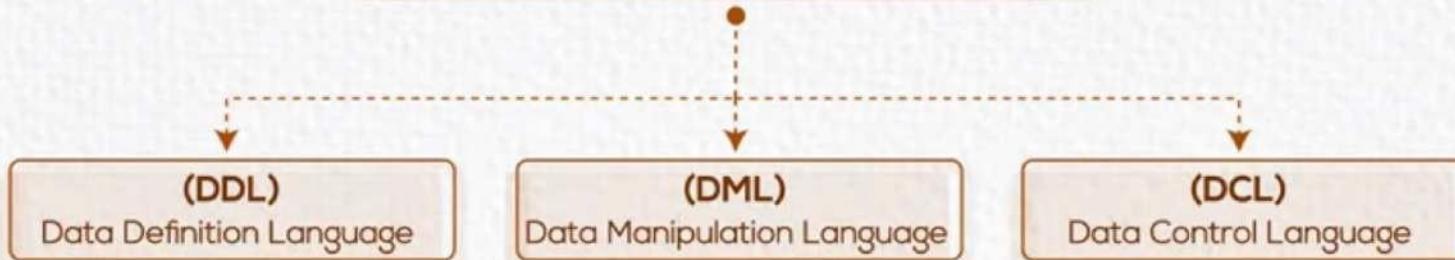


Ch 4: Structured Query Language (SQL)



Structured Query
Language(SQL)

(SQL)
Structured Query Language





- Database Schema
- Data types
- Database Constraints

- A schema is a **group of related objects in a database**.
- There is **one owner** of a schema who has access to manipulate **the structure** of any object in the schema.
- A schema **does not represent a person, although the schema is associated** with a user that resic

- Database Schema
- Data types
- Database Constraints

- A data type determines the type of data that can be stored in a database column.

The most commonly used data types are:

Alphanumeric

Variable Characters

Numeric

Integer

Date and Time

Float data type

Characters

- Database Schema
- Data types
- Database Constraints

- Restrictions on Database table or object to help **Maintain integrity of data**

Database Constraints

Primary Key

Primary Key Constraints

Not Null

Unique

Database Constraints

Primary Key

Not Null

Not Null Constraints

- This enforces a field to always contain a value, which means that you cannot insert a new record, or update a record without adding a value to this field.

Database Constraints

Primary Key

Not Null

Unique Key

- The UNIQUE constraint ensures that all values in a column are different.
- Both the UNIQUE and PRIMARY KEY constraints provide a guarantee for uniqueness for a column or set of columns.

Database Constraints

Primary Key

Not Null

Unique Key

Referential Integrity
(FK)

EMPLOYEE

| | | | | | | | | | |
|-------|------|-------|------------|-------|---------|-----|--------|----------|-----|
| FNAME | MINT | LNAME | <u>SSN</u> | BDATE | ADDRESS | SEX | SALARY | SUPERSSN | DNO |
|-------|------|-------|------------|-------|---------|-----|--------|----------|-----|

DEPARTMENT

| | | | |
|-------|----------------|--------|-------------|
| DNAME | <u>DNUMBER</u> | MGRSSN | MGRSTARDATE |
|-------|----------------|--------|-------------|



FK

Database Constraints

Primary Key

Not Null

Unique Key

Referential Integrity
(FK)

EMPLOYEE

| FNAME | MINT | LNAME | SSN | BDATE | ADDRESS | SEX | SALARY | SUPERSSN | DNO |
|-------|------|-------|-----|-------|---------|-----|--------|----------|-----|
|-------|------|-------|-----|-------|---------|-----|--------|----------|-----|

FK

DEPARTMENT

| DNAME | DNUMBER | MGRSSN | MGRSTARDATE |
|-------|---------|--------|-------------|
|-------|---------|--------|-------------|

FK

Database Constraints

Primary Key

Not Null

Unique Key

Referential Integrity
(FK)

EMPLOYEE

| FNAME | MINT | LNAME | SSN | BDATE | ADDRESS | SEX | SALARY | SUPERSSN | DNO |
|-------|------|-------|-----|-------|---------|-----|--------|----------|-----|
|-------|------|-------|-----|-------|---------|-----|--------|----------|-----|

DEPARTMENT

| DNAME | DNUMBER | MGRSSN | MGRSTARDATE |
|-------|---------|--------|-------------|
|-------|---------|--------|-------------|



Child record



Parent record

Database Constraints

Primary Key

Not Null

Unique Key

Referential Integrity
(FK)

EMPLOYEE

| | | | | | | | | | |
|-------|------|-------|------------|-------|---------|-----|--------|----------|-----|
| FNAME | MINT | LNAME | <u>SSN</u> | BDATE | ADDRESS | SEX | SALARY | SUPERSSN | DNO |
|-------|------|-------|------------|-------|---------|-----|--------|----------|-----|

DEPARTMENT

| | | | |
|-------|----------------|--------|-------------|
| DNAME | <u>DNUMBER</u> | MGRSSN | MGRSTARDATE |
|-------|----------------|--------|-------------|

①



FK

②

• Delete

Database Constraints

Primary Key

Not Null

Unique Key

Referential Integrity
(FK)

Check

Check Constraint

- Customize salary for employee salary is between 1,000 and 12,000
- Check Constraint on Column salary Minimum 1,000 , maximum 12,000



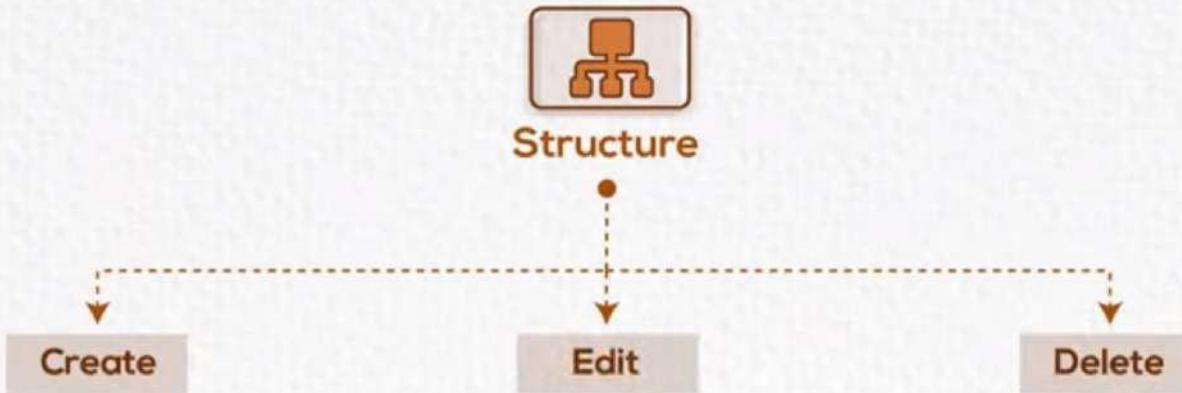
Watch later

Share

Press **Esc** to exit full screen

Data Definition Language (DDL)

Data Definition Language (DDL)



Data Definition Language (DDL)

CREATE command

ALTER command

DROP command

TRUNCATE command

The screenshot shows the Microsoft SQL Server Management Studio (SSMS) interface. The title bar reads "CH04_VID02_SQL-Data Definition Language (DDL)". The ribbon menu is visible with tabs like Home, Create, External Data, Database Tools, Design, and Query Type set to "Query". The main pane displays the following SQL code:

```
CREATE TABLE Students
(
    ID NUMBER PRIMARY KEY,
    First_Name CHAR(50) NOT NULL,
    Last_Name CHAR(50),
    Address CHAR(50),
    City CHAR(50),
    Country CHAR(25),
    Birth_Date DATE
)
```

The left sidebar shows a tree view of tables: Departments, Dependent, Employee, Project, and Works_for, with "Works_for" currently selected.

The top right corner of the window has a yellow banner with the text "CREATE command" and options to "Watch later" and "Share".

