

Introduction of Computer

Homework 4 - SQL in Practice

Due 23:59, May 28, 2019

SQLite is a C-language library that implements a small, fast, self-contained, high-reliability, full-featured, SQL database engine. The SQLite file format is stable, cross-platform, and backwards compatible and the developers pledge to keep it that way through at least the year 2050.

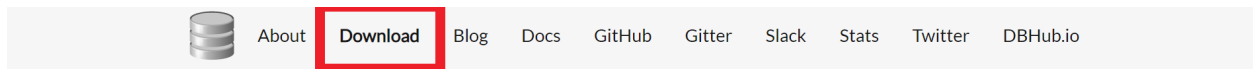
Goal

In this exercise, you'll learn how to query a SQLite database by using the SQL language.

Execute the SQLite Browser

SQLite Browser : <https://sqlitebrowser.org/>

1. Download and install



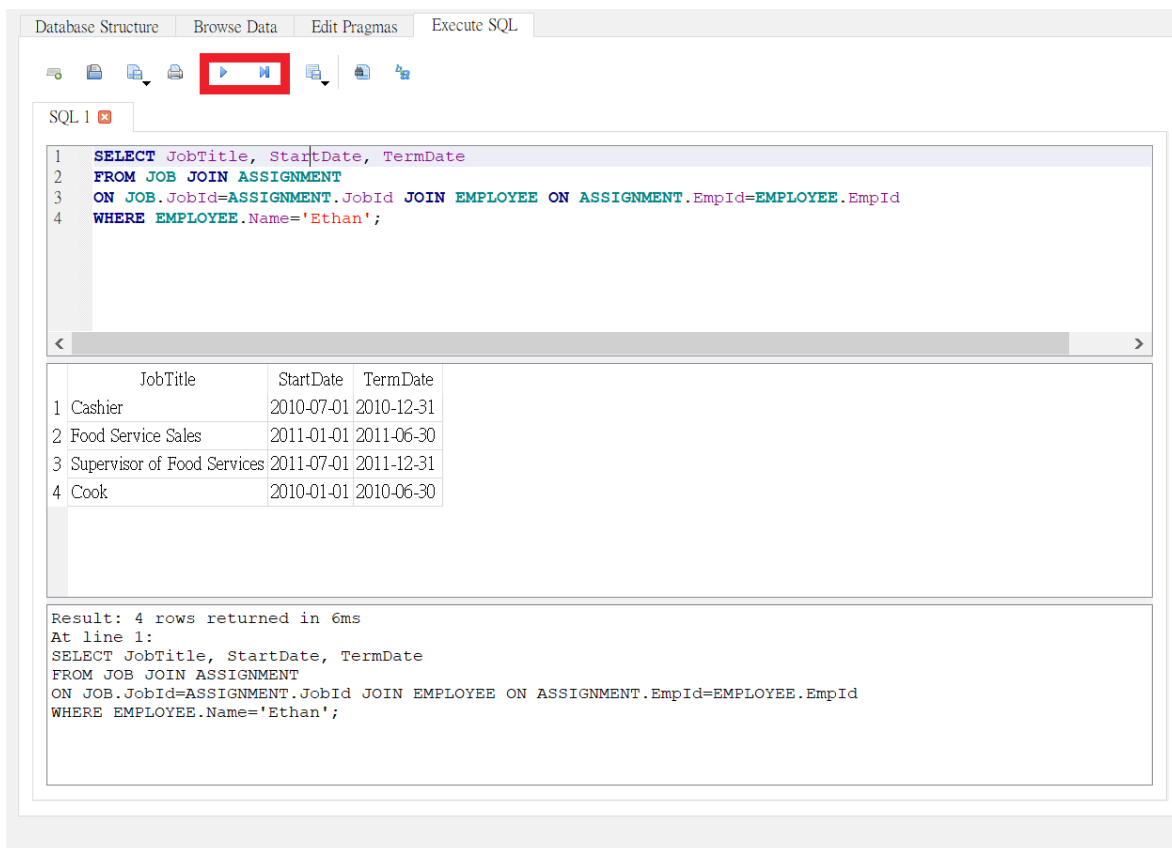
DB Browser for SQLite

The Official home of the DB Browser for SQLite

2. Execute "DB Browser for SQLite.exe"
3. Open the database "ichw4.db".



4. Execute a query in the following tab.
5. After typing your query, you can press the following button or type “Shift+F5” to execute it.



