

Query Added to Voltage Tap Database in SQLite

Amanda Hoebel, Mary Ann Antonioli, Sahin Arslan, Peter Bonneau, Pablo Campero, Brian Eng, George Jacobs,
Mindy Leffel, Tyler Lemon, Marc McMullen, Anatoly Sitnikov, and Amrit Yegneswaran
Physics Division, Thomas Jefferson National Accelerator Facility, Newport News, VA 23606

June 13, 2016

This note describes the addition of the query function to the SQLite program for Excel, which is to be used to database the Hall D solenoid voltage tap values.

The previous version of the voltage tap SQLite program [1] organized the contents of an existing Excel spreadsheet of voltage tap values into the correct format for inserting into a database; this version of the program has been expanded to include a query function which posts results as an array.

The new version of the program uses the SQLiteForExcel macro and the XLSQLite.xlam add-in, found on Gatekeeper for Excel, used in [1]. The macro and add-in can connect to a SQLite database and perform queries inside of an array in a macro-enabled Excel spreadsheet. The program requires the user to have a basic knowledge of SQLite commands. Since users of this program may not know SQLite syntax, a Visual Basic for Applications (VBA) form was created as a GUI to help users perform queries.

O58								
A	B	C	D	E	F	G	H	
1								
2		Database:	..\vt.sqlite					
3		SQL:	select * from voltage_taps					
4		Returned:	425 rows					
5								
6			Query					
7								
8	Query result:							
9	date	test voltage_V	current_A	vt_at_CLRB	vt_readings_at_CLRB_V	drop_difference_at_CLRB_V	vt_at_VTTB	vt_readings_at_V
10	2012-11-02	5	0.327				USCLW (Pos. VCL Warm)	
11	2012-11-02	5	0.327				USCLCr (Pos. VCL Cold)	
12	2012-11-02	5	0.327				SC2_VT1r	
13	2012-11-02	5	0.327				SC2_VT2r	
14	2012-11-02	5	0.327				SC2_VT3r	

FIG. 1. A portion of the database as shown in the query array.

Cell C2 in the first worksheet is read by the program as the directory of the database to which the user wishes to connect, and cell C3 contains the query command (Fig. 1).

If the user knows SQLite query commands, the commands may be manually inserted into the query cell C3. If the user does not know the commands, the user is expected to click the button labeled Query, Fig. 2, which brings up a user form, in which the user inputs which columns should be viewed. The user has the option of selecting conditionals to provide further filtering. Upon execution of the user form, the spreadsheet array automatically updates according to the user’s query inputs.

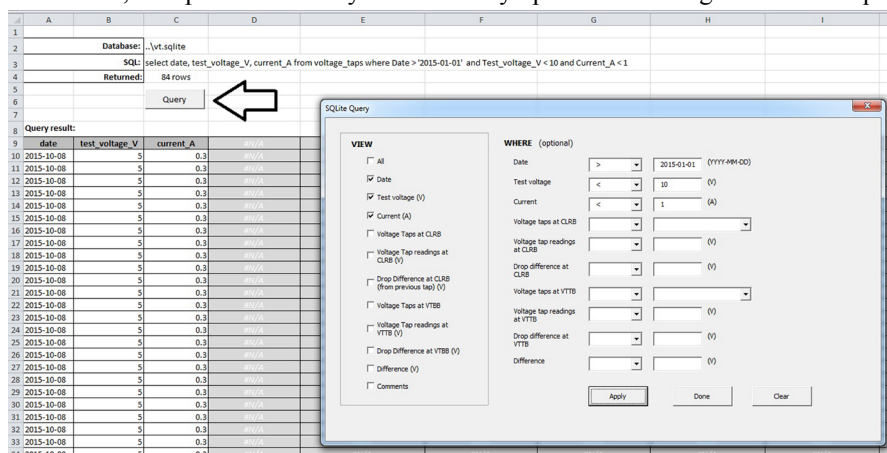


FIG. 2. The SQLite query box that appears when the Query button (indicated by the arrow) is pressed. The query box allows users to define “view” preferences and “where” conditionals.

The second worksheet (Fig. 3) contains data from the database (without an array, and in the same format given by the first version of the program as illustrated in [1]) and allows the user to manually add data to the rows. Once data is added, the user can insert data into the database via the Create/Add SQLite table icon on the XLSQLite tab.

