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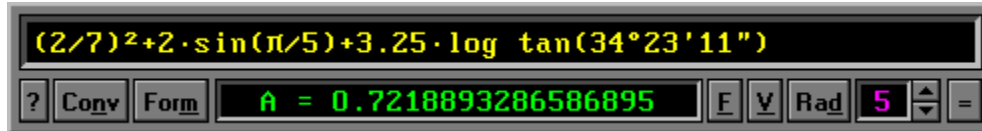
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Welcome to Midget, the calculator for the rest of us!

I hope you like the program and find it useful. Note that Midget is shareware: check out [what it means](#) and [how to register](#).



For starters, here is the Midget window. Click on various objects in the picture to get a brief explanation on what they are used for.

Using Midget is a no-brainer. To calculate the value of an expression, e.g. " $2.5 + 3/7 - \log 13$ ", just type it in and hit the Enter key. This is it.

Instead of pressing Enter, you can use the "=" key; the result will then be stored in a variable (i.e. abbreviated as an uppercase letter), chosen from a pop-up menu. For more on this, see [Evaluating Expressions](#).

In order to move Midget around the screen, click and hold the left mouse button at the window edge (the cursor will change to a grabbing hand) and drag the Midget window around. To minimize it, click at the very top-left corner.

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Midget as shareware

Midget is distributed as shareware: you are granted a trial license for a period of 30 days to see whether you will find the program useful and worth the price I'm asking.

After that you have the options of either registering (purchasing) Midget, or removing it from your system. Not doing so puts you in violation of U.S. and international copyright laws, but, first of all, it is just unethical.

If you decide to keep Midget, registering (i.e. buying it) will bring you additional benefits: unlocking of the [enhanced features](#), free upgrades without version or time limit, and technical support via email. Last but not least, the program will also get rid of the nagging screen which will start showing up after the trial license expires.

See also:

[How to register](#)

[How to reach me](#)

How to register

The least expensive way is to send a check or a money order for U.S. \$10 to my address:

**Dr. J. Andrzej Wrotniak
2057 Happy Lane
Crofton, MD 21114-1917
USA**

You do not have to include any letter: just state "Midget" in the check memo space. Letters and comments are, obviously, welcome. If you have an **email address**, include it with the order (or just write on the check): I will email you promptly a registration file, **midget.key**. (If your email program has problems with attached files, do not worry: you may enter your registration number from my email message manually and Midget will create the key file for you.)

If you do not have an email address, I will ship you a **3.5" floppy** with the program (state which Windows you are using; otherwise I will assume Win95/NT). There is a **\$2 extra charge** for this; try to avoid it, if possible, to save money and hassle.

Remember: Your registration covers all future versions of Midget, both 16- and 32-bit.

Registering on the CompuServe

The CompuServe subscribers may register online: GO SWREG and register product #11649 (Midget/16) or #11650 (Midget/32). The registration fee of \$11.77 will be added to your next CompuServe bill, and you should receive the registration key within 24 hours via email. Any registration is valid for both versions.

Credit card orders

The Public Software Library (PsL) is a respectable shareware distributor, providing registration services for about 1000 shareware authors. They also handle credit card orders (Visa, MC, AE) for Midget.

Unfortunately, there is an extra cost attached to such a service. To cover it, I had to attach a surcharge to credit card orders. The total cost of Midget when ordered via PsL is \$15.63 (don't ask me how do I come up with these numbers!)

There are three ways to order with your credit card through PsL:

- On the [World Wide Web](#): click on the PsL button in the Midget home page, to get to the PsL Registration Services form; then follow the prompts. The Midget home page is

<http://www.freeflight.com/wrotniak/midget.html>

- By phone: call PsL (Mo-Thu 7:00 to 6:00, Fri 7:00 to 12:30, Central Time) and order Midget, i.e. item #14668, at

800-2424-775 ext.14668 or 713-524-6394 ext.14668

Note: these numbers are for credit card orders only !

- By fax: fax the credit card order with all relevant data (your name, address, credit card number, expiration date, item #14668) to PsL at

713-524-6398

In any case include your **email address**. I will ship you a diskette with the program only if this information is missing or if you state in your order that you would like to have a diskette mailed. Otherwise you will receive only the MIDGET.KEY registration file via email.