- Create students table with ID pk, first name, last name, address, city, country, birth date
- Add column postal code
- Remove column country
- Remove table students

ALTER command

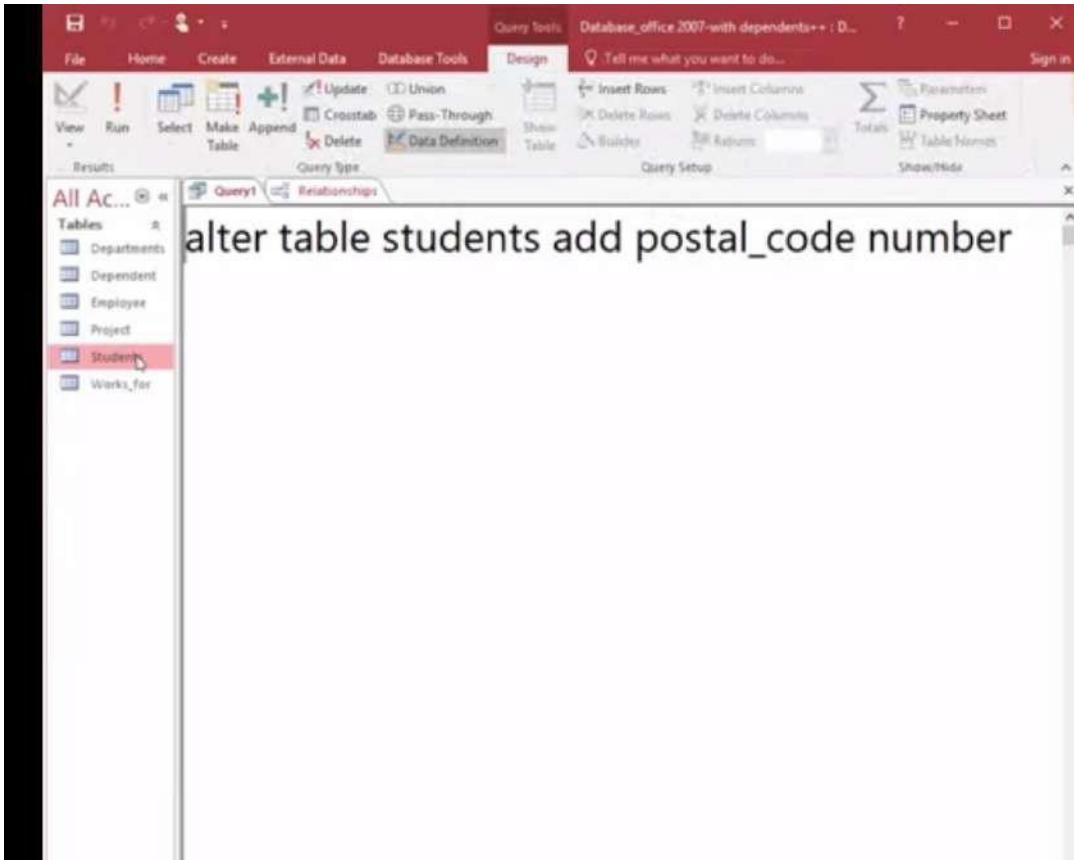
- Create students table with ID pk, first name, last name, address, city, country, birth date

CREATE TABLE Students

(ID NUMBER PRIMARY KEY, First_Name CHAR(50)
NOT NULL, Last_Name CHAR(50), Address
CHAR(50), City CHAR(50), Country CHAR(25),
Birth Date DATE)

- Add column postal code
- Remove column country
- Remove table students

alter table students add postal_code number



The screenshot shows the Microsoft Access application interface. The title bar reads "ALTER command". The ribbon menu is visible with "Query Tools" selected. In the left pane, there's a tree view of tables: "All Ac..." (selected), Departments, Dependent, Employee, Project, Students (highlighted in red), and Works_for. The main area contains the SQL query:

```
alter table students drop column country
```

- Create students table with ID pk, first name, last name, address, city, country, birth date

CREATE TABLE Students

(ID NUMBER PRIMARY KEY, First_Name CHAR(50)
NOT NULL, Last_Name CHAR(50), Address
CHAR(50), City CHAR(50), Country CHAR(25),
Birth Date DATE)

- Add column postal code

alter table students add postal_code number

- Remove column country

- Remove table students

File Home Create External Data Database Tools Design

View Run Select Make Append Table

Update Union Crosstab Pass-Through Delete Data Definition

Insert Rows Insert Columns Delete Rows Delete Columns Totals

Show Table Builders Returns

Sign in

Query Type: Query1 Relationships

All Access Tables

- Departments
- Dependent
- Employee
- Project
- Works_for

File Home Insert Design Layout References Mailings Review View Tell me... Sign in Share

- **Create students table with ID pk, first name, last name, address, city, country, birth date**
CREATE TABLE Students
(ID NUMBER PRIMARY KEY, First_Name CHAR(50)
NOT NULL, Last_Name CHAR(50), Address
CHAR(50), City CHAR(50), Country CHAR(25),
Birth Date DATE)
- **Add column postal code**
alter table students add postal_code number
- **Remove column country**
alter table students drop column country
- **Remove table students**
drop table students



Data Control Language
(DCL)



GRANT command

REVOKE command

Use a command that gives privilege access to data.

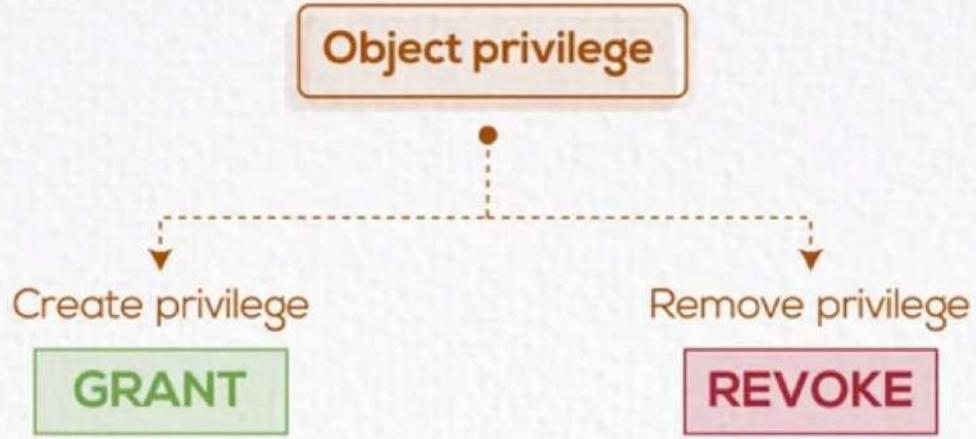
Data Control Language (DCL)

GRANT command

REVOKE command

Use a command that gives **privilege** access to data.





Data Control Language (DCL)

Create privilege

GRANT

GRANT SELECT ON TABLE employees TO Ahmed:

Command

User name



Create privilege

GRANT

GRANT SELECT ON TABLE employees TO Ahmed;

GRANT ALL ON TABLE department TO Mary, Ahmed;

Data Control Language (DCL)

Create privilege

GRANT

GRANT SELECT ON TABLE employees TO Ahmed;

GRANT ALL ON TABLE department TO Mary, Ahmed;

GRANT SELECT ON TABLE employees TO Ahmed WITH
GRANT OPTION;

Data Control Language (DCL)

Remove privilege

REVOKE

REVOKE UPDATE ON TABLE department FROM Mary;

REVOKE ALL ON TABLE department FROM Mary, Ahmed;

Ch 5: Data Manipulation Language



Data Manipulation Language
(DML)

