

# Library 544: TreeBrowserBuilder

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## **1. Disclaimer & Copyright**

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## **2. Credits**

Thanks to ACO for the HP 49G, Wolfgang Rautenberg for OT49, Eduardo M. Kalinowski for "Programming in System RPL", Mika Heiskanen for BZ and various post from different authors in comp.sys.hp48. Without them this program couldn't been written.

### 3. System Requirements & Installation

#### 3.1. System Requirements

Library 544: TreeBrowserBuilder has been coded and compiled with Debug4x and is written in System RPL. It was tested with ROM 1.22 in RPN-Mode. TreeBrowserBuilder requires at least ROM Version 1.19-6 and runs on the HP 49G and on the HP 49G+ and requires the Library 543 : TreeBrowser.

#### 3.2. Installation & Deinstallation

Transfer Library 544: TreeBrowserBuilder to your HP 49G and store it in a port. After a warmstart the library will be attached to {HOME} and is available.

To delete the library either use the FILE MANGER or the command

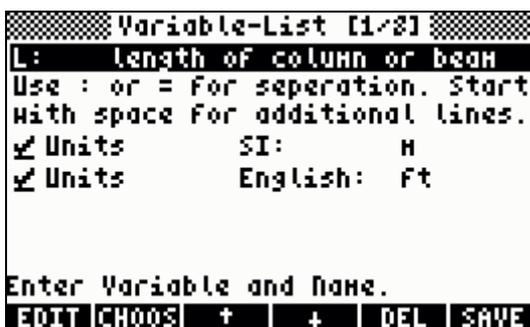
:P#:544 DETACH

:P#:544 PURGE

### 4. Using The Library

#### 4.1. Overview

TreeBrowserBuilder is an extension to the TreeBrowser, allowing it to act as an editor. With it one can easily create new or modify existing data-sets for the TreeBrowser directly on your HP 49G/49G+. Created data-sets can be saved as a program, a directory or as a library.



## 4.2. Using TreeBrowserBuilder

TreeBrowserBuilder contains two commands, TBNEW and TBED.

 : Starts an empty TreeBrowserBuilder for a new data-set.

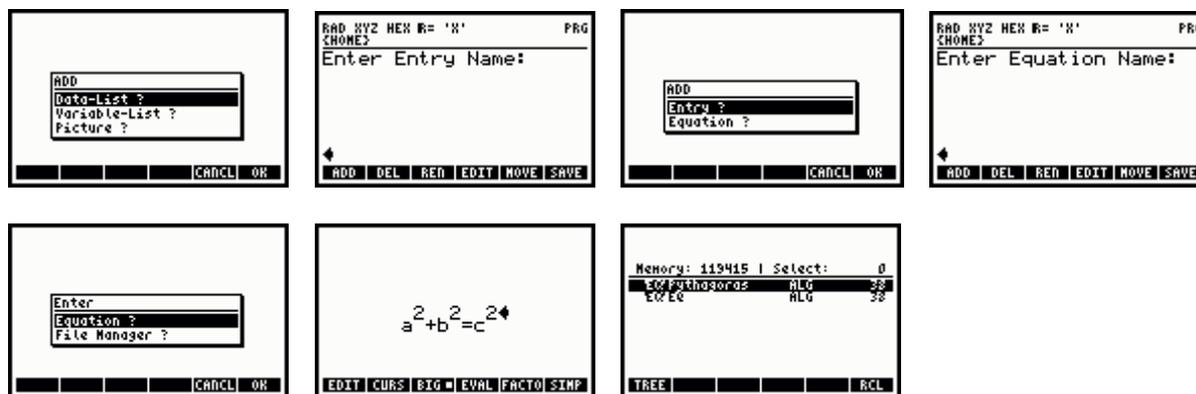
 : Modifies a data-set which was created with TreeBrowserBuilder. The data-set is expected on Level 1 of the stack and is either a program, a program in a directory containing the necessary files created by the TreeBrowserBuilder or a ROMPTR of a library created by the TreeBrowserBuilder.

For speed reasons no error checking is done at the start of the program, so please ensure that the arguments provided are valid !

The first six menu keys are the one for the TreeBrowserBuilder, pressing **(NXT)** leads to the menu keys of the TreeBrowser. TreeBrowserBuilder works exactly like the TreeBrowser and uses the same keys. The only difference are the first six menu keys which are hooked into TreeBrowser and will be explained in detail.

### 4.2.1. ADD

 : shows a choose box for adding a Data-List, a Variable-List or a picture.



Data-List ? will add a new entry at the current depth of the tree if possible and prompt for the name of it. Otherwise it will prompt for the name of the equation. It will repeat itself as long as one chooses to add an equation. One can either enter an equation through the EquationWriter or through the Filer.

In the EquationWriter press **(ENTER)** to store the expression into the TreeBrowserBuilder or press **(ON)** to cancel the whole operation.

The Filer will only show equations or programs. Use  to copy the object to the stack, then press **(ON)** to get the object into the TreeBrowserBuilder. One can use a program, but ensure that it delivers an algebraic object, otherwise the result will not be shown or even lead to a crash of the calculator. This can be used to evaluate flag -13 for a different appearance of an equation. A User-RPL program for this could look like this, for example:

```
<< IF -13 FS? THEN 'A+B=C' ELSE 'X+Y=Z' >>
```

Variable-List ? will add a new variable-list at the current position of the cursor. It is not possible to add a variable-list below an existing one. In this case you have to delete the variable-list above first. Adding a variable-list will open an input form in which one enters the variable and, if desired, the unit(s) of the variable. Units must be entered the same way as on the command line of the 49G behind the unit indicator \_ (underscore) so that the unit is correctly recognized by the command line interpreter.