The screenshot shows a database IDE with a tab labeled "SQL 1". The query editor contains the following SQL code:

```
1 SELECT JobTitle, StartDate, TermDate
2 FROM JOB JOIN ASSIGNMENT
3 ON JOB.JobId=ASSIGNMENT.JobId JOIN EMPLOYEE ON ASSIGNMENT.EmpId=EMPLOYEE.EmpId
4 WHERE EMPLOYEE.Name='Ethan';
```

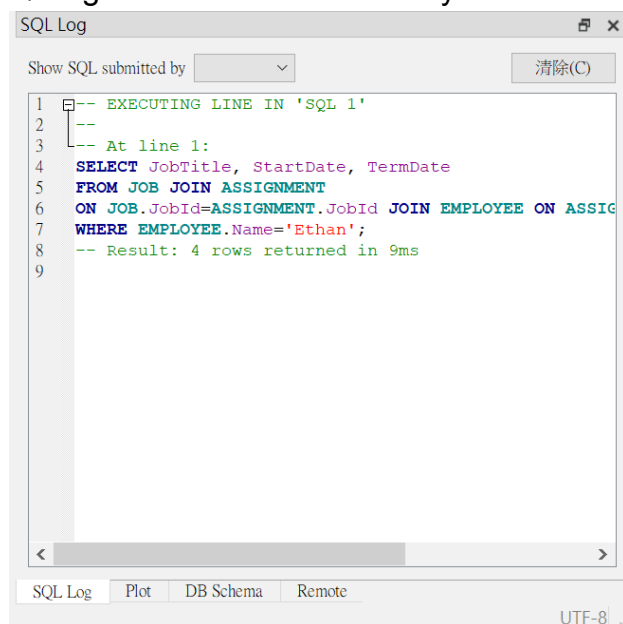
Below the query editor, the results are displayed in a table:

	JobTitle	StartDate	TermDate
1	Cashier	2010-07-01	2010-12-31
2	Food Service Sales	2011-01-01	2011-06-30
3	Supervisor of Food Services	2011-07-01	2011-12-31
4	Cook	2010-01-01	2010-06-30

Below the table, the execution result is shown:

```
Result: 4 rows returned in 6ms
At line 1:
SELECT JobTitle, StartDate, TermDate
FROM JOB JOIN ASSIGNMENT
ON JOB.JobId=ASSIGNMENT.JobId JOIN EMPLOYEE ON ASSIGNMENT.EmpId=EMPLOYEE.EmpId
WHERE EMPLOYEE.Name='Ethan';
```

6. If its syntax is correct, you'll see the result. Otherwise, you'll see some error message.
7. You can use "SQL log" to see execution history.

