

Topics

COLLABORATORS

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Chapter 1

Topics

1.1 TurboCalc by Michael Friedrich

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1.2 Input

Input

In this chapter you will find a summary of all possibilities (with mouse or keyboard) of the controlling and input of TurboCalc sheets.

The TurboCalc GUI (Graphical User Interface) offers three modes: The select-, the input- and the editing mode.

Select Mode

Input Mode

Editing Mode

Input Formats

1.3 Select Mode

Select Mode

After <Project-New> or <Project-Open> TurboCalc is set to this mode automatically. It allows the shifting of the cell cursor or the definition of a block. It is used to select a cell/block or to simply look at you work.

With Keyboard

The keyboard offers the following possibilities to move the cell cursor:

<Cursor> Moves the cursor, as far as possible, to the respective direction.
<Alt> +<Cursor> Moves the cursor, as far as possible, page by page to the respective direction.

<Ctrl>+<Cursor> Moves the cursor to the beginning or to the end (horizontal or vertical) - depending on the direction. "End" in this case means the last input cell, so to speak the end of the entered range.

<Alt> + <Ctrl> +

<Cursor> Moves the cursor to the top or the bottom of the whole sheet (horizontal or vertical) depending on the direction. Here bottom is the maximum position, therefore it is the last row or column (which need not contain any data).

<Tab> Moves the cursor one field to the right. If a block is marked it stays preserved and the cursor moves within the block (that means if the cursor stays on the right it will be set one row below at the left margin).

<Shift>-<Tab> Moves the cursor one field to the left. If a block is marked it stays preserved and the cursor moves within the block (that means if the cursor stays at the left margin it will be set one row up at the right margin).

<Return> No block marked: According to the entry made in <Options-Sheet> the cursor is moved or not.

Block marked: Moves the cursor one field down, but always stays within the block (the block remains preserved). If the cursor is at the bottom of the block it will be set on top of the first row (one column to the right).

<Shift>-<Return> Same as <Return>, but to the other direction.

If a <Shift>-key is pressed while executing the movements explained above not only the cell cursor will be shifted but at the same time a block will be marked. The marking starts at the cell where the shift key was pressed the first time and is extended up to the current cell.

During active block: If a block is selected and any cursor key is stroke (without <Shift>), the block is deleted and the cell cursor shifted. While pressing down the <Shift>-key the block will be extended accordingly. The keys <Tab> and <Return> preserve the block and shift the cursor within this marked range.

Hint: This can be used as follows: If you desire to make entries in a rectangular range, this range should be selected as a block. Now the entries can be entered (see below) and the cursor can be shifted in the appropriate direction by striking <Tab> or <Return>. If the cursor is positioned at the right or bottom edge the next field of the block is automatically selected.

By Mouse

A cell is selected with a click on the left mouse button. If you want to mark a block, press down the left mouse button in one corner of the block (do not release) and then move the mouse pointer towards the opposite corner (if this cell is not visible, the sheet will automatically be scrolled as soon as the margin is reached). Here just release the mouse button.

If the <Shift>-key is pressed when you click on a cell, a block from the former cell (resp. the corner of the block) to the current cell is marked. Hold the mouse button to move the block.

Hint: This is useful for an easier marking of large blocks: Click on one corner and then move to the other corner. Click there while pressing down the <Shift>-key.

By Menu

Furthermore there is a menu item that enables you to select definite cells (or ranges) very quickly. Above all it is most practical if cells are far away. Select the menu item <Command-Goto> or simply press <F5>. Now a list with all defined names (see "Names"), as well as a text line, appears. Now with a double click on the name, the belonging cell range or the single cell can be displayed and (having a block) be marked. This is very suitable for databases, e.g. to determine the database range "Database" or the search criteria "Criteria". Apart from that, any normal cell (A1 or AC100) or range (A1:C20) can be entered in the text line.

After a click on >Ok< or striking <Return>, this cell or range is selected.

1.4 Input Mode

Input Mode

The input mode allows a simple input of cell contents. To switch to this mode simply start with the input (press any key).

Attention: While executing this step any former cell contents will be deleted. You can still avoid the new input by using <ESC>. If you want to edit the former cell contents, press <F2> to switch to the editing mode (see next paragraph).

In the text line below the window title, as well as in the current cell, the input can be watched. The following control features are available.

<BackSpace> deletes the last entered letter

<ESC> stops the input, the former contents remains preserved. Switches back to the selection mode.

<Return>, <Tab>, <Cursor>

(or with <Shift>, <Alt>, <Ctrl>)

The input will be accepted and saved; the cell cursor is moved as described in the selection mode.

<Paste-Formula> or

<Paste-Macro> Inserts a formula or a macro instruction at the current position, see below. This will activate the editing mode automatically.

<Paste-Name> Inserts a name at the current position, see below. This will activate the editing mode automatically.

Cell/Range selection with mouse (Input text must start with "=".) Inserts a cell-or range-reference (e.g. "=C19" or "C19:F24") at the current cursor-position, see below. This will activate the editing mode automatically.

1.5 Editing Mode

Editing Mode

In this mode you can enter your data enjoying all editing possibilities of TurboCalc as well as modify previously entered text.

For this input/alteration the text line between window title and toolbar (or the beginning of the sheet if the toolbar is hidden) is used. Here the text is displayed and can be edited just like in all other text fields.