Press **NXT** to switch to the second menu page.



- EDIT** : edits the current field. Entered values are automatically converted to strings and they will be displayed without quotes in the standard font.
- CHOS** : opens a choose box and jumps to the selected variable.
- BACK** : saves the entered values at the current position and shows the previous variable.
- NEXT** : saves the entered values at the current position and shows the next variable.
- DEL** : deletes the current entry and shows the next variable.
- CHK** : saves the entered values at the current position and shows an empty input form after the current entry.
- UP** : move current variable up in the variable-list.
- DN** : move current variable down in the variable-list.
- SAVE** : saves the whole variable-list and jumps back to the TreeBrowserBuilder. Depending on the check marks a unit-list (none, SI units, SI and English Units) is added to the variable-list.
- NXT** : switches to the next page of the menu.
- ON** : ends the input form without any changes.

Some hints about the variable browser inside the TreeBrowser:

To create variable(s) through **CHOS** the cursor must be on a entry where either the MES or the SOLVER can be called.

If units are activated the variable(s) of the equation(s) are created in the current directory with the unit, otherwise the variable(s) are created without the unit.

If the variable(s) already exist changing from SI units to English units and restarting the solver will only change the unit, the value of the variable is left untouched.

If the variable(s) already exist changing from English units to no units and restarting the solver will remove the unit, the value of the variable is left untouched.

If the variable(s) already exist changing from no units to SI units and restarting the solver will add the unit, the value of the variable is left untouched.

**DEL** will delete all variables of the active variable-list in the current directory.

Picture ? will add a new picture at the current position of the cursor. Any existing picture(s) below the current entry are automatically deleted. If a picture exists above the current entry it will be replaced by the picture-list to the chosen picture.



Picture uses the standard PICT environment, so you need to press  to draw or modify your picture. Press  to copy the picture to the stack and then press  to get the graphic object into the TreeBrowserBuilder.

The Filer will only show graphics objects. Use  to copy the object on the stack, then press  to get the graphic object into the TreeBrowserBuilder.

#### 4.2.2. DEL

 : deletes either the whole entry, the variable-list or a picture at the current cursor position.



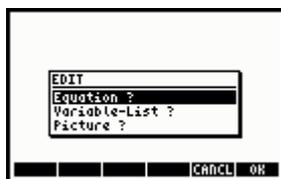
#### 4.2.3. REN

 : renames the selected entry.



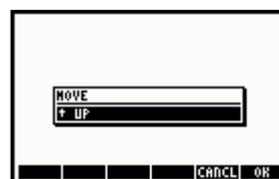
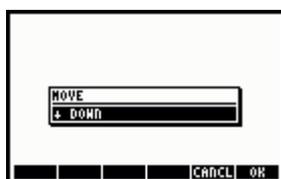
#### 4.2.4. EDIT

 : edits the current entry if possible.  
To edit an equation the cursor must be placed on the entry which contains the equation, the equation is passed to the EquationWriter.  
To edit a variable-list the cursor must be placed on the entry to which the variable-list is connected to. The variable-list is passed to the input form.  
To edit a picture the cursor must be placed on the entry to which the picture is connected to. The picture is passed to the standard PICT environment.



#### 4.2.5. MOVE

 : moves the selected entry (data-list, variable-list and picture-list). It is only possible to move in the current depth.



## 4.2.6. SAVE

**SAVE** : saves the created data-set as a program, a directory containing the files for the data-set and a program which calls the TreeBrowser or a library which calls the TreeBrowser.



If the data-set is saved as a program, the program is placed on the stack. From there it can be saved under any desired name. To edit the program put the content of the created variable (not the name !) with 'chosen name'  $\leftarrow RCL$  on the stack, then run **EDIT**.

If the data-set is saved as a directory, a directory with the name of the title is created. The directory contains the necessary files and a program named 'TBPRG'. Do not change the names and the content of the created files if you want to edit them again. To edit the data-set put the content of 'TBPRG' on the stack ('TBPRG'  $\leftarrow RCL$ ), then run **EDIT**. If no further changes are planned, 'TBPRG' can be renamed to any desired name but has to stay in the same directory as the other files which contain the necessary data for the TreeBrowser.

If the data-set is saved as a library, a library of the given number and title with an user-accessible command which calls the TreeBrowser is created and placed on the stack. Depending on the check mark the source directory is deleted or kept. The best way to re-edit the library is to split it into a directory and edit it from there. This assures that there are no reference calls in the data-set to another library.

### 4.3. Example Of A Data-Set

{ Data-List }

The data structure must at least contain one main level and a level below this one. Below the level which contains the equations no sub-levels are allowed.

The depth of the list(s) and the number of items is only limited by memory and speed of the calculator. The last entry of a sub-level is either an equation or a program which creates an equation. If you provide a program which tests system flag 13 it is possible to have two different appearances of the equation.

```
{ "Variable" "list" "for" "TreeBrowser" { "optional" "unitlist" "for" "variables" } }
```

It is important, that the list of main items and the list of variables contain the same number of entries because the list of variables is used to determine the number of entries TreeBrowser will show !