Do not use the PsL lines trying to get technical support or to inquire about the status of your order etc. The PsL people just arrange the monetary aspect of the registration and inform me promptly about it. They may not even know what the program does – they do not need to. For anything else, I'm your sole point of contact.

Special offer: the Midget / Mr. Matt bundle

You may save more than 50% off the Midget price by ordering it together with the Mr. Matt game (get an evaluation copy from my Web page first!). Using the channels shown above, the combined price is

- \$17 when ordering directly by mail (down from \$22 when bought separately); plus \$2 disk shipping if requested
- \$22.92 when ordering from the PsL, down from \$33.34. Mention Mr. Matt, item #14888 plus the Midget bonus, or check the bundle box on the Web ordering page.

For technical reasons, the Midget / Mr. Matt bundle is not available when ordering on the CompuServe.

See also:

[How to reach me](#)

How to reach me

The fastest, most convenient and cheapest way is via email:

pan_andrzej@csi.com

You may also visit my personal Web page at

<http://www.freeflight.com/wrotniak/>

where new versions of all my programs are posted usually before they are available anywhere else.

If you do not have an access to email, use the good old U.S. Mail:

**Dr. J. Andrzej Wrotniak
2057 Happy Lane
Crofton, MD 21114-1917
U.S.A.**

Copyrights and credits

Midget is copyright © 1996-98 by J. [Andrzej Wrotniak](#). All rights reserved.

This software has been developed using Borland's Delphi and contains parts of code copyright © 1995-97 by Borland International.

The sound files supplied with Midget have been created by Ted Tatman (thanks!) and are in public domain.

The program uses the free Applicata component by Baltic Solutions in Lithuania - thanks!

Midget inherited many design ideas and a significant amount of code from two of my previous projects:

- from Ex, a Scientific Calculator for the HP LX Palmtop computers (1992-97) – expression parser, most of the underlying math engine
- from Kalkulator, the [Mother of All Calculators](#) (1995-98) – basic parts of the user interface, most of the Windows code

[Important: read the enclosed disclaimer before using the program!](#)

