A Visual Learning Tool for Database Operation

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"*sAccess*" – A web-based online tool for database learning

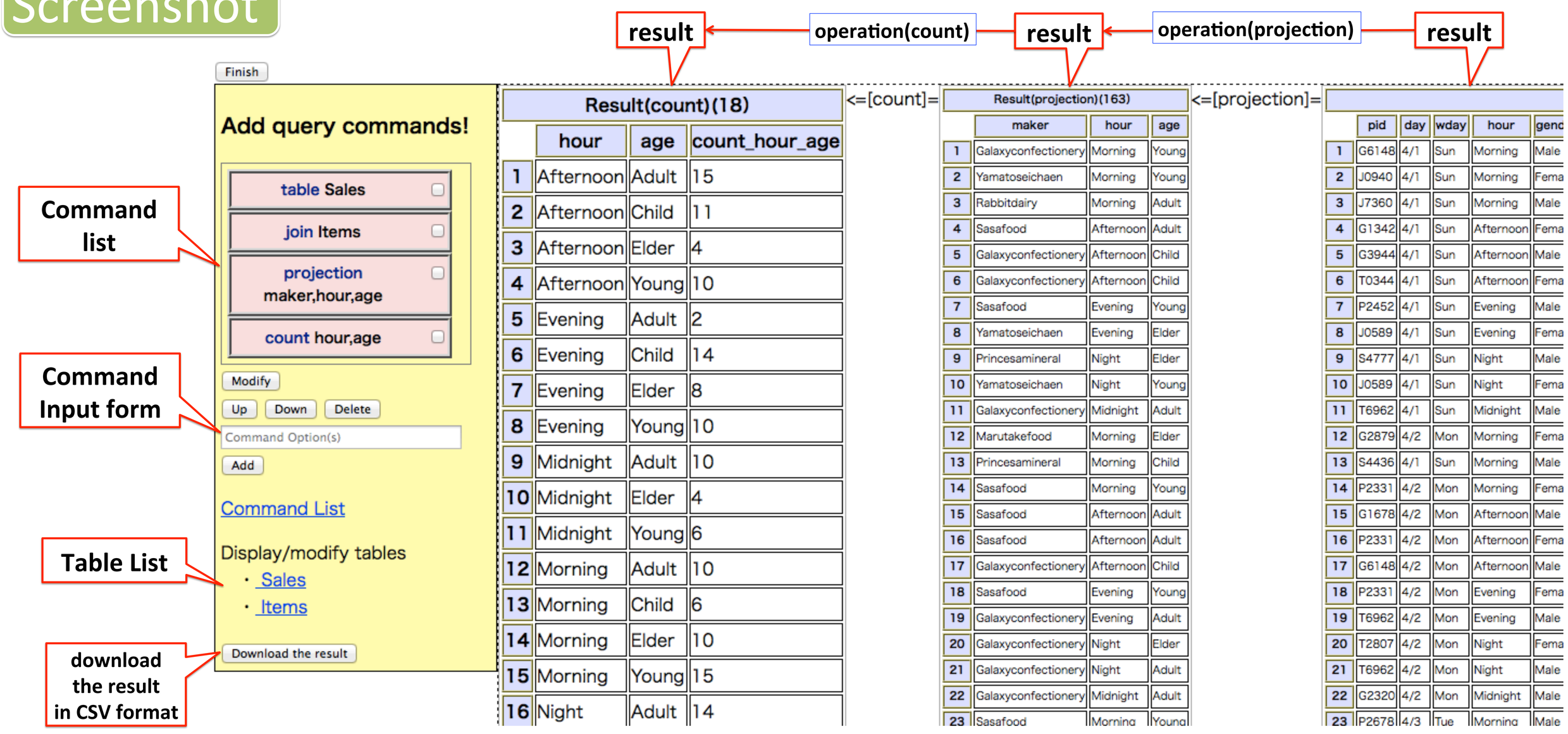
- **Designed for database learning activity, especially for practices of Relational Database operations**
- **Simple command set: easy to operate databases**
- **Preset datasets are offered; your original data can be used too**
- **Web application: no need to install extra softwares or plugins**

***sAccess* official website**: http://sAccess.eplang.jp/

- You can try *sAccess* here anytime
- English version is now available!