To activate this mode proceed as follows:

<F2> If this key is pressed in the selection mode the text of the current cell can be edited (or if the cell is empty you can enter new text). If the key is pressed while working in the input mode, the (already) entered text will be taken over and is ready to be edited.

Click with the mouse on the text line below the window title

The cursor is automatically located at the position where the mouse button was pressed. This is possible in the selection mode as well as in the input mode (see <F2>).

<Paste-Formula>, <Paste-Macro>, <Paste-Name>

Description see below

Insert cell/range with mouse out of the input mode

Description see below

The following editing possibilities are available:

<Left>/<Right> Moves the text cursor to the appropriate direction. If the text is not visible completely, the sheet will be scrolled automatically when reaching the left or right margin.

<Shift>-<Left>/<Right> Jumps to the beginning or the end of the cell.

 Deletes the letter at the cursor's position

<BS> Deletes the letter to the left of the cursor and moves the cursor in this direction.

<Shift>- Deletes the complete text line.

<Tab>, <Return> Finishes the input (it will be taken over) and moves the cell-cursor as described in the selection mode

<ESC> rejects the entry (the former content remains preserved) and finishes the editing mode (Change back to the selection mode).

<Paste-Formula> Inserts a formula at the current position (see below).

<Paste-Macro> Inserts a macro-instruction at the current position (see below).

<Paste-Name> Inserts a name at the current position (see below).

Select cell or range with mouse

(Entered text must start with "=".) Inserts a cell- or range-reference at the current position, see below.

Insert Formula/Macro

The menu item <Command-Paste-Formula> or <Command-Paste-Macro> or the respective symbol "f()" or "m()" activates a requester in which all available TurboCalc functions or macro-instructions are listed. Here an entry can be selected with a click on the appropriate text and >Ok< or a double click on the entry.

The selected entry will be pasted at the current cursor-position.

Afterwards, TurboCalc is set back to the editing mode.

If the selected function requires parameters the cursor will be placed within the brackets automatically. Otherwise it can be found directly behind the closing bracket ")". If this menu item is called from the selection mode, an equals sign will be added in front of the function name, as it (obviously) should become a formula.

Hint: Apart from using the mouse, the formula (macro) can also be selected with the keyboard: Select the desired entry with <Cursor up> or <Cursor down> and then confirm with <Return>. To reach the top or bottom of the list use <Shift>+<Up/Down>.

Insert Name

Having selected the menu item <Command-Paste-Name> a list of all existing (defined) names will appear. Here it is possible to select an entry by means of a click on the appropriate text and >Ok< or a double click on the entry itself. This entry will then be inserted at the current position (or at the end of your input line if you are in input mode) and the program will switch to the editing mode automatically. If this menu item is called from the selection mode, an equals sign "=" will be inserted in front of the name.

Hint: Apart from using the mouse the formula (macro) can also be selected with the keyboard: Select the desired entry with <Cursor up> or <Cursor down> and then confirm with <Return>. To reach the top or bottom of the list use <Shift>+<Up/Down>.

Insert Cell/Range

If you are in the input- or editing mode and the current text starts with an equals sign "=" (that means you are just entering a formula), a cell reference can easily be entered:

A simple click with the mouse on the desired cell or cell range, as described in the selection mode, is enough. To do this, the currently visible range can be scrolled with the help of the scroll bars. The input line stays preserved and you can see that the current cell is immediately inserted.

If you had been in the input mode before, the program changes to the editing mode automatically.

1.6 Input Formats

Input Formats

Now all important input possibilities have been touched at least once. It follows a concluding description of the individual input formats and what TurboCalc is going to make out of it.

Numbers

Numbers consist of numerals from 0-9 and one decimal point. Furthermore they might begin with a "+" or "-" and end with an "e" or "E" followed by a whole number, if necessary with a minus sign:

123
1.23
.23
1.23E3
1.23e-3

"Enumber" here means that the leading number is multiplied with 10^{number} (scientific notation).

It is also possible to add a percentage sign "%" to any number. This divides the number by 100 and selects the numeric format "Percentage" automatically:

"5%" thus becomes 0.05 and is displayed as "5.00%" as desired.

Time

Time data consist of two or three integer numbers which are separated from

each other by a colon ":". The first has to be among 0 and 23 and the two others among 0 and 59. The numbers indicate the hours, minutes and, by option, the seconds. Leading noughts are allowed.

```
5:23
05:23
17:23:20
```

The time is stored as a consecutive number and the selected numeric format for the time (with or without seconds) is set automatically.

Date

The date is entered similar to the time. TurboCalc allows to enter a correct date in many ways. The following examples of valid formats use the symbols below:

D is a day among 1 and 28-31, depending on month and leap year

M is a month (among 1 and 12)

MMM is a month as a text. The first three letters of the English name are necessary for the identification of the month, others can be added, e.g.: Jan, February, March,...

Y is a year among 1900 and 2500. Numbers from 21 to 99 represent 1921 up to 1999, 0-20 results in 2000 to 2020.

"-" is a separator. It can be surrounded by blanks. The following separators are valid: "-", "/" and "." (separator, slash and point). If you find a month text to the left or right of the separator, it can be omitted or substituted by blanks.

The following inputs are possible:

```
D-M-Y 30-9-93 30.09.1993
D-MMM-Y 30-Sep-93 30 Sep 93
D-MMM 30/Sep 30 Sep
MMM-Y Sep 93 Sep 1993
D-M 30-9 30-09
M-Y 9-93
```

Date inputs without a year are automatically provided with the current year (in addition to that see TODAY()).

