
Tutorial for SQL in 4HPlus!

The real value of any information based software is in the data and reports that can be produced. 4HPlus! provides an extremely powerful and effective tool for creating an endless number of reports and other data outputs.

The name of this tool is **SQL**, which stands for Structured Query Language. As hard core data base programmers know, SQL is a powerful language that can be used to create a wide variety of data request.

The strength of 4HPlus! is that it harnesses the power of SQL in a way that makes it possible for users to build infinitely complex requests in a relatively simple fashion.

SQL Introductory Example

In this example, we will display, on the screen, a list of members who are in grade 9, and have been in 4-H at least 5 years

The foundational assumption with SQL is that you are wanting to select out a group of Members or Leaders, and related data about them. You cannot combine Members and Leaders in an SQL. Therefore, you must first decide if you want to look for members or leaders. In this case we are looking for members.

- To get started, click on [Goto] [Members] [SQL]

You are now in the SQL section of the Members data and can do a number of things, including make various requests. A basic request option is to list the group of Members you are interested in, so that's where we'll start.

NOTE: 4HPlus! assumes that all SQL requests are for active members only, and therefore, Active status is always assumed to be "Yes", which is exactly what we want in this example.

- Click on [Request] [List]

At this point you will see a whole bunch of check boxes appear. The check boxes correspond to the kinds of information that 4HPlus! has about each of your members. Although there are over 30 check boxes displayed, you will only work with one at a time.

The first step, then, is to click on the ONE check box that contains information that will help you select, or sort out, the group of members you are looking for.

In our case, we are looking for members who, among other things, are in grade 9

- Because the information we are looking for would be part of the "Grade" field, click on the check box next to "Grade"

In addition to placing a check mark in the "Grade" box, the computer also brought up another box which appears on the center of the bottom part of the screen. This box contains the section where you tell 4HPlus! how to search the "Grade" field.

- Because we are looking for members in Grade 9, or in other words, members whose Grade data is equal to 9, click on the "Equal to" radio button.

Clicking on the radio button brought up another box, this one listing the possible grade choices.

- Click on [9 - 9th Grade]
- Click on the [Continue] button

This brings up yet another box in the process. Clicking on the [Process] radio button would complete this SQL and display a list of members in 9th Grade. However, we will continue on with our example of looking for Members who are in 9th Grade and have been in 4-H at least 5 years.

- Click on the [And] radio button

This restores the list of check boxes (representing member data fields in 4HPlus!) to it's original state. However, notice that you are not really at the beginning. If you look at the long green box near the top of the screen, you will see that our request to list Members in Grade 9 is now displayed. Also displayed is the "Connector" AND.

- To continue with the request, click on the check box next to the "4H Years" data item

This again brings up the list of ways to search the 4H Years data.

- Because we want members with 4H Years of 5 or greater, click on the radio button labeled [Greater than or equal to].
- This will bring up the list of possible years, click on [5]
- Then click on the [Continue] button
- At this point you are ready to proceed, so click on the [Process] button to display the list of members who are in Grade 9 and have been in 4-H 5 years or more

You can double check any of the members in the list by clicking on their name. This will take you to the member's screen, where you can verify that they are indeed in Grade 9, and have been in 4-H 5 years or more. You can use the "Next" and "Prior" buttons to scan through all the records.

SQL examples focusing on "Selection"

SQL offers a number of different types of requests. Because the examples on this page focus on the "selection" step in SQL, only two types of requests will be made; Count and List, which do not involve the more advanced steps of selecting data fields and a sort order. The advanced type of requests are covered later.

The following examples of SQL requests are written in a format that follows the wording on the SQL screens.

When the examples refer to, for example, club 1, project 3, city 2, etc., click on actual clubs, projects, etc. that apply to the data you are working with.

These first three examples simply count the number of members who meet the specified criteria.

Request - Count Members - With Field - Gender - Equal to - F - Continue - Process

Request - Count Members - With Field - Project - Equal to - Project 1 - Continue - Process

Request - Count Members - With Field - Active - Equal to - Y - Continue - Process

The following two examples illustrate the difference between using "AND" & "OR". Notice that in the first example you are looking for members who are enrolled in BOTH projects. In the second example, you are looking for members enrolled in EITHER project.

Request - List Members - With Field - Projects - Equal to - Project 1 - Continue - AND - With Field - Projects - Equal to - Project 2 - Continue - Process

Request - List Members - With Field - Projects - Equal to - Project 1 - Continue - OR - With Field - Projects - Equal to - Project 2 - Continue - Process

Sometimes the best way to get the list you want is to not select anything. Here is an example of that. Notice that you do not click on any projects, and as a result will get a list of all members who have no projects.