Contact: saccess@klab.eplang.jp

Screenshot



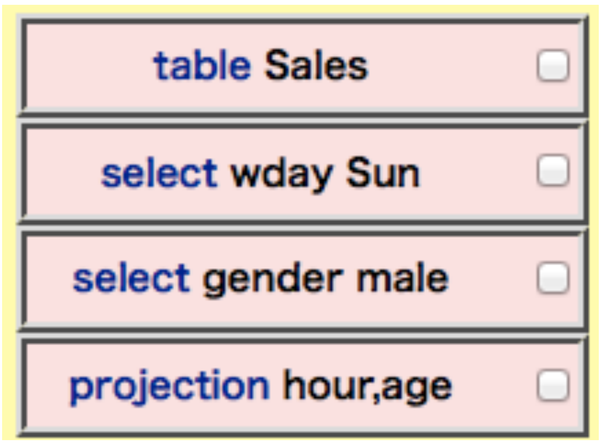
Targeted learning activity

- The main goal is to understand the fundamental mechanism of database systems
  - getting professional skill, such as developing database systems, is not the main goal
- Need to practice manipulation of Relational Database
  - Normalization, relational operations such as Projection/Selection/Join
- Need to learn how to retrieve the intended data from database by making proper queries
  - prior to master the syntax of the specific query language like SQL
- Assigned time for database class is limited
  - e.g. Only 1-2 hours can be used for database practices

Characteristics

Database operations by simple commands

- Complex operation can be done
  by combining multiple commands



(equivalent SQL:
select hour,age from Sales
where wday="Sun"
and gender="male")

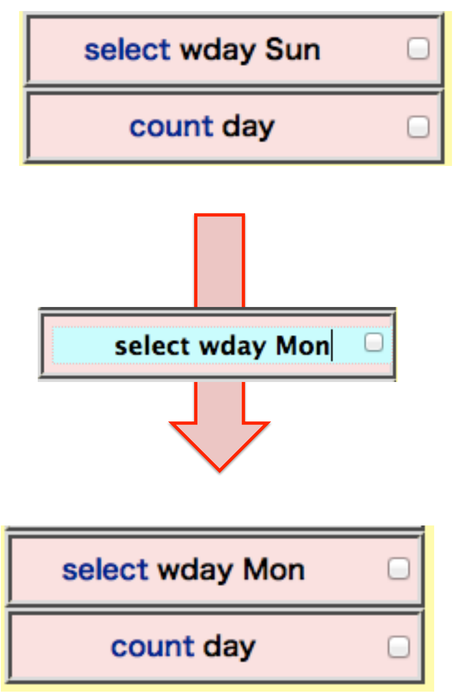
Command List

Selection	
SELECT	Extract records including specified keywords
REMOVE	Remove records including specified keywords
COMPARE	Extract records fulfilling specified criteria
DISTINCT	Remove duplicate records
Projection	
PROJECTION	Extract the specified fields
Join	
JOIN	Combine two tables (natural join)
ADD	Add fields of another table to current
Statistics	
SORT	Sort the records
SUM	Returns the total sum of numeric fields
AVG	Returns the average of numeric fields
COUNT	Count the number of records or values of the specified fields

(Each command has one or more options)

Description of the operation results with the transition of tables

- Enable to observe what change has occurred by each operation
- Add, modify, delete or change the order of commands and it will soon affect the transition of tables simultaneously
- **Easy to try-and-error operations for database practices**



Result(count)(4) <=[count]= Result(select)(34)

	day	count_day
1	4/1	13
2	4/15	9
3	4/8	11
4	4/9	1

	pid	day	wday	hour	gender	age
1	G6148	4/1	Sun	Morning	Male	Young
2	J0940	4/1	Sun	Morning	Female	Young
3	J7360	4/1	Sun	Morning	Male	Adult
4	G1342	4/1	Sun	Afternoon	Female	Adult
5	G3944	4/1	Sun	Afternoon	Male	Child
6	T0344	4/1	Sun	Afternoon	Female	Child
7	P2452	4/1	Sun	Evening	Male	Young

Result(count)(4) <=[count]= Result(select)(25)

	day	count_day
1	4/10	2
2	4/16	4
3	4/2	10
4	4/9	9

	pid	day	wday	hour	gender	age
1	G2879	4/2	Mon	Morning	Female	Elder
2	P2331	4/2	Mon	Morning	Female	Young
3	G1678	4/2	Mon	Afternoon	Male	Adult
4	P2331	4/2	Mon	Afternoon	Female	Adult
5	G6148	4/2	Mon	Afternoon	Male	Child
6	P2331	4/2	Mon	Evening	Female	Young
7	T6962	4/2	Mon	Evening	Male	Adult
8	T2807	4/2	Mon	Night	Female	Elder

