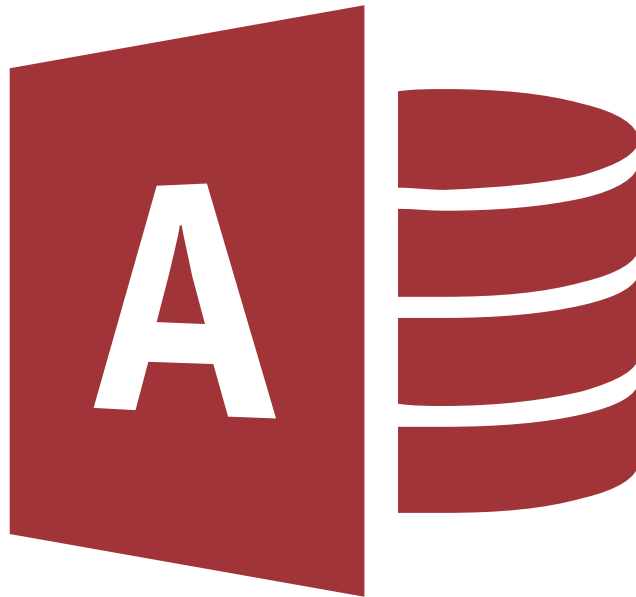


# Praktikum 03

## Tipe Data dan Domain



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# Company Database

- Departments, Employees, and Projects.
- is organized into departments

## Departments



- has department **name**, department **number**, **location**, and a **manager** who manage the department.
- **start date** that the manager began managing the department.
- may be in several locations.
- controls a number of projects

## Employees



- stores employee **name**, **social security number**, **address**, **salary**, **sex (gender)**, and **birth date**.
- In one department and may work on several projects controlled by the different department.
- the working hours per week on each project
- the direct supervisor of each employee (who is another employee).

## Projects



- project **name**, project **number**, and a single **location**.

## Dependent of Employee



- **name**, **sex (gender)**, **birth date**
- relationship between the dependent and the employee



# Company Database

Terdapat dua Table lain yang bisa ditambahkan

## Dept\_Location



- Departement **number**, and **location**.

## Works\_On

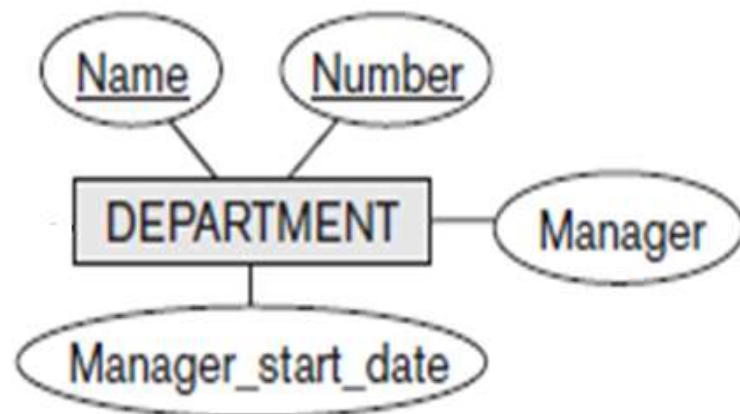


- **SSN**, project **number**, **hours**



# Company Database

## Departement



```
CREATE TABLE DEPARTMENT
( Dname          VARCHAR(15)      NOT NULL,
  Dnumber        INT              NOT NULL,
  Mgr_ssn        CHAR(9)         NOT NULL,
  Mgr_start_date DATE,
  PRIMARY KEY (Dnumber),
  UNIQUE         (Dname),
  FOREIGN KEY (Mgr_ssn) REFERENCES EMPLOYEE(Ssn) );
```



# Company Database

## Departement

### DEPARTMENT

Dname	<u>Dnumber</u>	Mgr_ssn	Mgr_start_date
Research	5	333445555	1988-05-22
Administration	4	987654321	1995-01-01
Headquarters	1	888665555	1981-06-19