If one wants to use units the last entry of the variable-list is an extra-list which contains the units as strings as they are keyed in on the command line. If there are units you need a string as a unit for every variable. If one variable has no unit "-" is expected as a placeholder. It is possible to have alternative units, so one can provide SI units and English units. In this case one needs exactly twice as much entries as there are variables, the fore part of the units-list are SI units and the rear part are English units.

As a divider between the name of the variable and the description of the variable a colon ( : ) or the equal sign ( = ) is used. If the description of the variable is longer than one line the following lines have to begin with space and as a placeholder in the units-list the nullstring ( "" ) has to be used for this lines.

If you don't want to use a list of variables at all you need at least a list containing as many empty strings { "" "" "" "" "" "" "" "" "" "" ... } as there are entries in the list of main items.

The depth of the list of variables is independent from the depth-levels you provide for your data list but it can't be deeper than the data list. You can provide a different list of variables for each sub-level data list entry, but it is not possible to provide a list of variables below one. If you have a sub-level below, the variable list above will be shown.

{ Picture-List }

The structure of the picture-list is the same as the structure of the list of variables without the unit-list. If you don't want to provide any pictures at all use an empty list as argument ( { } ).

The picture-list contains a GROB (Graphic Objects) where a GROB should be shown and the real number 0 ( 0. ) if no picture is shown.

Keep in mind, that you have to provide a list with the same number of entries for the list of variables and/or the picture list as there are entries in the current depth if you want these lists shown together with the current depth.

This probably sounds quite theoretically so it might be a lot easier to have a look at an example. Examples are shown in the files Variablen.S and Einträge.S which are best viewed if you open the file TestDaten.HPP with Debug4x.

Or, as an alternative, load an existing data-set in your calculator and disassemble it to have a look at it.

#### 4.4. A Step By Step Guide For Using The TreeBrowserBuilder

The following pages explain how one can create an example data-set for the TreeBrowser using the TreeBrowserBuilder.

**Assumptions:** The calculator operates in RPN-Mode, Library 543 : TreeBrowser and Library 544: TreeBrowserBuilder are stored in either Port 0, 1 or 2 and the last mentioned library is attached to the current directory or to the home directory.

Further information about library objects and memory management can be found in the documentation provided with your calculator.

**REFERENCE NOTE:** The example data-sets for the TreeBrowser have been created directly on a PC. Please do not modify the example data-set with the TreeBrowserBuilder. They contain code with extended functionalities which is not supported by the TreeBrowserBuilder and will surely crash your calculator. Please **do not** edit the files created by the TreeBrowserBuilder unless you are familiar with the data structure. For speed reasons no error checking is done at the start of the program, so please ensure that the arguments provided are valid. An invalid data-set will surely crash your calculator !

#### 4.4.1. Starting TreeBrowserBuilder For A New Data-Set

**REFERENCE NOTE:** The following example assumes that the variable `QuadraticEquation` which contains the equation  $Y=A*X^2+B*X+C$  and the variable `twoViews` which contains the program

```
⌘
  IF -13 FS?
  THEN 'A+B=C'
  ELSE 'X+Y=Z'
  END
```

⌘ which tests system flag 13 as a demonstration for two different appearances of the equation inside the TreeBrowser already exist in the memory of the calculator.

In case you want to reproduce the example please create the variable specified above.

Further information about creating objects and working with memory can be found in the documentation provided with your calculator.

It is not possible to interrupt the construction of a new data-set. There is only the choice of either finishing the new data-set or to discard the entire data-set keyed in so far. To minimize your work you should already have an idea about the tree structure of your collections of formulas and how it should look like before entering a data-set.

Switch to the attached libraries with  `LIB` and start TreeBrowserBuilder.



To construct a new data-set press the soft menu . TreeBrowserBuilder starts and an empty workspace is shown where we will create our data-set.

#### 4.4.2. Constructing The First Entry Of A Data-Set

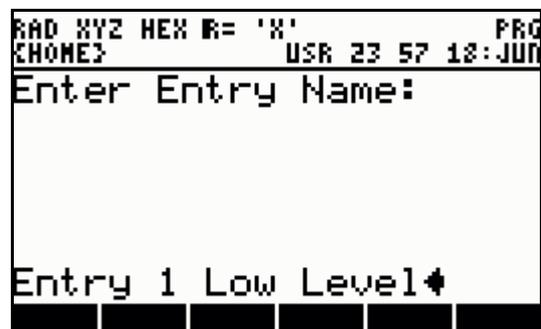
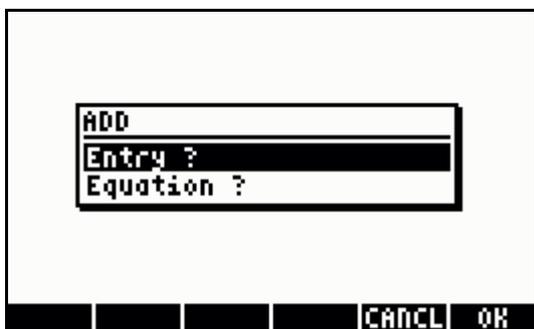


There is only the soft menu  available if we start TreeBrowserBuilder with an empty workspace which we will use to construct the first entry of our data-set. This will become the first and highest entry in the tree structure of our collections of formulas. Choose an appropriate name for the first entry of your data-set and name it. All characters of the additional character set of the HP 49G / HP 49G+ / HP 50G can be used. A valid data-set must contain at least one main level and one sub-level below this one.

