

Chapter 5:- Structure Query Language "SQL"

SELECT [Distinct] <Col. list>

FROM <tables>

[WHERE <Conditions>]

[ORDER BY <Col. List>]

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①

Recall

SQL

DDL

create

drop

alter

[اختياري]

[اجباري]

DLI

insert

update

delete

Select

Control

Ex Sailors (sail , sname , rating , age)

Boats (bid , name , color)

Reserve (sail , bid , date)

SELECT S.sname

OR

SELECT sname

FROM Sailors S ,

FROM Sailors ,

computer start from here

SELECT **DISTINCT** S.sname

FROM Sailors S ;

SELECT sname

FROM Sailors S ;

ممكن اكثر من واحد

Note Distinct works on tuples
 Low pit chet hater is

(2)

Assume

A 18

A 19

SELECT S.age ~~DISTINCT~~ S.sname the A 18 ?
A 19
 FROM Sailors S

SELECT DISTINCT S.sname, S.age Result
 FROM Sailors S
 WHERE S.age > 18 AND S.rating < 9;
S.sname S.age
A 18
A 19

SELECT DISTINCT S.sname As FullName, S.age as age
 FROM Sailors
 WHERE S.age > 18 AND S.rating < 9

Result
 FullName age
 A 18
 A 19

* Default ~~the sorting~~ ascending

ORDER BY desc

ORDER BY S.age, S.sname

ORDER BY S.rating desc

③

How to make join?

Find sailors who reserve at least 1 Boat?

Ans

```
SELECT S.sname
FROM Sailors S, Reserve R
WHERE S.sid = R.sid
```

$\Pi(\text{condition})$

QB

```
SELECT S.sname
FROM Sailors S Join Reserve R on S.sid = R.sid;
```

Ex السفن التي حجزها قارب أحمر

```
SELECT S.sname
FROM Sailors S, Reserves R, Boats B
Where S.sid = R.sid AND
      R.bid = B.bid AND
      B.color = 'red';
```

Note Join conditions = No. of ~~table~~ Join Tables - 1

Ex السفن التي حجزها قارب أحمر أو أخضر

```
select S.sname
from Sailors S, Reserve R, Boats B
Where (B.color = 'red' OR
      B.color = 'green');
```

8

4

SELECT S.name
FROM
WHERE

UNION
SELECT
WHERE

'green' ;

Ex Assume we add salary to sailors → sailors (, salary)

SELECT O.I * S.salary As Tax For View
FROM Sailors لا يبدل على اليا
WHERE S.age > 18

WHERE S.age > 2 * S.rating ;

Ex A query that list all sailors last

SELECT S.name
FROM Sailors S
WHERE S.name

LIKE

'A%' ;

capital letter

↑ matches 0 or more char

'A%d'

→ Ahmad ✓
Ad ✓

Case Sensitive

5

S.sname LIKE 'A' → A

S.sname like '_a%' - Matcher one char only

↑
a الحرف الثاني
اسماء الأشخاص التي

'A - %d'

A حرف

d آخر حرف

على الأقل 3 حرف راج يكون الألف

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①

Sailors (Sid, sname, aage, rating
Boats (bid, bname, colour)
Reserve (Sid, bid, day)

Ex List Names of sailors ~~also~~ with rating
(1 or 2 or 3)

Answer select S.sname
from Sailors S
where S.rating IN (1,3,5) ;

or select S.sname
from Sailors S
where S.rating = 1 or S.rating = 3 or S.rating = 5

or select S.sname
from Sailors S
where S.rating IN (select S2.rating
from Sailors S2
where S2.rating = 1
or S2.rating = 3
or S2.rating = 5)

PREVIOUS called "Nested SQL"

join قارب البحر سائرين sailors السائل Ex

2

Ans
Select S.sname
From Sailors S
Where
S.sid in (Select R.sid
FROM Reserve R
Where R.bid In
(select B.bid
From Boats B
Where B.color = 'red'
)
) ;

