

# Praktikum 6- STA261

## *Data Manipulation Language SQL*

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# Perintah dalam SQL



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## *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**



# Perintah *Insert*



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Perintah *Insert* digunakan untuk menambahkan suatu record/tuple pada sebuah entity

- Data value lengkap sesuai dengan urutan attribute yang telah didefinisikan

```
INSERT INTO <table> VALUES (data value,data value,...,data value);
```

INSERT INTO EMPLOYEE

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

INSERT INTO EMPLOYEE

VALUES ('Franklin','T','Wong',333445555,null, null,'M',40000, 888665555,5),  
( 'Alicia','J','Zelaya',999887777,'1968-01-19','3321 Castle, Spring TX','F', 25000,  
987654321,4);



# Perintah *Insert*



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- Data value lengkap urutan attribute berbeda dengan yang telah didefinisikan

```
INSERT INTO <table> (attribute1, attribute5,..., attribute2)  
VALUES          (data value1, data value5,..., data value2);
```

```
INSERT INTO EMPLOYEE (Fname, Minit, Lname, Ssn, Bdate, Dno, Salary, Address, Super_ssn,  
Sex)  
VALUES          ('Jennifer', 'S', 'Wallace', 987654321, '1941-06-20', 4, 4300, '291 Berry, Bellaire  
TX', 888665555, 'F'),  
                ('Ramesh', 'K', 'Narayan', 666884444, '1962-09-15', 5, 38000, '975 Fire Oak, Humble  
TX', 333445555, 'M');
```



# Perintah *Insert*

- Data value tidak lengkap dengan attribute yang telah didefinisikan

```
INSERT INTO <table> (attribute1, attribute 2, attribute3)  
VALUES          (data value1, data value2, data value3);
```

```
INSERT INTO EMPLOYEE (Fname, Minit, Lname, Ssn, Dno)  
VALUES          ('Joyce', 'A', 'English', 453453453, 5),  
                ('Ahmad', 'V', 'Jabbar', 987987987, 4);
```

```
INSERT INTO EMPLOYEE (Fname, Lname, Ssn, Dno, Salary, Minit, Bdate)  
VALUES          ('James', 'Borg', 888665555, 1, 55000, 'E', '1937-11-10');
```



# Perintah *Delete*



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Perintah *Delete* digunakan untuk menghapus suatu record/tuple dari sebuah entity

- Menghapus semua data value dari suatu entity

```
DELETE FROM <table>;
```

```
DELETE FROM DEPT_LOCATIONS;
```

```
DELETE FROM WORKS_ON;
```



# Perintah *Delete*

- Menghapus sebagian data value dari suatu entity

```
DELETE FROM <table> WHERE <clause>;
```

```
DELETE FROM EMPLOYEE  
WHERE Lname='Brown';
```

```
DELETE FROM WORKS_ON  
WHERE Pno=3 AND Hours>10;
```

```
DELETE FROM WORKS_ON  
WHERE Hours<10 OR Essn=123456789;
```



# Perintah *Delete*



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Perintah *delete* terkadang mengakibatkan terhapusnya primary key dalam sebuah entity, sehingga nilai attribute foreign key pada entity lain tidak memiliki referensi lagi.

```
DELETE FROM EMPLOYEE  
WHERE Sex IS NULL;
```

```
DELETE FROM EMPLOYEE  
WHERE Sex IS NULL;
```

```
-- Result: FOREIGN KEY constraint failed
```





# Perintah *Delete*



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Maka perlu adanya *constraint* yang mengizinkan dilakukannya penghapusan record pada entity yang memuat primary key yang menjadi referensi pada entity lain.

```
CREATE TABLE WORKS_ON (  
  Essn      CHAR(9)      NOT NULL,  
  Pno       INT          NOT NULL,  
  Hours     DECIMAL(3,1) NOT NULL,  
  PRIMARY KEY (Essn, Pno),  
  FOREIGN KEY (Essn) REFERENCES EMPLOYEE (Ssn),  
  FOREIGN KEY (Pno) REFERENCES PROJECT (Pnumber) ON DELETE CASCADE);
```

Jika record pada entity parent dihapus maka row yang berasosiasi pada entity child juga terhapus



# Perintah *Update*

Perintah *Update* digunakan untuk memodifikasi/ mengubah suatu record/tuple dari sebuah entity

```
UPDATE <table> SET <attribute=data value> WHERE <clause>;
```

UPDATE DEPENDENT

```
SET      Relationship='Mother'  
WHERE    Dependent_name='Alice';
```

UPDATE EMPLOYEE

```
SET      Salary=35000, Super_ssn=333445555  
WHERE    Fname in ('Franklin','Joyce','Ahmad');
```



# Perintah *Update*



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Perintah *update* terkadang mengakibatkan berubahnya nilai primary key dalam sebuah entity, sehingga nilai attribute foreign key pada entity lain tidak memiliki referensi lagi.

```
UPDATE DEPARTMENT
SET      Dnumber=7
WHERE    Dname='Research';
```

```
UPDATE DEPARTMENT
SET      Dnumber=7
WHERE    Dname='Research';
-- Result: FOREIGN KEY constraint failed
```



# Perintah *Update*

Maka perlu adanya *constraint* yang mengizinkan dilakukannya perubahan record pada entity yang memuat primary key yang menjadi referensi pada entity lain.

```
CREATE TABLE DEPT_LOCATIONS
```

```
(Dnumber          INT          NOT NULL,
```

```
Dlocation         VARCHAR(15) NOT NULL,
```

```
PRIMARY KEY       (Dnumber, Dlocation),
```

```
FOREIGN KEY       (Dnumber) REFERENCES DEPARTMENT(Dnumber) ON UPDATE CASCADE);
```

```
CREATE TABLE PROJECT (
```

```
Pname            VARCHAR(15) NOT NULL,
```

```
Pnumber          INT          NOT NULL,
```

```
Plocation        VARCHAR(15),
```

```
Dnum             INT          NOT NULL,
```

```
PRIMARY KEY (Pnumber),
```

```
UNIQUE (Pname),
```

```
FOREIGN KEY (Dnum) REFERENCES DEPARTMENT(Dnumber) ON UPDATE CASCADE);
```

Jika record pada entity parent dimodifikasi maka row yang berasosiasi pada entity child juga termodifikasi



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# TERIMA KASIH