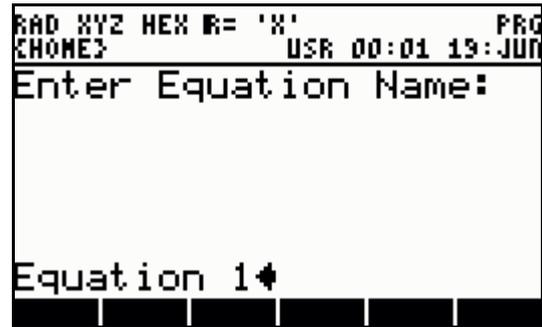
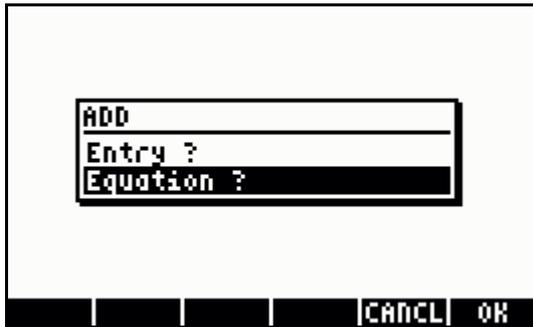


In the next step we have to decide how many sub-levels below the main level we want. With **Entry ?** another sub-level below the last entered level is added, **Equation ?** will add an Equation to the last entered sub-level. The sub-level containing the equations is always the lowest level and no sub-levels below this one are allowed.

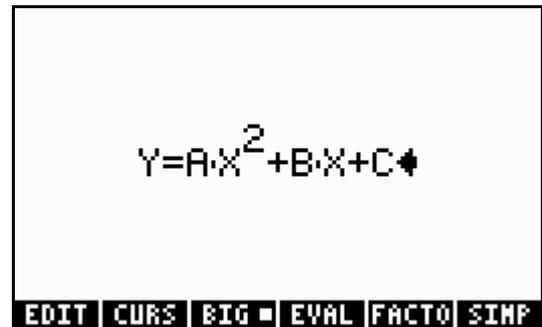
In our example we will construct a data-set with three levels, the main level, a middle level and the lowest level where the equations will be stored.



Now we will add an equation at the lowest constructed level.



Choose Equation ? and give your equation a proper name.



Either enter the equation through the EquationWriter (EQW) or use the File Manager to select an equation that is already in the memory of the calculator. You can also choose a program that depending on system flag 13 evaluates which equation is shown in the TreeBrowser. This can be used to have two different appearances of the same equation, for example.

Leave the EquationWriter with **ENTER** to accept the equation, **ON** will cancel the whole process of constructing the data-set.



The File Manager will only show equations and/or programs of the current directory. All other objects are suppressed but otherwise use the File Manager like you would do if called directly from the keyboard with **FILES**. Use **RCL** to transfer the highlighted item into your data-set and leave the File Manager with **ON** afterwards. The chosen file will be checked and is accepted by the TreeBrowser if valid. To cancel the whole process of constructing the data-set press **ON**.

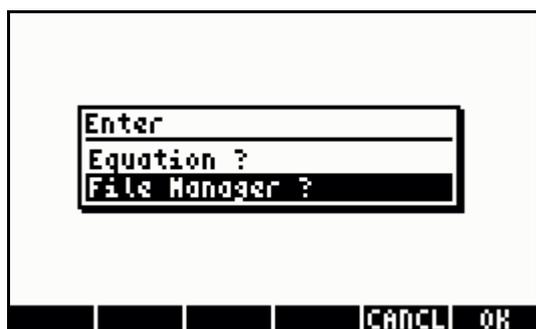
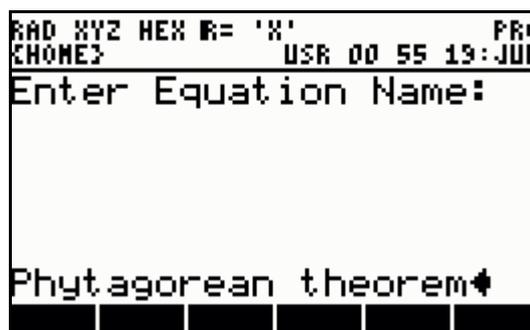
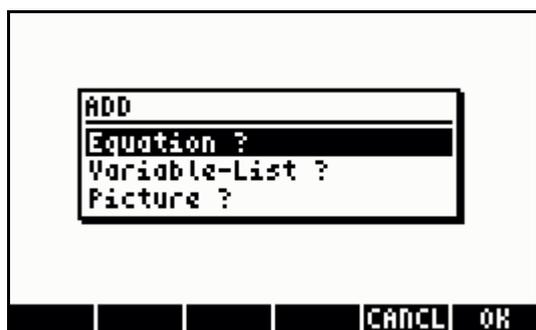
Further information about the EquationWriter (EQW) and the File Manager can be found in the documentation provided with your calculator.

**WARNING:** A program that creates an equation must follow exactly the regulations given above to be a valid object for the TreeBrowserBuilder.

Now you will see your first constructed entry of your data-set in the TreeBrowserBuilder.