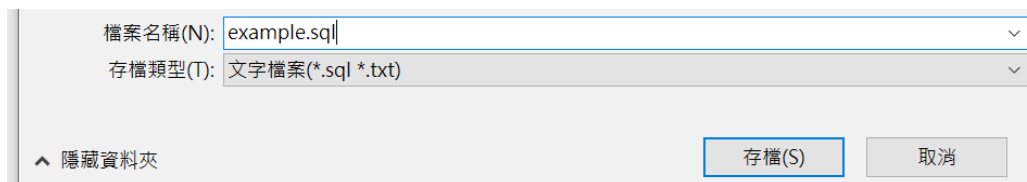
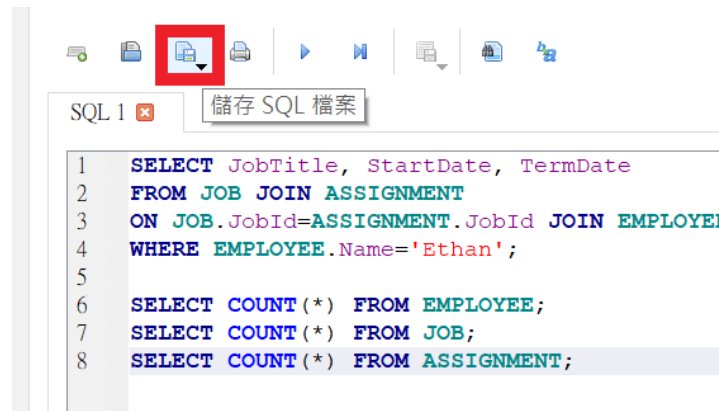


The screenshot shows the "SQL Log" window. It contains the following log entries:

```
1 -- EXECUTING LINE IN 'SQL 1'
2 --
3 -- At line 1:
4 SELECT JobTitle, StartDate, TermDate
5 FROM JOB JOIN ASSIGNMENT
6 ON JOB.JobId=ASSIGNMENT.JobId JOIN EMPLOYEE ON ASSIG
7 WHERE EMPLOYEE.Name='Ethan';
8 -- Result: 4 rows returned in 9ms
9
```

The window also has a "Show SQL submitted by" dropdown menu and a "清除(C)" button. At the bottom, there are tabs for "SQL Log", "Plot", "DB Schema", and "Remote". The encoding is set to "UTF-8".

8. You can try the following queries. ref: http://www.sqlite.org/lang_select.html
- It should return “20” after entering the following query.
SELECT COUNT(*) FROM EMPLOYEE;
 - It should return “30” after entering the following query.
SELECT COUNT(*) FROM JOB;
 - It should return “58” after entering the following query.
SELECT COUNT(*) FROM ASSIGNMENT;
9. You can save SQL commands as .sql file, thus you can retrieve it after closing SQLBrowser.



SQL Tutorial

You can learn SQL commands on <https://www.w3schools.com/sql/> .

Questions

Please use any legal SQL commands to finish the following questions.

HW#4-0: (An example)

What assignments are Ethan evolved with? List them as (JobTitle, StartDate, TermDate)s in a relation.

SQLite commands:
SELECT JobTitle, StartDate, TermDate
FROM JOB JOIN ASSIGNMENT
ON JOB.JobId=ASSIGNMENT.JobId JOIN EMPLOYEE
ON ASSIGNMENT.EmpId=EMPLOYEE.EmpId
WHERE EMPLOYEE.Name='Ethan';

Result:

	JobTitle	StartDate	TermDate
1	Cashier	2010-07-01	2010-12-31
2	Food Service Sales	2011-01-01	2011-06-30
3	Supervisor of Food Services	2011-07-01	2011-12-31
4	Cook	2010-01-01	2010-06-30

You may need to use some special operators, e.g. LIKE, JOIN, GROUP BY, HAVING, ORDER BY, EXISTS ... DESC, LIMIT.

HW# 4-1 (10%): Find the Dept which contain job “Cook” or “Executive Chef”.

HW# 4-2 (10%): Find all the JobTitle in Dept A.

HW# 4-3 (10%): Count the assignments which started in 2011 or terminated in 2012.

HW# 4-4 (10%): Find the names of the employees who live in Broadway and list the name in ascending order.

HW# 4-5 (10%): Count the assignments which JobTitles contain “Manager”.

HW# 4-6 (10%): Find the employees who have exactly 4 assignments and list their (Name, Empld)s in a relation.

HW# 4-7 (10%): Find the employees who have assignments started in 2011 and list their (Name, Empld)s in a relation.