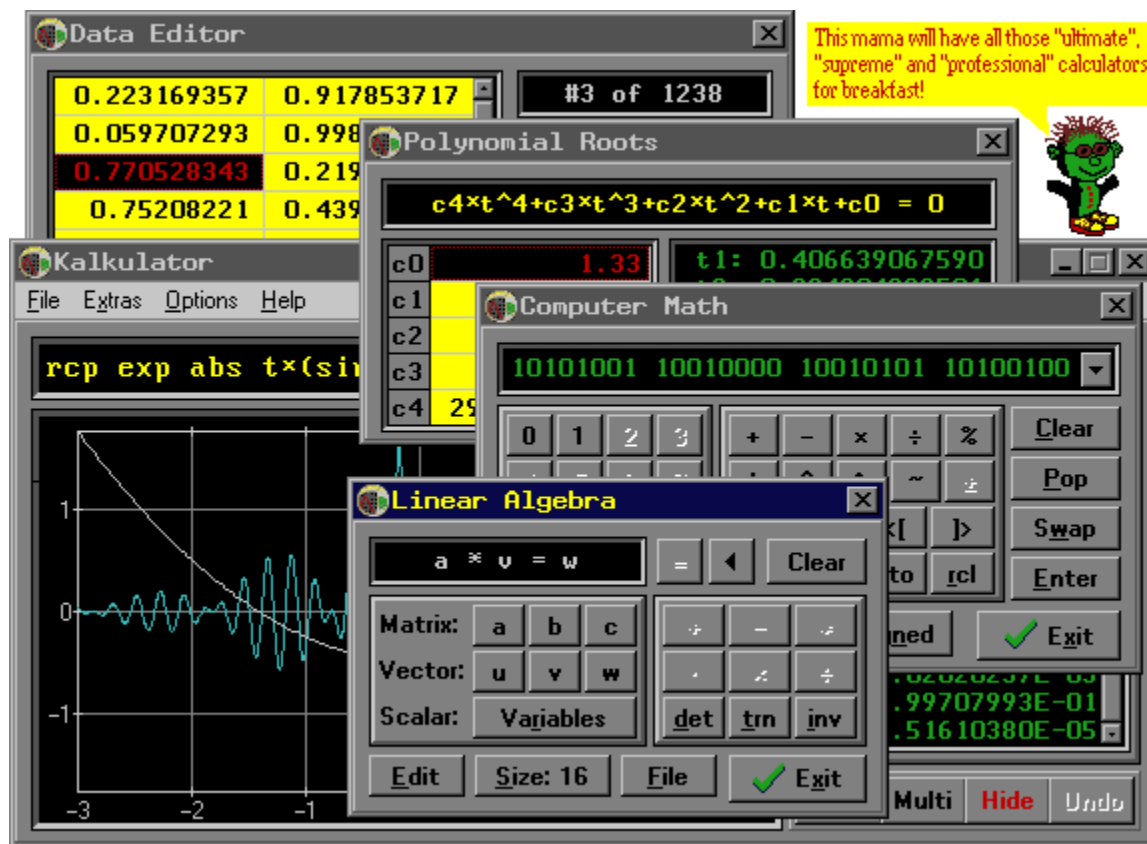
Legal Disclaimer

Midget is licensed on the "as is" basis.

Although the author has extensively tested the software and reviewed the documentation, he makes no warrant or representation, explicit or implied, with respect to this package, its quality or performance, merchantability or fitness for any particular purpose, in any hardware or software environment.

In no event shall the author be liable for direct, indirect, special, incidental or consequential damages, arising from use, misuse, or inability to use the software or documentation.

The Mother of All Calculators



If your numerical needs exceed the capabilities of Midget, you should meet Midget's Big Mama: the [Kalkulator](#).

Kalkulator is probably the most powerful program of its kind on the market. In addition to enhancing the capabilities existing in Midget, it offers:

- A wider function set: hyperbolic, Euler, statistical distributions (including integral and inverse-integral)
- Pre-defined physical constants
- Numerical operations on expressions: integration, computing derivatives, finding zeros of functions, indexed sums
- Function plotting (with smart handling of discontinuities and changes in curvature)
- Statistical operations on points in a data buffer: sample parameters, histograms, polynomial regression (up to the ninth degree), column-wise arithmetics on data, point and histogram fitting with an arbitrary function
- Finding roots of polynomial equations up to the fourth degree
- Finding extrema (minima and maxima) of arbitrary functions with up to nine arguments
- Linear algebra: vector and matrix arithmetics, matrix inversion, systems of up to 16 linear equations

- A computer math calculator for integer, fixed-length word arithmetics and for conversions between binary, octal, hex and decimal representations.

Most importantly, the more advanced features do not get into your way in the more elementary tasks: you are not bothered with the functionality you are not using.

You can get an evaluation copy of Kalkulator from the CompuServe (the Science Forum, Math Library) or from [my Web page](#).

Evaluating expressions

First, enter the expression into the Expression Line. You may need to use special [keystroke combinations](#) to enter some of the symbols.

The expression syntax follows (mostly, at least) the customary "blackboard" notation. The maximum expression length is 60 characters or 36 tokens (operators, variables, constants or separators); in the registered version these limits have been increased to 120 characters or 72 tokens.

After the expression has been entered, you may tell Midget where to store the result: click on the [=] button, then select a variable from a pop-up menu. Instead of doing that, you may just press the Enter key – the result will then be stored in the Temporary Variable, **t**.

If the expression syntax is not proper, an error will be reported and you will be able to correct the mistake. The cursor will be placed at the error.

Otherwise Midget will try to evaluate the expression. Some errors may occur at that stage (e.g., division by zero, or referring to a variable without a previously assigned value). If this is the case, another error alert will show up.

The result of the calculation will be shown in the Result Display. The [Form] button can be used to change the display precision and/or format.

The evaluated expression stays displayed in the Expression Line, unless the Auto Scroll option is on, in which case Midget will move to the next line. The Expression Line contents will be highlighted which means that it is subject to be erased by any subsequent input. Following the Windows standard, any cursor movement will remove the highlighting and allow editing of the expression without erasing it.

If the highlighted expression is erased by accident, pressing the Insert key will restore it to the original state. This, in turn, can be undone by pressing Insert again.