Open the entry and add an equation that already exists in the memory of the calculator.



```

TreeBrowserBuilder
Entry 1 Main Level
  Entry 1 Mid Level
    Entry 1 Low Level
      Equation 1
      Phytogorean theorem
ADD | DEL | REN | EDIT | MOVE | SAVE

```

```

TreeBrowserBuilder
Entry 1 Main Level
  Entry 1 Mid Level
    Entry 1 Low Level
      Equation 1
      Two Views
      Phytogorean theorem
ADD | DEL | REN | EDIT | MOVE | SAVE

```

A new entry will always be added directly below the cursor.

**REFERENCE NOTE:** A valid data-set must contain at least one main level and one sub-level below this one. The sub-level containing the equations is always the lowest level and no sub-levels below this one are allowed.

The depth of the list(s) and the number of items is only limited by memory and speed of the calculator. The last entry of a sub-level is either an equation or a program which creates an equation. If you provide a program which tests system flag 13 it is possible to have two different appearances of the equation.

While an equation is shown **MODE** can be used to toggle between the two different views of an equation (of course only if there are two different views). Outside of the equation view **MODE** sets or clears system flag 13. Depending on system flag 13 the appropriate equation is shown when entering the equation view.

```

(1/3) Entry 1 Low Level
Equation 1
      Y=A·X2+B·X+C

```

```

(2/3) Entry 1 Low Level
Two Views
      A+B=C

```

```

(2/3) Entry 1 Low Level
Two Views
      X+Y=Z

```

```

(3/3) Entry 1 Low Level
Phytogorean theorem
      A2+B2=C2

```





#### 4.4.4. Moving An Entry Inside A Sub-Level

You can change the order in a sub-level and move entries up or down. Possible variable-lists and picture-lists that belong to that entry are moved as well.

```
TreeBrowserBuilder
Entry 1 Main Level
Entry 1 Mid Level
  Entry 1 Low Level
    Equation 1
    Two Views
    Pythagorean theorem
  Entry 2 Mid Level
    Area of a rectangle
    Equation 3
    Altitude of a triangle
    Equation 4
ADD | DEL | REN | EDIT | MOVE | SAVE
```

```
MOVE
+ DOWN
CANCL | OK
```

```
TreeBrowserBuilder
Entry 1 Main Level
Entry 1 Mid Level
  Entry 1 Low Level
    Equation 1
    Two Views
    Pythagorean theorem
  Entry 2 Mid Level
    Equation 3
    Area of a rectangle
    Altitude of a triangle
    Equation 4
ADD | DEL | REN | EDIT | MOVE | SAVE
```

```
MOVE
+ UP
+ DOWN
CANCL | OK
```

**REFERENCE NOTE:** At the moment it is not possible to move an entry outside of a level. This has to be done by hand so far. Please get familiar with the data structure before performing such a task.

An invalid data-set will surely crash your calculator !

#### 4.4.5. Renaming An Entry

You can rename every entry of a data-set.

```
TreeBrowserBuilder
Entry 1 Main Level
Entry 1 Mid Level
  Entry 1 Low Level
    Equation 1
    Two Views
    Pythagorean theorem
  Entry 2 Mid Level
    Equation 3
    Area of a rectangle
    Equation 4
    Altitude of a triangle
ADD | DEL | REN | EDIT | MOVE | SAVE
```

```
RAD XYZ HEX B= 'X' PRG
~BrowserBuilder> USR 12 03 19:JUN
Rename Entry:
Equation 4
```

```

RAD XYZ HEX R= 'X'          PRG
\BrowserBuilder> USR 12:06 19:JUN
Rename Entry:

Renamed

```

```

TreeBrowserBuilder
Entry 1 Main Level
|Entry 1 Mid Level
| |Entry 1 Low Level
| | |Equation 1
| | |Two Views
| | |Phytagorean theorem
|Entry 2 Mid Level
| |Equation 3
| |Area of a rectangle
| |Altitude
| |Altitude of a triangle
ADD | DEL | REN | EDIT | MOVE | SAVE

```

#### 4.4.6. Deleting An Entry

Entries of a data-set can be deleted. You can choose to delete the whole entry or possible existing variable-lists and/or picture-lists. If a whole entry is deleted all possible existing variable-lists and/or picture-lists belonging to this entry are deleted as well.

```

TreeBrowserBuilder
Entry 1 Main Level
|Entry 1 Mid Level
| |Entry 1 Low Level
| | |Equation 1
| | |Two Views
| | |Phytagorean theorem
|Entry 2 Mid Level
| |Equation 3
| |Area of a rectangle
| |Altitude
| |Altitude of a triangle
ADD | DEL | REN | EDIT | MOVE | SAVE

```

```

DEL
Whole Entry ?
Variable-List ?
Picture ?

```

```

TreeBrowserBuilder
Entry 1 Main Level
|Entry 1 Mid Level
| |Entry 1 Low Level
| | |Equation 1
| | |Two Views
| | |Phytagorean theorem
|Entry 2 Mid Level
| |Equation 3
| |Area of a rectangle
| |Altitude of a triangle
ADD | DEL | REN | EDIT | MOVE | SAVE

```

```

TreeBrowserBuilder
Entry 1 Main Level
|Entry 1 Mid Level
| |Entry 1 Low Level
| | |Equation 1
| | |Two Views
| | |Phytagorean theorem
|Entry 2 Mid Level
| |Equation 3
ADD | DEL | REN | EDIT | MOVE | SAVE

```

```

DEL
Whole Entry ?
Variable-List ?
Picture ?