The numeric format is automatically adjusted to the appropriate date format; so the output looks similar to the input.

Hint: The normal date-order is Day-Month-Year. But this can be changed to "Month-Day-Year" if necessary. For further details refer to the menu item <Options-Locale> . Nevertheless remember: This option is only valid for the output, you always have to enter the date in order "Day-Month-Year".

Booleans

Booleans can be entered directly as follows:

```
TRUE
FALSE
```

Hint: If you want to enter true or false as a text without interpreting it as a boolean value, please enter "true or "false (with leading quotation mark) as a text!

Texts

All remaining inputs that cannot be counted to one of the four categories above mentioned will be treated as text and not worked on any further.

Exception:

If the text begins with an equals sign "=" it will be interpreted as a

formula, see below.

If the first letter is a quotation mark the entry will be treated as a text without displaying this first quotation mark.

Hint: In this way you are able to keep those texts as texts, which would normally be interpreted as numbers, dates or times, e.g. "001 or "013:3.

Formulas

Formulas are necessary to calculate values, dates, times or texts. They start with an equals sign "=" which is followed by a normal "Formula", e.g. numbers, texts, booleans, cell references and formulas which are connected with each other by (+,-,...).

If you have entered a correct formula followed by <Return>, all valid functions, booleans and cell references are automatically capitalized, the formula is calculated and the result is displayed. Otherwise the entered formula remains unchanged and an error message (e.g. #(-BRACKET or #VALUE, is displayed instead of the cell result.

1.7 Database

Database

TurboCalc possesses many operations for data definition and manipulation. With these operations data ordered line by line can be administrated, sorted, searched, deleted and copied. In addition to that, further functions are available to query these data within formulas.

Definition of a Database Range

The Search Criteria

Finding Data Records

Extracting Data Records

Deleting Data Records

Sorting Data Records

1.8 Definition of a Database Range

Definition of a Database Range

The basis for every database is the database range. This can be any cell range that is structured as follows:

Every row of the selected range represents a data record (so to speak a "file card"), in which the columns represent the data fields (entries on the file card) of the appropriate data-set.

The first row of a data range must consist of text determining the names (e.g. name, christian name, address, age...) of the respective data field (in the columns). The names should be defined clearly (i.e.: different) to allow a correct access (see search criteria).

The Creation

Please select your desired database range (that means: first row: title, rest: data) and then the menu item <Data-Define Database>. So the database range is created and assigned to the name "database" (see "Name").

Hint: Naturally, it is possible to put more than one database in one sheet. If you give a name to every database (see "Name": Mark block, select <Command-Define Names...> and enter name), you will be able to change between the databases: Select <Command-Goto> or press <F5> and click on the desired name (the range will be marked). Finally call <Data-Define Database >.

You can find an example for this in the example-sheet "DataBase.TCD" on the TurboCalc-diskette.

1.9 The Search Criteria

The Search Criteria

For the instructions <Find>, <Extract> and <Delete> special criteria are needed that determine which data record should be searched, copied or deleted.

The criteria are again determined by a range which must be structured as follows (similar to the database):

In the first row the database titles, for which the criteria should be determined, are listed. You do not have to list all titles and it is possible that some titles appear several times (for this see "Example: Selection" below).

It follows one or more "criteria" lines, which contain conditions for the respective titles.

* An empty field is always coincident, independent of what is written in the database.

* A number, date, time or boolean (no matter, if it is entered directly or calculated by a formula) will only come to a coincidence, if it is identical with the data field of the respective data row.

* A text that does not start with ">" or "<" will be coincident if the text is completely identical (capitalization and use of initial letters are not differentiated!). That corresponds to the above mentioned item "number" but only here "patterns" ("*" and "?") can be used. An explanation will follow further below.

* If the text begins with ">", "<", ">=", "<>", it is interpreted as a comparison. In this case the rest of the line is read (or calculated as it can be a formula as well) and compared, depending on the selected relational operator.

Attention: An equals-sign "=" as a first text sign results in a normal formula and is treated like a pure number, text...; the equality test will be executed with this formula, then.

A data line is regarded as "found" when the following condition is valid: All "criteria" (=cells) of a "criteria"-row coincide with the data record. A coincidence of one criteria-row is sufficient. Expressed in logic terms: It is an "or-linkage" of the rows in the course of which all fields of one row are "and-linked".

The Creation

Select your desired search-criteria range and then the menu item <Data Define-Criteria>.

This defines the search-criteria range and assigns it to the name "criteria" (see "Names").

Hint: Naturally, it is possible to create more than one search-criteria range for one or more databases in one sheet. It is advisable to assign a name to each criterion and database to switch between them without problems.

Patterns

For comparison of texts patterns can be used to search for text groups or text combinations.

? stands for any (exactly one!) letter

* stands for leaving out as many (none, one..) letters as one likes

Ma?or finds "Major" or "Mayor", but also "Manor"

Ma* finds "Manager", "Master", "Malfunction"...

A* searches for every text starting with an "A"

*A or ending with an "A".

If none of these patterns are used, the searched text must coincide completely (no case-sensitivity).

Example: Criteria

To clarify the use of criteria, here a few examples for search conditions:

100 delivers conformity if 100 is found in the data cell

Hello the text "Hello" must have been entered previously in the data range

>100 the value must be higher than 100.

<VALUE("1.8.93") the date in the column must be before 1.8.93.