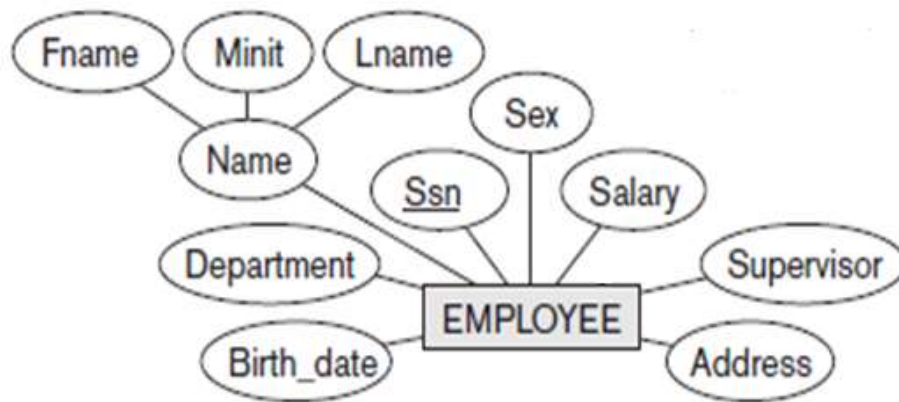
### INSERT INTO DEPARTMENT

VALUES ('Research',5,333445555,'1988-05-22'),  
('Administration',4,987654321,'1995-01-01'),  
('Headquarters',1,888665555,'1981-06-19');



# Company Database

## Employee



### CREATE TABLE EMPLOYEE

```
( Fname          VARCHAR(10)  NOT NULL,  
  Minit          CHAR,  
  Lname          VARCHAR(20)  NOT NULL,  
  Ssn            CHAR(9)      NOT NULL,  
  Bdate          DATE,  
  Address        VARCHAR(30),  
  Sex            CHAR(1),  
  Salary         DECIMAL(5),  
  Super_ssn      CHAR(9),  
  Dno            INT          NOT NULL,  
  PRIMARY KEY    (Ssn));
```



# Company Database

## Employee

### EMPLOYEE

Fname	Minit	Lname	Ssn	Bdate	Address	Sex	Salary	Super_ssn	Dno
John	B	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	M	30000	333445555	5
Franklin	T	Wong	333445555	1955-12-08	638 Voss, Houston, TX	M	40000	888665555	5
Alicia	J	Zelaya	999887777	1968-01-19	3321 Castle, Spring, TX	F	25000	987654321	4
Jennifer	S	Wallace	987654321	1941-06-20	291 Berry, Bellaire, TX	F	43000	888665555	4
Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak, Humble, TX	M	38000	333445555	5
Joyce	A	English	453453453	1972-07-31	5631 Rice, Houston, TX	F	25000	333445555	5
Ahmad	V	Jabbar	987987987	1969-03-29	980 Dallas, Houston, TX	M	25000	987654321	4
James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	55000	NULL	1

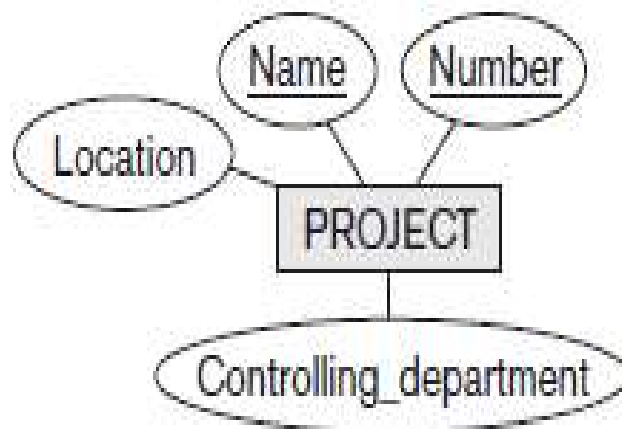
INSERT INTO EMPLOYEE

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),  
('Jennifer','S','Wallace',987654321,'1941-06-20','291 Berry, Bellaire TX','F',43000,888665555,4),  
('Ramesh','K','Narayan',666884444,'1962-09-15','975 Fire Oak, Humble TX','M',38000,333445555,5),  
('Joyce','A','English',453453453,'1972-07-31','5631 Rice, Houston TX','F',25000,333445555,5),  
('Ahmad','V','Jabbar',987987987,'1969-03-29','980 Dallas, Houston TX','M',25000,987654321,4),  
('James','E','Borg',888665555,'1937-11-10','450 Stone, Houston TX','M',55000,null,1);