```

```

TreeBrowser
Builder:
Delete Entry
Above

```

After deleting the current entry the cursor stays at its position, following entries move up one position. Deleting the last entry of a sub-level moves the cursor up one position within the level. It is not possible to delete the last entry of a sub-level. In this case you have to delete the higher sub-level this entry belongs to.



```

Variable-List [1/1]
Use : or = for seperation. Start
with space for additional lines.
_ Units

h = height
EDIT | CHOOS | BACK | NEXT | DEL | SAVE

```

```

Variable-List [1/1]
h = height
Use : or = for seperation. Start
with space for additional lines.
 Units

Check For SI-Units
EDIT | CHK | BACK | NEXT | DEL | SAVE

```

```

Variable-List [1/1]
h = height
Use : or = for seperation. Start
with space for additional lines.
 Units      SI:      -
_ Units

Check For SI-Units
EDIT | CHK | BACK | NEXT | DEL | SAVE

```

```

Variable-List [1/1]
h = height
Use : or = for seperation. Start
with space for additional lines.
 Units      SI:      -
_ Units

CM
EDIT | CHOOS | BACK | NEXT | DEL | SAVE

```

```

Variable-List [1/1]
h = height
Use : or = for seperation. Start
with space for additional lines.
 Units      SI:      CM
 Units

Check For English Units
EDIT | CHK | BACK | NEXT | DEL | SAVE

```

```

Variable-List [1/1]
h = height
Use : or = for seperation. Start
with space for additional lines.
 Units      SI:      CM
 Units      English:  -

Check For English Units
EDIT | CHK | BACK | NEXT | DEL | SAVE

```

```

Variable-List [1/1]
h = height
Use : or = for seperation. Start
with space for additional lines.
 Units      SI:      CM
 Units      English:  -

in
EDIT | CHOOS | BACK | NEXT | DEL | SAVE

```

```

Variable-List [1/1]
h = height
Use : or = for seperation. Start
with space for additional lines.
 Units      SI:      CM
 Units      English:  in

Enter Variable and Name.
EDIT | CHOOS | BACK | NEXT | DEL | SAVE

```

**ENTER** stores the entered data at the current position inside the variable-list and an empty input form behind the last entered variable is displayed.

Now you can either enter the next variable or enter a note as an additional explanation to your variable.

```

Variable-List [2/2]
Use : or = for seperation. Start
with space for additional lines.
☒ Units      SI:      -
☒ Units      English: -

Enter Variable and Name.
EDIT|CHOOS|BACK|NEXT|DEL|SAVE

```

```

Variable-List [2/2]
Use : or = for seperation. Start
with space for additional lines.
☒ Units      SI:      -
☒ Units      English: -

this is a note
EDIT|CHOOS|BACK|NEXT|DEL|SAVE

```

```

Variable-List [2/2]
this is a note
Use : or = for seperation. Start
with space for additional lines.

Enter Variable and Name.
EDIT|CHOOS|BACK|NEXT|DEL|SAVE

```

```

Variable-List [3/3]
Use : or = for seperation. Start
with space for additional lines.
☒ Units      SI:      -
☒ Units      English: -

..g hypotenuse section
EDIT|CHOOS|BACK|NEXT|DEL|SAVE

```

```

Variable-List [3/3]
p = long hypotenuse section
Use : or = for seperation. Start
with space for additional lines.
☒ Units      SI:      -
☒ Units      English: -

Check for SI-Units
EDIT|☒CHK|BACK|NEXT|DEL|SAVE

```

```

Variable-List [3/3]
p = long hypotenuse section
Use : or = for seperation. Start
with space for additional lines.
☒ Units      SI:      cm
☒ Units      English: in

Enter Variable and Name.
EDIT|CHOOS|BACK|NEXT|DEL|SAVE

```

```

Variable-List [4/4]
Use : or = for seperation. Start
with space for additional lines.
☒ Units      SI:      -
☒ Units      English: -

..t hypotenuse section
EDIT|CHOOS|BACK|NEXT|DEL|SAVE

```

```

Variable-List [4/4]
q = short hypotenuse section
Use : or = for seperation. Start
with space for additional lines.
☒ Units      SI:      cm
☒ Units      English: in

Enter Variable and Name.
EDIT|CHOOS|BACK|NEXT|DEL|SAVE

```

After you have entered all variables and/or notes use  from the second menu page to adopt the variable-list. This will save the variable-list to the entry the cursor is on, leaves the input form and jumps back into the TreeBrowserBuilder.

```

Variable-List [4/4]
q = short hypotenuse section
Use : or = for seperation. Start
with space for additional lines.
[ ] Units      SI:      cm
[ ] Units      English: in

Enter Variable and Name.
EDIT | CHOO3 | BACK | NEXT | DEL | +TBB

```

```

TreeBrowserBuilder
Entry 1 Main Level
Entry 1 Mid Level
  Entry 1 Low Level
    Equation 1
    Two Views
    Pythagorean theorem
  Entry 2 Mid Level

```

ADD | DEL | REN | EDIT | MOVE | SAVE

Now take a look at the variable-list from the TreeBrowser using the variables browser.

```

h = height
  this is a note
p = long hypotenuse section
q = short hypotenuse section

UNITS | SI = | +VAR | PURGE