<>100 returns TRUE, if the cell is filled with any value except 100.

A* all texts starting with an "A"

Example: Selection

The "or-linkage over and-linkage" can be used as follows:

1. If you are looking for all persons who are born between 1.1.1970 and 1.1.1980 you can do this: The field containing the date should simply be called "date" (in this example). Now create a two lined and two columned table. In the first row insert the text "date" twice. Below that you write at first ">1.1.1979" and then "<1.1.1980":

```
Date Date
>1.1.1970 <1.1.1980
```

The program now searches for all entries which have a higher date than 1.1.1970 and which are at the same time lower than 1.1.1980.

2. Now all children and all seniors shall be searched (in other words: All persons who are born before the 1.1.1930 or after the 1.1.1975). Proceed as follows:

Create a one-columned and three-lined table (title of the first row: "date").

Below that write ">1.1.1975" and "<1.1.1930" - with this procedure all data records, which are higher than 1.1.1975 or lower than 1.1.1930, will be accepted.

```
Date
>1.1.1975
<1.1.1930
```

You will find more examples in the file "Database.TCD" on your TurboCalc-diskette.

1.10 Finding Data Records

Finding Data Records

To search data records (after having determined the database and criteria) simply select <Data-Find>. Now the program is looking for data records, which are congruous to the criteria. If the cursor is located within the database range the search starts from this position on (exactly one row below):

Hint: If you want to search through the whole database (or simply from the beginning) it is advisable to locate the cursor outside the database range, e.g. with <Ctrl-up> in the first row.

If the search has been successful the matching data record will be marked and the search is stopped.

To keep on searching, select the same menu item <Data-Find > again; the search will be continued in the next row then.

If no (other) matching record could be found, a message will be displayed. If the search has been started in the middle of the database, there is the opportunity to start searching from the beginning of the range (with >Ok<). Otherwise click on >Abort< (or while having a simple message: >Continue<).

1.11 Extracting Data Records

Extracting Data Records

Furthermore it is possible to search and copy data records, i.e. to copy all matching data records together in one range. This is useful for further processing or if you want to check them together. For this step the database range as well as the search-criteria range must be defined. After that, move the cursor to an empty cell (with free space on the right and below) where the data record should be copied to.

Attention: Be careful that you do not overwrite any data while copying. Also pay attention that the data-sets point to the right (because all data columns will be copied) and that (depending on the criteria) many data records may be copied. For this transaction it is also useful to care for enough free space below the desired location. Then, select <Data-Extract> to start copying. Naturally, all data records stay originally preserved - the database will not be changed.

1.12 Deleting Data Records

Deleting Data Records

This menu item deletes all records that match the criteria and thus reduces the database range. Again you have to define the data-base- and criteria range at first before you can select <Data-Delete> .

Attention: The deletion is executed without warning. Therefore be careful that the criteria are correct and that only the desired data records will be deleted.

Hint: To have a quick check whether you have chosen the right data sets (i.e. the criteria are correct), simply call <Data-Find > before deleting. For a better survey you can also use <Data-Extract>.

1.13 Sorting Data Records

Sorting Data Records

A sorting of the complete database according to columns is possible as well:

Locate the cursor in the desired column (either in the title or in any data line) which shall have the leading position later. Then choose the menu item <Data-Sort Database>. The data base will immediately be sorted in ascending (or descending) order with regard to the current column.

Hint: If the database should be sorted according to more than one criterion (e.g. first the surname and - if it is identical - to the christian name) you simply have to sort after all criteria successively. Start with the most unimportant and end with the main sorting condition (sort at first the christian names, then the surnames).

1.14 Names

Names

TurboCalc offers the possibility to give names to any cell, range, value or formula and to use them with any formula of the sheet. This will be very useful, if you have a cell that is needed in different formulas of your sheet. In this case it is easier to apply an expressive mnemonic like "interest" in the formula than the simple cell reference C7. Furthermore, if you want to change C7 to F3 it will be easier to change the cell named "interest" than replacing every C7 by F3.

Do you need the value added tax in your formula? You could enter *15% every time! But what happens, if the tax changes? In this case you would have to replace every *15% by for example *20%.

There are two ways to change (and improve) this:

At first as mentioned above: Create a cell with the name "VAT" and enter 15% into this cell. Now you can simply write *VAT. instead of *15% wherever it is needed.

Now imagine a cell containing "*15%", which you want to suppress in the print-out. This fact motivates the second possibility: You can directly assign a number to the name VAT. (in our case 15%) - the rest works as mentioned before. If the VAT rate changes, you only have to substitute the 15% by the new value and the sheet will be up-to-date immediately.

If you want to switch between different locations in your sheet you only have to define a name for each important position. Then you can easily move in the sheet by selecting <Command-Goto > and the appropriate cell- or range name.

Setting Names

Changing Names

Deleting Names

1.15 Setting Names

Setting Names

It follows a description of how to create a name:

Select <Command-Define Name>. If you wish to give a name to a cell or range it is advisable to mark this cell or range before selecting this menu item. The cell or range will then be shown in the field >Contents<, see below.

The following window appears:

In the left block you can see all previously created names. With the scrollbar you can change the visible range if the list is too long to be displayed completely.

To determine a new name you will need the text fields >Name< and >Contents< (and perhaps >Type<).

