

Kenneth Lee 2101313

### Lab 3

1. SELECT email FROM student;

```
sqlite> #kenneth lee jia huang 2101313
sqlite> select email from student;
angjiayi1990@hotmail.com
anniechapman1991@yahoo.com
chnghuiling1992@gmail.com
choyyiting1992@hotmail.com
davidchapman1989@msn.com
davidhall1992@yahoo.com
dennisbeckham1989@msn.com
dennispalmer1992@yahoo.com
dingweixiang1990@yahoo.com
fengmeng1990@gmail.com
geduo2010@yahoo.com
gohhuiying1989@gmail.com
huangwenxin2010@msn.com
huangxuant1992@msn.com
huangzhanpeng1992@msn.com
irisbrown1992@hotmail.com
jennyhunt1991@gmail.com
kenowen2011@yahoo.com
lisasmith2011@msn.com
liushaojun2010@msn.com
liuyihui1990@hotmail.com
liuzhanpeng2011@msn.com
liuzhencai1990@msn.com
neelamdeol2011@hotmail.com
nganhquang1991@yahoo.com
ngookaiting1991@yahoo.com
ngqiyang1989@msn.com
ngyanfen2010@msn.com
ngyongming2011@yahoo.com
pengjiayuan2011@hotmail.com
pohhuiling1992@hotmail.com
qinyiyang2010@hotmail.com
qinyuwei2011@hotmail.com
seahteckkee1990@gmail.com
siowcaokhoa1991@msn.com
tayweiguo1989@msn.com
tayyongming1989@gmail.com
tsohuilin1989@msn.com
wangna1990@yahoo.com
zhanghan1989@hotmail.com
zhanghong2011@msn.com
zhaoyang1989@yahoo.com
zhengnana1991@gmail.com
zhengxi1990@yahoo.com
zhengzhemin1991@yahoo.com
zhouxialin1990@yahoo.com
zhuchang2010@gmail.com
sqlite>
```

2. Select distinct email from student;

```
sqlite> select distinct email from student;
angjiayi1990@hotmail.com
anniechapman1991@yahoo.com
chnghuiling1992@gmail.com
choyyiting1992@hotmail.com
davidchapman1989@msn.com
davidhall1992@yahoo.com
dennisbeckham1989@msn.com
dennispalmer1992@yahoo.com
dingweixiang1990@yahoo.com
fengmeng1990@gmail.com
geduo2010@yahoo.com
gohhuiying1989@gmail.com
huangwenxin2010@msn.com
huangxuanti1992@msn.com
huangzhanpeng1992@msn.com
irisbrown1992@hotmail.com
jennyhunt1991@gmail.com
kenowen2011@yahoo.com
lisasmith2011@msn.com
liushaojun2010@msn.com
liuyihui1990@hotmail.com
liuzhanpeng2011@msn.com
liuzhencai1990@msn.com
neelamdeol2011@hotmail.com
nganhquang1991@yahoo.com
ngookaiting1991@yahoo.com
ngqiyang1989@msn.com
ngyanfen2010@msn.com
ngyongming2011@yahoo.com
pengjiayuan2011@hotmail.com
pohhuiling1992@hotmail.com
qinyiyang2010@hotmail.com
qinyuwei2011@hotmail.com
seahteckkee1990@gmail.com
siowcaokhoa1991@msn.com
tayweiguoi1989@msn.com
tayyongming1989@gmail.com
tsohuilin1989@msn.com
wangna1990@yahoo.com
zhanghan1989@hotmail.com
zhanghong2011@msn.com
zhaoyang1989@yahoo.com
zhengnana1991@gmail.com
zhengxi1990@yahoo.com
zhengzhemin1991@yahoo.com
zhouxialin1990@yahoo.com
zhuchang2010@gmail.com
sqlite>
```