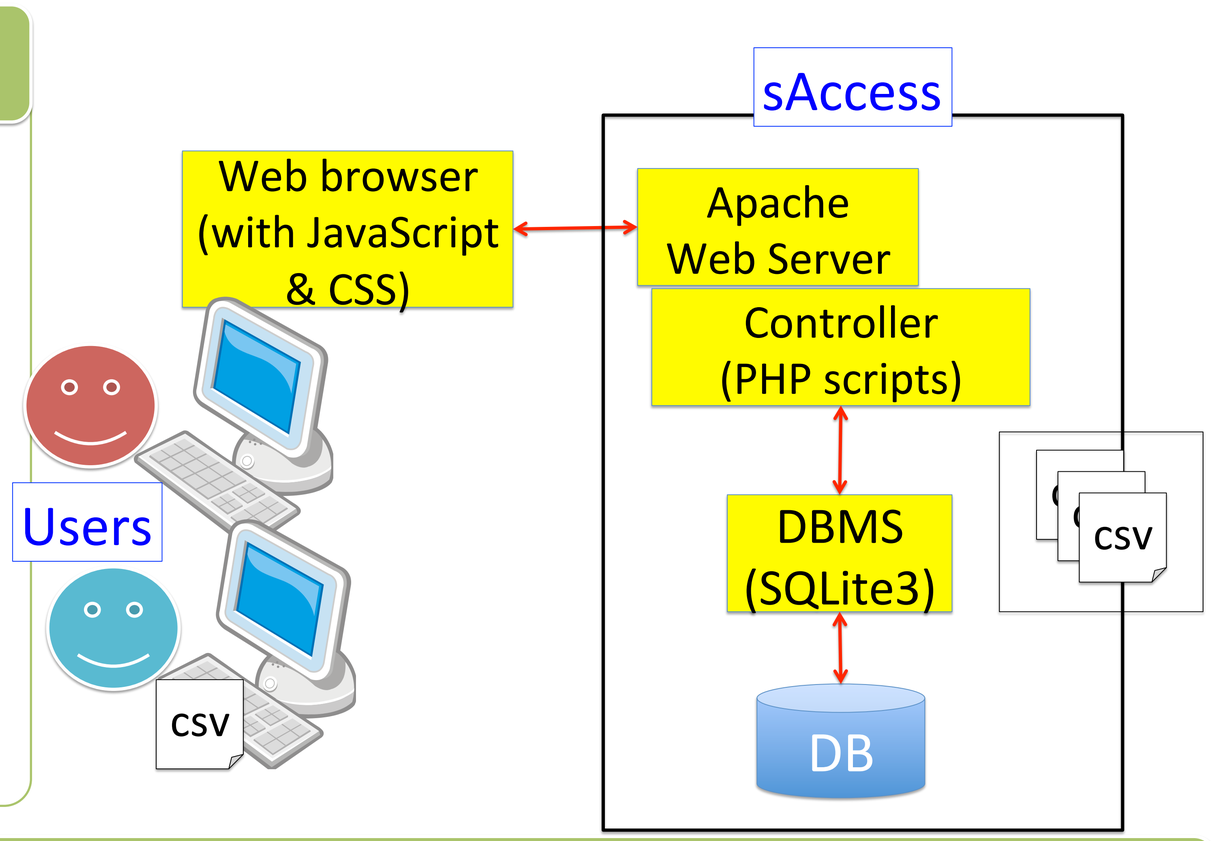
Internal design

Developed as an web application

- Apache + PHP5 + SQLite3 (bandled with PHP5)
- Any major web browsers supporting JavaScript can use sAccess

Virtually independent database environment

- Temporary DB is given to each user
  - delete it when the user closes the web browser
- Each DB is independent from others
  - one user's operations never affect other's DB



Current situations & future work

- **Current situations**
  - Several high-schools and universities in Japan has used *sAccess* in real computer-science classes for non-professional students; in each cases teachers gave this system good evaluations
  - Some classes which used sAccess got better grades than those which used Microsoft Access
- **Future work**
  - Implementing learning support functions for schema design, including normalization
  - Class management mode: sharing single DB in a class to experience multiple database operations