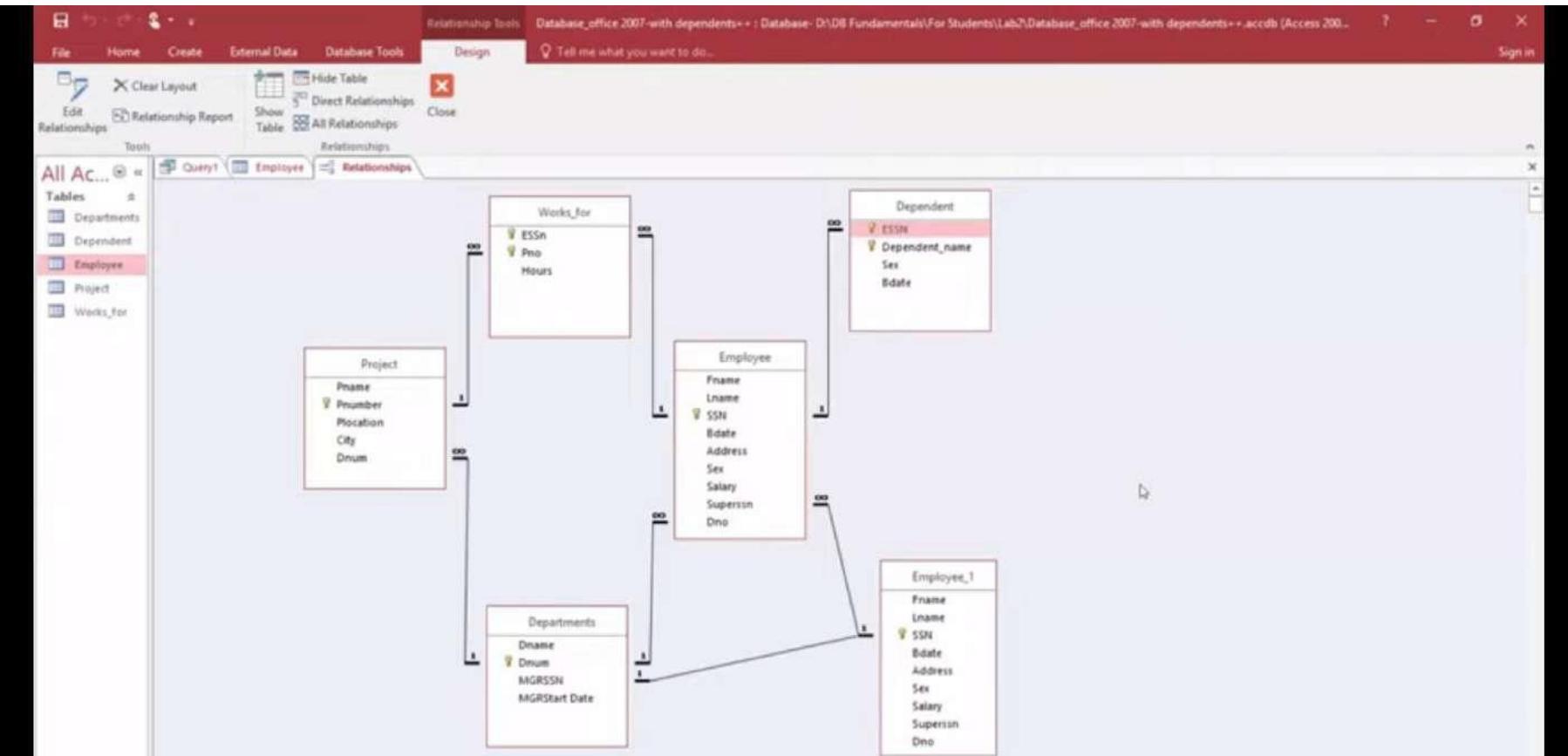
Data Manipulation Language (DML)

INSERT Command

UPDATE Command

DELETE Command

SELECT Command



CH05_VID01_INSERT Command

Home Create External Data Database Tools Design Tell me what you want to do... Sign In

View Clipboard Sort & Filter Records Find Text Formatting

All Ac... Tables Departments Dependent Employee Project Works_for

Employee

Query1 Employee Relationships

Insert into employee (Fname, Lname, SSN, Address, Sex, Salary, Superssn, Dno)
Values ('Ahmed', 'Hassan', 102672,
'8/8/1988', '20 el-haram st', 'M', 2000,
112233, 30)

INSERT

Watch later Share

- Insert Full data of employee (Ahmed, Hassan, 102672, 8/8/1988, 20 El- haram st, M, 2000, 112233, 30)
- Insert Full data of employee (Moheb, Rafaat, 102674, 5/6/1984, 6 Makram ebid st, M, 1600, 112233, 30)
- Insert the data of employee (Asmaa, Ali, 102660, 18/10/1985, F, 10)
- Update Salary for the employee whose SSN is 102660 to be 1200
- Update the Salary and department number for the employee SSN is 102674 to be 1700 in department 10
- Delete the data of the employee whose SSN is 102672
- Display the Department's data
- Display the employee SSN, first name and

File **Home** **Create** **External Data** **Database Tools** **Design** **Query Tools** Database_office 2007-with depende... ? - X

View Paste Filter Refresh All Save Find Find & Replace Text Formatting

All Ac... Tables Departments Dependent Employee Project Works_for

Views Clipboard

Query1 Employee Relationships

Insert into employee Values ('Moheb', 'Rafaat', 102674, '5/6/1984', '6 Makram Ebid St', 'M', 1600, 112233, 30)

INSERT

- Insert Full data of employee (Ahmed, Hassan, 102672, 8/8/1988, 20 El-haram st, M, 2000, 112233, 30)

```
Insert into employee (Fname, Lname, SSN, Bdate, Address, Sex, Salary, Superssn, Dno)  
Values ('Ahmed', 'Hassan', 102672, '8/8/1988', '20  
el-haram st', 'M', 2000, 112233, 30)
```

- Insert Full data of employee (Moheb, Rafaat, 102674, 5/6/1984, 6 Makram ebid st, M, 1600, 112233, 30)
- Insert the data of employee (Asmaa, Ali, 102660, 18/10/1985, F, 10)
- Update Salary for the employee whose SSN is 102660 to be 1200
- Update the Salary and department number for the employee SSN is 102674 to be 1700 in department 10
- Delete the data of the employee whose SSN is

CH05_VID01_INSERT Command

Home Create External Data Database Tools Design Query Tools Database_007-with depend... Tell me what you want to do... Sign in

View Clipboard Sort & Filter Records Find Text Formatting

All Ac... Tables Departments Dependent Employee Project Works_for

Employee

Insert into employee (fname, lname, SSN, bdate, sex, dno)
Values ('Asmaa', 'Ali', 102661, '18/10/1985', 'F', 10)

INSERT

Watch later Share

- Insert Full data of employee (Ahmed, Hassan, 102672, 8/8/1988, 20 El-haram st, M, 2000, 112233, 30)
Insert into employee (Fname, Lname, SSN, Bdate, Address, Sex, Salary, Superssn, Dno)
Values ('Ahmed', 'Hassan', 102672, '8/8/1988', '20 el-haram st', 'M', 2000, 112233, 30)
- Insert Full data of employee (Moheb, Rafaat, 102674, 5/6/1984, 6 Makram ebid st, M, 1600, 112233, 30)
Insert into employee Values ('Moheb', 'Rafaat', 102674, '5/6/1984', '6 Makram Ebid St', 'M', 1600, 112233, 30)
- Insert the data of employee (Asmaa, Ali, 102661, 18/10/1985, F, 10)
- Update Salary for the employee whose SSN is 102660 to be 1200
- Update the Salary and department number for

Screenshot of Microsoft Access showing the Database Tools ribbon tab selected. The left pane displays a list of tables: All Ac..., Departments, Dependent, Employee (selected), Project, and Works_for.

INSERT

102672, 8/8/1988, 20 El- haram st, M, 2000,
112233, 30)

Insert into employee (Fname, Lname, SSN, Bdate,
Address, Sex, Salary, Superssn, Dno)
Values ('Ahmed', 'Hassan', 102672, '8/8/1988', '20
el-haram st', 'M', 2000, 112233, 30)

- Insert Full data of employee (Moheb, Rafaat,
102674, 5/6/1984, 6 Makram ebid st, M, 1600,
112233, 30)
Insert into employee Values ('Moheb', 'Rafaat',
102674, '5/6/1984', '6 Makram Ebid St', 'M', 1600,
112233, 30)
- Insert the data of employee (Asmaa, Ali, 102661,
18/10/1985, F, 10)
Insert into employee (Fname, Lname, SSN, Bdate,
Sex, Dno)
Values ('Asmaa', 'Ali', 102661, '18/10/1985', 'F',
10)
- Update Salary for the employee whose SSN is

The screenshot shows the Microsoft Access 2007 interface. The ribbon at the top has tabs for File, Home, Create, External Data, Database Tools, and Design. The Home tab is selected. Below the ribbon is a toolbar with various icons for viewing, creating, filtering, and saving data. The main area displays a query builder window titled "Query1". The query is defined as follows:

```
SELECT * FROM Employee
```

The "Tables" pane on the left lists several tables: Departments, Dependent, Employee (which is selected and highlighted in red), Project, and Works_for.

