Oracle DB Constraint

a constraint is a rule enforced on the data in a table. Constraints ensure the accuracy and integrity of the data by restricting the types of data that can be inserted into a table. Here's a breakdown of the different types of constraints you might encounter in Oracle DB

1. **Primary Key Constraint**

2. **Foreign Key Constraint**

3. **Unique Constraint**

4. **Not Null Constraint**

5. **Not Null Constraint**

5. **Check Constraint**

By Eslam Khder

Oracle DB Constraint

```sql
INSERT INTO jobs VALUES (100,null,1,10000);
INSERT INTO jobs VALUES (100,'My_Job',1,10000);
INSERT INTO jobs(job_id,min_salary,max_salary) VALUES (100,1,10000);
CREATE TABLE managers (manager_id     NUMBER NOT NULL,
                       first_name     VARCHAR2(50),
                       last_name      VARCHAR2(50) CONSTRAINT lname_not_null NOT NULL,
                       department_id NUMBER NOT NULL);
```

1. NOT+NULL+Constraint+(Code+Samples).sql

By Eslam Khder

Oracle DB Constraint

```sql
CREATE TABLE managers
     (manager_id      NUMBER CONSTRAINT mgr_mid_uk UNIQUE,
      first_name      VARCHAR2(50),
      last_name       VARCHAR2(50),
      department_id   NUMBER NOT NULL
);
INSERT INTO managers VALUES (100,'Alex','Brown',80);
INSERT INTO managers VALUES (101,'Alex','Brown',80);

CREATE TABLE managers
     (manager_id      NUMBER CONSTRAINT mgr_mid_uk UNIQUE,
      first_name      VARCHAR2(50),
      last_name       VARCHAR2(50),
      department_id   NUMBER NOT NULL,
      phone_number    VARCHAR2(11) UNIQUE NOT NULL,
      email VARCHAR2(100),
      UNIQUE (email),
      CONSTRAINT mgr_composite_uk UNIQUE(first_name, last_name, department_id)
);
INSERT INTO managers VALUES (100,'Alex','Brown',80,'123-456-789','abrown');
INSERT INTO managers VALUES (101,'Alex','Brown',80,'123-456-789','abrown');
INSERT INTO managers VALUES (101,'Alex','Brown',80,'123-456-780','abrown');
INSERT INTO managers VALUES (101,'Alex','Brown',80,'123-456-780','abrown2');
INSERT INTO managers VALUES (101,'Alex','Brown',90,'123-456-780','abrown2');
INSERT INTO managers VALUES (null,null,null,null,null,null);
INSERT INTO managers VALUES (null,null,null,90,null,null);
INSERT INTO managers VALUES (null,null,null,90,'123-456-781',null);
INSERT INTO managers VALUES (null,null,null,90,'123-456-782',null);
INSERT INTO managers VALUES (null,null,null,100,'123-456-782',null);

SELECT * FROM managers;
UPDATE managers SET department_id = 90 WHERE manager_id = 100;
```

2. UNIQUE+Constraint+(Code+Samples).sql

Oracle DB Constraint

```sql
DROP TABLE managers;
CREATE TABLE managers
     (manager_id       NUMBER CONSTRAINT mgr_mid_uk UNIQUE,
      first_name       VARCHAR2(50),
      last_name        VARCHAR2(50),
      department_id NUMBER NOT NULL,
      phone_number  VARCHAR2(11) UNIQUE NOT NULL,
      email            VARCHAR2(100),
      UNIQUE  (email),
      CONSTRAINT mgr_composite_uq UNIQUE (department_id, first_name, last_name)
);

CREATE TABLE directors
     (director_id      NUMBER CONSTRAINT dir_did_pk PRIMARY KEY,
      first_name       VARCHAR2(50),
      last_name        VARCHAR2(50)
);

CREATE TABLE executives
     (executive_id  NUMBER,
      first_name       VARCHAR2(50),
      last_name        VARCHAR2(50),
      CONSTRAINT dir_did_pk PRIMARY KEY (executive_id, last_name)
);

CREATE TABLE executives
     (executive_id NUMBER,
      first_name    VARCHAR2(50),
      last_name     VARCHAR2(50),
      CONSTRAINT exec_eid_pk PRIMARY KEY (executive_id, last_name)
);

INSERT INTO directors VALUES(100,'John','Goodman');
INSERT INTO directors VALUES(null,'John','Goodman');
INSERT INTO executives VALUES(100,'John',null);

DROP TABLE executives;
```