Re-using the last result in the next expression can be speeded up by checking "Insert t" in the Options Menu. With this enabled, whenever you start entering a new expression from one of the basic four operators: +, -, × or /, the **t** variable will be automatically appended in front of it. In the example above, you will have just to enter "+5", and Midget will change that to "**t**+5".

See also:

[Expression syntax](#)

[Variables](#)

Expression syntax

The expression syntax follows closely the customary "blackboard" notation. The maximum expression length is 60 characters or 36 tokens (operators, variables, constants or separators); in the registered version these limits have been increased to 120 characters or 72 tokens.

The following is a formal description of the syntax; if it seems too technical, just skip it and use your intuition, which will work just fine in 90% of cases.

Functions and operators are executed from high to low priority:

- High: power, square, cube, factorial, [implied multiplication](#), functions
- Medium: multiplication and division
- Low: addition and subtraction, unary plus and minus

An operand with operators on both sides will associate with the higher priority operator of the two. If both priorities are the same, then the left operator (low and medium priority) or the right one (high priority) is applied first.

This order, following the customary "blackboard" notation, can be arbitrarily changed with parentheses. Of course, you may always do it when in doubt.

See also:

[Upper and lower case](#)

[Implied multiplication](#)

[Syntax restrictions](#)

[Examples](#)

Upper and lower case

Expressions do not have to be entered in a case-sensitive manner. If a lower case letter does not make sense in a given context, it may be raised to upper case (becoming a variable, if applicable).

This is convenient, as we usually prefer to type just `2axsin3c` rather than `2 AX sin 3C`.

Note, however, that `asin2x` will be understood as `asin 2X` and not `A sin 2X`, as `asin` is recognized as a function name.

In case of doubt you may always add a separating space or use an upper case letter to have it treated as a variable.

Implied multiplication

The multiplication operator, \times , between two tokens (operands or symbols) can be skipped if

- the first one is a variable, a constant, a postfix operator or a closing parenthesis (except when used for function arguments), AND
- the second one is a variable, a symbolic constant, a function, or an opening parenthesis.

The difference between explicit and implied multiplication is that the latter has higher priority.

Examples:

Legal	Equivalent to	Illegal
$3AXZ$	$3*A*X*Z$	$AX3Z$
$2\pi C$	$2*\pi*C$	$2\ 3.14C$
$9 \sin X$	$9*\sin(X)$	$\sin(Y)\sin X$
$\ln X \exp Y$	$\ln(X*\exp(Y))$	$\ln(X)\exp Y$
$\sin 2AB$	$\sin(2*A*B)$	$\sin(2A)B$
$\sin X(A+B)$	$\sin(X*(A+B))$	$\sin(A+B)X$
πZ^2	$\pi*(Z^2)$	$Z^2\ 3.14$
$(A+B)(C+1)$	$(A+B)*(C+1)$	$\ln(A+B)(C+1)$

The traditional notation is not quite consistent: **exp 3 ln X** is usually interpreted by a human reader as **exp(3*ln(X))** while **2 sin X cos X** as **2*sin(X)*cos(X)**. Midget always chooses the first way, interpreting the latter example as **2*sin(X*cos(X))**.

See also:

[Syntax restrictions](#)

Syntax restrictions

The "blackboard" notation is not always clear and consistent. Therefore, to avoid ambiguous expressions, we have to introduce a number of (hopefully, reasonable) restrictions.

- High-priority operators: 2 , 3 , $!$, $^{\wedge}$, [implied multiplication](#), cannot follow a parenthesis enclosing a function argument (or arguments)
- For example, the sequence $\log(\mathbf{x})^2$ is illegal; it should be changed into $(\log \mathbf{x})^2$ or $\log(\mathbf{x}^2)$, depending on the intended meaning. On the other hand, $\log \mathbf{x}^2$ is OK and means $\log(\mathbf{x}^2)$.
- Sequences like $\sin^2 \mathbf{x}$, often used to denote $(\sin \mathbf{x})^2$, are not recognized; the latter, explicit form has to be used.