UPDATE

- Update Salary for the employee whose SSN is 102660 to be 1200
- Update the Salary and department number for the employee SSN is 102674 to be 1700 in department 10
- Delete the data of the employee whose SSN is 102672
- Display the Department's data
- Display the employee SSN, first name and department number
- Display the department's data which are located in Cairo
- Display employee's data who earn higher than 5000

The screenshot shows the Microsoft Access Query Designer window. The ribbon tabs at the top include File, Home, Create, External Data, Database Tools, Design, and Query Tools. The main area displays an UPDATE statement:

```
update employee  
set salary = 1200  
where SSN = 102661
```

The left pane lists tables: All, Ac..., Departments, Dependent, Employee (highlighted), Project, and Works_for.

UPDATE

- Update Salary for the employee whose SSN is 102661 to be 1200
- Update the Salary and department number for the employee SSN is 102674 to be 1700 in department 10
- Delete the data of the employee whose SSN is 102672
- Display the Department's data
- Display the employee SSN, first name and department number
- Display the department's data which are located in Cairo
- Display employee's data who earn higher than 5000

The screenshot shows the Microsoft Access Query Designer interface. The ribbon at the top has tabs for File, Home, Create, External Data, Database Tools, Design, and Query Tools. The Home tab is selected. The main area displays a query named "Query1" with the following SQL code:

```
update employee  
set salary = 1700 , dno = 10  
where ssn = 102674
```

The left pane shows the "Tables" section with tables: Departments, Dependent, Employee (selected), Project, and Works_for.

- ## UPDATE
- Update Salary for the employee whose SSN is 102661 to be 1200
 - `update employee`
 - `set salary = 1200`
 - `where SSN = 102661`
 - Update the Salary and department number for the employee SSN is 102674 to be 1700 in department 10
 - `update employee`
 - `set salary = 1700 , dno = 10`
 - `where ssn = 102674`
 - Delete the data of the employee whose SSN is 102672

CH05_VID03_DELETE Command , TRUNCATE

Home Create External Data Database Tools Design

DatabaseOffice 2007 with depends...

Tell me what you want to do... Sign in

View Clipboard

Sort & Filter Records Find Ted Formatting

All Ac... Tables

Departments Dependent Employee Project Works_for

Employee

Query1 Employee Relationships

```
update employee
set salary = 1700 , dno = 10
where ssn = 102674
```

- # DELETE
- Watch later Share
- Delete the data of the employee whose SSN is 102672
 - Display the Department's data
 - Display the employee SSN, first name and department number
 - Display the department's data which are located in Cairo
 - Display employee's data who earn higher than 5000
 - Display the first names of the employees who earn greater than or equal 5000 and smaller than or equal 9000
 - Display the SSN and first names of the employees who are supervised by supervisor number 669 or 200
 - Display the names of the employees whose first name has the second letter S
 - Display the full data of employees whose first name is Ahmed

File Home Create External Data Database Tools Design

View Clipboard

All Ac...              

Records Find Text Formatting

Employee

delete from employee
where ssn = 102672

DELETE

- Delete the data of the employee whose SSN is 102672
- Display the Department's data
- Display the employee SSN, first name and department number
- Display the department's data which are located in Cairo
- Display employee's data who earn higher than 5000
- Display the first names of the employees who earn greater than or equal 5000 and smaller than or equal 9000
- Display the SSN and first names of the employees who are supervised by supervisor number 669 or 200
- Display the names of the employees whose first name has the second letter S
- Display the full data of employees whose first name is Ahmed

DELETE



TRUNCATE

TRUNCATE Vs DELETE

- **TRUNCATE TABLE** is functionally identical to **DELETE** statement with no **WHERE** clause

TRUNCATE = DELETE

TRUNCATE TABLE Table_name



TRUNCATE Vs DELETE

- **TRUNCATE TABLE** is functionally identical to **DELETE** statement with no **WHERE** clause

DELETE Customer table

TRUNCATE TABLE customer

Remove all Data For Customer

TRUNCATE

-  Deletes all data but keeps the structure of the table
-  Deletes data unconditionally (doesn't have WHERE clause)
-  Can't be rolled back because it's a DDL statement
-  De-allocates the physical memory assigned to data

DELETE

-  Deletes all data but keeps the structure of the table (if it doesn't have WHERE clause)
-  Can include a WHERE clause to delete data conditionally
-  Can be rolled back since it is a DML statement
-  Keeps the physical memory assigned to data until a commit or rollback is issued

The screenshot shows the Microsoft Access Query Designer interface. The ribbon at the top has 'File', 'Home' (selected), 'Create', 'External Data', 'Database Tools', 'Design', and 'Query Tools'. The 'Query Tools' tab is active, showing 'Database' and 'Text' tabs. Below the ribbon is a toolbar with various icons for operations like New, Save, Find, and Delete. The main area is titled 'Query1' and shows the 'Employee' table selected from a list of tables: 'All Active', 'Tables', 'Departments', 'Dependent', 'Employee' (highlighted in red), 'Project', and 'Works_for'. The 'Employee' table has columns: EmployeeID, FirstName, LastName, BirthDate, HireDate, Address, City, and State.

SELECT

- Delete the data of the employee whose SSN is 102672

```
delete from employee  
where ssn = 102672
```

- Display the Department's data
- Display the employee SSN, first name and department number
- Display the department's data which are located in Cairo
- Display employee's data who earn higher than 5000
- Display the first names of the employees who earn greater than or equal 5000 and smaller than or equal 9000
- Display the SSN and first names of the employees who are supervised by supervisor number 669 or 200

Screenshot of Microsoft Access Query Designer showing a query named "Query1". The query is defined as:

```
SELECT Dname, Dnum, MGRSSN, [MGRStart date]  
FROM departments
```

The "Tables" pane on the left shows the following tables: All, Departments, Dependent, Employee, Project, and Works_for. The "Departments" table is selected.

SELECT

- Display the Department's data
- Display the employee SSN, first name and department number
- Display the department's data which are located in Cairo
- Display employee's data who earn higher than 5000
- Display the first names of the employees who earn greater than or equal 5000 and smaller than or equal 9000
- Display the SSN and first names of the employees who are supervised by supervisor number 669 or 200
- Display the names of the employees whose first name has the second letter S
- Display the full data of employees whose first name is Ahmed
- Display the first names of the employees and their bonus which is 10% of their salary

Screenshot of Microsoft Access Query Designer showing a query for "Employee". The query is:

```
Select SSN, Fname, Dno  
from employee
```

The "Tables" pane shows "All" and "Tables" sections with "Departments" selected. The "Query Type" dropdown shows "Select". The ribbon tabs include File, Home, Create, External Data, Database Tools, Query Tools (Design), and a "Tell me what you want to do..." search bar.

SELECT

- Display the Department's data
Select Dname, Dnum, MGRSSN, [MGRStart date]
from departments
- Display the employee SSN, first name and department number
- Display the department's data which are located in Cairo
- Display employee's data who earn higher than 5000
- Display the first names of the employees who earn greater than or equal 5000 and smaller than or equal 9000
- Display the SSN and first names of the employees who are supervised by supervisor number 669 or 200
- Display the names of the employees whose first name has the second letter S
- Display the full data of employees whose first name is Ahmed

CH05_VID04_SELECT Command

Home Create External Data Database Tools Design

Query Tools Database_007-with-dependencies Tell me what you want to do... Sign in

View Run Select Make Append Table Update CUnion Crosstab Pass-Through Delete Data Definition Insert Rows Insert Columns Delete Rows Delete Columns Return

Results

All Ac... Tables Departments Dependent Employee Project Works_for

Query Type

Query1 Employee Relationships Departments

Query Setup

Show/Hide

```
select *  
from departments  
where mgrssn = 223344
```

SELECT

Watch later Share

- Display the Department's data
Select Dname, Dnum, MGRSSN, [MGRStart date]
from departments
- Display the employee SSN, first name and department number
Select SSN, Fname, Dno
from employee
- Display the department's data which are managed by 223344
- Display employee's data who earn higher than 5000
- Display the first names of the employees who earn greater than or equal 5000 and smaller than or equal 9000
- Display the SSN and first names of the employees who are supervised by supervisor number 669 or 200
- Display the names of the employees whose first name has the second letter S

File Home Create External Data Database Tools Design

Query Tools Database_office 2007-with depende... ? - X Sign in

Tell me what you want to do...

