KiwiSoft.
LOGO V1.3
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Comments:

Menus

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Options Menu

Set Aspect

This option lets you graphically set the aspect for your screen.   Use the scroll bar to adjust the circle until it appears round on your screen.

Info Menu

You may not select any items on this menu, its sole purpose it to give information about the current state of the turtle.

Help Menu

Logo
> Displays this help file

About
> Displays program information

Functions Menu

Add/Edit

This option will display the function Add/Edit dialog from which you may select an existing function to edit or create a new one.

Load

This option allows the loading of saved function sets, you may choose to load a new set and lose all existing functions or add the loaded to the functions currently in memory.

Save

This options allows the saving of user defined functions for future use.

New

This option will remove all user defined functions from memory, be sure to save any functions you wish to keep before using this option.

Logo Menu

Reset

Clears the screen and sets the turtle to the center of the screen, exactly the same as the reset command

Print

Prints the current drawing to the default printer.

Animate Turtle

When this option is checked the turtle pointer will move as the drawing is created, however this required approximately three times as many calculations, and will increase the time takes to execute commands by about 200%.

Show Turtle

Turns on and off the visible triangular pointer.

Stop on errors

When this option is selected execution of commands will abort is an error in your commands is found. When unselected Logo will try to execute your commands to the end regardless of any errors.   The interpreter will always abort if is encounters a nesting too complex error   these usually occur from a <u>circular reference</u>.

Exit

This option quits Logo.

Pen Menu

Color

Use this option to set the current color of the pen, you may also use the numbers next to the color and the COLOR command.

Width

Use this option to set the pen width; you may also set the pen width with the width command.

Commands

FD, BD { Forward, Backward }

These commands are used to move the turtle forward and backwards a specified number of units.

Example

```
FD100
```

Moves the turtle forward 100 units

RT, LT   (right , left)

These command are used to turn rotate the turtle a specified number of degrees

Example

`RT90`

Turns the turtle 90 degrees in a clockwise direction form it's current point.

`LT90`

Turns the turtle back to it's initial position

Note:

You could also accomplish the same as `LT90` by giving a `RT90` command

How to use Logo

This will introduce you to the way logo works

[What is Logo?](#)
[Getting Started](#)

What is Logo?

Logo for Windows is a structured computer programming language.   It can be useful in teaching the basic programming skills and concepts of commands and procedures.   Logo can be used for anything from making simple designs to creating complex mathematical pictures.

Logo is easy to learn and fun to use.

Enjoy!!

Getting Started

Logo commands are very simple to understand and use.

The first and most important command if <u>FD</u> (or forward) this command tells the turtle to move forward.

Try this.
```
FD100
```

This will move the turtle forward 100 units. Leaving a line behind it.

The next thing is to change the direction that the turtle is heading,   you can use the `RT` and `LT` (RighT & LefT commands to do this).

Try this
```
FD100 RT90 FD100 RT90 FD100 RT90 FD100 RT90
```

This will draw a square, because you are telling the turtle to move forward 100 units and then do a 90 degree turn four times.

You can also tell the turtle to repeat the same commands a number of times. To do this you use the repeat statment.

Try this
```
Repeat4 [ fd100 rt90 ]
```

You should have produced the same square as before.   This is because before we simpley gave the turtle four setes of FD100 RT90 now weve told the the turtle to repeat the two commands four times

Try these
```
Repeat3 [ fd100 rt120 ]     a triangle
Repeat6 [ fd100 rt60 ]      a hexagon
```

What does this do?
```
Repeat36 [ fd10 rt10 ]
```

Try some commands for your self.   How do you think you could draw a pentagon?

Functions

Creating Functions

What is a Function?

Simply Put a Logo function is a Group of commands that are executed each time you call that function. for example.

Function

```
BOX
```

Commands

```
Repeat4 [ fd100 rt90 ]
```

After creating this function each time you used the word you will produce a box.

to create this function type

```
to Box
```

{ the <u>function definition box</u> will appear and the cursor will be in the large box at the bottom}

Type

```
Repeat4 [ fd100 rt90 ]
```

when you press enter the definition box will disappear.   You are now ready to use you function. Test it by typing BOX and pressing enter.

Try this

```
TO Polygon:sides:size

Repeat:sides [ fd:size rt360/:sides ]
```

try

```
Polygon6,100
```

and

```
:c=3 Repeat6 [ fd20 polygon:c,50 rt60 ]
```

You can also make compound functions.

```
To turnbox
repeat10 [ fd20 rt36 box }
```

Define functions

Name

Box:Size

Commands

Repeat4 [fd:size rt90]

Enter function commands.

Repeat

Repeat# [<commands]

The Repeat function causes the commands inside the brackets to be repeated a specified number of times.