Name: Here you enter your desired cell name (in the above mentioned example it would be VAT). You can enter any name, also in combination with blanks or numbers, but keep the following points in mind:

- * Capitalization or the use of small letters is not of importance.
- * Names should start with a letter (umlauts and special characters of other countries are allowed) and then be followed by further letters or numbers (or one of the signs "-" or ".").
- * Avoid blanks if possible and use for example "_" instead.
- * Avoid names which could be mixed up with cell references (A1 or C3:F5) or formulas (SIN, LOG, IF...) or which start like that (e.g. iftrue, sinus...). All these names are allowed but will lead to an unintended confusion, if you want to use the appropriate formula later on or enter these names into formulas.

Contents: This field specifies the value of your name and is entered as follows (examples for the different types you will find below):

Numbers, Texts, Date, Time

Enter them just as usual during the normal cell input (also see "Input").
Cells, Ranges If you want to give a name to a cell or range, please enter the appropriate cell reference with an equals sign "=" in front of it, e.g. =A1:C5. All cell references are absolute. (I.e. it is not necessary to enter "\$", but possible).

Formula Any formula can be named. Please enter them as usual, with an equals sign at the beginning =". Please note that A1 and \$A\$1 are both absolute addresses. If you want the cell reference to be treated as "relative", use the function CELL, see next point.

Relative cells

Rel. ranges If you want to mark the cells as "relative", you have to use cell-formulas, e.g. CELL. (E.g., =CELL(-1;0) reads the value one row above the position it is called from).

Type: In this field you determine which type of name you want to define. Normally it should be set to "normal". If you enter the name of a macro you have to select >Macro<. In this case the name of the macro will be listed up in the schedule of "Start macro". The remaining other two types are without importance at the moment and can be used for documentation, if necessary.

Hint: When the window appears the current cell/range will be written in the textfield >Contents< as a formula (e.g. "=A1:C3"). In the field >Name<, you can find the contents of the current cell (or the text above or on the left of it - if all these cells are empty, <Contents> will be cleared, too).

This facilitates the creation of cell- or range names. So, before selecting the menu item, please mark the desired range and it will be inserted automatically in the field >Contents<. (If you want to enter something else, you can easily delete this contents with <right Amiga>+<X> or

<Shift>+. During this operation the cursor must be located in the respective text field.)

After entering name and contents, simply click on >Ok< and the name will be added to the list and the window will be closed. If you wish to determine more names, click on >Add<. In this case, the name will be added, but the window remains open.

>Abort< stops the input of names and closes the window. The current (last) name will be dismissed, if it has not been entered with the help of >Add<. Hint: The gadget >Abort< does not undo changes done earlier with the help of <Add<. The only effect is that the window will be closed without adding the current name (no >Add< is executed before closing the window).

Examples of possible Contents

15% (or 0.15)

This results in the number 0.15 (see example above). If the cell is labeled VAT, you can now simply write *VAT in your formula.

30.9.93

Here you can fix a date. The respective name can now be used instead of this date.

=A1

This names the cell A1 - instead of referring to A1 this name can be used now

=A1:F7

According to =A1 but this time for the block A1:F7

=Cell(-1;0)

This creates a relative cell reference (one row above)! If you use this name in D4 for example, it will refer to cell C4.

=CELL(-1;-1):CELL(-1;1)

This creates a relative block (the cells on the left above and on the right above the position it is called from). If you use this name (e.g. block1) in D4 (with formula "=SUM(block1)"), the sum of C3+C4+C5 will be calculated.

=SUM(CELLABS(1;COLUMNNUMBER()):CELL(-1;0)

Name this Formula COLUMNSUM and then enter the formula =COLUMNSUM in F7. Now this formula calculates the sum of the values from F1 to F7 (that means, the sum of the values of the current column, from the top up to the cell above the formula).

This example is a little bit more complicated but can be used universally. The functions and their combinations of TurboCalc are well worth to be looked at more intensive.

1.16 Changing Names

Changing Names

If you already have determined a name and you want to change it, the execution of this step is similar to the creation and the same menu item is used: Select: <Command-Define Name...>. The already well known window for the input of names will be opened. Now have a look at the rectangle in the upper left corner. Here the name you like to change should be displayed (if necessary, shift the visible range with the scrollbar or the cursor keys). Once you have found the name simply click on it with the mouse. The name will be copied to the fields >Name< and >Contents< and its >Type< will be changed accordingly.

Now you can change the contents of the name and type. Click on >Ok< or, if the window should stay open, simply click on >Add< and the former contents

will be deleted and the new one saved.

Hint: In this way the type and the contents can be changed. If you like to change the name (perhaps you have made a typing mistake), proceed as follows: At first, click on the name, then change the name and click on >Add<. The name will be added and the old and new one should be listed. Now you can delete the old name (select it and then click on >Delete<, see below).

Hint: The gadget >Abort< does not cancel changes executed with the help of >Add<. The only result is, that the window will be closed without taking over the current name entry (>Add< is not executed before closing).

Hint: After the change of names the sheet will not be recalculated automatically. If this is required you will have to do this by yourself (Menu item <Command-Recalculate> or simply enter any value in a cell of your choice).

1.17 Deleting Names

Deleting Names

The deletion of a name works analogous to the change:

Select menu item <Command-Define Names>, then click on the name that should be deleted and afterwards click on the gadget >Delete<. The current name is deleted immediately.

Attention: Once a name is deleted it cannot be countermanded - the >Abort< gadget only closes the window but cannot undo the executed cancellations. So, please be careful!