View Run Select Make Append Table Update Union Crosstab Pass-Through Delete Data Definition Insert Rows Insert Column Delete Rows Delete Columns Show Table Builder Return Query Setup Show/Hide

All Ac... Tables Departments Dependent Employee Project Works_for

Query Type Employee Relationships Departments

```
select *  
from employee  
where salary > 1500
```

File Home Insert Design Layout References Mailings Review View Tell me... Sign in Share

- Display employee's data who earn higher than 1500
- Display the first names of the employees who earn greater than or equal 5000 and smaller than or equal 9000
- Display the SSN and first names of the employees who are supervised by supervisor number 669 or 200
- Display the names of the employees whose first name has the second letter S
- Display the full data of employees whose first name is Ahmed
- Display the first names of the employees and their bonus which is 10% of their salary
- Display the full name of the employees whose earn more than 10000 annually

File Home Create External Data Database Tools Design

View Run Select Make Append Table ! Update Union Crosstab Pass-Through Delete Data Definition

Insert Rows Insert Columns Delete Rows Delete Columns

Show Table Builder Return

Query Type Employee Relationships Departments

All Ac... Tables Departments Dependent Employee Project Works_for

```
select fname  
from employee  
where salary >= 1500  
and salary <=2500
```

- File Home Insert Design Layout References Mailings Review View Tell me... Sign in Share
- Display employee's data who earn higher than 1500
`select *
from employee
where salary > 1500`
 - Display the first names of the employees who earn greater than or equal 1500 and smaller than or equal 2500
 - Display the SSN and first names of the employees who are supervised by supervisor number 669 or 200
 - Display the names of the employees whose first name has the second letter S
 - Display the full data of employees whose first name is Ahmed

File Home Create External Data Database Tools Design

Query Tools Database_office 2007-with depende... ? - X

View Run Select Make Append Table ! Update (C) Union Crosstab Pass-Through Delete Data Definition Show Table Insert Rows Insert Columns Delete Rows Delete Columns Builder Return Sign in

All Ac...

Tables Departments Dependent Employee Project Works_for

Query Type Query Setup Show/Hide

select fname
from employee
where salary between 1500 and 2500

- File Home Insert Design Layout References Mailings Review View Tell me... Sign in Share
- Display employee's data who earn higher than 1500
select *
from employee
where salary > 1500
 - Display the first names of the employees who earn greater than or equal 1500 and smaller than or equal 2500
select fname
from employee
where salary >= 1500
and salary <=2500
- OR

File Home Create External Data Database Tools Design Query Tools Database_office 2007-with depende... ? - X Sign in

Tell me what you want to do...

View Paste Filter Remove Sort Refresh All Save Find Text Formatting

Views Clipboard Sort & Filter Records Find Text Formatting

All Ac...

Tables Departments Dependent Employee Project Works_for

Query1 Employee Relationships Departments

Select SSN, Fname from employee where superssn = 321654 or superssn = 223344

File Home Insert Design Layout References Mailings Review View Tell me... Sign in Share

- Display the SSN and first names of the employees who are supervised by supervisor number 321654 or 223344
- Display the names of the employees whose first name has the second letter O
- Display the full data of employees whose first name is Ahmed
- Display the first names of the employees and their bonus which is 10% of their salary
- Display the full name of the employees whose earn more than 10000 annually
- Display the first names and the SSN of the employees ordered by the first name
- Display the full data of the employees sorted by their department number ascendingly and then sorted by the salary descendingly

File Home Create External Data Database Tools Design

Query Tools Database_office 2007-with depende... ? Tell me what you want to do... Sign in

View Run Select Make Append Table Delete Data Definition

Update Union Crosstab Pass-Through Insert Rows Insert Columns Delete Rows Delete Columns Show Table Builder Return

Query Type Query Setup Show/Hide

All Ac... Tables Departments Dependent Employee Project Works_for

Query1 Employee Relationships Departments

Select SSN, Fname from employee where superssn IN (321654, 223344)

IN, ALL, ANY : Multi row operator
=, <, > : Single row operator

File Home Insert Design Layout References Mailings Review View Tell me... Sign in Share

- Display the SSN and first names of the employees who are supervised by supervisor number 321654 or 223344

Select SSN, Fname from employee where superssn = 321654 or superssn = 223344

OR

Select SSN, Fname from employee where superssn IN (321654, 223344)

- Display the names of the employees whose first name has the second letter O
- Display the full data of employees whose first name is Ahmed
- Display the first names of the employees and their bonus which is 10% of their salary
- Display the full name of the employees whose earn more than 10000 annually

The screenshot shows the Microsoft Access Query Designer interface. The ribbon at the top has tabs for File, Home, Create, External Data, Database Tools, Query Tools (selected), Design, and Sign in. The main area displays a query with the following SQL code:

```
select *  
from employee  
where fname like '?o*' 
```

The left pane shows a list of tables: All, Ac..., Tables, Departments, Dependent, Employee, Project, and Works_for. The 'Tables' section is expanded, and 'Departments' is selected. The 'Employee' table is also selected in the main query area.

-
- The screenshot shows a Microsoft Word document titled 'Lect 4.docx - Word'. The ribbon at the top has tabs for File, Home, Insert, Design, Layout, References, Mailings, Review, View, Tell me..., Sign in, and Share. The main content area contains a bulleted list of tasks related to database queries:
- Display the names of the employees whose first name has the second letter O
 - select *
from employee
where fname like '?o*'
 - Display the full data of employees whose first name is Ahmed
 - Display the first names of the employees and their bonus which is 10% of their salary
 - Display the full name of the employees whose earn more than 10000 annually
 - Display the first names and the SSN of the employees ordered by the first name
 - Display the full data of the employees sorted by their department number ascendingly and then sorted by the salary descendingly

Screenshot of Microsoft Access Query Designer showing a query against the Northwind database:

```
select *  
from employee  
where fname like 'Ahm?d'
```

- Lect 4.docx - Word
- Display the names of the employees whose first name has the second letter O
 - select *
from employee
where fname like '?o*'
 - Display the full data of employees whose first name is Ahmed
 - select *
from employee
where fname like 'Ahm?d'
 - Display the first names of the employees and their bonus which is 10% of their salary
 - Display the full name of the employees whose earn more than 10000 annually
 - Display the first names and the SSN of the employees ordered by the first name
 - Display the full data of the employees sorted by their department number ascendingly and then sorted by the salary descendingly

File Home Create External Data Database Tools Design

View Run Select Make Append Table Union Crosstab Pass-Through Delete Data Definition

Insert Rows Insert Columns Delete Rows Delete Columns Show Table Builder Return

Query Type Query1 Employee Relationships Departments

All Ac... Tables Departments Dependent Employee Project Works_for

Select fname, salary*0.1 as Bonus from employee

Lect 4.docx - Word File Home Insert Design Layout References Mailings Review View Tell me... Sign in Share

- Display the first names of the employees and their bonus which is 10% of their salary
Select fname, salary*0.1 as Bonus from employee
- Display the full name of the employees whose earn more than 10000 annually
- Display the first names and the SSN of the employees ordered by the first name
- Display the full data of the employees sorted by their department number ascendingly and then sorted by the salary descendingly

The screenshot shows the Microsoft Access Query Designer window. The ribbon tabs at the top include File, Home, Create, External Data, Database Tools, Query Tools (selected), Design, and Sign in. The 'Query Type' dropdown is set to 'Select'. The main area displays the following SQL query:

```
select fname + ' ' + lname as [Full Name]  
from employee  
where salary*12 > 10000
```

The 'Tables' pane on the left lists 'All Access Tables' with 'Departments' selected. Below the tables are icons for Dependent, Employee, Project, and Works_for.

-
- The screenshot shows a Microsoft Word document titled 'Lect 4.docx - Word'. The content consists of a bulleted list of tasks related to database queries:
- Display the first names of the employees and their bonus which is 10% of their salary
Select fname, salary*0.1 as Bonus from employee
 - Display the full name of the employees whose earn more than 10000 annually
 - Display the first names and the SSN of the employees ordered by the first name
 - Display the full data of the employees sorted by their department number ascendingly and then sorted by the salary descendingly

Screenshot of Microsoft Access Query Designer:

The window title is "Database_office 2007-with depende...". The ribbon tabs are "File", "Home", "Create", "External Data", "Database Tools", "Query Tools", and "Design".

The "Query Type" dropdown shows "Select".

The "Tables" pane on the left lists "All Ac...", "Tables", "Departments", "Dependent", "Employee", "Project", and "Works_for".