Request - List Members - With Field - Projects - Equal to - Continue - Process

In addition to "Equal to", there are other options offered. These examples use two more of these. The first one lists members who do not live on a farm or ranch. The second example lists members in grades 4 or higher.

Request - List Members - With Field - Residence - Not Equal to - 1 Farm or Ranch - Continue - Process

Request - List Members - With Field - Grade - Greater Than or Equal to - 4th Grade - Continue - Process

The following two examples illustrate the ability of SQL in 4HPlus! to construct "OR" statements quickly. In these examples, we are looking for members in Grades 3, 4 and 5.

In the second example, we are building the same selection criteria, but at the point where you select the grade, simply ctrl-click or shift-click to select more than one grade, which as the effect of inserting an "OR" into the SQL request between each grade.

Request - List Members - With Field - Grade - Equal to - 3 - OR - With Field - Grade - Equal to - 4 - OR - With Field - Grade - Equal to - 5 - Continue - Process

Request - List Members - With Field - Grade - Equal to - 3,4,5 - Continue - Process

In all of the examples so far, when it has come time to specify what the "selection criteria" will be, the computer has suggested the available options. For example, when choosing a grade to select for, the computer knows the possible grades and displays Kindergarten through all the grade options.

When selecting on a field that the computer does not know the possible options, then a blank text box appears, labeled "target". More often than not, the use of this target box will involve the use of wild cards. The following example demonstrates that.

Request - List Members - With Field - First - Equal to - (type a "t*" into the box, without the quotes) - hit the Tab key - Process

The real power of SQL can be harnessed by using the parenthesis that are offered. The computer will use the parenthesis to guide what data it looks at first, giving you the ability to build multiple "sorts" into a single SQL Request. Normally, the computer will simply work left to right. But if parenthesis are included in the SQL request, the computer will consider the parenthesis first, then work left to right.

To get some idea how this works, consider the two different results from these two math examples:

$$4 * 2 + 1 = 9$$

$$4 * (2 + 1) = 12$$

The following SQL examples illustrate how this works in 4HPlus! in a situation where we want only members who live in a particular city and are enrolled in either of two projects.

Notice that when this SQL statement is constructed, that 4HPlus! will first look for members who have either of the selected projects, and then select out of those members, only those who live in the selected city.

Request - List - Members - With Field - City - Equal to - City 1 - Continue - And - Add (- With Field - Projects - Equal to - Project 1 - Continue - Or - With Field - Projects - Equal to Project 2 - Continue - Add) - Process

Here are two more examples of using the parenthesis. Both examples also make use of the ability to ctrl-click in the selection box. The second example makes use of parenthesis that are within parenthesis, which are also called "nested" parenthesis.

Request - List - Members - Add (- With Field - Primary Club - Equal to - Club 1, Club 2, Club 3, Club 4, Club 5 - Continue - Add) - And - Add (- With Field - Projects - Equal to - Project 1, Project 2, Project 3, Project 4 - Continue - Add) - Process

Request - List - Members - Add (- With Field - Primary Club - Equal to - Club 1 - Continue - And - Add (- With Field - Grade - Equal to - 3, 4, 5 - Continue - Add) - Add) - Or - Add (- With Field - Primary Club - Equal to - Club 2 - Continue - And - Add (- With Field - Grade - Equal to 8, 9, 10 - Continue - Add) - Add) - Process

Descriptions of SQL outputs available and how to use them

In addition to being a powerful selection tool, the SQL feature in 4HPlus! offers several things that you can do with your list of selected members or leaders.

If you click on [Goto] [Members] (or Leaders) [SQL] [Request], you will see the SQL output possibilities listed below. A description of each one follows.

Count

The count option simply returns the number of members or leaders that match the criteria of the SQL request.

List

The list option will also return the total number of matches, with the additional feature of listing the members or leaders.

The displayed list is a dynamic list, meaning that you can click on any one of the names listed and you will be taken to that member's registration screen. At that point, the next and prior buttons will allow you to look through all the names on the SQL results list. If you want to return to the SQL list from the member's screen, simply click on the SQL menu item.

Labels

The label option will create mailing labels for the members or leaders selected.

Once you have made your selection, you then have options about the capitalization of the mailing label data, how you want the labels sorted, and if you want labels with duplicate addresses removed.

Then you have the ability to preview who will be getting a mailing label, select what kind of label you want to print, and if you want to indicate which labels are already used from the sheet going into the printer.

Email

The e-mail request takes advantage of an internal e-mailing capability, allowing you to send e-mails to the group of members or leaders you select.