3. PRIMARY+KEY+Constraint+(Code+Samples).sql

By Eslam Khder

Oracle DB Constraint

```sql
DROP TABLE managers;
CREATE TABLE managers
    (manager_id        NUMBER CONSTRAINT mgr_mid_uk UNIQUE,
     first_name        VARCHAR2(50),
     last_name         VARCHAR2(50),
     department_id     NUMBER NOT NULL,
     phone_number      VARCHAR2(11) UNIQUE NOT NULL,
     email             VARCHAR2(100),
     UNIQUE(email),
     CONSTRAINT mgr_composite_uq UNIQUE(department_id, first_name, last_name)
);


SELECT * FROM employees;
SELECT * FROM employees_copy;

CREATE TABLE managers
    (manager_id     NUMBER CONSTRAINT mgr_mid_pk PRIMARY KEY,
     first_name     VARCHAR2(50),
     last_name      VARCHAR2(50),
     department_id NUMBER NOT NULL,
     phone_number   VARCHAR2(11) UNIQUE NOT NULL,
     email VARCHAR2(100),
     UNIQUE (email),
     CONSTRAINT mgr_emp_fk FOREIGN KEY (manager_id) REFERENCES employees_copy (employee_id)
);
DROP TABLE employees_copy;
CREATE TABLE employees_copy
(
employee_id        NUMBER(6) CONSTRAINT emp_cpy_eid_pk PRIMARY KEY,
     first_name     VARCHAR2(20),
     last_name      VARCHAR2(20),
     department_id      NUMBER(4)
);
INSERT INTO employees_copy
SELECT employee_id, first_name, last_name, department_id
     FROM employees;
```

4. FOREIGN+KEY+Constraint+(Code+Samples).sql

By Eslam Khder

Oracle DB Constraint

```sql
DROP TABLE managers;
CREATE TABLE managers
    (manager_id      NUMBER CONSTRAINT mgr_mid_pk PRIMARY KEY,
     first_name      VARCHAR2(50),
     last_name       VARCHAR2(50),
     department_id NUMBER NOT NULL,
     phone_number  VARCHAR2(11) UNIQUE NOT NULL,
     email           VARCHAR2(100),
     UNIQUE(email),
     CONSTRAINT mgr_emp_fk FOREIGN KEY (manager_id) REFERENCES employees_copy (employee_id)
);

DELETE FROM managers;
INSERT INTO managers values (103, 'John', 'King', 90, '123-456-789','jking');
INSERT INTO managers values (104, 'John2', 'King', 90, '123-456-780','jking2');
INSERT INTO managers values (105, 'John3', 'King', 90, '123-456-781','jking3');

SELECT * FROM employees_copy;
SELECT * FROM managers;

CREATE TABLE managers
    (manager_id      NUMBER,
     first_name      VARCHAR2(50),
     last_name       VARCHAR2(50),
     department_id NUMBER NOT NULL,
     phone_number  VARCHAR2(11) UNIQUE NOT NULL,
     email VARCHAR2(100),
     UNIQUE (email),
     CONSTRAINT mgr_emp_fk FOREIGN KEY (manager_id) REFERENCES employees_copy (employee_id) ON DELETE SET NULL
);

DELETE FROM employees_copy
WHERE employee_id = 103;

DELETE FROM employees_copy
WHERE employee_id = 150;
```

5. The+ON+DELETE+CASCADE++ON+DELETE+SET+NULL+Clause+(Code+Samples).sql

Oracle DB Constraint

```sql
CREATE TABLE managers2
(
    manager_id NUMBER,
    first_name VARCHAR2(50),
    salary     NUMBER,
    CONSTRAINT salary_check CHECK (salary > 100 AND salary < 50000)
);


INSERT INTO managers2 VALUES(1, 'Steven', 50);
INSERT INTO managers2 VALUES(1, 'Steven', 500);
UPDATE managers2
SET salary = 20
WHERE manager_id = 1;


DROP TABLE managers2;
CREATE TABLE managers2 (
    manager_id NUMBER,
    first_name VARCHAR2(50),
    salary NUMBER,
    email VARCHAR2(100),
    CONSTRAINT demo_check CHECK (salary > 100 AND salary < 50000 AND upper(email) LIKE '%.COM')
);
INSERT INTO managers2 VALUES (1, 'Steven', 500,'thisisademoemail.xyz);
INSERT INTO managers2 VALUES (1, 'Steven', 500,'thisisademoemail.com');
```