The main area contains the following SQL query:

```
select Fname, SSN  
from employee  
order by fname desc
```

Screenshot of Microsoft Word document titled "Lect 4 docx - Word":

The ribbon tabs are "File", "Home", "Insert", "Design", "Layout", "References", "Mailings", "Review", "View", "Tell me...", "Sign in", and "Share".

The content of the document is:

- Display the first names and the SSN of the employees ordered by the first name
- Display the full data of the employees sorted by their department number ascendingly and then sorted by the salary descendingly

The screenshot shows the Microsoft Access Query Designer window. The ribbon tabs at the top include File, Home, Create, External Data, Database Tools, Design, and Query Tools. The Design tab is selected. The left pane displays a list of tables: All, Ac..., Departments, Dependent, Employee, Project, and Works_for. The 'Tables' section has 'Departments' selected. The main area contains the following SQL query:

```
select *  
from employee  
order by dno asc, salary desc
```

-
- The screenshot shows a Microsoft Word document titled 'Lect 4.docx - Word'. The ribbon tabs at the top include File, Home, Insert, Design, Layout, References, Mailings, Review, View, and Share. The Design tab is selected. The content area contains two bullet points followed by their respective SQL queries:
- Display the first names and the SSN of the employees ordered by the first name

```
select Fname, SSN  
from employee  
order by fname
```
 - Display the full data of the employees sorted by their department number ascendingly and then sorted by the salary descendingly

CH05_VID08_Order By

Database Tools Tell me what you want to do... Sign in

View Paste Filter Sort & Filter Records Find Text Formatting

All Ac... Tables Departments Dependent Employee Project Works_for

Query1 Employee Relationships Departments

| Fname | Lname | SSN | Bdate | Address | Sex | Salary | Superssn | Dno |
|--------|---------|--------|------------|---------------------|-----|--------|----------|-----|
| Amr | Omran | 321654 | 9/14/1963 | 44 Hilopolis.Ca M | M | 2500 | | |
| Ahmad | Sameh | 102680 | 12/12/1986 | 75 sabaa st | M | 1900 | 102674 | 10 |
| Kamel | Mohamed | 223344 | 10/15/1970 | 38 Mohy el die M | M | 1800 | 321654 | 10 |
| Moheb | Rafaat | 102674 | 5/6/1984 | 6 Makram Ebld M | M | 1700 | 112233 | 10 |
| Ahmed | Ali | 112233 | 1/1/1965 | 15 Ali fahmy St M | M | 1300 | 223344 | 10 |
| Asmaa | Ali | 102661 | 10/18/1985 | | F | 1200 | | 10 |
| Hanaa | Sobhy | 123456 | 3/18/1973 | 38 Abdel Khalil F | F | 800 | 223344 | 10 |
| Noha | Mohamed | 968574 | 1/2/1975 | 55 Orabi St. El F F | F | 1600 | 321654 | 20 |
| Mariam | Adel | 669955 | 12/6/1982 | 269 El-Haram st F | F | 750 | 512463 | 20 |
| Edward | Hanna | 512463 | 8/19/1972 | 18 Abaas El 3ak M | M | 1500 | 321654 | 30 |
| Maged | Raoof | 521634 | 6/4/1980 | 18 Kholosi st.Si M | M | 1000 | 968574 | 30 |

- Display the first names and the SSN of the employees ordered by the first name

```
select Fname, SSN  
from employee  
order by fname
```

- Display the full data of the employees sorted by their department number ascendingly and then sorted by the salary descendingly

The screenshot shows the Microsoft Query Tools interface. The 'Design' tab is selected. In the 'Query Type' section, 'Select' is chosen. The 'Tables' pane on the left lists 'All', 'Tables', and 'Employee'. The main area displays the query: 'Select distinct Dno from employee'. The status bar at the bottom indicates '1 row(s) found'.

Distinct: filters the duplicates
not of each column but for
the whole combination
(allows different
combinations)

The screenshot shows a Microsoft Word document titled 'Lect 4.docx - Word'. The 'Design' tab is selected. The content is a bulleted list of tasks:

- Display the departments that currently have hired employees
- Display the departments and the supervisors within each department
- Display the employee name and the department name that he works for
- Display the employee name and the department name that he manages
- Display the employee name and the department name that he works for if exist
- Display the department name and the employee name that works for it if exist
- Display the employee names and the corresponding department names if exist
- Display the employee name and the name of his/her supervisor

CH05_VIDEO9_DISTINCT

Home Create External Data Database Tools Design

Query Tools DatabaseOffice 2007-with dependen... Tell me what you want to do... Sign in

View Run Select Make Append Delete Insert Rows Insert Columns Show Table Builder Returns

Results

Query Type: Query1 Departments Employee

Query Setup

```
select distinct dno, superssn  
from employee
```

- Display the departments that currently have hired employees
`Select distinct Ono
from employee`
- Display the departments and the supervisors within each department
- Display the employee name and the department name that he works for
- Display the employee name and the department name that he manages
- Display the employee name and the department name that he works for if exist
- Display the department name and the employee name that works for it if exist
- Display the employee names and the corresponding **department names** if exist
- Display the employee name and the name of his/her supervisor

The screenshot shows two windows side-by-side. On the left is Microsoft Access with a query results grid titled 'Query1'. The grid displays data from three tables: 'Departments' (dno), 'Employee' (supervisor), and 'Employee' (Employee). The columns are labeled 'dno', 'supervisor', and 'Employee'. The data shows several rows where employees are assigned to departments and supervisors. On the right is a Microsoft Word document titled 'Lect 4.docx'. It contains a bulleted list of tasks related to displaying departmental information.

| dno | supervisor | Employee |
|-----|------------|----------|
| 10 | 112233 | |
| 10 | 102674 | |
| 10 | 223344 | |
| 10 | 223344 | 10 |
| 10 | 321654 | |
| 30 | 321654 | |
| 30 | 968574 | |
| 20 | 512463 | |
| 20 | 321654 | |

- Display the departments that currently have hired employees
Select distinct Dno from employee
- Display the departments and the supervisors within each department
- Display the employee name and the department name that he works for
- Display the employee name and the department name that he manages
- Display the employee name and the department name that he works for if exist
- Display the department name and the employee name that works for it if exist
- Display the employee names and the corresponding department names if exist
- Display the employee name and the name of his/her supervisor

The screenshot shows two windows side-by-side. On the left is the Microsoft Access 'Query Tools' ribbon tab, showing a query named 'CH05_VID10_Inner Join'. The query is designed to select 'fname, dname' from 'employee, departments' where 'MGRSSN = SSN'. The Access interface includes a toolbar with 'View', 'Run', 'Select', 'Make Append Table', 'Update', 'Union', 'Crosstab', 'Pass-Through', 'Delete', and 'Data Definition'. Below the toolbar is a 'Tables' pane listing 'All Ac...', 'Departments', 'Dependent', 'Employee' (which is selected), 'Project', and 'Works_for'. The main area displays the SQL query code.

The right window is Microsoft Word, titled 'Lect 4.docx - Word'. It contains a list of tasks for displaying employee information across multiple queries:

- Display the employee name and the department name that he manages
`select fname, dname
from employee, departments
where MGRSSN = SSN`
- Display the employee name and the department name that he works for
- Display the employee name and the department name that he works for if exist
- Display the department name and the employee name that works for it if exist
- Display the employee names and the corresponding department names if exist

Screenshot of Microsoft Access Query Designer showing a query for selecting employee names and department names.

The interface includes:

- File, Home, Create, External Data, Database Tools, Design tabs.
- Query Type dropdown: Select.
- Tables list: Departments, Dependent, Employee (highlighted), Project, Works_for.
- Employee table is selected in the query builder.
- Employee table columns: fname, lname, dno.
- Departments table columns: dname, dno.
- Query results pane showing the SQL code:

```
select fname, lname  
from employee e , departments as d  
where e.dno = d.dno
```

- Lect-4.docx - Word
- Display the employee name and the department name that he manages
`select fname, lname
from employee, departments
where MGRSSN = SSN`
 - Display the employee name and the department name that he works for
 - Display the employee name and the department name that he works for if exist
 - Display the department name and the employee name that works for it if exist
 - Display the employee names and the corresponding department names if exist

File Home Create External Data Database Tools Design

Query Tools Database_office 2007-with dependen... ? Sign in

View Run Select Make Append Table ! Update Union Crosstab Pass-Through Delete Data Definition Show Table Insert Rows Insert Columns Delete Rows Delete Columns Builder Return Totals Query Setup Show/Hide

All Ac...