```

- EDIT** : edits the current field. Entered values are automatically converted to strings and they will be displayed without quotes in the standard font.
- CHOO3** : opens a choose box and jumps to the selected variable.
- BACK** : saves the entered values at the current position and shows the previous variable.
- NEXT** : saves the entered values at the current position and shows the next variable.
- DEL** : deletes the current entry and shows the next variable.
- REN** : saves the entered values at the current position and shows an empty input form after the current entry.
- MOVE** : move current variable up in the variable-list.
- MOVE** : move current variable down in the variable-list.
- +TBB** : saves the whole variable-list and jumps back to the TreeBrowserBuilder. Depending on the check marks a unit-list (none, SI units, SI and English Units) is added to the variable-list.
- NXT** : switches to the next page of the menu.
- ON** : ends the input form without any changes.

#### 4.4.8. Adding A Picture-List

Picture ? will add a new picture at the current position of the cursor. Any existing picture(s) below the current entry are automatically deleted. If a picture exists above the current entry it will be replaced by the picture-list to the chosen picture. The process of adding a picture is basically identical with the process of adding a variable-list.



The standard PICT environment is used to add a picture, so you need to press **□** to draw or modify your picture. Press **STO▶** to copy the picture to the stack and then press **ON** to get the graphic object into the TreeBrowserBuilder.

The Filer will only show graphic objects. Use **□** to copy the object on the stack, then press **ON** to get the graphic object into the TreeBrowserBuilder.

Further information about graphic objects and working with them can be found in the documentation provided with your calculator.

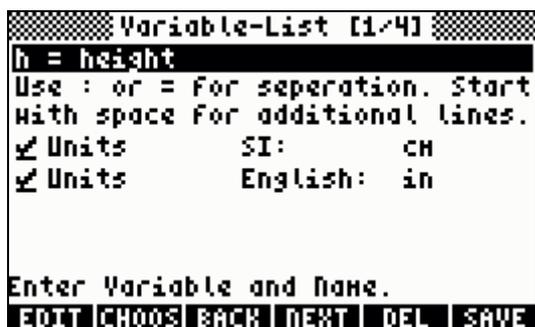
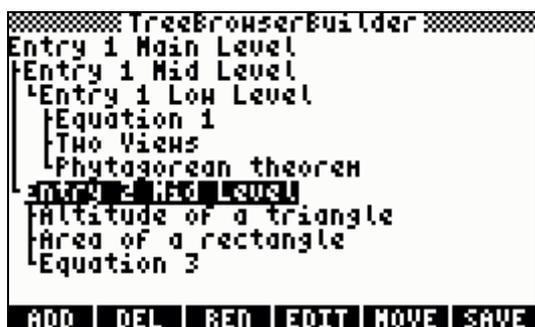
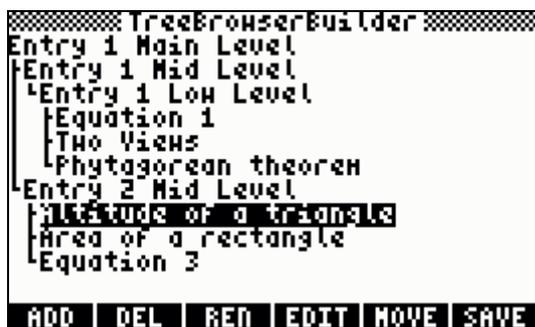
#### 4.4.9. Editing An Already Existing Data-Set

If the cursor is on an entry where additional information of your collections of formulas like an equation, the variable-list and/or the picture-list you can edit this information.

To edit an equation move the cursor to an entry that contains one. Editing takes place in the EquationWriter

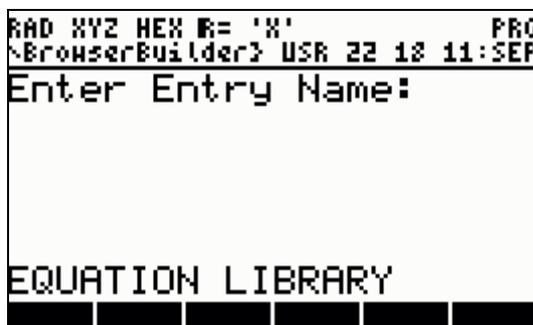
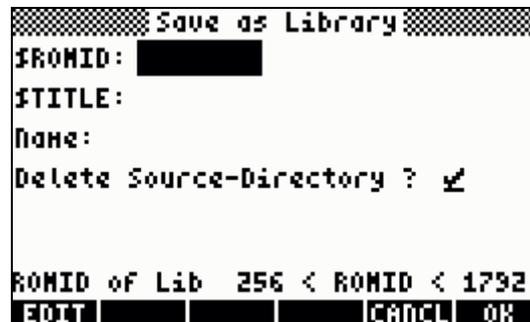
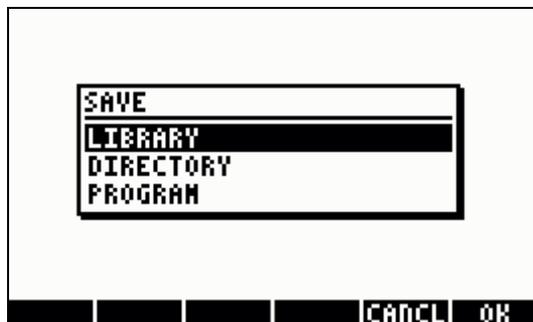
To edit a variable-list move the cursor to an entry that contains one. Editing takes place in the input form designed for this.