See also:

[Implied multiplication](#)

[Examples](#)

Examples

$2*\sin 2x$	means	$2*\sin(2*X)$
$2 \sin 2*x$		$2*\sin(2)*X$
a^b^{xy}		$A^{(B^{(X*Y)})}$
$a+b*xy^3.1$		$A+(B*(X*(Y^3.1)))$
$a \sin 2x$		$A*\sin(2*X)$
$\text{asin}2 x$		$\text{asin}(2*X)$
$\ln x^2$		$\ln(X^2)$

Variables

Variables are upper case letter symbols used to store numerical values.

- Midget has six "regular" variables, denoted as **A**, **B**, **C**, **X**, **Y** and **Z** (the registered version adds four more: **D**, **P**, **Q** and **R**).
- There is also the Temporary Variable, **t** (lower case!); it always denotes the result of the last computation (shown in the Result Display).
- The two symbolic constants, **¶** and **é**, behave in expressions exactly like variables, but they cannot be used to store calculation results. (To enter them, use Ctrl-p and Ctrl-e, respectively).

To store an expression value in a variable, type in the expression and press the "=" key; then select the variable from a pop-up menu. (Remember: a single numerical constant, like "1.25" is also an expression, although a very simple one!).

To use a variable in an expression, type it in, like in "**1.25x-z**". The variable has to contain a previously stored value, otherwise an error will be reported.

To look up all variable values, click on the "V" button at the top right.

Constants

Numeric constants

Constants are used as components of expressions. A constant consists of digits 0..9, an optional decimal point and an optional decimal exponent symbol, "E"; the exponent may be signed or not. For example, "1.5E-3" means the same as "0.0015". A zero preceding the decimal point can be skipped, as in ".0015".

A leading minus (or plus) sign is not treated as a part of a constant, but rather as an operator, although this is a purely academic distinction.

When an expression is reformatted before being computed, the constants in it may become reformatted as well, to a (hopefully) simpler representation.

Important for European users: regardless of your regional settings, Kalkulator always uses a point, ".", as the decimal separator.

Angular constants

These are entered with use of digits and the symbols of degrees, minutes and seconds. To enter the degree symbol from the keyboard, use Ctrl-d; minutes are entered as a single quote, and seconds – as a double quote.

Symbolic constants

There are two predefined symbolic constants: pi (3.14...) and Euler's e (2.71...). They are denoted with symbols π and e , respectively. To enter them from the keyboard, use the Ctrl-p and Ctrl-e [keystroke combinations](#).

Functions

Functions are used as elements of expressions in a customary way, e.g. `log (.25+x) – sqr (7/8)`. Their names are spelled in lower case.

Most functions accept one argument. If this argument is a constant or a variable, it does not have to be enclosed in parentheses. Multiple arguments are separated with commas, like in `rad (1 ,C+2 . 5)`.

The following functions are available in Midget:

- Roots and powers: [sqr](#), [sq](#), [cur](#), [cu](#)
- Logarithmic and exponential: [ln](#), [log](#), [exp](#), [ten](#)
- Trigonometric: [sin](#), [cos](#), [tan](#), [cot](#)
- Inverse trigonometric: [asin](#), [acos](#), [atan](#), [acot](#)
- Polar coordinate functions: [rad](#), [ang](#)
- Unit conversion: [lbs](#), [ft](#), [hrs](#)
- Others: [abs](#), [int](#), [fra](#), [sgn](#), [min](#), [max](#)

See also:

[Operators](#)

Operators

The arithmetic operators available in Midget include:

- [Basic four operations](#): +, -, *, /
- [Raising to power](#): ^, like in $x^{1.5}$
- [Square and cube](#): ², ³
- [Factorial](#): !
- [Implied multiplication](#): · (a tiny dot, sometimes not shown)

When entered from the keyboard, some of the operators will require special [keystroke combinations](#).

The multiplication operator, shown in the display as "×", is entered with the asterisk key, "*", which is a commonly accepted procedure. (In the examples shown here we will be using the asterisk as well.)

See also:

[Expression syntax](#)

Angular mode

The current angular mode is shown as [Rad] or [Deg] in a button to the right of the Result Display. Clicking on that button will change the mode.

Depending on this mode, Midget assumes that arguments to trigonometric functions are expressed in radians or degrees. It will also return results of inverse trigonometric functions in the same units.

Changing the angular mode to degrees can often lead to some confusion. I would recommend staying in the radian mode and using the angular constants explicitly. Then the calculation results can be displayed in the desired angular representation as needed.