Hint: If you delete a name that is a component of a formula you may have problems after the next new calculation. Probably you will get an error message in these formulas.

1.18 Charts

Charts

Charts often allow a quick and simple survey of numerical values and thus are very useful for presentations. TurboCalc enables you to create such charts in a very quick and intuitional way.

All parameters can be changed subsequently with the help of pulldown menus appearing with the display window of the chart. Further adjustments as for example chart title, legend and patterns can also be made.

The Creation

Changing Parameters

Printing

Saving as IFF

1.19 The Creation

The Creation

At first it is necessary to select the data range that shall be presented as a chart.

This can be a range of several lines or columns (normally only numbers). The row or column in front of the first row or column of the data-basis can also define the legend text (with <Options-Legend>, see there).

Then select the menu item <Data- Create Chart...>. A window appears, where the following settings can be made:

Chart Type

Rows/columns: Here it can be determined, whether the numbers of the block should be interpreted line by line or column by column.

Chart type: This selection determines the type of the chart. Select here, if you want to have a bar chart, a histogram or a line chart to name but a few. After that, click on >Ok<.

Chart Parameter

A second window is opened, where you can determine the parameters of the current chart. These parameters change depending on the selected chart type. Most of the parameters appear several times. It follows a brief survey about the possible parameters.

Stacking: Here you can determine, whether several value rows should be listed up next to each other (or in the dot mode or line mode above each other), or whether the different values should be summed up and their distribution should be displayed (absolute or in percentages).

Hint: The distribution is very useful if you have different values, which together result in one sum (e.g. turnover of material A,B,C...). In this case you can show the sum (total sales) as well as the single values. If you have the values of the previous year in a second row, they can easily be compared.

Connected: Following items of a data row will be connected. This it is very useful for the bar- or histogram type, when "sum up rows" is activated or dots should be connected with lines.

Box: (In the line- or step mode) small boxes are overlaid besides the lines symbolizing the values.

Horiz. line: (lines and dots). A line is drawn from the corresponding data items to the x-axis.

Values: The appropriate values are displayed.

Offset: (Only bar- and histogram type). Determines the distance between the bars of the different data rows.

If you click on >Ok< here, a window will be opened and the chart is drawn. The window can now be moved in any direction and its size can be altered at will.

1.20 Changing Parameters

Changing Parameters

Once a chart has been generated, these options can be changed at any time. For that, please use the second menu title <Options>.

With <Type> and <Parameter> the two windows mentioned above will be opened and the previous settings can be changed.

With <Title> the title, subtitle and footer can be defined.

<Legend> allows displaying a legend at the left or right margin of the chart to define the value rows more precisely, if this information cannot be derived from the title. If you dislike the colors and patterns, you may change them with <Patterns>.

Hint: Try to experiment a little bit with the different settings until you get your optimum chart.

1.21 Printing

Printing

With <Chart-Print> the chart can be transferred to every graphic printer. Simply adjust the desired picture size and then start the print-out.

Hint: Please, make sure that the settings of the preferences at "PrintGfx" are correct.

1.22 Saving as IFF

Saving as IFF

Besides the normal print-out, the picture can also be saved as an IFF-graphic and then postprocessed with a painting program, e.g. DPaint, or integrated in a text program. In all cases, the picture will be saved in the format of 640*400 pixels. The number of colors depends on the current screen type with a minimum of at least 8.

1.23 Macro/ARexx Instructions

Macro/ARexx Instructions

Macros and ARexx are very mighty tools allowing to automatize processes, to remotecontrol TurboCalc, or to enlarge it by external routines. Macros are a built in feature of TurboCalc and can be used and programmed very easily. Programmers as well as "Non-Programmers" are able to create macros due to the possibility to record inputs and instructions automatically. In any case you should read the next pages up to "Macro Recording". More experienced programmers should extend their interest to chapter "Macro Programming".

ARexx is, starting with the operating system OS2.0, the enclosed "general programming language" by which TurboCalc and a lot of other application programs are controlled and linked. For Kickstart 1.2/1.3 an ARexx version is available, too. For details see "ARexx-Instructions".

Macro Instructions

ARexx Instructions

1.24 Macro Instructions

Macro Instructions

Macro instructions are built up similar to the normal (calculating) functions but provide an "active control" of TurboCalc. They allow an automatic execution of any action (e.g. marking of a range, sorting, then copying...) and a context sensitive program controlling (e.g. by an inquiry of parameters...).

They are especially suitable for:

- * Repeating routine tasks or working steps, which can be recorded once and then be repeated as often as necessary.
- * Routines that execute complicated data formattings and data changings. In this case, the routines have to be developed only once and can then be called up later at any time.

The Instructions

The macro format is built up similar to the format of the normal formula: They start with an equals sign that is followed by the macro name (with following brackets) and, if necessary, the parameters separated by semicolons (within the brackets).

Example:

```
=ALIGNMENT(3;2)
```

But there are a few differences:

Most macros do not return a value (except REQUEST, INPUT for example - and only, if the instruction is finally executed).

Displaying: In the normal mode the macros are directly displayed instead of the values of the normal formula. (This makes sense as most of the macros do not return a value). To look at the values select >display values instead of formulas< in <Options-Display> (further details can be found there). Macros use this option just in the inversed sense in contrast to standard formulas.

The instructions can be found in the instruction survey, chapter 12; some special macro instructions (mainly for macro control) can be found there, too (under "Macro Control"). This subdivision was necessary as ARexx and TurboCalc's macro language use a mutual instruction set, except the special macro control structures.

