Tables:　水手Sailors　(sid, sname, rating, age)
　　　　　預訂Reserves　(sid, bid, day)
　　　　　船隻Boats　　(bid, bname, color)

Sailors水手

SID	SNAME	RATING	AGE
10	Dustin	1	45
29	Brutus	1	33
85	Art	3	25.5
95	Bob	3	63.3
96	Frodo	3	25.5
22	Dustin	7	45
64	Horatio	7	35
31	Lubber	8	55.5
32	Andy	8	25.5
74	Horatio	9	35
71	Zorba	10	16
58	Rusty	10	35

Reserves預訂

SID	BID	DAY
64	101	2010-10-1
22	101	2010-10-2
22	102	2010-10-3
31	102	2010-10-4
64	102	2010-10-5
31	103	2010-10-6
22	103	2010-10-7
74	103	2010-10-8
31	104	2010-10-9
22	104	2010-10-10
水手	船隻	預訂日期

Boats船隻

BID	BNAME	COLOR
101	Interlake	blue
102	Interlake	red
103	Clipper	green
104	Marine	red
109	HKSAR	pink

for Q.39

```
// drop tables if exist.
drop table Sailors;
drop table Reserves;
drop table Boats;

// create tables
create table Sailors(
    sid int not null primary key,
    sname varchar(20),
    rating  int,
    age     decimal(4,1)
);

create table Boats(
    bid int not null primary key,
    bname varchar(20),
    color   varchar(20)
);
```

```
預訂
create table Reserves(
    sid int,
    bid int,
    day     date,
    primary key (sid,bid,day),

    foreign key (sid)
        references Sailors(sid)
        ON DELETE CASCADE,
    foreign key (bid)
        references Boats(bid)
        ON DELETE CASCADE
);
```

insert into Sailors values	insert into Boats values	insert into Reserves values
(22,'Dustin',7,45.0), (29,'Brutus',1,33.0), (31,'Lubber',8,55.5), (32,'Andy',8,25.5), (58,'Rusty',10,35.0), (64,'Horatio',7,35.0), (71,'Zorba',10,16.0), (74,'Horatio',9,35.0), (85,'Art',3,25.5), (95,'Bob',3,63.5);	(101,'Interlake','blue'), (102,'Interlake','red'), (103,'Clipper','green'), (104,'Marine','red'), (109,'HKSAR','pink');	(22,101,'2010-10-1'), (22,102,'2010-10-2'), (22,103,'2010-10-3'), (22,104,'2010-10-4'), (31,102,'2010-10-5'), (31,103,'2010-10-6'), (31,104,'2010-10-7'), (64,101,'2010-10-8'), (64,102,'2010-10-9'), (74,103,'2010-10-10');

Exercises:

1) "Find all sailors with a rating above 7" 所有水手(rating高於7)

2) "Find sailor name, boat id and date for each reservation" 船隻預訂紀錄

3) "Find the names and ages of all sailors" 所有水手姓名、年齡

4) Find the names of sailors that are 30 or older 所有水手姓名(年齡 30 或以上)

5) Find the names of boats that have been reserved on 01/10/2010 在某天有哪些預訂船隻(名稱)

6) "Find the sid of sailors who have reserved a red boat" 曾預訂紅色船隻

7) sailors whose name begins and ends with B and has at least 3 characters 所有水手姓名(至少3英文字母,以B開始及結束)

8) "Find the average age of all sailors" 水手平均年齡

9) "Find the average age of sailors with a rating of 10"

10) Find duplicate sailor names 找出姓名相同的水手

11) Find for each boat, the total no of reservations 計算每艘船的預訂總數
(a) show boat id   (b) show boat name

12) Find for each boat name, the no of different sailors that reserved it 計算每艘船曾被多少個不同的水手預訂

13) Find for each boat, the no of different sailors that reserved it on 01/10/2010 (同上,在某天)

14) "Find the sid & names of sailors who have reserved boat number 103"
// 那些水手曾預訂boat#103: 22,31,74

15) "Find the names of sailors who have never reserved boat number 103"
// 那些水手從未預訂boat#103: 29,32,58,64,71,85,95

16) "Find the names of sailors who have reserved a red boat"
// 那些水手曾預訂red boat: Dustin, Lubber, Horatio

17) "Find the colors of boats reserved by Lubber" 他曾預訂過船隻的顏色
// red, green

18) "Find the names of sailors who have reserved at least one boat"
// 那些水手曾預訂過船隻: Dustin, Lubber, Horatio

19) "Find the names of sailors who have reserved a red or a green boat"
// 那些水手曾預訂過船隻(red or green): Dustin, Lubber, Horatio

20) "Find the names of sailors who have reserved both red and green boat"
// 那些水手曾預訂過船隻(red and green): Dustin, Lubber

