Assignment 6

One interesting aspect about all browsers, like Firefox, Chrome and Safari, is that they all keep your browsing history in a sqlite database. This is due to its simple format that can be embedded in different apps and programing languages.

Part 1: Visualizing data

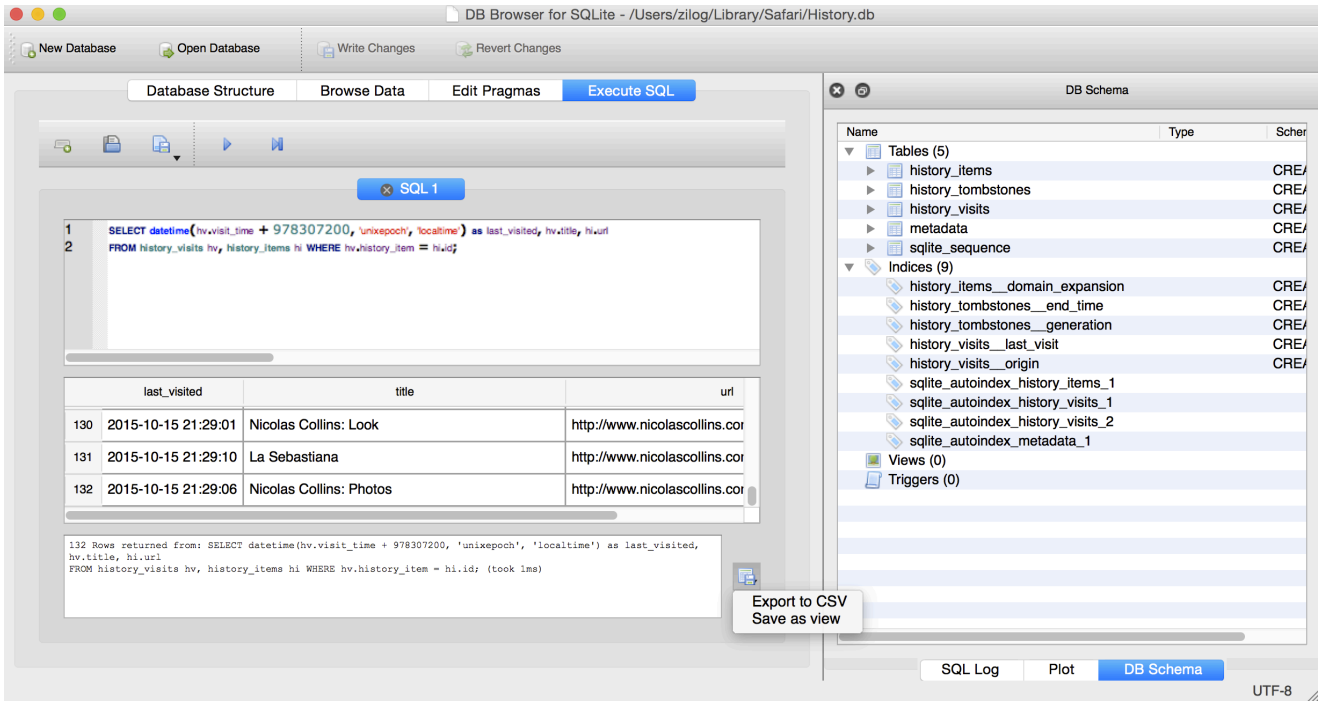
You will choose one browser (depending on what you have installed on your personal machine), and get the db file so that you can visualize the data inside it. You will use "DB Browser for SQL lite" as discussed in the video material.

Safari

1. Safari history is located in ~/Library/Safari/History.db
2. Open that file with sqliteBrowser, your OSX file open dialog probably will not show the ~/Library directory, that's Apple trying to protect you from yourself. While the file open dialog is open, press `Cmd+Shft+G`, you will see the Go To Dialog. Paste this ~/Library/Safari/, and you'll see the History DB file there.
3. After loading it to "DB Browser for SQL lite" Go to the *execute SQL* tab, and pase the following SQL query:

```
SELECT    datetime(hv.visit_time + 978307200, 'unixepoch', 'localtime') as
last_visited,    hi.url,   hv.title FROM    history_visits hv,    history_items hi
WHERE    hv.history_item = hi.id;
```

8. This basically get's three fields from the database, the time of the last visit, the title and the url.
9. If everything goes well you should see something like this screenshot.



Chrome

Chrome keeps its history, in a file that is typically located at ~/Library/Application\ Support/Google/Chrome/Default/History. You can use the same method explained above to work with this file, but because the database structure is slightly different, we will to modify the sql code slightly. Here's a clip that will work with Chrome:

```
SELECT    datetime(last_visit_time/1000000-11644473600, "unixepoch") as last_visited, url,    title,    visit_count  FROM urls;
```

Firefox

Same technique as above, this time the file is called places.sqlite and is located in the profile directory located here ~/Library/Application Support/Firefox/Profiles/.

```
SELECT    datetime(moz_historyvisits.visit_date/1000000,'unixepoch'), moz_places.url,    moz_places.title FROM    moz_places,    moz_historyvisits  WHERE moz_places.id = moz_historyvisits.place_id;
```

Part 2: Working with history data in C/C++

Now that you have played with this data in your personal machine, time to move it to cs1, and write some C/C++ code.

Following Dr Min's example, write a C/C++ program called "myBrowsingHistory.c" that does the following:

- The program will ask the user for a url substring (like "google"). The program will list all the history entries that have a url containing that string., based on the following query.
- The SQL statement selects your history. For each one, display only the title, url, last date visited, and visit count.
- Your program should compile and run on CS1.
- Once done, package the source "myBrowsingHistory.c" and your history db file in one zip called <assignment5_firstname_lastname>.zip. Submit it to elearning.