# **SQL Constraints**

The following constraints are commonly used in SQL:

* **NOT NULL** - Ensures that a column cannot have a NULL value
* **UNIQUE** - Ensures that all values in a column are different
* **PRIMARY KEY** - A combination of a NOT NULL and UNIQUE. Uniquely identifies each row in a table
* **FOREIGN KEY** - Uniquely identifies a row/record in another table
* **CHECK** - Ensures that all values in a column satisfies a specific condition

**How to add NOT NULL Constraint?**

1. While creating the table

CREATE TABLE Persons (  
    ID int NOT NULL,  
    LastName varchar(255) NOT NULL,  
    FirstName varchar(255) NOT NULL,  
    Age int  
);

1. After the table is created

ALTER TABLE Persons  
MODIFY Age int NOT NULL;

**How to add UNIQUE Constraint?**

1. While creating the table

CREATE TABLE Persons (  
    ID int NOT NULL UNIQUE,  
    LastName varchar(255) NOT NULL,  
    FirstName varchar(255),  
    Age int  
);

CREATE TABLE Persons (  
    ID int NOT NULL,  
    LastName varchar(255) NOT NULL,  
    FirstName varchar(255),  
    Age int,  
    CONSTRAINT UC\_Person UNIQUE (ID,LastName)  
);

1. After the table is created

ALTER TABLE Persons  
ADD UNIQUE (ID);

ALTER TABLE Persons  
ADD CONSTRAINT UC\_Person UNIQUE (ID,LastName);

**How to add PRIMARY KEY Constraint?**

1. While creating the table

CREATE TABLE Persons (  
    ID int NOT NULL PRIMARY KEY,  
    LastName varchar(255) NOT NULL,  
    FirstName varchar(255),  
    Age int  
);

CREATE TABLE Persons (  
    ID int NOT NULL,  
    LastName varchar(255) NOT NULL,  
    FirstName varchar(255),  
    Age int,  
    CONSTRAINT PK\_Person PRIMARY KEY (ID,LastName)  
);

1. After the table is created

ALTER TABLE Persons  
ADD PRIMARY KEY (ID);

ALTER TABLE Persons  
ADD CONSTRAINT PK\_Person PRIMARY KEY (ID,LastName);

**How to add FOREIGN KEY Constraint?**

1. While creating the table

CREATE TABLE Orders (  
    OrderID int NOT NULL PRIMARY KEY,  
    OrderNumber int NOT NULL,  
    PersonID int FOREIGN KEY REFERENCES Persons(PersonID)  
);

CREATE TABLE Orders (  
    OrderID int NOT NULL PRIMARY KEY,  
    OrderNumber int NOT NULL,  
    PersonID int REFERENCES Persons(PersonID)  
);

CREATE TABLE Orders (  
    OrderID int NOT NULL,  
    OrderNumber int NOT NULL,  
    PersonID int,  
    PRIMARY KEY (OrderID),  
    CONSTRAINT FK\_PersonOrder FOREIGN KEY (PersonID)  
    REFERENCES Persons(PersonID)  
);

1. After the table is created

ALTER TABLE Orders  
ADD FOREIGN KEY (PersonID) REFERENCES Persons(PersonID);

ALTER TABLE Orders  
ADD CONSTRAINT FK\_PersonOrder  
FOREIGN KEY (PersonID) REFERENCES Persons(PersonID);

**How to add CHECK Constraint?**

1. While creating the table

CREATE TABLE Persons (  
    ID int NOT NULL,  
    LastName varchar(255) NOT NULL,  
    FirstName varchar(255),  
    Age int CHECK (Age>=18)  
);

CREATE TABLE Persons (  
    ID int NOT NULL,  
    LastName varchar(255) NOT NULL,  
    FirstName varchar(255),  
    Age int,  
    City varchar(255),  
    CONSTRAINT CHK\_Person CHECK (Age>=18 AND City='Sandnes')  
);

1. After the table is created

ALTER TABLE Persons  
ADD CHECK (Age>=18);

ALTER TABLE Persons  
ADD CONSTRAINT CHK\_PersonAge CHECK (Age>=18 AND City='Sandnes');

**To view the names of constraints defined in a table**

SELECT CONSTRAINT\_NAME FROM USER\_CONSTRAINTS WHERE TABLE\_NAME = ‘PERSONS’

**Note: Table name should be in upper case.**

**Setting a default value for a column when no value is specified**

CREATE TABLE Persons (  
    ID int NOT NULL,  
    LastName varchar(255) NOT NULL,  
    FirstName varchar(255),  
    Age int,  
    City varchar(255) DEFAULT 'Sandnes'  
);

ALTER TABLE Persons  
MODIFY City DEFAULT 'Sandnes';