Tables Departments Dependent Employee Project Works_for

Query Type: All

Query1 Departments Employee

```
select fname, dname
from employee e inner join departments as
d
on e.dno = d.dno
```

Lect 4.docx - Word File Home Insert Design Layout Reference Mailings Review View Tell me... Sign in Share

- Display the employee name and the department name that he works for if exist
- Display the department name and the employee name that works for it if exist
- Display the employee names and the corresponding department names if exist
- Display the employee name and the name of his/her supervisor
- Display the names of employees, the projects they are working on and the number of hours spent on each project
- Display the employees data who earn higher than Ahmed Ali
- Display the employees data who earn higher than all the employees in department 10
- Display the employees data who earn higher than any employee in department 10

CH05_VID10_Inner Join

Home Create External Data Database Tools Design

View Run Select Make Append Table Delete Data Definition

Insert Rows Insert Columns Totals

Query Tools Database_007-with dependen... Sign In

File Home Insert Design Layout Reference Mailings Review View Watch later Share

on e.dno = d.dno

• Display the employee name and the name of his/her supervisor

```
select e.fname, s.fname  
from employee e, employee s  
where e.superssn = s.ssn
```

• Display the names of employees, the projects they are working on and the number of hours spent on each project

• Display the employees data who earn higher than Ahmed Ali

• Display the employees data who earn higher than all the employees in department 10

• Display the employees data who earn higher than any employee in department 10

```
select fname, pname, hours  
from employee, project, works_for  
where ssn = essn  
and pno = pnumber
```

CH05_VID11_Outer , Full Join

Home Create External Data Database Tools Design

View Run Select Make Append Table Delete Data Definition

! Update CrossTab Pass-Through Show Table

Insert Rows Insert Columns Delete Rows Delete Columns Builder Return

Tell me what you want to do... Sign In

All Ac... Tables Departments Dependent Employee Project Works_for

Query Type

Query1 Departments Employee

Select fname, dname
from employee e left outer join
departments d
on e.dno = d.dno

File Home Insert Design Layout Reference Mailings Review View Tell me what you want to do... Watch later Share

- Display the employee name and the department name that he works for if exist
- Display the department name and the employee name that works for it if exist
- Display the employee names and the corresponding department names if exist
- Display the employee name and the name of his/her supervisor
- Display the names of employees, the projects they are working on and the number of hours spent on each project
- Display the employees data who earn higher than Ahmed Ali
- Display the employees data who earn higher than all the employees in department 10
- Display the employees data who earn higher than any employee in department 10

File Home Create External Data Database Tools Design

View Run Select Make Append Table Delete Data Definition

All Ac... Tables Departments Dependent Employee Project Works_for

Query Tools Database_office 2007-with dependen... ? - X

Tell me what you want to do... Sign in

Insert Rows Insert Columns Delete Rows Delete Columns Totals

Show Table Builder Return

Query Type

Query1 Departments Employee

Select fname, dname
from employee e right outer join departments d
on e.dno = d.dno

File Home Insert Design Layout Reference Mailings Review View Tell me... Sign in Share

Lect 4.docx - Word

- Display the employee name and the department name that he works for if exist
Select fname, dname
from employee e left outer join departments d
on e.dno = d.dno
- Display the department name and the employee name that works for it if exist
- Display the employee names and the corresponding department names if exist
- Display the employee name and the name of his/her supervisor
- Display the names of employees, the projects they are working on and the number of hours spent on each project
- Display the employees data who earn higher than Ahmed Ali
- Display the employees data who earn higher than all the employees in department 10

S : fname, dname
from employee e full outer join
departments d
on e.dno = d.dno

- Display the employee name and the department name that he works for if exist
Select fname, dname
from employee e left outer join departments d
on e.dno = d.dno
- Display the department name and the employee name that works for it if exist
Select fname, dname
from employee e right outer join departments d
on e.dno = d.dno
- Display the employee names and the corresponding department names if exist
- Display the employee name and the name of his/her supervisor
- Display the names of employees, the projects they are working on and the number of hours spent on each project

The screenshot shows the Microsoft Access Query Designer interface. The ribbon tabs at the top include File, Home, Create, External Data, Database Tools, Design, and Query Tools. The Home tab is selected. The main area displays the following SQL query:

```
select e.fname, s.fname  
from employee e, employee s  
where e.superssn = s.ssn
```

The left pane shows the database objects: Tables (Departments, Dependent, Employee, Project, Works_for) and All Access Objects. The Employee table is currently selected.

-
- The screenshot shows a Microsoft Word document titled "Lect4.docx - Word". The ribbon tabs at the top include File, Home, Insert, Design, Layout, Reference, Mailings, Review, View, Tell me..., Sign in, and Share. The Home tab is selected. The main content area contains a bulleted list of tasks related to querying an employee database:
- Display the employee name and the name of his/her supervisor
 - Display the names of employees, the projects they are working on and the number of hours spent on each project
 - Display the employees data who earn higher than Ahmed Ali
 - Display the employees data who earn higher than all the employees in department 10
 - Display the employees data who earn higher than any employee in department 10
 - Display maximum and minimum salary for the company
-
- Display the average salary for each department given that its maximum salary is greater than 1800

The image shows two overlapping windows: Microsoft Access on top and Microsoft Word on the bottom.

Microsoft Access Window (Top):

- **Title Bar:** Database_office 2007-with dependent...
- **Menu Bar:** File, Home, Create, External Data, Database Tools, Design, Tell me what you want to do..., Sign in
- **Toolbar:** View, Paste, Filter, Sort & Filter, Refresh, Find, Text Formatting
- **List Box:** Tables (Departments, Dependent, Employee, Project, Works_for)
- **Query Editor:**

```
select *  
from employee  
where salary > (select salary from employee  
where fname ='Ahmed' and lname = 'Ali')
```

Microsoft Word Window (Bottom):

- **Title Bar:** Lect 4.docx - Word
- **Menu Bar:** File, Home, Insert, Design, Layout, Reference, Mailings, Review, View, Tell me..., Sign in, Share

List of Tasks:

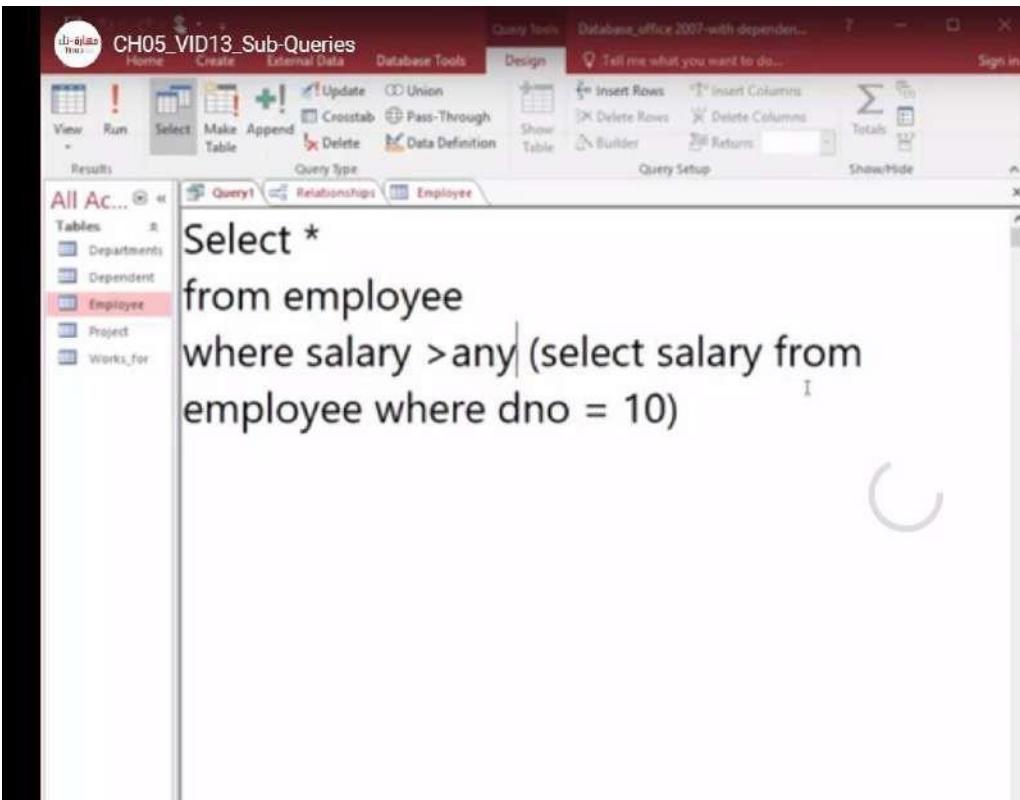
- Display the employees data who earn higher than Ahmed Ali
- Display the employees data who earn higher than all the employees in department 10
- Display the employees data who earn higher than any employee in department 10
- Display maximum and minimum salary for the company
- Display the average salary for each department given that its maximum salary is greater than 1800
- Display the department name and the maximum salary for each department given that its average is greater than 1200, sort the result by department name