HW# 4-8 (10%): Find the employees who didn't have assignments started in 2011 and list their (Name, Empld)s in a relation.

HW# 4-9 (10%): Count jobs' popularity and list their (JobTitle, Count)s in relation.

HW# 4-10 (10%): Find which jobs are the top 3 most popular. List them as (JobTitle, Count)s in relation. If the job count order is 543332221, you should list the jobs whose count are not lower than 3.

Submission rules

- TA offers a report template. Please fill your responses in the template and upload it as .pdf format to CEIBA.

Report template :

https://docs.google.com/document/d/1hs4jQ8otyUJ3RWhmF4R-24jePEYywRDcHF_7ltroejM/edit?usp=sharing

- No Plagiarism.
- Accept late submission for 2 days after the deadline. Late submission penalty is 15 points per day.
- Wrong submitted format will get 10 points penalty.
- It is your responsibility to make sure the submission is completed. Showing an unsubmitted set of homework after the due date will not work.

Appendix

Data - Job:

JobId	JobTitle	SkillCode	Dept
S4N	Bakery Superintendent	BS1	B
M64J	Banquet Hall Manager	BHM1	D
V800	Cashier	C1	A
N5B	Caterer	C2	B
Y91L	Catering Sales-Order Taker	CST1	A
M0E	Cook	C3	E
F87T	Deli Manager	DM1	E
Y4K	Dishwasher	D1	D
L53K	Executive Chef	EC1	B
R49F	Food Service Director	FSD1	A
E36M	Food Service Sales	FSS1	A
M68G	Food Technologist	FT1	E
L96Y	General Manager	GM1	B
H8L	High School Manager-Nutrition Services	HSMS1	D
W66Z	Purchasing Agent	PA1	D
X45R	Registered Dietitian	RD1	D
K93P	Supervisor of Food Services	SoFS1	E
Q75T	Tray Line Supervisor	TLS1	C
S28Y	Waitstaff	W1	A
N4J	Bakery Superintendent	BS2	C
P84M	Banquet Hall Manager	BHM2	E
C3I	Cashier	C4	B
C69K	Caterer	C5	E
M59G	Catering Sales-Order Taker	CST2	D
R71S	Cook	C6	C
B29G	Deli Manager	DM2	D
G52R	Dishwasher	D2	E
D34F	Executive Chef	EC2	E

H46Z	Food Service Director	FSD2	A	
Z72R	Food Service Sales	FSS2	B	
+-----+-----+-----+-----+				

Data - Employee:

EmpId	Name	Address	SSN	
+-----+-----+-----+-----+				
4N22	Jacob	280 Broadway, New York, NY 10007	727494718	
64J61	Isabella	67 Murray Street Frnt, New York, NY 10007	480279796	
8005	Ethan	77 Warren Street Frnt, New York, NY 10007	832831010	
5B39	Sophia	291 Broadway, New York, NY 10007	503389995	
91L11	Emma	61 Reade Street, New York, NY 10007	927935553	
0E86	Michael	63 Reade Street, New York, NY 10007	481495797	
87T90	Olivia	Food Scope New York Inc	221540043	
4K61	Jayden	299 Broadway, New York, NY 10007	926160003	
53K29	Alexander	230 Park Avenue Lbby, New York, NY 10169	445483219	
49F16	William	94 Chambers Street, New York, NY 10007	664296052	
36M11	Ava	78 Reade St, New York, NY 10007	160578270	
68G89	Emily	16 Warren Street, New York, NY 10007	485771687	
96Y36	Joshua	110 Duane ST, New York, NY 10007	437424054	
8L72	Noah	98 Chambers St, New York, NY 10007	275999748	
66Z60	Abigail	20 Warren, New York, NY 10007	881121512	
45R78	Daniel	315 Broadway, New York, NY 10038	902482093	
93P96	Madison	317 Broadway, New York, NY 10007	401041952	
75T42	Aiden	165 Church Street, New York, NY 10007	636912931	
28Y11	Chloe	165 Church, New York, NY 10007	708234145	
4J53	Anthony	165 Church ST, New York, NY 10007	511676558	
+-----+-----+-----+-----+				