← Compiler

Ans By using join

Select
FROM Sailors S, Reserve R, Boats B
Where S.sid = R.sid arch
R.bid = B.bid arch
B.color = 'red' ;

(3)

Select S.sname
From Sailors s
where

IN \equiv OR

Not OR \equiv and

S.rating Not IN (1,3,5)

س 3 ولا 1 ولا 5
يجب أن لا يكون

\Rightarrow and (S.rating \neq 1 and S.rating \neq 3 and S.rating \neq 5)

Ans أسماء الإشراف التي لا حجبها قوارب حمراء Ex

Select S.sname
From Sailors s
where s.sid in (select R.sid
FROM Reserve R
where R.bid Not In
(select B.bid
From Boats B
where B.color = 'red')
);

Ex VF الإشراف التي لا حجبها قوارب حمراء

Select S.sname
From Sailors
where s.sid Not In
(select R.sid
From Reserve R)

Ex Find minimum age ?

Aggregate Functions : فکٹر جنکشن اگلی
اپنے کی اپنی!

There is a function in mysql called min (...)

Answer

Select min(s.age)
FROM Sailors S;

(4)

Another

function Max : To find max value

Avg : To find Average $\frac{\text{Sum of all}}{\# \text{ of}}$

Sum : To find the summation

Count : To Count # of tuples

Ex Find # of sailors

Select Count (*)
FROM Sailors S;

کون کی (توپل)

= Count(s.sname)

Combination of columns

Ex : Count unique age ?

Select Count (Distinct s.age)
FROM Sailors S;

21 - 19

21 - 19

3

21 20 19

Ans X

just it

Ans ✓

Select Min (s.age)
FROM Sailors S;

S.sname

Select S2.sname FROM
Sailors S2 where S2.age =
(select Min (s.age)
FROM Sailors S)

Note Common mistake

Where min (age) = ... X

Select في نقطة \Leftarrow

: نقطة نقطة \Leftarrow
Nested queries easier
than Join !

Ex Find Avg Rate of sailors with rating 7

24-10-2018

Ans select AVG(age)
from sailors s
where s.rating = 7;

Ex Find Number (count) of sailors with age
greater than 18 or equal.

select count(*)
from sailors s
where s.age >= 18

* Group By : Used when you saw (for each) in the
question.

select
from sailors s
Group By s.rating

Results

4-Groups

Rating	7	8	9	5
1	3	5	6	
2	8	9		
4				
7				

Sid	age	rating
1	18	7
2	19	7
3	17	9
4	19	7
5	20	8
6	21	8
7	18	7
8	17	9
9	19	8

* Select Avg(s.age), s.rating
from Sailors s

group by s.rating
order by s.rating
Avg(s.age)
1

Means
First column
which is Avg(s.age)

Avg (age)	s.rating
18.5	7
17	9
19.5	8
21	5

3

Ex Find Sailors who reserve all Boats

Ans Select S.sname
from Sailors

Where Not Exist (Select Bid
from Boats B
where B.id Not IN (select Distric R.bid
from Reserve R
where
R.sid = S.sid)

Ex [Group By < cols >
[Having < conditions >]]

H

Select S.rating, Avg(S.age)
FROM Sailors S
Group By S.rating
Having Count(*) > 2 ;

where 1 tuple '1' کے ہیں
Having اس کا 1 کے ہیں

Ex Find the name of sailors who have reserved at least 2 Boats

Ans Select S.name as names
From Sailors S, Reserve R1, Reserve R2
Where S.sid = R1.sid And
S.sid = R2.sid And
R1.bid <> R2.bid ;
!=

Ex Display and Increment for the rating of persons who
have sailed two different boats in the same day?

Select
From Sailors S, Reserve R1, Reserve R2
Where S.sid = R1.sid And
S.sid = R2.sid And
R1.bid != R2.bid And
R1.Date = R2.Date