See also:

[Angular constants](#)

Result format

Clicking on the Format button to the left of the Result Display offers (from a pop-up menu) a selection of various display formats.

- **Default** – a reasonable compromise, the choice between floating and fixed point is made based on number readability. The values are shown with the full accuracy of 18 significant digits, and the trailing insignificant zeros are omitted.
- **Fixed Point** – a fixed-point representation, with a selected number of digits after the decimal point (if the selected number would result in more than 18 significant digits, it will be appropriately reduced).
- **Exponential** – a floating-point display, with a selected number of significant digits (up to 18) and at least two digits in the decimal exponent.

Any of these three settings becomes "permanent": it will also hold for all future calculation, until revoked. The other settings reformat just the current result.

- **Fraction** – the value is shown as a whole part and a fraction, e.g., 3.125 becomes "3 1/8". The largest denominator is 1000 and it will be used if the value cannot be exactly represented with a smaller one.
- **Deg-Min-Sec** – the value is shown in degrees, minutes and seconds of angle. This is affected by the current angular mode setting, **Rad** or **Deg**, as the result is assumed to be an angle, originally expressed in radians or degrees, respectively.
- **Feet & Inches** – the result is assumed to be in feet and it will be shown as feet, inches and fraction (with the max. denominator of 64). For example, 1.24 will become "1 2 7/8" (one foot, two inches and 7/8 of an inch).
- **Lbs & Ozs** – the result is treated as pounds and shown as pounds, ounces and fraction.
- **Hrs-Min-Sec** – the result is treated as hours and shown as hours, minutes and seconds.

Obviously, depending on the displayed value and the format used, the display may be rounded. This never affects the actual result value, stored internally with 19 significant digits of accuracy.

See also:

[Accuracy](#)

Accuracy

The internal accuracy of individual arithmetic operations performed by Midget is 19 good decimal digits or better. The errors will, however, accumulate in computations involving multiple operations, so that 18 good digits is a safer assumption.

Midget displays up to eighteen significant digits of results. In most cases all these digits will be valid with a reasonably large safety margin.

Due to an obscure bug in Windows, this accuracy may be reduced by two decimal digits on some Intel processors running the 16-bit version. This cannot be helped; therefore Midget runs an appropriate test upon startup, and if such effect is detected, it will be accounted for. Most notably, the pop-up menu setting the display accuracy will be limited to 16 decimal digits. (This is an easy way to tell whether your system is affected.)

Windows 95 users may experience a similar problem due to a well-known [bug in the Microsoft System Agent](#). This can be fixed by updating one of the Win95 components.

Keep in mind, however, that for any finite floating-point accuracy, and for any calculator, one can easily invent an example of a computation where the relative result error will be 100% or more – i.e., all decimal digits wrong.)

See also:

[The Pentium bug](#)

Problems with the Win95 System Agent

The System Agent, included with the Microsoft's Win95 Plus, affects the accuracy of some floating-point calculations. Microsoft fixed the problem in one of the Windows95 Service Packs.

In addition to reducing Midget's precision from 19 to about 16 digits, this may also affect reformatting the result as a fraction with use of the "Form" button.

My recommendation is to turn the System Agent off when using Midget (or any other math program). If the System Agent is present, you will see its icon in the tray at the right end of the launchpad.

To check for yourself, type in (notice twenty 3's after the decimal point):

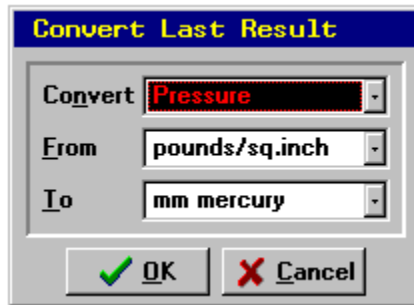
$1/3-.333333333333333333$

and hit Enter (Midget will reformat the expression, truncating the decimal fraction from 20 to 18 digits). The displayed result should be near to $2E-20$, but with the System Agent affecting the accuracy, it will be close to $2E-17$.

The Pentium bug

The infamous bug in some of the early Pentium processors affects the accuracy of some division operations. Midget detects a faulty processor and uses additional code to work around the problem. (Really, the work-around has been built into the Delphi compiler by Borland; I had nothing to do with it.)