3. Select name from student order by name desc;

```
sqlite> select name from student order by name desc;  
ZHU CHANG  
ZHOU XIALIN  
ZHENG ZHEMIN  
ZHENG XI  
ZHENG NANA  
ZHAO YANG  
ZHANG HONG  
ZHANG HAN  
WANG NA  
TSO HUI LIN  
TAY YONG MING  
TAY WEI GUO  
SIOW CAO KHOA  
SEAH TECK KEE  
QIN YUWEI  
QIN YIYANG  
POH HUI LING  
PENG JIAYUAN  
NGOO KAI TING  
NG YONG MING  
NG YAN FEN  
NG QI YANG  
NG ANH QUANG  
NEELAM DEOL  
LIU ZHENCAI  
LIU ZHANPENG  
LIU YIHUI  
LIU SHAOJUN  
LISA SMITH  
KEN OWEN  
JENNY HUNT  
IRIS BROWN  
HUANG ZHANPENG  
HUANG XUANTI  
HUANG WENXIN  
GOH HUI YING  
GE DUO  
FENG MENG  
DING WEI XIANG  
DENNIS PALMER  
DENNIS BECKHAM  
DAVID HALL  
DAVID CHAPMAN  
CHOY YI TING  
CHNG HUI LING  
ANNIE CHAPMAN  
ANG JIA YI  
sqlite>
```

4. select name from student where name in (select name from student group by name having count(\*) > 1);

```
sqlite> select name from student where name in (select name from student group by name having count(*) > 1);
sqlite>
```

No duplicate names.

5. Select distinct name from student order by name;

```
sqlite> select distinct name from student order by name;
ANG JIA YI
ANNIE CHAPMAN
CHNG HUI LING
CHOY YI TING
DAVID CHAPMAN
DAVID HALL
DENNIS BECKHAM
DENNIS PALMER
DING WEI XIANG
FENG MENG
GE DUO
GOH HUI YING
HUANG WENXIN
HUANG XUANTI
HUANG ZHANPENG
IRIS BROWN
JENNY HUNT
KEN OWEN
LISA SMITH
LIU SHAOJUN
LIU YIHUI
LIU ZHANPENG
LIU ZHENCAI
NEELAM DEOL
NG ANH QUANG
NG QI YANG
NG YAN FEN
NG YONG MING
NGOO KAI TING
PENG JIAYUAN
POH HUI LING
QIN YIYANG
QIN YUWEI
SEAH TECK KEE
SIOW CAO KHOA
TAY WEI GUO
TAY YONG MING
TSO HUI LIN
WANG NA
ZHANG HAN
ZHANG HONG
ZHAO YANG
ZHENG NANA
ZHENG XI
ZHENG ZHEMIN
ZHOU XIALIN
ZHU CHANG
sqlite>
```

6. select name from loan join student on loan.borrower = student.email where book = "978-0321474049";

```
sqlite> select name from loan join student on loan.borrower = student.email where book = "978-0321474049";
NG ANH QUANG
HUANG XUANTI
JENNY HUNT
DENNIS BECKHAM
ZHOU XIALIN
CHOY YI TING
LIU YIHUI
DAVID CHAPMAN
JENNY HUNT
CHOY YI TING
GE DUO
ZHU CHANG
DENNIS PALMER
LISA SMITH
CHNG HUI LING
LIU ZHENCAI
sqlite>
```

7. select name from student join copy on student.email = copy.owner join book on copy.book = book.ISBN13 where book.pages > 100 AND book.title like "%Photoshop%";

```
sqlite> select name from student join copy on student.email = copy.owner join book on copy.book = book.ISBN13 where book
.pages > 100 AND book.title like "%Photoshop%";
GOH HUI YING
JENNY HUNT
TSO HUI LIN
WANG NA
sqlite>
```

8. select sum(pages/2) from book where ISBN13 ="978-0321474049" OR ISBN13 = "978-0684801520";

```
sqlite> select sum(pages)/2 from book where ISBN13 ="978-0321474049" OR ISBN13 = "978-0684801520";
217
sqlite>
```

9. select name from student join copy on student.email = copy.owner where book != "978-0321474049";

```
sqlite> select name from student join copy on student.email = copy.owner where book != "978-0321474049";
GOH HUI YING
HUANG ZHANPENG
JENNY HUNT
JENNY HUNT
JENNY HUNT
LIU SHAOJUN
QIN YUWEI
TAY WEI GUO
TSO HUI LIN
WANG NA
ZHANG HAN
ZHU CHANG
sqlite>
```