# Company Database

## Project



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) );
```





# Company Database

## Project

### PROJECT

Pname	<u>Pnumber</u>	Plocation	Dnum
ProductX	1	Bellaire	5
ProductY	2	Sugarland	5
ProductZ	3	Houston	5
Computerization	10	Stafford	4
Reorganization	20	Houston	1
Newbenefits	30	Stafford	4

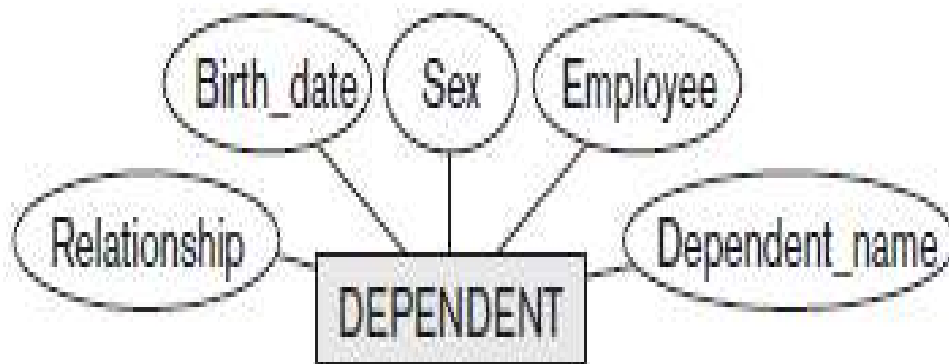
INSERT INTO PROJECT

VALUES ('ProductX',1,'Bellaire',5),  
('ProductY',2,'Sugarland',5),  
('ProductZ',3,'Houston',5),  
('Computerization',10,'Stafford',4),  
('Reorganization',20,'Houston',1),  
('Newbenefits',30,'Stafford',4);



# Company Database

## Dependent



```
CREATE TABLE DEPENDENT
( Essn          CHAR(9)          NOT NULL,
  Dependent_name VARCHAR(15)      NOT NULL,
  Sex           CHAR,
  Bdate        DATE,
  Relationship   VARCHAR(8),
  PRIMARY KEY (Essn, Dependent_name),
  FOREIGN KEY (Essn) REFERENCES EMPLOYEE(Ssn) );
```



# Company Database

## Dependent

DEPENDENT

<u>Essn</u>	<u>Dependent_name</u>	Sex	Bdate	Relationship
333445555	Alice	F	1986-04-05	Daughter
333445555	Theodore	M	1983-10-25	Son
333445555	Joy	F	1958-05-03	Spouse
987654321	Abner	M	1942-02-28	Spouse
123456789	Michael	M	1988-01-04	Son
123456789	Alice	F	1988-12-30	Daughter
123456789	Elizabeth	F	1967-05-05	Spouse

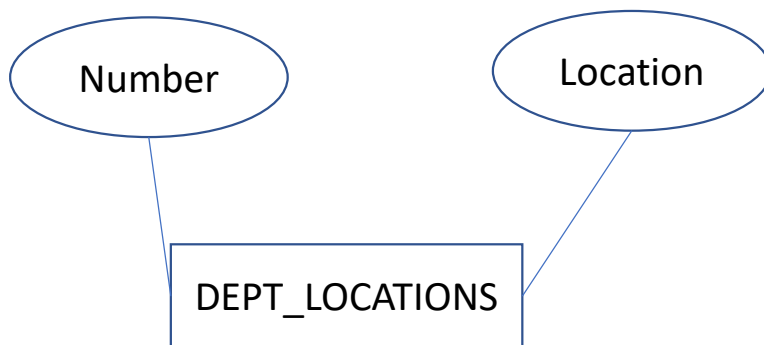
INSERT INTO DEPENDENT

VALUES (333445555,'Alice','F','1986-04-04','Daughter'),  
(333445555,'Theodore','M','1983-10-25','Son'),  
(333445555,'Joy','F','1958-05-03','Spouse'),  
(987654321,'Abner','M','1942-02-28','Spouse'),  
(123456789,'Michael','M','1988-01-04','Son'),  
(123456789,'Alice','F','1988-12-30','Daughter'),  
(123456789,'Elizabeth','F','1967-05-05','Spouse');



# Company Database

## Dept\_Locations



```
CREATE TABLE DEPT_LOCATIONS
( Dnumber          INT          NOT NULL,
  Dlocation        VARCHAR(15)  NOT NULL,
  PRIMARY KEY (Dnumber, Dlocation),
  FOREIGN KEY (Dnumber) REFERENCES DEPARTMENT(Dnumber) );
```



# Company Database

## Dept\_Locations

**DEPT\_LOCATIONS**

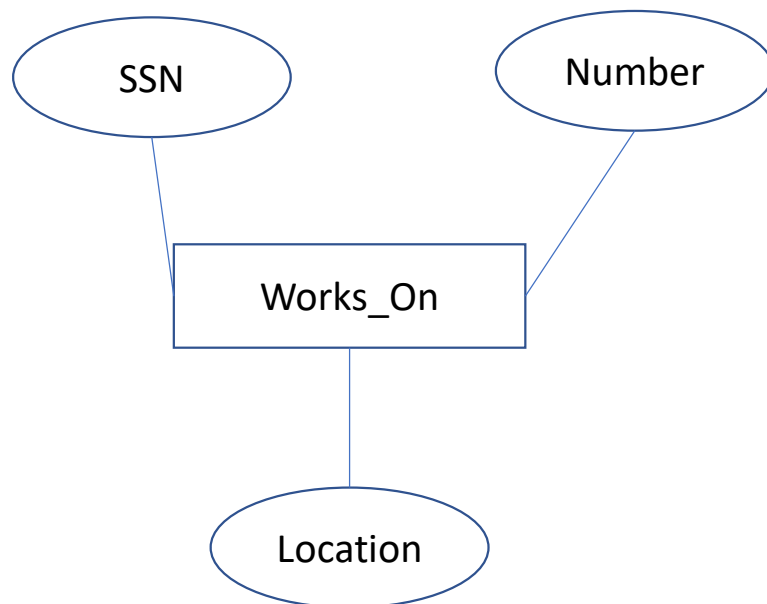
<u>Dnumber</u>	<u>Dlocation</u>
1	Houston
4	Stafford
5	Bellaire
5	Sugarland
5	Houston

