Praktikum 4- STA261

BATASAN (*CONSTRAINT*) dalam SQL

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Perintah SQL

Data Definition Language (DDL)

Perintah mendefinisikan data

- **Create**
- **Alter**
- **Drop**

Data Manipulation Language (DML)

Perintah memanipulasi data

- **Delete**
- **Update**
- **Insert**

Data Control Language (DCL)

Perintah mengontrol data

- **Hak akses data**

Batasan SQL

o **NOT NULL**

o **UNIQUE**

o **DEFAULT**

o **CHECK**

o **PRIMARY KEY**

o **FOREIGN KEY/ REFERENTIAL INTEGRITY**

Batasan SQL

NOT NULL → Nilai data pada suatu attribute untuk setiap baris **tidak boleh kosong**

```
CREATE TABLE EMPLOYEE(
Fname               VARCHAR(15)         NOT NULL,
Minit               CHAR,
Lname               VARCHAR(15)         NOT NULL,
Ssn                 CHAR(9),
Bdate               DATE,
Adress              VARCHAR(30),
Sex                 CHAR,
Salary              DECIMAL(10,2),
Super_ssn           CHAR(9),
Dno                 INT                 NOT NULL);
```

Tidak boleh kosong

Batasan SQL

INSERT INTO EMPLOYEE

VALUES ('James', 'E', 'Borg', 888665555, '1987-11-10', '450 Stone, Houston TX', 'M', 55000, 333445555, **NULL**);

VALUES (**?**, 'E', **?**, 888665555, '1987-11-10', '450 Stone, Houston TX', 'M', 55000, 333445555, 4);

INSERT INTO EMPLOYEE

VALUES ('John', 'B', 'Smith', 123456789, '1965-01-09', '731 Fondren, Houston TX', 'M', 30000, 333445555, 5),

('Franklin', 'T', 'Wong', 333445555,' 1965-12-08', '638 Voss, Houston TX', 'M', 40000, 888665555, 5),

('Alicia', 'J', 'Zelaya', 999887777,'1968-01-19', '3321 Castle, Spring TX', 'F', 25000, 987654321, 4);

UNIQUE→ Nilai data pada suatu attribute untuk setiap baris **tidak boleh sama (berulang)**

```
CREATE TABLE Project(
Pname                    VARCHAR(15)         NOT NULL        UNIQUE,
Pnumber                  INT                 NOT NULL,
Plocation                VARCHAR(15),
Dnum                     INT                 NOT NULL);
```

Tidak boleh sama

Batasan SQL

❌

```
INSERT INTO Project
VALUES              ('ProductX', 1, 'Bellaire', 5),
                    ('ProductX', 2,'Sugarland', 5),
                    ('ProductZ', NULL,'Houston', 4);
```

✅

```
INSERT INTO Project
VALUES              ('ProductX', 1, 'Bellaire', 5),
                    ('ProductY', 2,'Sugarland', 5),
                    ('ProductZ', 3,'Houston', 4);
```

Batasan SQL

DEFAULT→ memberi nilai default terhadap data suatu attribute yang kosong

```
CREATE TABLE DEPENDENT(
Essn                    CHAR(9)                        NOT NULL        UNIQUE,
Dependent_name          VARCHAR(15)                    NOT NULL,
Sex                     CHAR,
Bdate                   DATE,
Relationship            VARCHAR(10)                    DEFAULT 'Employee');
```

Data kosong terisi nilai default: Employee

```
CREATE TABLE DEPENDENT(
Essn                    CHAR(9)        NOT NULL        UNIQUE,
Dependent_name          VARCHAR(15)    NOT NULL,
Sex                     CHAR,
Bdate                   DATE,
Relationship            VARCHAR(10)    NOT NULL        ON CONFLICT replace DEFAULT 'Employee');
```
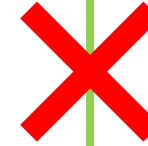
Batasan SQL

INSERT INTO DEPENDENT

VALUES   (231234567,'Ali','M', '1978-2-13', **NULL**);   ❌

INSERT INTO DEPENDENT

VALUES   (333445555,'Alice', 'F', '1986-04-04', 'daughter'),

                (987654321,'Theodore', 'M', '1983-10-25','Son');