Data - Assignment:

EmpId	JobId	StartDate	TermDate	
+-----+-----+-----+-----+				
4N22	C69K	2010-01-01	2010-06-30	
64J61	N4J	2010-01-01	2010-06-30	
64J61	C3I	2010-07-01	2010-12-31	
64J61	S28Y	2011-01-01	2011-06-30	
64J61	X45R	2011-07-01	2011-12-31	
8005	R71S	2010-01-01	2010-06-30	
8005	C3I	2010-07-01	2010-12-31	
8005	E36M	2011-01-01	2011-06-30	
8005	K93P	2011-07-01	2011-12-31	

	5B39		M68G		2010-01-01		2010-06-30	
	5B39		Y4K		2010-07-01		2010-12-31	
	5B39		M68G		2011-01-01		2011-06-30	
	91L11		R71S		2010-01-01		2010-06-30	
	91L11		G52R		2010-07-01		2010-12-31	
	91L11		R49F		2011-01-01		2011-06-30	
	91L11		S28Y		2011-07-01		2011-12-31	
	0E86		B29G		2010-01-01		2010-06-30	
	0E86		H8L		2010-07-01		2010-12-31	
	0E86		M59G		2011-01-01		2011-06-30	
	0E86		M0E		2011-07-01		2011-12-31	
	0E86		W66Z		2012-01-01		2012-06-30	
	87T90		E36M		2010-01-01		2010-06-30	
	87T90		H46Z		2010-07-01		2010-12-31	
	87T90		R49F		2011-01-01		2011-06-30	
	87T90		R71S		2011-07-01		2011-12-31	
	87T90		G52R		2012-01-01		2012-06-30	
	4K61		S4N		2010-01-01		2010-06-30	
	4K61		Z72R		2010-07-01		2010-12-31	
	4K61		D34F		2011-01-01		2011-06-30	
	4K61		L96Y		2011-07-01		2011-12-31	
	4K61		H46Z		2012-01-01		2012-06-30	
	53K29		H8L		2010-01-01		2010-06-30	
	53K29		R71S		2010-07-01		2010-12-31	
	49F16		D34F		2010-01-01		2010-06-30	
	49F16		D34F		2010-07-01		2010-12-31	
	49F16		M59G		2011-01-01		2011-06-30	
	49F16		C3I		2011-07-01		2011-12-31	
	36M11		S4N		2010-01-01		2010-06-30	
	68G89		R71S		2010-01-01		2010-06-30	
	96Y36		D34F		2010-01-01		2010-06-30	
	96Y36		E36M		2010-07-01		2010-12-31	
	96Y36		N4J		2011-01-01		2011-06-30	
	8L72		G52R		2010-01-01		2010-06-30	
	66Z60		B29G		2010-01-01		2010-06-30	
	66Z60		K93P		2010-07-01		2010-12-31	
	45R78		C3I		2010-01-01		2010-06-30	
	93P96		G52R		2010-01-01		2010-06-30	
	93P96		M68G		2010-07-01		2010-12-31	
	75T42		P84M		2010-01-01		2010-06-30	
	75T42		K93P		2010-07-01		2010-12-31	
	75T42		M68G		2011-01-01		2011-06-30	
	28Y11		W66Z		2010-01-01		2010-06-30	
	28Y11		Y4K		2010-07-01		2010-12-31	

4J53	N4J	2010-01-01	2010-06-30	
4J53	G52R	2010-07-01	2010-12-31	
4J53	M59G	2011-01-01	2011-06-30	
4J53	L53K	2011-07-01	2011-12-31	
4J53	H46Z	2012-01-01	2012-06-30	
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