The Macro-Program

In principle the macro program consists of several macro instructions, one beneath the other. These instructions are interpreted sequently. More details (only important for programmers) can be found in the chapter "Macro Programming".

Here, only a short example of how a macro can look like:

```
=MACRO("testmacro")
=ABOUT()
=RETURN()
```

Description:

The first instruction (that should always exist) specifies that the following lines are a macro named "testmacro". The function "ABOUT" displays the about-window (corresponding to <Project-About>). The third and last line says that the end of the macro is reached and the execution should be finished.

Replaying a Macro

Playing (=starting) a macro is very easy. Simply select the menu item <Macro-Play>. A list of all existing macros, which have been defined with <Command-Define Names> or automatically recorded, will appear. A click on the desired name and >Ok< (or simply a double click) starts the respective

macro for the current sheet.

Hint: The macros of all existing sheets are shown automatically. If the desired macro is not in list, it might be necessary to load the appropriate (macro-)sheet in advance. On the other hand it is possible that macros are shown which have been originally created for other sheets. If you have chosen the name of the macro meaningfully, you will have no problems to find the right macro.

Macro-Recording

A very simple way to create macros is the macro-recording. Here all inputs and instructions that are executed with the help of the keyboard or mouse, will be recorded and saved as a macro. (Select <Macro-Record> and enter the macro name, see below).

<Macro-Stop Recording> finishes the recording. The macro is now completely created and can be used instantly. Once started, all inputs/instructions will be executed one after the other as recorded.

The Macro-Recording Window:

Here, the following data can be entered:

Macroname: Enter the name under which the macro shall be found later on. Select a meaningful name, so that it is possible to recognize the macro. If the macro name is missing, the recording will be aborted.

Write Macro to: Here you can select, whether you want to record the macro to the current sheet, or in a new macro work-sheet. TurboCalc offers both recording types (in contrast to other spread-sheet analysis programs). The recording in the current sheet is suitable if only a few macros shall be saved. In this case, you do not need a separate sheet that has to be saved and loaded together with your current work. If you intend to create a lot of macros or use global macros for more than one sheet, you might prefer to save your macros in an external sheet. Please note that you have to save and load this sheet separately.

Position: Here, you can enter a definite position (the cursor position is preset), where the macro shall be written to. TurboCalc always uses the next new and unoccupied column by default (in the current sheet from column BA on, if this column is not occupied yet).

Save cursormovements relatively determines, whether the cursor positions shall be saved absolutely (e.g. C5) or relatively (e.g. 3 down, 2 left...). When you have set all parameters, click on >Ok< and the recording will be started (if necessary a new macro sheet is opened). On the screen bar appears a corresponding text indicating that recording is in process (if the bar is not overlaid by a window).

After you have recorded all necessary steps, you can stop the recording with the menu item <Macro-Stop Recording>. The message on the screen bar disappears.

Macro Programming

This chapter directs mainly to the experienced programmer. If you are not so advanced you can skip this chapter. Try to settle in to the work with TurboCalc and afterwards read this chapter again.

General conventions: Every macro should start with the =MACRO(name)-instruction and end with a =RETURN().

RETURN() stops the macro execution (or the current subroutine, see CALL). In between you find the real macro instructions, which can be separated by blank lines or comment lines (text or numbers). Please note that there are not more than 8 lines allowed between two single instructions. After the eighth non-macro line an automatic RETURN() will be executed. This avoids a wrong program execution in case of an accidentally forgotten RETURN(). You will find the macro instructions and the appropriate syntax in the surveys and descriptions later in this book. It is advisable to have a closer look at the enclosed demonstration macros.

Additionally a few hints:

Cell references: Cell references (e.g. C5 or A1:F20) normally refer to the sheet from which the macro was started or which is active at the moment. Only seldom they refer to the macro sheet itself (except the macro is located in the current sheet). Please pay attention to this while using cell references. The only exception is the specification of a jump address using GOTO, IFGOTO and CALL (for a jump to another place within the same macro should be executed). If you want to address another sheet, use the AT-instruction (or @). If you want to address the macro sheet directly you may use the abbreviation: #reference. (Simply put a double cross in front of the cell reference to refer to a macro cell, e.g. if you want to read out the result of a REQUEST or INPUT).

Speeding up Macros

TurboCalc possesses a macro instruction that can switch off the recalculation and the reconstruction of the screen: REFRESH(0). This allows an execution of the macro "in the background". The time for the construction of the screen can thus be saved. This is a very useful to avoid an extensive loss of time when working with more complex macros. Please note that during this time, the user will (nearly) perceive no change on the screen. Let him know (by a message) or reconstruct the screen from time to time, so that he can recognize that the macro is still working. After finishing your work, turn on the screen construction again (REFRESH(1)) and recalculate (RECALC(1)) the sheet. Finally, call REFRESH(2) to bring the changed sheet to the screen. You will find an example in the description of the instruction REFRESH.

Adding Macros

If you have created a new macro you surely want to add it to the macro list, so that it can be started with a double click in <Macro-Play>. Therefore click on the first cell of the macro and call the menu item <Command-Define Names>.

>Contents< contains the current cell and if the macro starts with "=MACRO(macroname)", the macroname can already be found in the field >Name<. Otherwise, please enter the correct name. Then change the type to >Macro< (or <right Amiga>+<M>) (this is important, because otherwise this entry will not appear in the requester of <Macro-Play>!) and simply click on >Ok< (for more details about defining names, see chapter "Names".)