INSERT INTO DEPENDENT (Essn, Dependent_name,Sex, Bdate)

VALUES   (231234567,'Ali','M', '1978-2-13');   ✔

INSERT INTO DEPENDENT

VALUES   (123456789,'Alice','F', '1988-12-30',**NULL**);   ✔

Batasan SQL

CHECK→ memastikan data suatu attribute **sesuai aturan** yang telah ditentukan

```
CREATE TABLE Department(
Dname                    VARCHAR(15)          NOT NULL,
Dnumber                  INT                  NOT NULL        UNIQUE,
Mgr_ssn                  CHAR(9)              CHECK (Mgr_ssn <> 123456789),
Mgr_name                 VARCHAR(15)          DEFAULT 'Alex');
```

Tidak boleh berisi '123456789'

Batasan SQL

❌

INSERT INTO Department

VALUES ('Research', 5, 33344555, 'Josh'),

('Administration', 4, 987654321, 'Alicia'),

('Headquarters', 1, **123456789**, 'Theodore');

✔

INSERT INTO Department

VALUES ('Research', 5, 33344555, 'Josh'),

('Administration', 4, 987654321, 'Alicia'),

('Headquarters', 1, 336655999, 'Theodore');

INSERT INTO Department (Dname, Dnumber, Mgr_ssn)

VALUES ('Marketing', 2, 223344555);

PRIMARY KEY→ identitas unik suatu entity yang nilainya tidak boleh kosong dan berulang

```
CREATE TABLE Works_On(
Essn                    CHAR(9)                         PRIMARY KEY,
Pno                     INT                             NOT NULL        UNIQUE,
Hours                   DECIMAL(3,1)      CHECK (Hours >1 AND Hours <50.5));
```

Identitas unik entity Works_On

Batasan SQL

❌

```
INSERT INTO Works_On
VALUES          (123456789, 1, 32.5),
                (666884444, 3, 40.0),
                (333445555, 20, 10.0),
                (987654321, 3, 35.0),
                (987654321, 10, 55.5);
```

✔️

```
INSERT INTO Works_On
VALUES          (123456789, 1, 32.5),
                (666884444, 3, 40.0),
                (333445555, 20, 10.0),
                (987654321, 6, 35.0),
                (999887777, 10, 45.5);
```

Batasan SQL

FOREIGN KEY→ attribute suatu entity yang mengacu pada **Primary key** entity lain

```
CREATE TABLE Dept_Locations(
Id_Location          INT                NOT NULL      PRIMARY KEY,
Dnumber              INT                NOT NULL,
Dlocation            VARCHAR(50)        NOT NULL,
Essn                 CHAR(9)            NOT NULL,
FOREIGN KEY (Essn) REFERENCES Works_On(Essn));
```

mengacu ke entity

Works_on attribute Dnumber

Batasan SQL

❌

INSERT INTO Dept_Locations

VALUES   (34, 1, '731 Fondren, Houston TX', 123456789),

                          (12, 1, '450 Stone, Houston TX', 123456789),

                          (2, 5, '3321 Castle, Spring TX', 333445555),

                          (28, 4, '638 Voss, Houston TX', **557773344**);

✔️

INSERT INTO Dept_Locations

VALUES   (34, 1, '731 Fondren, Houston TX', 123456789),

                          (12, 1, '450 Stone, Houston TX', 123456789),

                          (2, 5, '3321 Castle, Spring TX', 333445555),

                          (28, 4, '638 Voss, Houston TX', 987654321);

TUGAS

❑ **Buatlah database dengan maksimal 3 entity yang saling berelasi**

❑ **Dalam penyusunan entity harus memuat batasan (*constraints*) yaitu NOT NULL, Unique, Default, Check, Primary Key, dan Foreign Key**

❑ **Masukkan beberapa record dalam masing-masing entity**

❑ **File dikumpulkan dalam bentuk .txt (Query SQL) dan .db (database)**