Example

```
repeat4 [ fd100 rt90 ]
```

Draws a square.   You can also nest any number of repeat statements.

Example

repeat18 [fd20 rt20 repeat4 [repeat3 [rt120 fd100] fd150 rt90] repeat6 [fd200 rt60]]

PU, PD (penup, pendown)

The pen up and down commands are used to tell the turtle to draw or not.

Example.

Repeat18 [pu fd100 rt20 pd repeat4 [fd100 rt90]]

Draws 18 squares in a circle without connecting them together

FD, BD (Forward, Backward)

These commands move the turtle forward or backwards a specified amount.

Example

fd50

Moves the turtle forward 50 units

SH (set heading)

SH sets the heading to the specified angle

Example

fd100 sh90 fd100 sh180 fd100 sh270 fd100

This creates a square.

IF

IF<condition> [Commands]

The IF statement is used to test values.

Possible conditions

=	Equals
>	Greater than
<	Less than
>=	Greater than or equal to
<=	Less than or equal to
<>	Not equal to

Example

```
IF:c=15 [ :b=:b+1 :c=0 ]
```

English translation:
IF :c equals 15 then add one to :b and make :c equal 0

SP (set position)

SP<X,Y>

Moves the turtle to the coordinate X,Y

Example

SP0,0

Positions the turtle in the center of the screen.

Width

Width<value>

Sets the width of the line that is drawn.
Values may range from 1 to 10

Example

Wdith5

Sets the pen to a medium width.

Move

Move<X,Y>

Moves the specified amount on the X & Y axis's.

Example

Move100,0 Move0,100 Move-100,0 Move0,-100

This statement draws a box with sides 100 units in length

Color

Color<Value>

Sets the current color value.   See the <u>pen menu</u> for color numbers

Example

Color12

Sets the pen to bright red.

Mathmatical Operators

Examples

:x=15
make :x equal 15

:x=:x + 20
Add 20 to the current value of :X

Acceptable operations
+, -, *, /

You can also perform expressions directly on commands

fd100/2 or rt:c*3

NOTE: Logo for windows does not yet support compound expressions.
i.e.
:x=6*:y/5 will not work
:x=6*:y   :x=:x/5 will work fine

Aspect

Aspect<value>

Changes the screen aspect

Note: This value will can also be changed from the options menu

Scale

Scales the screen.
Values may range from 1 to 20

i.e

Scale 5 repeat3 [fd100 rt120] scale20 repeat3 [fd100 rt120]

will draw two differently scaled triangles

Finding Functions

There are three ways to find a function to edit.

Firstly enter the function name in the add function name box.

i.e.
Box
will find the existing function Box :size or Box

Secondly you can select the function name from the picklist under the name box.

Third you can use the TO command.
i.e.

TO box

Loading functions

Selecting function load from the menus allows you to load or add a function set to the current set.

Load will replace all existing functions

Add will add loaded functions to the existing set

Reset

Clears, rescales, and resets the display and the turtle position,   This should be performed after the logo window is resized

CLR

Clears the display keeping the turtle position and heading

Conventions

Conventions used by Logo for Windows.

Short RULE
If its not a parameter to a function separate it with one or more spaces.

Examples

A command will always be followed by its parameter with no space

i.e.
FD100   Correct
FD   100 Wrong

Commands and functions with more than parameter have parameters separated by commas.

i.e.
Move100,100
MyFunction100,343,.004,5

Commands that require bracketing use square brackets with a space after the parameters then a space and then the first command.

i.e.
Repeat6   [fd100   rt60   ] correct
Repeat6[fd100 rt60]   Wrong
Repeat6   [fd100 rt60] Wrong

Logo is case insensitive.
i.e.
FD100 is exactly the same as fd100 & Fd100 & fD100
:VAR is the same as :var & :Var & :vAR

TO

TO <function Name> < :variable(s)>

The TO command achieves the same result as selecting add command from the menus, allowing you to add or edit a user defined function.

Example

TO Polygon:sides:size

Errors

Width Errors

These errors indicate that you have tried to set a width greater than 10 or less than 0,   in either case the width will be set to the nearest legal setting.

Bad Color Value

You have attempted to use a color that is out of the range of the color command, Acceptable values are 0 - 15.   See the pen menu for actual color numbers.

Name **not defined**

You have entered a command that is unknown to Logo.

Nesting Too Complex

This usually occurs when you have a circular reference in one or more of your functions.

Example

```
to Circular
Circular
```

This function will create this error.   This error will also occur if you use nesting greater than 75 levels.

Attempted Division

An <u>expression</u> in one of your functions has tried to divide by zero.   This is a mathematical impossibility.

Example
```
:c=0  fd50/:c
```

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