Debugging Macros

If you have problems with your macro, please use the TurboCalc function STEP that activates the step-by-step interpretation mode. This mode displays every step before it is done and thus allows a single step execution of the macro ("tracing"). With this method the structure of the respective routine can be visualized and a possible mistake can be easily localized.

The macro instruction STEP() or STEP(1) activates this mode. STEP(0) quits this mode and resumes the macro in the normal way.

Hint: Please note that you leave blank lines between the single "routines" while creating the macro (these lines will be ignored during execution, if there are less than 8 beneath the other). This establishes a sort of "division" and simplifies the survey of larger macros. Furthermore you can insert the functions "=STEP" and "STEP(0)" above (and below) the macro that should be checked to activate/stop the single step mode. Like that, you can limit the tracing mode to only a section of the macro. When the macro works as intended, you can remove the lines.

Hint: These functions can also be used to create a little break for a program check between two routines. (E.g. to check whether the first part is working correctly.)

For that insert the instructions "STEP()" and "STEP(0)" one beneath the

other. (These instructions switch on and off the step-by-step mode after the next instruction and interpreter message.) In the meantime you can check, whether this part of the macro worked as desired.

Automatic Macros

TurboCalc allows an automatic start of macros directly after loading a file. With this option, initializations can be carried out and further files can be loaded. If it is a pure macro sheet (and not a macro within a work-sheet), the correct data sheet can be loaded from this. The only thing you have to do is to open the macro. All the rest will be done by TurboCalc.

The creation of such a macro is very simple: Name one of your macros "AUTOMATIC" and it will be executed immediately after starting TurboCalc. Hint: If you want to edit the file that contains the "automatic"-macro, it might be a handicap that the macro is executed right at the beginning. Here, the following trick takes remedial action: Move to an empty sheet with <Project-New> - the cursor will be located in cell A1 automatically. Now select menu item <Edit-Insert Data-TurboCalc> and then insert the sheet you want to load into the empty sheet. Everything will be loaded now, but the macro stays inactive.

Hint: During the first <Project-Save> the file name has to be reentered, because it remains preserved during opening only, but not during inserting!

Deleting Macros

The deletion of a macro requires two steps:

At first the "name" of the macro must be deleted. To do this, select the menu item <Command-Define Names>, then choose the macro name and click on >Delete<. (For more details see chapter "Names"). (This is not absolutely necessary but otherwise the macro still appears in the list of <Macro-Play>, even if it is no longer existing).

Then the range where the macro instructions were located can be deleted or overwritten.

Executing Macros when loading TurboCalc

TurboCalc provides the possibility to run a special macro-start file right after the start. This file is named TurboCalc.STD and is searched in succession in the current directory, in the directory "S:", as well as in the directory in which TurboCalc is located. If the file is found, it will be executed immediately.

This file consists of macro instructions ordered line by line (either in the macro or in ARexx syntax - both can be used alternately). Such files can also be started with the macro instruction START. This file is very suitable to define the current screen mode, the menus, the colors and for example to load a standard file.

This is exactly the purpose of the internal script file that is executed if TurboCalc cannot find "TurboCalc.STD". This script file is copied to your original disk as well (named "TurboCalc.STD2") and you can use it as a pattern for your own scripts. Just modify it at will and rename it to TurboCalc.STD to declare it as new standard-script

Hint: If you create an own script file you also have to define the menus by yourself. To add or change menus, refer to the menu instructions survey, especially NEWMENU (with a short example).

Hint: If you like to execute the standard-script file by your normal script file, simply add the line "START \$\$" or "START("\$)\$)".

Example:

You want to leave the settings unchanged but wish to open the file "dh0:TurboCalc/standard.TCD" after initialization. In this case, enter the following script:

```
START $$
```

```
LOAD "dh0:TurboCalc/Standard.tcd"
```

1.25 ARexx Instructions

ARexx Instructions

TurboCalc possesses, like all modern programs, an ARexx port and allows the remote control via ARexx.

For details please refer to your ARexx-manual (which should be part of your computer's documentation from OS2.0 on). A few tips are also given in the enclosed ARexx demonstration programs.

The ARexx port-name of TurboCalc is TICALC; it can be addressed with the following small demo program.

```
/*ARexx file must start with a comment */  
ADDRESS TICALC  
"ABOUT"
```

TurboCalc has to be started and ARexx has to be initialized (with REXXMAST) before this operation. Afterwards call "rx filename". (This program simply shows the about-requester.) You will find the description of the used instructions in chapter "Instruction Survey".

Apart from a few exceptions both instruction sets of the macro language and ARexx are the same. Thus, the following instruction survey is valid for both alternatives. The divergences of ARexx can be found in chapter "Special ARexx-Instructions".

Hint: When using ARexx instructions, the parameters have to be entered one after the other separated by spaces in contrast to the macro instructions (where they are separated by semicolons!)

```
PUT "=A1+A2" A3
```

The parameters (and the instructions) can be put in quotation marks (some must be to avoid conflicts with ARexx, see ARexx-manual).

Error messages: All instructions return an error message, which can be requested by RC. (If necessary instruct ARexx to stop only for error messages of 100 or higher with "OPTIONS FAILAT 100". If the instruction was successful, 0 is returned. Further error messages and their values can be found in the table "Error Messages" in the appendix.

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