Biology
5	Mike	Comp. Sci

✓ Null ✓
X Null ✓

Primary Keys
→ Uniquely identifies a Row in a

- Table.
① Avoid Duplicacy
② Consistency of Data

#NULL means nothing, None in Python

① Can we have Primary Key column as NULL?

⇒ No, Sql does not allow this

② Can I insert 2 rows with same primary keys col. values

⇒ No, Sql does not allow this.

```

mysql> USE CHOW;
Database changed
mysql> CREATE TABLE student(
    -> student_id INT PRIMARY KEY,
    -> name VARCHAR(10),
    -> major VARCHAR(10));
Query OK, 0 rows affected (0.04 sec)

```

Describe

```

mysql> DESC student;
+-----+-----+-----+-----+-----+
| Field | Type  | Null | Key   | Default | Extra |
+-----+-----+-----+-----+-----+
| student_id | int   | NO   | PRI   | NULL    |       |
| name        | varchar(10) | YES  |       | NULL    |       |
| major       | varchar(10) | YES  |       | NULL    |       |
+-----+-----+-----+-----+-----+
3 rows in set (0.01 sec)

```

```

mysql> INSERT INTO student VALUES
    -> (1, 'JACK', 'BIOLOGY'),
    -> (2, 'KATE', 'SOCIOLOGY'),
    -> (3, 'CLAIRe', 'ENGLISH'),
    -> (4, 'JACK', 'BIOLOGY'),
    -> (5, 'MIKE', 'COMP. SCI');
Query OK, 5 rows affected (0.01 sec)
Records: 5  Duplicates: 0  Warnings: 0

```

```

mysql> SELECT * FROM STUDENT;
+-----+-----+-----+
| student_id | name   | major  |
+-----+-----+-----+
| 1          | JACK   | BIOLOGY |
| 2          | KATE   | SOCIOLOGY |
| 3          | CLAIRe | ENGLISH |
| 4          | JACK   | BIOLOGY |
| 5          | MIKE   | COMP. SCI |
+-----+-----+-----+
5 rows in set (0.00 sec)

```

```
mysql> INSERT INTO student VALUES  
    -> (NULL,'JACK','MATHS');  
ERROR 1048 (23000): Column 'student_id' cannot be null  
mysql> INSERT INTO student VALUES  
    -> (3,'NILESH','TRIOLIPI');  
ERROR 1062 (23000): Duplicate entry '3' for key 'student.PRIMARY'  
mysql>
```

Sensex

Date	Name	Balance	Position
28-Apr-96	Upple	53.45	2
14-Aug-97	Crosoft	145.76	1
06-Sep-93	Ladobe	49.03	3

Primary Key
→ Name

```
mysql> INSERT INTO sensex values
    -> ('1996-04-28','Upple',53.45,2),
    -> ('1997-08-14','Crosoft',145.76,1),
    -> ('1993-09-06','Ladobe',49.03,3);
```

```
Query OK, 3 rows affected (0.01 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

```
mysql> SELECT * FROM sensex;
+-----+-----+-----+-----+
| Date      | Name     | Balance | Position |
+-----+-----+-----+-----+
| 1997-08-14 | Crosoft | 145.76 | 1         |
| 1993-09-06 | Ladobe   | 49.03  | 3         |
| 1996-04-28 | Upple    | 53.45  | 2         |
+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

Primary Key

customers
* customerNumber
customerName
contactLastName
contactFirstName
phone
addressLine1
addressLine2
city
state
postalCode
country
salesRepEmployeeNumber
creditLimit