Unit conversion



The value shown in the Result Display can be converted from one kind of measurement units into another. This will affect not only the display, but also the actual value of the variable to which it refers.

Clicking on the [Convert] button will bring up the Unit Conversion Panel. It has three combo boxes with drop-down lists of items to choose from.

Click on objects in the picture above to get more information on their purpose.

Only the units relevant to the selected type will be available at any given moment; i.e. you will not be able to convert mass from feet to mph. (Hopefully, you will find this limitation not too painful...)

The actual conversion will take place when we exit the panel by clicking on [OK]. The variable storing the result will be affected by the conversion.

Note: although the temperature is not, strictly speaking, a physical quantity, temperature conversion has been also included.

See also:

[Result format](#)

The pop-up menu

This menu pops up when you click on the **[?]** button on the left, or press the F10 key, or right-click at the edge of the Midget window. It groups some program settings and the less frequently accessed operations. Here are the choices:

- **Clear all** – clears all expressions and variables
- **Minimize** – shrink Midget to an icon
- **Options** – a submenu of program settings:
 - **Auto scroll** – with this option checked, Midget will, after successfully completed operation, move to the next expression line, clearing it in the process.
(You can come back to the computed expression by scrolling back with the up-arrow key. The erased expression can be restored by hitting the Escape key before you started typing anything into the cleared line)
 - **Balloon hints** – enables or disables the yellow fly-by hints. They can be useful in the beginning, but soon becomes annoying.
 - **Sound** – enables or disables the sounds (useful during corporate meetings or in the classroom)
 - **Stay on Top** – with this option checked Midget will always stay on top of all other windows
 - **Use tray** – when Midget is minimized, its icon will hide in the icon tray at the right end of the taskbar (Win95/NT only)
 - **Insert t** – enables automatic insertion of the Temporary Variable, **t**, at the beginning of an expression started by typing in an operator – see [Evaluating Expressions](#)
- **Help** – calls this help
- **Keyboard shortcuts** – jumps directly to the keyboard Help page
- **About Midget...** – displays the version and registration info
- **Exit** – exits the program.

Registered copies of Midget will remember the last settings when the program is run again.

Keyboard

Midget is run mostly from the keyboard (to provide buttons for all operators, functions, variables and digits would eat up lots of screen space). Here are the basics:

- The Delete, Backspace, left and right arrows, Home and End keys retain their customary Windows text-editing functionality.
- The up- and down-arrows are used to move between stored expressions.
- Escape (or Alt-Delete) clears the Display line with the current expression. If the line is already clear, Escape copies into it the last cleared expression.
- F1 calls this help
- F10 brings the [pop-up menu](#)
- F12 copies the displayed result into the Windows clipboard. To copy it into a document, switch to this document and press Shift-Ins
- The Control key is used, in [keystroke combinations](#) with other keys, to enter some special symbols onto the Expression Line.

There are also some less frequently accessed keystrokes:

- Alt-Insert copies the buffer into the current line. If the line is not empty, its old contents will be stored in the buffer (so that, effectively, a swap takes place).
- The Delete and Insert keys, when used together with Shift or Control, apply the standard Windows clip, copy and paste functions to the displayed expression. (Refer to your Windows manual if in doubt.)

Enhanced features

Registered copies of Midget provide some enhanced features:

- The maximum expression length is 120 (not 60) characters
- Up to 24 (not 6) expressions are available at the same time
- Ten (not six) variables can be used to store calculation results
- The program remembers last screen position and settings

Most importantly, you are paying me for the time I have spent to develop a product you use and enjoy (if you don't, just delete it from your system and forget this conversation). Thank you.

See also:

[How to register](#)

Line arrows

Use these buttons to move to the previous or to the next expression.

Unit conversion

Use this button to convert the result between various measurement units (e.g., from feet to centimeters).

The Expression Line

Here the expression you are typing in is being shown.
Hit the Enter key to compute the expression value.

Evaluate and store

By clicking on the [=] button you will be able to select a variable from a menu. Then the displayed expression will be evaluated, and the result will be stored in that variable. Pressing the "=" key has the same effect.