The image shows two windows side-by-side. On the left is the Microsoft Access 'Query Tools' ribbon tab, showing a query named 'Query1' against a database named 'Database_office 2007-with dependen...'. The query is:

```
Select *  
from employee  
where salary > all (select salary from employee  
where dno = 10)
```

On the right is a Microsoft Word document titled 'Lect 4.docx - Word'. It contains a bulleted list of tasks and their corresponding SQL queries:

- Display the employees data who earn higher than Ahmed Ali
`select *
from employee
where salary > (select salary from employee
where fname = 'Ahmed' and lname = 'Ali')`
- Display the employees data who earn higher than all the employees in department 10
- Display the employees data who earn higher than any employee in department 10
- Display maximum and minimum salary for the company
- Display the average salary for each department given that its maximum salary is greater than 1800

CH05_VID13_Sub-Queries

Home Create External Data Database Tools Design

Query Tools Database_Office 2007-with dependen...

View Run Select Make Append Table

! Update Union CrossTab Pass-Through Delete Data Definition

Insert Rows Insert Columns Delete Rows Delete Columns Builder Returns

Results

All Ac... 

Tables

Departments
Dependent
Employee
Project
Works_for

Query Type: Employee

Select *

from employee

where salary > any (select salary from employee where dno = 10)

File Home Insert Design Layout Reference Mailings Review View  

• Display the employees data who earn higher than Ahmed Ali

```
select *
from employee
where salary > (select salary from employee
where fname = 'Ahmed' and lname = 'Ali')
```

• Display the employees data who earn higher than all the employees in department 10

```
Select *
from employee
where salary > all (select salary from employee
where dno = 10)
```

• Display the employees data who earn higher than any employee in department 10

• Display maximum and minimum salary for the company

The screenshot shows the Microsoft Query Designer interface. The 'Design' tab is selected in the ribbon. A query window titled 'Query1' is open, containing the following SQL code:

```
select max(salary) as max, min(salary) as min  
from employee
```

The 'Tables' pane on the left lists several tables: 'All Ac...', 'Tables', 'Departments', 'Dependent', 'Employee' (which is selected), 'Project', and 'Works_for'. The 'Employee' table is highlighted with a pink background.

The screenshot shows a Microsoft Word document window titled 'Lect 4.docx - Word'. The ribbon tabs include File, Home, Insert, Design, Layout, Reference, Mailings, Review, View, and Share. The main content area contains the following list:

- Display maximum and minimum salary for the company
- Display the average salary for each department given that its maximum salary is greater than 1800
- Display the department name and the maximum salary for each department given that its average is greater than 1200, sort the result by department name

The image shows two windows side-by-side. On the left is the Microsoft Access 'Query Tools' ribbon tab, showing a query named 'Query1' with the 'Employee' table selected. The SQL code in the query window is:

```
Select count(ssn) as emp, Count(salary) as sal  
from employee
```

A note below the query states: "Null Values are not countable. If average: sum / 11 .. not 12".

On the right is the Microsoft Word ribbon tab, titled 'Lect_Edits - Word'. It contains a bulleted list of tasks and a corresponding SQL query:

- Display maximum and minimum salary for the company
`select max(salary) as max, min(salary) as min
from employee`
- Display the count of employees and the count of salaries
- Display the average salary for each department given that its maximum salary is greater than 1800
- Display the department name and the maximum salary for each department given that its average is greater than 1200, sort the result by department name

The screenshot shows the Microsoft Query Designer interface. The 'Tables' pane on the left lists 'All Ac...', 'Departments', 'Dependent', and 'Employee'. The 'Employee' table is selected. The main area displays the following SQL query:

```
select avg(salary)  
from employee  
group by dno  
having max(salary)>1800
```

We can't use Where with an aggregate function. Instead, we use it with Having

The screenshot shows a Microsoft Word document titled 'Lect 4.docx - Word'. The content is a bulleted list of SQL tasks:

- Display maximum and minimum salary for the company
`select max(salary) as max, min(salary) as min
from employee`
- Display the count of employees and the count of salaries
`Select count (ssn) as emp, Count (salary) as sal
from employee`
- Display the average salary for each department given that its maximum salary is greater than 1800
- Display the department name and the maximum salary for each department given that its

File Home Create External Data Database Tools Design

View Run Select Make Append Delete Data Definition

Results

All Ac... <> Query1 Relationships Employee

Tables Departments Dependent Employee Project Works_for

Query Type

Database_office 2007-with dependen...

Tell me what you want to do... Sign in

Insert Rows Insert Columns Delete Rows Delete Columns Totals

Builder Return Show/Hide

```
select dname, max(salary) as max
from employee e, departments d
where e.dno=d.dno
group by dname
having avg(salary)>1200
order by dname
```

- Lect 4.docx - Word
- File Home Insert Design Layout Reference Mailings Review View
- Tell me... Sign in Share
- Display the department name and the maximum salary for each department given that its average is greater than 1200, sort the result by department name

Lect 4 Data.xlsx - Excel

| | A | B | C | D | E | F | G | H | I |
|----|--------|---------|--------|-----------|---------------------|-----|--------|----------|-----|
| 1 | | | | | | | | | |
| 2 | Fname | Lname | SSN | Bdate | Address | Sex | Salary | Superssn | Dno |
| 3 | Asmaa | Ali | 102661 | 18-Oct-85 | | F | 1200 | | 10 |
| 4 | Moheb | Rafaat | 102674 | 06-May-84 | 6 Makram Ebid St | M | 1700 | 112233 | 10 |
| 5 | Ahmad | Sameh | 102680 | 12-Dec-86 | 75 sabaa st | M | 1900 | 102674 | 10 |
| 6 | Ahmed | Ali | 112233 | 01-Jan-65 | 15 Ali fahmy St.Giz | M | 1300 | 223344 | 10 |
| 7 | Hanaa | Sobhy | 123456 | 18-Mar-73 | 38 Abdel Khalik Th | F | 800 | 223344 | 10 |
| 8 | Kamel | Mohamed | 223344 | 15-Oct-70 | 38 Mohy el dien at | M | 1800 | 321654 | 10 |
| 9 | Edward | Hanna | 512463 | 19-Aug-72 | 18 Abaas El Zakaad | M | 1500 | 321654 | 30 |
| 10 | Maged | Raoof | 521634 | 04-Jun-80 | 18 Kholosi st.Shobi | M | 1000 | 968574 | 30 |
| 11 | Mariam | Adel | 669955 | 06-Dec-82 | 269 El-Haram st. | G | 750 | 512463 | 20 |
| 12 | Noha | Mohamed | 968574 | 02-Jan-75 | 55 Orabi St. El Mol | F | 1600 | 321654 | 20 |
| 13 | | | | | | | | | |
| 20 | | | | | | | | | |
| 21 | | | | | | | | | |
| 22 | | | | | | | | | |
| 23 | | | | | | | | | |
| 24 | | | | | | | | | |
| 25 | | | | | | | | | |
| 26 | | | | | | | | | |
| 27 | | | | | | | | | |
| 28 | | | | | | | | | |

| Dname | Max |
|-------|------|
| DP1 | 1900 |
| DP3 | 1500 |

Lect 4.docx - Word

Table Tools

File Home Insert Design Layout Refer Mail Review View Design Layout Tell me... Sign in Share

- Display the department name and the maximum salary for each department given that its average is greater than 1200, sort the result by department name

```

4
select dname, max(salary) as max
from employee e, departments d
where e.dno=d.dno
group by dname
having avg(salary)>1200
order by dname
    
```

