

# The NOT NULL Constraint

- Ensures that null values are not permitted for the column

**EMP**

EMPNO	ENAME	JOB	...	COMM	DEPTNO
7839	KING	PRESIDENT			10
7698	BLAKE	MANAGER			30
7782	CLARK	MANAGER			10
7566	JONES	MANAGER			20
...					

**NOT NULL constraint**  
(no row can contain  
a null value for  
this column)

**Absence of NOT NULL  
constraint**  
(any row can contain  
null for this column)

**NOT NULL constraint**

# The NOT NULL Constraint

## ➤ Defined at the column level

```
SQL> CREATE TABLE emp (  
2      empno      NUMBER(4) ,  
3      ename      VARCHAR2(10) NOT NULL,  
4      job        VARCHAR2(9) ,  
5      mgr        NUMBER(4) ,  
6      hiredate   DATE ,  
7      sal        NUMBER(7,2) ,  
8      comm       NUMBER(7,2) ,  
9      deptno     NUMBER(7,2) NOT NULL) ;
```


# The UNIQUE Key Constraint

**DEPT**  **UNIQUE key constraint**

DEPTNO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

 **Insert into**

50	SALES	DETROIT
60		BOSTON

 **Not allowed  
(DNAME=SALES  
already exists)**


 **Allowed**

# The UNIQUE Key Constraint


- Defined at either the table level or the column level

```
SQL> CREATE TABLE dept (  
2      deptno      NUMBER(2) ,  
3      dname       VARCHAR2(14) ,  
4      loc         VARCHAR2(13) ,  
5      CONSTRAINT dept_dname_uk UNIQUE(dname) ) ;
```


# The PRIMARY KEY Constraint

**DEPT**  **PRIMARY KEY**

DEPTNO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

 **Insert into**

20	MARKETING	DALLAS
	FINANCE	NEW YORK

 Not allowed  
(DEPTNO-20 already exists)

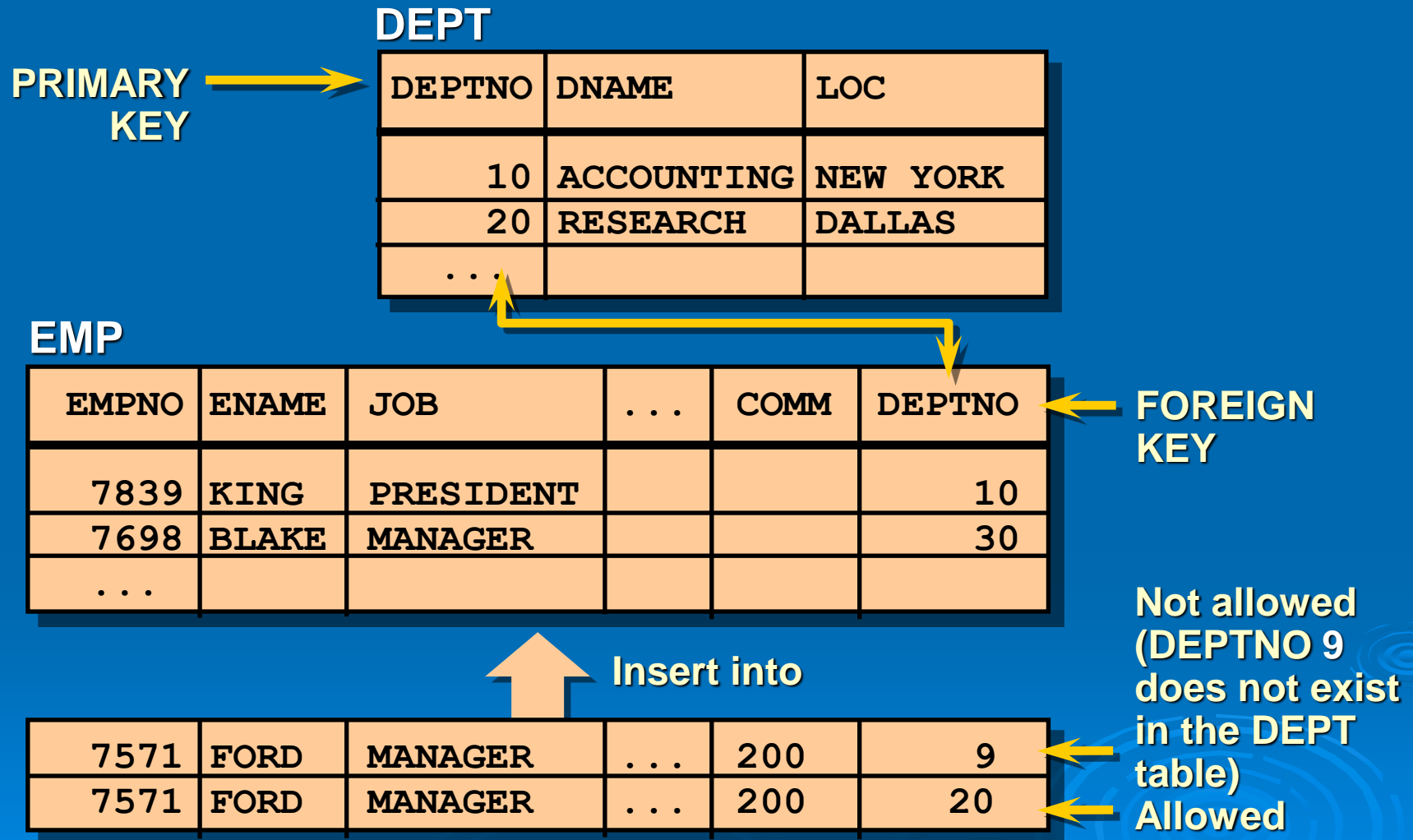
 Not allowed  
(DEPTNO is null)