10. select name from student join loan on student.email = loan.borrower where book = "978-0321474049";

```
sqlite> select name from student join loan on student.email = loan.borrower where book = "978-0321474049";
NG ANH QUANG
HUANG XUANTI
JENNY HUNT
DENNIS BECKHAM
ZHOU XIALIN
CHOY YI TING
LIU YIHUI
DAVID CHAPMAN
JENNY HUNT
CHOY YI TING
GE DUO
ZHU CHANG
DENNIS PALMER
LISA SMITH
CHNG HUI LING
LIU ZHENCAI
sqlite>
```

11. select name from student inner join loan on student.email = loan.borrower where book = "978-0321474049" union select name from student inner join copy on student.email = copy.owner where book = "978-0321474049";

```
sqlite> select name from student inner join loan on student.email = loan.borrower where book = "978-0321474049" union select name from student inner join copy on student.email = copy.owner where book = "978-0321474049";
CHNG HUI LING
CHOY YI TING
DAVID CHAPMAN
DAVID HALL
DENNIS BECKHAM
DENNIS PALMER
GE DUO
HUANG XUANTI
JENNY HUNT
LISA SMITH
LIU YIHUI
LIU ZHENCAI
NG ANH QUANG
NG YONG MING
WANG NA
ZHOU XIALIN
ZHU CHANG
sqlite> _
```

12. select name from student left join loan on student.email = loan.borrower left join copy on student.email = copy.owner where loan.book = "978-0321474049" or copy.book = "978-0321474049";

```
sqlite> select name from student left join loan on student.email = loan.borrower left join copy on student.email = copy.owner where loan.book = "978-0321474049" or copy.book = "978-0321474049";
WANG NA
NG ANH QUANG
CHOY YI TING
CHOY YI TING
DENNIS BECKHAM
JENNY HUNT
JENNY HUNT
JENNY HUNT
JENNY HUNT
JENNY HUNT
JENNY HUNT
LIU YIHUI
ZHU CHANG
ZHOU XIALIN
DAVID CHAPMAN
DENNIS PALMER
DAVID HALL
GE DUO
HUANG XUANTI
LISA SMITH
NG YONG MING
CHNG HUI LING
LIU ZHENCAI
sqlite>
```

### 13. Question 11 execution time

```
sqlite> select name from student inner join loan on student.email = loan.borrower where book = "978-0321474049" union se
lect name from student inner join copy on student.email = copy.owner where book = "978-0321474049";
CHNG HUI LING
CHOY YI TING
DAVID CHAPMAN
DAVID HALL
DENNIS BECKHAM
DENNIS PALMER
GE DUO
HUANG XUANTI
JENNY HUNT
LISA SMITH
LIU YIHUI
LIU ZHENCAI
NG ANH QUANG
NG YONG MING
WANG NA
ZHOU XIALIN
ZHU CHANG
Run Time: real 0.010 user 0.000000 sys 0.000000
sqlite>
```

### Question 12 execution time

```
sqlite> select name from student left join loan on student.email = loan.borrower left join copy on student.email = copy.
owner where loan.book = "978-0321474049" or copy.book = "978-0321474049";
WANG NA
NG ANH QUANG
CHOY YI TING
CHOY YI TING
DENNIS BECKHAM
JENNY HUNT
JENNY HUNT
JENNY HUNT
JENNY HUNT
JENNY HUNT
JENNY HUNT
LIU YIHUI
ZHU CHANG
ZHOU XIALIN
DAVID CHAPMAN
DENNIS PALMER
DAVID HALL
GE DUO
HUANG XUANTI
LISA SMITH
NG YONG MING
CHNG HUI LING
LIU ZHENCAI
Run Time: real 0.013 user 0.000000 sys 0.000000
sqlite>
```

The results are different as question 12 does not remove the duplicates. Using union is also slightly faster compared to question 12.

### 14. Delete from loan

```
sqlite> select name from student left join loan on student.email = loan.borrower left join copy on student.email = copy.
owner where loan.book = "978-0321474049" or copy.book = "978-0321474049";
WANG NA
DAVID HALL
NG YONG MING
LIU ZHENCAI
Run Time: real 0.005 user 0.000000 sys 0.000000
sqlite> # without the loan table the run time was reduced significantly. due to the extra join not having any data in it
. Kenneth Lee Jia HUang 2101313
sqlite>
```

### 15.