Result format

Click [here](#) to change the format used to show the result. You can change the number of digits, show the value as degrees, minutes and seconds, or as a fraction etc.

The Function Button

Pressing this button brings up a menu listing all available functions. Selecting from that menu may be used instead of typing in the function name. While the menu is up, brief function hints will be shown in the Result Display.

Line number

Midget can store up to six expressions (registered version: 24). The number of the currently shown expression is displayed here. Clicking on this number will allow you to jump to the expression line selected from a pop-up menu.

The Menu Button

Clicking on this button will bring up the Midget [pop-up menu](#) with program options and some less frequently accessed operations.

Angular mode

This button changes the angular mode between Radians and Degrees. Depending on this mode Midget treats arguments to trigonometric functions as expressed in radians or degrees, and uses these units to return results of inverse trigonometric (arc) functions.

Result Display

Here the result of the last computation is shown. The result can be reformatted or converted to different measurement units with use of the buttons on the left.

Clicking here will allow you to store the displayed value in any variable, chosen from a menu which will pop up.

Variables

Pressing this button displays a menu with all available variables. Those with values assigned will have a checkmark shown and a value shown. Clicking the left mouse button on a variable will insert its symbol into the Expression Line.

Click on this button to close the dialog box without doing anything.

Select the type of units, i.e. the physical quantity to convert (area, mass, etc.).

Select the units to convert from.

Click on this button to perform the conversion.

Select the units to convert to.

abs x returns the absolute value of x

acos x computes the arc cosine of x

acot x computes the arc cotangent of x

Andrzej

Pronounced: "Un-jay". One of the most misspelled names east of Mississippi.

ang(x, y) computes the polar angle of the point (x, y) , equal to **atan(y/x)**, and located in the proper quadrant

asin x computes the arc sine of x

`atan x` computes the arc tangent of x

Basic four operations

Note that "+" and "-" can be used as unary or binary operators, i.e. as in $-2 \times \sin X$ or as in $\sin X - 4$.

`cos x` computes the cosine of x

`cot x` computes the cotangent of x

cu x computes the cube (third power) of x,
same as the cube operator.

cur x computes the cubic root of x

`exp x` computes the exponent of x , i.e. e^x

Factorial

Defined for integer arguments as $n! = 1 \times 2 \times \dots \times n$.
For non-integer arguments it will be computed via the gamma function. (If you do not know what the gamma function is, just disregard this remark.)

`fra x` returns the fractional part of `x`;
for example, **`fra 3.2`** will return 0.2,
and **`fra(-3.2)`** will return -0.2

ft(x,y) converts x feet and x inches to feet

hrs(x, y, z) converts x hours, y minutes
and z seconds to hours

`int x` returns the integer part of `x`
(rounded towards 0)

Kalkulator

About the name: this is an old Polish word; it can be translated into American English as "The Mother of All Calculators, and there ain't no better one, period".

Keystroke combinations

- Ctrl-d enters the degree symbol, °
- Ctrl-p enters pi, π
- Ctrl-e enters the Euler's e, shown as e
- Ctrl-2 enters the square, 2
- Ctrl-3 enters the cube, 3

lbs (x, y) converts x pounds
and y ounces to pounds

`ln x` computes the natural (base e) logarithm of x

log x computes the decimal
(common, base 10) logarithm of x

max(x, y) returns the greater of x and y

midget.key

This file should be put in the directory where all other Midget files are. It will activate all enhanced features of the program. It will be also recognized by all future versions of Midget (both 16- and 32-bit), so that you are getting free lifetime upgrades.

Please remember to keep a safe backup of **midget.key**!

`min(x, y)` returns the lesser of x and y

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rad(x, y) computes the polar radius
of the point (x, y) , equal to **sqr(x²+y²)**

Raising to power

If the first operand of the power operator is negative, the second one has to have no fractional part. For example, $(-3)^{1.5}$ will cause an error.

sgn x returns -1, 0 or 1 for negative, zero and positive x, respectively

`sin x` computes the sine of x

sq x computes a square of x
(same as the square operator)

sqr x computes a square root of x

Square and cube

Use Ctrl-2 and Ctrl-3 keystroke combinations to enter these symbols.

`tan x` computes the tangent of x

`ten x` computes ten to the power of x , i.e. 10^x



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