SELECT $A_1, A_2, \ldots, A_n$ → output attributes : π

FROM $R_1, R_2, \ldots, R_m$ → input tables:

                                     $R_1 \times R_2 \times \cdots \times R_m$

WHERE   conditions ;   → $\sigma, \bowtie$

$$\pi_{A_1, A_2, \ldots, A_n} \left(\overset{\sigma}{\bowtie} \text{conditions} \ (R_1 \times R_2 \times \cdots \times R_m) \right)$$

Quiz 3 on Wednesday on RA only. No SQL.

Query: List Lname of emp in dept 5 who work more than 10 & less than 20 hrs on 'Product X'.

Select distinct Lname

from Emp, Works, Project

where   ESSN $\overset{\bowtie}{=}$ SSN   and   Pno $\overset{\bowtie}{=}$ Pnumber

         and   Pname = 'Product X' and dno = 5

         and   (hours between 10 and 20) ;

<u>ORDER BY</u>

   Select Dname, Fname

   from Department, Emp

   where Dnumber = Dno

     ORDER BY Dname, Fname;

<u>Output</u>

Dname	Fname
Admin	Ahmed
"	Alicia
"	Jennifer

Default ordering: ascending

Head	James
Res	Frank
Res	John
Res	Joyce
Res	Ramesh

ORDER BY Dname Desc, Fname Asc;

Modifying database :

INSERT   DELETE   UPDATE

Insert Into Employee
Values ('John', 'M', 'Smith', '1235'·····)

Insert into Emp (Fname, Lname, Dno, ····)
Values ('Rick', 'Smith', 5, ····)

Delete from Emp
where Lname = 'Smith';

Delete from Emp; ⟵ delete all rows

Update Project
Set Pname = 'Product yyy'
where Pnumber = 3;

Update Project
Set Pname = 'Product yyy' and (Dnum = 3)

where Pnumber = 3;

Rename Table EMPLOYEE TO EMP;
permanent rename → next time you login

Query: List the Fname of emp as Ename
& Fname of emp's supervisor as Sname
if supervisor's lname is 'Wong' or 'Borg'.

Select E.Fname AS Ename, S.Fname AS Sname
From Emp E, Emp S
where (S.Lname = 'Wong' or S.Lname = 'Borg')
        and   S.SSN = E.SuperSSN;

E.Fname Ename, S.Fname SName

UNION

Select E.Fname Ename, S.Fname Sname
from Emp E, Emp S
Where S.Lname = 'Wong' and S.SSN = E.SuperSSN
    UNION
Select E.Fname Ename, S.Fname Sname
from Emp E, Emp S
where S.Lname = 'Borg' and S.SSN = E.SuperSSN;

Query: List all emp who live is Houston, TX.

```
Select   Fname
from     Emp
where    Address  LIKE  '% Houston, TX';
```
↓
zero or more character

Query: List all emp born in 1960.

```
Select   Fname
from     Emp
where    Bdate  LIKE  '1960 _ _ _ _ _ _';
```
↓
1 character

Query: Show the effect of 10% raise is salary.

```
Select Fname, 1.1 * Salary as Raised Sal
from   Emp;
```


Chapter 6.3, 6.4, 7.
NULL

Query: List emp who do not have a supervisor.

```sql
select Fname
from   Employee
where  superSSN IS NULL.
                  IS NOT
```

Query:
```sql
select *
from   works_on
where  hours > 10  or  hours <= 10;
```
15 rows

Query:
```sql
select *
from   works_on
where  (hours > 10  or  hours <= 10)
OR     Pno > 0;
```
16 rows

```sql
AND  Pno > 0;  ⟶  15 rows
```