It is important to note that 4HPlus! takes care of making sure that ONLY members or leaders who have an e-mail address entered into 4HPlus! will be included in the list. Simply create your SQL request as you normally would, and 4HPlus! will take care of selecting out those members who have an e-mail address. (The next section describes how to create regular mailing labels for members or leaders who meet your criteria, but do not have an e-mail address entered into 4HPlus!)

Once you have made your selection of members or leaders, you will be taken to a screen where you enter a subject line, write a message and/or attach a file. The e-mail function includes the ability to load a previously saved message and to check the spelling of the e-mail message.

To complete the process, you must select the names of who is to receive the e-mail (from the list of members or leaders who matched your SQL criteria). There is an option to select ALL members or leaders in a single click of the mouse. This last step provides you with the opportunity to see who will be getting the e-mail and to selectively remove names from the list if you so choose.

Missing Email Labels

This option is the counterpart to the e-mail option described above, in that it creates traditional mailing labels for members or leaders who meet your criteria, but do not have an e-mail address entered into 4HPlus!.

You will need to re-create the selection request, using the same criteria used to send an e-mail. Once 4HPlus! selects out those members who do not have e-mail (but meet your criteria), you have the same mailing label options as the regular label option described above.

Report

The report option is probably the most commonly used SQL option, as it allows you to create nearly any imaginable printed report that can be based on member or leader data.

To achieve that usefulness, 4HPlus! offers additional options to the user. The first step though, is to build the selection criteria, which follows the same process as all the other SQL options.

Once you have indicated which individuals you want included, you then need to tell 4HPlus! which pieces of data (about those individuals) you want included on the report. All pieces of data about an individual are available to be included on the report, regardless of what the selection process was built on. To include a particular data field, simply check on the box next to the data description.

4HPlus! will also keep track of what order you click on the data fields, and will put them into the report in that order. For example, if you want the last name listed first, click on "Last", then on "First". If you want the first name listed first, click on the fields in the reverse order. 4HPlus! will display the order in which you clicked on the items.

Once you have selected which data fields to include, you then have the option to decide what order the members or leaders will be listed in. For example, if you want all the members of one club to be listed first, then the members of the next club, etc., you would click on "Primary club". If you also wanted the members to be listed alphabetically within the club, you would also click on "Last" and "First". 4HPlus! will keep track of what order you click the sort fields.

Once all of these steps are completed, you can see a preview or print the report.

Mail Merge

The mail merge option works very similar to the report option, except that instead of a printed report, you will get a data file that can be used as a data source for mail merging or for importing into a spreadsheet or database.

Advanced SQL examples using various request types

This page lists a variety of "advanced" SQL examples. These examples include the various output options, and include advanced selection criteria. They are written in "normal" language, which you must convert into SQL commands in 4HPlus! Any of the listed examples that refer to creating a report could also be used to create a mail merge file. You can consider yourself a real SQL pro for working with these!

Create a report listing all members of a specific club. The report should include their name, address info, and projects. Sort the report by the members last and first name.

Create a report listing all members enrolled in a specific project, that are also members of 4 specific clubs. The report should include their name, address info, primary club name. Sort the report by club, then name.

Create an e-mail that will be sent to all inactive members, then create the mailing labels for this request to send to members without an e-mail address

Create mailing labels for all members who have enrolled in any of three specific projects, and have also been in 4-H for 4 or more years.

Create a report listing all Active and Inactive members. The report should include their name, years in 4-H, and school. Sort the members by residence.

Create mailing labels for all members of a specific club that are enrolled in any of three specific projects, and whose last name begins with an "S".

Create a report listing all members in grades 3-5 and grade 12, that belong to a specific club. The report should include their name, Date of Birth and gender. Sort the report by 4-H years and name.

Create an e-mail that will be sent to all members in grades 10-12 who have been in 4-H more than three years, then create the mailing labels for this request to send to members without an e-mail address

Create a report listing all members in 6 specific projects that all attend a specific school, and are in grades 4-8. The report should include their name, phone number and projects. Sort by their name

Create mailing labels for members who are in BOTH of two specific projects, and do not live on a farm or ranch

Create a report listing members whose last name starts with a "B", and are enrolled in any of three specific projects, and attend a specific school, and have been in 4-H for less than 4 years. Include their name, address info, primary club, projects, and school. Sort by their grade, then their name.

Create an e-mail that will be sent to all members in a specific project that are from a specific city and are at least 8 years old, then create the mailing labels for this request to send to members without an e-mail address

Create a report that includes members who are in grades 3-5 from one specific club, and members who are in grades 9-12 and are from a different club. These members should also not live in a Town under 10,000. Include their name, grade and primary club. Sort by their name.