6. CHECK+Constraint+(Code+Samples).sql

By Eslam Khder

Oracle DB Constraint

```sql
DROP TABLE managers;
DROP TABLE employees_copy;
CREATE TABLE employees_copy AS SELECT * FROM employees;

ALTER TABLE employees_copy ADD CONSTRAINT emp_cpy_email_uk UNIQUE (email);
ALTER TABLE employees_copy ADD CONSTRAINT emp_cpy_names_uk UNIQUE (first_name, last_name);
ALTER TABLE employees_copy ADD UNIQUE (phone_number);
ALTER TABLE employees_copy ADD CHECK (salary > 10000);
ALTER TABLE employees_copy ADD CHECK (salary > 1000);
ALTER TABLE employees_copy ADD CONSTRAINT emp_cpy_emp_id_pk PRIMARY KEY (employee_id);
ALTER TABLE employees_copy ADD CONSTRAINT emp_cpy_dept_fk FOREIGN KEY (department_id) REFERENCES departments(department_id);
ALTER TABLE employees_copy MODIFY salary CONSTRAINT emp_cpy_salary_nn NOT NULL;
ALTER TABLE employees_copy MODIFY last_name NOT NULL;
ALTER TABLE employees_copy MODIFY first_name NOT NULL;
```

7. Adding+Constraints+via+ALTER+TABLE+Statements+(Code+Samples).sql

By Eslam Khder

Oracle DB Constraint

```sql
SELECT * FROM employees_copy;
CREATE TABLE managers
    (manager_id     NUMBER CONSTRAINT mgr_mid_pk PRIMARY KEY,
    first_name      VARCHAR2(50),
    last_name       VARCHAR2(50),
    department_id NUMBER NOT NULL,
    phone_number    VARCHAR2(11) UNIQUE NOT NULL,
    email           VARCHAR2(100),
    UNIQUE(email),
    CONSTRAINT mgr_emp_fk FOREIGN KEY (manager_id) REFERENCES employees_copy (employee_id)
);
DROP TABLE managers;


ALTER TABLE employees_copy DROP CONSTRAINT emp_cpy_emp_id_pk
```

8. Dropping+(Removing)+Constraints+(Code+Samples).sql

By Eslam Khder

Oracle DB Constraint

```sql
DROP TABLE employees_copy;
DROP TABLE departments_copy;
CREATE TABLE employees_copy AS SELECT * FROM employees;
CREATE TABLE departments_copy AS SELECT * FROM departments;


ALTER TABLE departments_copy ADD CONSTRAINT dept_id_pk PRIMARY KEY (department_id);
ALTER TABLE departments_copy ADD CONSTRAINT dept_cpy_id_pk PRIMARY KEY (department_id);
ALTER TABLE employees_copy
ADD CONSTRAINT emp_dept_cpy_fk FOREIGN KEY (department_id) REFERENCES departments_copy (department_id);


ALTER TABLE departments_copy DROP COLUMN department_id;
ALTER TABLE departments_copy DROP COLUMN department_id CASCADE CONSTRAINTS;
ALTER TABLE employees_copy ADD UNIQUE (first_name, last_name);
ALTER TABLE employees_copy DROP COLUMN last_name;
ALTER TABLE employees_copy DROP COLUMN last_name CASCADE CONSTRAINTS;
```

9. Cascading+Constraints+in+Oracle+(Code+Samples).sql

Oracle DB Constraint

```sql
CREATE TABLE employees_copy AS SELECT * FROM employees;


ALTER TABLE employees_copy RENAME CONSTRAINT SYS_C008743 TO email_nn;
```

10. Renaming+Constraints+(Code+Samples).sql

Oracle DB Constraint

```sql
DROP TABLE employees_copy;
DROP TABLE departments_copy;
CREATE TABLE departments_copy AS SELECT * FROM departments;
CREATE TABLE employees_copy AS SELECT * FROM employees;


ALTER TABLE departments_copy
ADD CONSTRAINT dept_cpy_id_pk PRIMARY KEY(department_id);


ALTER TABLE employees_copy
ADD CONSTRAINT emp_dept_copy_fk FOREIGN KEY(department_id) REFERENCES departments_copy (department_id);


UPDATE departments_copy
SET department_name = null
WHERE department_id = 10;


ALTER TABLE departments_copy
DISABLE CONSTRAINT SYS_C008762;


UPDATE departments_copy
SET department_id = 5
WHERE department_id = 80;


ALTER TABLE departments_copy
DISABLE CONSTRAINT dept_cpy_id_pk;


ALTER TABLE departments_copy
ADD CONSTRAINT dept_cpy_id_pk PRIMARY KEY (department_id) DISABLE;
```

11 .Disabling+Constraints+(Code+Samples).sql

By Eslam Khder

Oracle DB Constraint

```sql
INSERT INTO departments_copy VALUES (10,'TempDept',100,1700);

ALTER TABLE departments_copy ENABLE CONSTRAINT dept_cpy_id_pk;

SELECT * FROM departments_copy ORDER BY department_id;

DELETE FROM departments_copy WHERE department_name = 'TempDept';
```