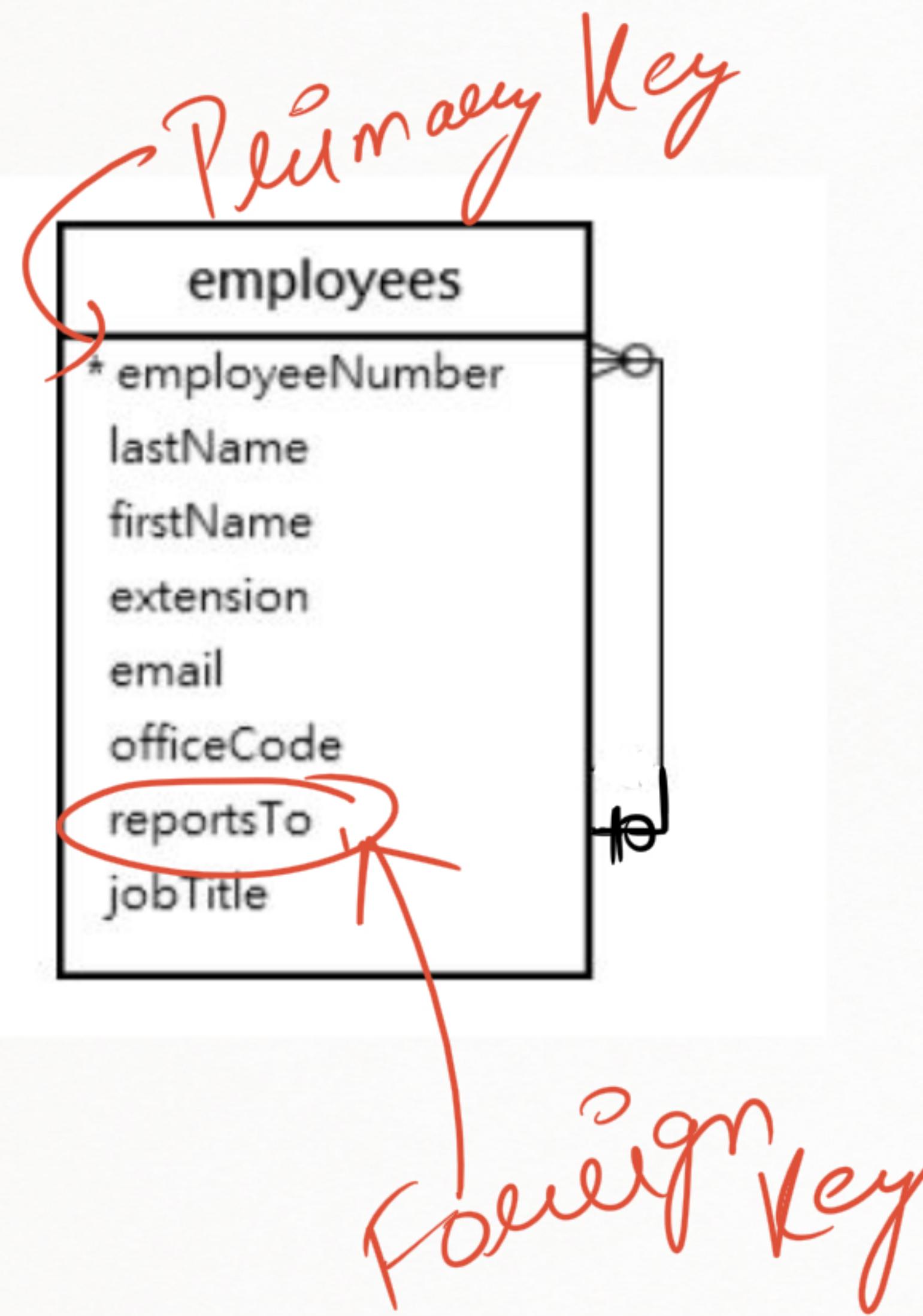
Foreign Key

orders
* orderNumber
orderDate
requiredDate
shippedDate
status
comments
customerNumber

Foreign Key

a foreign key is a set of attributes in a table that refers to the primary key of another table. The foreign key links these two tables.

Foreign Key



A hand-drawn diagram of the 'employees' table with handwritten annotations. The columns are labeled 'embNo', 'lastName', and 'reportTo'. The rows are numbered 1, 2, and 3. Row 1 contains 'Chouhan' and 'NULL'. Row 2 contains 'Shukla' and '1'. Row 3 contains 'Mujerati' and '1'. Red circles highlight the values '1', 'Shukla', and 'Mujerati'. A red arrow points from the 'reportsTo' column in the ER diagram to the value '1' in the 'reportTo' column of the table. The word 'Primary Key' is written in red above the table.

embNo	lastName	reportTo
1	Chouhan	NULL
2	Shukla	1
3	Mujerati	1

Primary Key

a foreign key is a set of attributes in a table that refers to the primary key of another table. The foreign key links these two tables.

Employee

emp_id	first_name	last_name	birth_date	sex	salary	super_id	branch_id
100	David	Wallace	1967-11-17	M	250,000	NULL	1
101	Jan	Levinson	1961-05-11	F	110,000	100	1
102	Michael	Scott	1964-03-15	M	75,000	100	2
103	Angela	Martin	1971-06-25	F	63,000	102	2
104	Kelly	Kapoor	1980-02-05	F	55,000	102	2
105	Stanley	Hudson	1958-02-19	M	69,000	102	2
106	Josh	Porter	1969-09-05	M	78,000	100	3
107	Andy	Bernard	1973-07-22	M	65,000	106	3
108	Jim	Halpert	1978-10-01	M	71,000	106	3

Branch

branch_id	branch_name	mgr_id	mgr_start_date
1	Corporate	100	2006-02-09
2	Scranton	102	1992-04-06
3	Stamford	106	1998-02-13

Works_With

emp_id	client_id	total_sales
105	400	55,000
105	401	267,000
108	402	22,500
107	403	5,000
108	403	12,000
105	404	33,000
107	405	26,000
105	406	15,000
105	406	130,000

Client

client_id	client_name	branch_id
400	Dunmore Highschool	2
401	Lackawana Country	2
402	FedEx	3
403	John Daly Law, LLC	3
404	Scranton Whitepages	2
405	Times Newspaper	3
406	FedEx	2

Branch Supplier

branch_id	supplier_name	supply_type
2	Hammer Mill	Paper
2	Uni-ball	Writing Utensils
3	Patriot Paper	Paper
2	J.T. Forms & Labels	Custom Forms
3	Uni-ball	Writing Utensils
3	Hammer Mill	Paper
3	Stamford Lables	Custom Forms

Foreign Key

What happens to works with emp_id 102 when you delete 102 from Employee?
 → We cannot make P.K as Null.