	A	B	C	D	E	F	G
1	date	test_voltage_V	current_A	vt_at_CLRb	vt_readings_at_CLRb_V	drop_difference_at_CLRb_V	vt_at_VTTb
396	2015-10-12	5	0.3	SSPL_VT24	-2.1116	-0.0596	SSPL_VT24r
397	2015-10-12	5	0.3	DSCLC (Neg VCL Cold)			DSCLCr (Neg VCL Cc
398	2015-10-12	5	0.3	DSCLW (Neg VCL Warm)			DSCLW (Neg. VCL W
399	2015-12-03	5	0.3	USCLW (Pos. VCL Warm)	2.8046		USCLW (Pos. VCL W
400	2015-12-03	5	0.3	USCLC (Pos. VCL Cold)	2.8291	-0.0245	USCLCr (Pos. VCL C
401	2015-12-03	5	0.3	SC2_VT1	2.829	1.00E-04	SC2_VT1r
402	2015-12-03	5	0.3	SC2_VT2	2.4902	0.3388	SC2_VT2r
403	2015-12-03	5	0.3	SC2_VT3	2.3219	0.1683	SC2_VT3r
404	2015-12-03	5	0.3	SC2_VT4	2.1345	0.1874	SC2_VT4r
405	2015-12-03	5	0.3	SC2_VT5	1.8585	0.276	SC2_VT5r
406	2015-12-03	5	0.3	SSPL_VT6	1.8576	0.0009	SSPL_VT6r

FIG. 3. The insert sheet which allows users to add rows of data to the spreadsheet and insert newly-added rows to the existing database via the Create/Add SQLite table icon on the ribbon.

When the Create/Add SQLite table icon is selected, the user will be prompted to select the path of the database. After connection to the database, the insert-user form is launched, Fig. 4. On this form, the option “Insert new data in existing table” must be selected to perform inserts (the “create new table” option will create a new table in the database). The user would select the box to the right of “table source”, select the range of data to insert, and then click Execute. Once the user performs another query using the Query command on the first worksheet, the array will resize according to the new length of the database and include the newly added data.

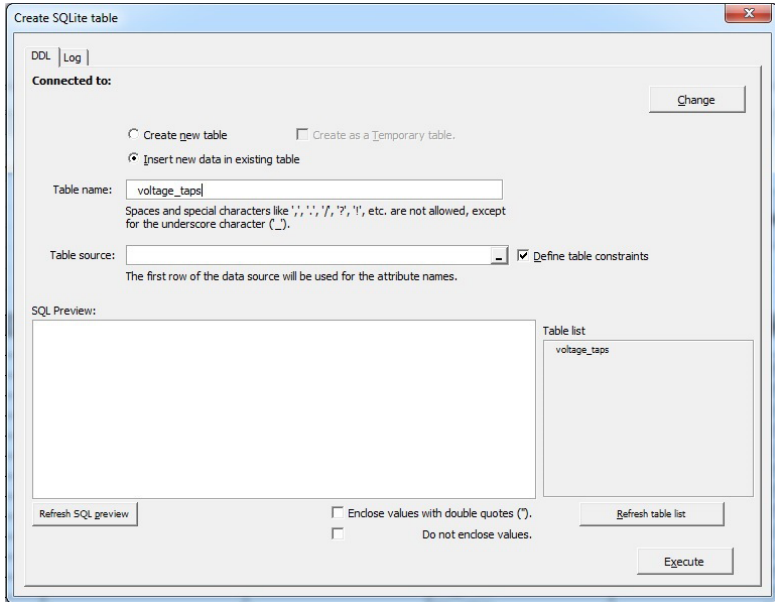


FIG. 4. The Create SQLite table pop-up window that runs when a user selects the Create/Add SQLite table button from the XLSQLite tab.

SQLiteForExcel and the XLSQLite.xlam add-in are useful tools to create SQLite databases for users who are familiar with Excel, but unfamiliar with SQLite. The VBA GUI allows queries to be performed by users unfamiliar with SQLite commands, and the insert page allows users to add data to the database.

[1] A. Hoebel *et al.*, Thomas Jefferson National Accelerator Facility DSG Note 2016-007, 2016.