21) "sid of sailors with age over 20 who have not reserved a red boat"
// 年齡>20,從未預訂過 red boat: Brutus, Andy, Rusty, Horatio(74), Art, Bob

22) "names of sailors who have reserved at least two different boats"
// 至少預訂過2隻不同船隻: Dustin, Lubber, Horatio

23) "Find sid of all sailors who have reserved green but not red boats" 只預訂過
green boat, 但未預訂過red boat: 顯示 sid

24) "Find the names of sailors who have reserved green but not red boat"
// 只預訂過green boat, 但未預訂過red boat: 顯示水手姓名 Horatio

25) "Find the sid and names of sailors who have not reserved a red boat" 從未
預訂過 red boat:

26) "Find sailors whose rating is greater than _____ sailor called Horatio"
// rating 大於 (a) 任何一個 (b) 所有 名叫Horatio的水手
(a) some/any 任何一個 (>min)   (b) every/all 所有 (>max)

27) "Find the sailors with the highest rating" 最高rating的水手

28) "Find the name and age of the oldest sailor" 最年長的水手

29) "Count the number of sailors" 水手的總人數

30) "Count the number of different sailor names" 水手姓名的總數 (不可重複)

31) Find boats NOT reserved by the sailor with sid=31. 水手#31 未租過的船隻

32) "Find the names of sailors who are older than the oldest sailor with a rating of 10" 那些水手比 (rating10中最年長的水手) 更年長

33) "Find the age of the youngest sailor for each rating level" 每rating組別中, 最年輕的水手

34) "Find the age of the youngest sailor who is eligible to vote (age>=18) // for each rating level with at least 2 such sailors" 每rating組別中, 超過18而最年輕的水手, 每組別必須有至少2人

35) "Find the no of reservations for each red boat" 每艘red boat的預訂次數

36) "Find ___ age of sailors for each rating level that has at least 2 sailors"每rating組別中, 水手的 (a)平均年齡 (b)最高年齡, 每組別必須有至少2人
(a) average   (b) maximum

37) For each boat, identify sid the of sailor who made the highest no of reservations. 每一艘船, 預訂次數最多的水手及次數
                insert into Reserves values
           (64,101,'2010-11-1'), (64,102,'2010-11-2'),
           (31,103,'2010-11-3'), (31,104,'2010-11-4');

38) Identify the boat with most reservations. 那艘船的預訂次數最多

39) For each boat, find the number of times it has been reserved; including those boats that have never been reserved (list boat id and name). 每一艘船(包括沒有預訂的船隻) 的預訂次數

40) Identify sailors who have never reserved a red boat. 哪些水手從未預訂過red boat.

41) Find the sailors who have at least 10 reservations for red boats. 哪些水手至少預訂過10次red boat

42) Show All reservations made 所有預訂船隻資料 (sid,sname,bid,bname,color)

Harder
51) Find sailors who have reserved all red boats 哪些水手已預訂過所有紅色船
22,31
52) List sailors who have reserved only green boats. 哪些水手只預訂過綠色船
74
53) "Find sailors who have reserved all boats" 哪些水手已預訂過所有船隻
Dustin
54) "Find the names of sailors who have reserved all boats called Interlake" 哪些水手已預訂過所有名為Interlake的船隻 Dustin, Horatio
55) For each sailor, list all boats which have never been reserved by that sailor 列出每個水手從未租用過的船隻 (sid, sname, bid, bname)

56) List the most recent reservation (bid, bname, sid, sname) for each boat.
每艘船最後(最近)一次出租紀錄

sid	bname	bid	sname	day
64	Interlake	101	Horatio	2010-11-01
64	Interlake	102	Horatio	2010-11-02
31	Clipper	103	Lubber	2010-11-03
31	Marine	104	Lubber	2010-11-04

57) Create a table LastReservation (sid, bname, bid, sname, day)
that contains for every sailor the most recent date when the sailor has made
a reservation and the boat he/she has reserved.
找出每個水手最後(最近)一次出租紀錄，
並建立新檔 LastReservation (sid, bname, bid, sname, day)

sid	bname	bid	sname	day
64	Interlake	102	Horatio	2010-11-02
74	Clipper	103	Horatio	2010-10-10
22	Marine	104	Dustin	2010-10-04
31	Marine	104	Lubber	2010-11-04

58) For each sailor, who has at least ten reservations for red boats,
increase the rating by 1. 凡租用紅色船達10次(或以上)的水手，把rating增加1

59) "Compute increments for the ratings of persons
who have sailed two different boats on the same day" 凡在同一天內租用兩艘不同
船隻的水手，把rating增加1

60) "Find the sailor ids with top 5 rating ranks." 找出rating最高的5名水手