```
INSERT INTO DEPT_LOCATIONS
VALUES      (1,'Houston'),
            (4,'Stafford'),
            (5,'Bellaire'),
            (5,'Sugarland'),
            (5,'Houston');
```



# Company Database

## Works\_On



```
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) );
```



# Company Database

## Works\_On

### WORKS\_ON

<u>Essn</u>	<u>Pno</u>	Hours
123456789	1	32.5
123456789	2	7.5
666884444	3	40.0
453453453	1	20.0
453453453	2	20.0
333445555	2	10.0
333445555	3	10.0
333445555	10	10.0
333445555	20	10.0
999887777	30	30.0
999887777	10	10.0
987987987	10	35.0
987987987	30	5.0
987654321	30	20.0
987654321	20	15.0
888665555	20	NULL

```
INSERT INTO WORKS_ON
VALUES      (123456789,1,32.5),
            (123456789,2,7.5),
            (666884444,3,40.0),
            (453453453,1,20.0),
            (453453453,2,20.0),
            (333445555,2,10.0),
            (333445555,3,10.0),
            (333445555,10,10.0),
            (333445555,20,10.0),
            (999887777,30,30.0),
            (999887777,10,10.0),
            (987987987,10,35.0),
            (987987987,30,5.0),
            (987654321,30,20.0),
            (987654321,20,15.0),
            (888665555,20,16.0);
```



# Tipe Data

**1/** **Numeric**  
INTEGER/INT/SMALLINT  
FLOAT/REAL/DOUBLE PRECISION  
DECIMAL(i,j)/DEC(i,j)/NUMERIC(i,j)

**2/** **Character-string**  
CHAR(n)/CHARACTER(n)  
VARCHAR(n)/CHAR VARYING(n)/  
CHARACTER CARYING(n)

**3/** **Bit-string**  
BIT(n)  
BIT VARYING(n)

Catatan :

i = total digit,

j = angka setelah koma

**4/** **Boolean**  
TRUE/FALSE/NULL

**5/** **Date**  
YEAR(YYYY)  
MONTH(MM)  
DAY(DD)  
**Time**  
HOUR(HH)  
MINUTE(MM)  
SECOND(SS)





# Domain

## CREATE TABLE DEPARTMENT

```
( Dname          VARCHAR(15)      NOT NULL,  
  Dnumber        INT              NOT NULL,  
  Mgr_ssn        CHAR(9)         NOT NULL,  
  Mgr_start_date DATE,  
PRIMARY KEY (Dnumber),  
UNIQUE        (Dname),  
FOREIGN KEY (Mgr_ssn) REFERENCES EMPLOYEE(Ssn) );
```

## CREATE TABLE EMPLOYEE

```
( Fname          VARCHAR(10) NOT NULL,  
  Minit          CHAR,  
  Lname          VARCHAR(20) NOT NULL,  
  Ssn            CHAR(9)     NOT NULL,  
  Bdate          DATE,  
  Address        VARCHAR(30),  
  Sex            CHAR(1),  
  Salary         DECIMAL(5),  
  Super_ssn      CHAR(9),  
  Dno            INT          NOT NULL,  
PRIMARY KEY (Ssn));
```

## CREATE TABLE DEPENDENT

```
( Essn           CHAR(9)          NOT NULL,  
  Dependent_name VARCHAR(15)      NOT NULL,  
  Sex            CHAR,  
  Bdate          DATE,  
  Relationship    VARCHAR(8),  
PRIMARY KEY (Essn, Dependent_name),  
FOREIGN KEY (Essn) REFERENCES EMPLOYEE(Ssn) );
```

## 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) );
```

```
CREATE DOMAIN SSN_TYPE AS CHAR(9);
```