# The PRIMARY KEY Constraint

- Defined at either the table level or the column level

```
SQL> CREATE TABLE dept(  
2      deptno      NUMBER(2) ,  
3      dname       VARCHAR2(14) ,  
4      loc         VARCHAR2(13) ,  
5      CONSTRAINT dept_dname_uk UNIQUE (dname) ,  
6      CONSTRAINT dept_deptno_pk PRIMARY KEY(deptno)) ;
```

# The FOREIGN KEY Constraint



# The FOREIGN KEY Constraint

```
SQL> CREATE TABLE emp (  
  2      empno      NUMBER(4) ,  
  3      ename      VARCHAR2(10) NOT NULL ,  
  4      job        VARCHAR2(9) ,  
  5      mgr        NUMBER(4) ,  
  6      hiredate   DATE ,  
  7      sal        NUMBER(7,2) ,  
  8      comm       NUMBER(7,2) ,  
  9      deptno     NUMBER(7,2) NOT NULL ,  
 10      CONSTRAINT emp_deptno_fk FOREIGN KEY (deptno)  
 11          REFERENCES dept (deptno)) ;
```



# FOREIGN KEY Constraint Keywords

- FOREIGN KEY

Defines the column in the child table at the table constraint level

- REFERENCES

Identifies the table and column in the parent table

- ON DELETE CASCADE

Allows deletion in the parent table and deletion of the dependent rows in the child table

# The CHECK Constraint

- Defines a condition that each row must satisfy

```
..., deptno  NUMBER(2),  
        CONSTRAINT emp_deptno_ck  
            CHECK (DEPTNO BETWEEN 10 AND 99),...
```

# Adding a Constraint

```
ALTER TABLE table  
ADD [CONSTRAINT constraint] type (column);
```

- Add or drop, but not modify, a constraint
- Enable or disable constraints
- Add a NOT NULL constraint by using the MODIFY clause

# Adding a Constraint

- Add a FOREIGN KEY constraint to the EMP table indicating that a manager must already exist as a valid employee in the EMP table.

```
SQL> ALTER TABLE      emp
      2  ADD CONSTRAINT  emp_mgr_fk
      3                FOREIGN KEY (mgr) REFERENCES emp (empno) ;
Table altered.
```

# Dropping a Constraint

- Remove the manager constraint from the EMP table.

```
SQL> ALTER TABLE      emp
      2  DROP CONSTRAINT  emp_mgr_fk;
Table altered.
```