To edit a picture-list move the cursor to an entry that contains one. Editing takes place in the standard PICT-environment.



#### 4.4.10. Details About Saving Your Constructed Data-Set

With **EXIT** you can save your constructed data-set as a program, a directory or as a library in the memory of the calculator.



**WARNING:** Please **do not** edit the files created by the TreeBrowserBuilder unless you are familiar with the data structure. For speed reasons no error checking is done at the start of the program, so please ensure that the arguments provided are valid. An invalid data-set will surely crash your calculator !

If you are not familiar with the data structure, please leave the management and editing of the data-sets to the TreeBrowserBuilder. That's what it was programmed for !

#### REFERENCE NOTE:

Save your collections of formulas as a program for easy sharing them with others or for easy editing. The whole data-set (containing the entries, equations, variable-list(s) and picture-list(s)) is placed on the stack as a program. The program contains a SYSTEM-RPL call to the TreeBrowser, this means that you can look at it with the built-in editor of the calculator but you can not make any changes to it.

Save your collections of formulas as a directory once you got familiar with the data structure. You can transfer the directory to your PC and edit or modify it there.

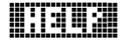
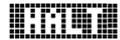
Save your collections of formulas as a library if you do not want to make any further changes.



## 4.5. Used Keys

The following keys are used by the TreeBrowser.

Keys while the TreeBrowser is active:

-  : opens a tree
-  : closes a tree
-  : shows the equation if there is something to show and if one is on the lowest level
-  : shows variables (if there are any)
-  : shows picture (if there is any)
-  : sets or clears the user flag for using units with SI units (user flag 60 and 61)
-  : sets or clears the user flag for using units with English units (user flag 60 and 61)
-  : shows help for TreeBrowser
-  : temporary stops the TreeBrowser and gives access to the normal user stack. One has complete control over the calculator at this point. If an error happens by another program, for example, which is not be covered by TreeBrowser your calculator may crash. The purpose of these functions is to allow simple calculations so that it is not necessary to leave TreeBrowser for this.  CONT brings you back to the TreeBrowser.
-  : starts the solver if one is on the lowest level and the equation contains =. system flag 30 controls if the solver of the HP 48SX or the solver of the HP 48GX is used.
-  : starts the Multiple Equation Solver, all equations of the lowest level are grouped together. The equations should be related by topic to each other if you want usable results (also see user guide of the HP 48GX).  CONT brings you back to the TreeBrowser.
-  : switches to the next page of the menu
-  : double click opens or closes a tree
-  : starts the solver if the equation contains =
-  : toggles between the way equations are shown, if you provide a program which tests system flag 13 it is possible to have two different appearances of the equation.
-  : opens a choose box to select the equations which will be passed to the Multiple Equation Solver.
-  : shows variables (if there are any)
-  : shows picture (if there is any)
-  : ends TreeBrowser
-  : opens or closes a tree

    : arrow keys to navigate or to move the screen.

  : one page up

  : one page down

  : first entry

  : last entry

  : move screen to the right

  : move screen to the left

 : choose font

 : toggle fonts

 : hide / show title

 : hide / show menu

 : integrated help

Keys while an equation is shown:

 : equation before

 : copies the current equation to the stack

 : next equation

 : toggles between big and small appearance of the equation (changes system flag 80)

 : leaves the equation view and jumps back to the TreeBrowser

 : previous equation

 : next equation

    : arrow keys to navigate or to move the screen.

## 5. Things To Do

## 6. Version History

18.01.05	Version 1.7	First public version
01.03.05	Version 1.8	Fixed bug in MOVE and DEL
13.05.05	Version 1.9	Adaptation to TreeBrowser 1.9
30.08.05	Version 2.0	Adaptation to ROM 2.00 for the HP 49G+
21.09.05	Version 2.1	Adaptation to TreeBrowser 2.1
27.10.05	Version 2.2	Adaptation to TreeBrowser 2.2
31.12.05	Version 2.3	Adaptation to TreeBrowser 2.3
01.09.06	Version 2.4	Adaptation to TreeBrowser 2.4
23.10.06	Version 2.41	Fixed bug in MOVE DOWN
15.12.06	Version 2.42	Improvement at the beginning of the TBNEW-routine. If a variable list or a picture list is added before the first main item is added the data file could get corrupted.
08.01.07	Version 2.45	Fixed bug in the DEL-routine and adaptation to TreeBrowser 2.5
08.05.07	Version 2.6	Adaptation to TreeBrowser 2.6
19.06.07	Version 2.7	Adaptation to TreeBrowser 2.7
11.09.07	Version 2.8	Adaptation to TreeBrowser 2.8
18.12.07	Version 3.0	Adaptation to TreeBrowser 3.0
22.11.09	Version 3.10	Adaptation to TreeBrowser 3.10

## 7. Known Bugs

Fixed in Version 1.8	After an entry has been moved the screen is not refreshed correctly. Deleting the last entry may lead to a crash of the calculator. Entries in a depth of two or greater will not be deleted, if an entry above this one is open.
Fixed in Version 2.41	Moving down entries lead to a crash.

## 8. Beta Tester

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