



# Bmp Wizard

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## Introduction:

As a graphic programs user, I often need to modify/filter bitmap accessing pixel data at low level. BmpWiz accomplish this need, using a Basic like language to modify raster images in BMP format. To obtain better performance, script program is semicompiled before execution.

There are some base filter ready to run (see Examples chapter for a list), but it is easy to create or derive new one.

This is a shareware software, after a tryal you must register to use it , with registration you obtain new releases notification and bug-fixing, the registration cost is **40\$**, if you are on **Compuserve** you can use (go) **SWREG** and use Id **8910** for payment.

This is the 32 bit version of BmpWiz that could be used in Windows NT or Windows '95 and Windows 3.1x or Windows for Workgroup with Win32s extensions.

## Script language:

BmpWiz script (BWL) is a basic like language.

There are two main difference from basic, BWL accept only one instruction each row (except expression) and variables must be declared.

### Remark:

Allows explanatory remarks to be inserted in a program preceding them with a single quotation mark ['].

### Variables & constants:

Variables must be defined before their use with the syntax:

var\_type var\_name[,var\_name]

es:

**float** x,y

Characters allowed in a variable name are only letters, the parser is case sensitive so **var** and **Var** is not the same variable.

There are two family of variables type:

Simple:

<b>float</b>	floating point number
<b>string</b>	character string

Structured:

<b>DevCon</b>	image
<b>Width</b>	image width (read only)
<b>Height</b>	image height (read only)
<b>BitCount</b>	bit number per pixel (read only)
<b>Res</b>	resolution
<b>CiImp</b>	colors importants (for image rendering)
<b>RGB</b>	color info in <b>RedGreenBlue</b> format
<b>Lum</b>	luminosity (0-255) or (Red+Green+Blue)/3
<b>Red</b>	red component (0-255)
<b>Green</b>	green component (0-255)
<b>Blue</b>	blue component (0-255)
<b>HBS</b>	color info in <b>HueBrightSaturation</b> format
<b>Hue</b>	color (0-240)
<b>Bri</b>	bright (0-240)
<b>Sat</b>	saturation (0-240)

Structured variables could receive data using assignment.

To access single components you must specify component name after variable name separated by a dot.

es:

define a color variable

RGB pix

set pix red component to max:

pix.Red=255

**HBS struct cannot be used with graphical instructions, the color information must be assigned to a RGB variable before its use.**

You can define arrays of float using **[n]** int the definition line, **n** is the elements number.

To use arrays in the program you must specify the index (0 based), es:

```
float ar[10]
ar[0]=1
ar[1]=ar[0]+1
```

Constants could be numbers or string, numbers must be in the n.n form, strings must be enclosed in double quotation marks.

#### Predefined constants:

float	<b>CINum</b>	Number of arguments on command line
string	<b>CIArg[n]</b>	Argument received on command line
float	<b>PI</b>	Return the $\pi$ (3,14159)

## Statement & functions:

### Graphics commands:

#### **DevCon=LoadImage(string Name):**

Reads a bitmap from disk returning a DevCon value.

**Name** could be a variable or a constant that point to a file in the Windows BMP format, 1/4/8/24 bits.

Memory bitmap pointed by DevCon have the same width length and color limits of the BMP file.

To get a bitmap from clipboard you must specify its name as file to read (es:

lbmp=LoadImage("CLIPBOARD") ), then program flow stop waiting a bitmap in the clipboard.

Reading/writing to clipboard allow to build macro like script that operate inside other graphic programs, ClpBrd.Bas demonstrate this use.

#### **DevCon=CreateImage(float Xdim,float Ydim,float bit)**

Creates a bitmap in memory with the specified limits.

Return a DevCon value that must be used as reference.

In the 1/4/8 bit format a gray palette will be associated to the image.

#### **SaveImage(DevCon img,string Name)**

Saves the img memory bitmap in a file.

If file name is "CLIPBOARD" destination will be the clipboard.

#### **RGB=GetPalette(DevCon img,float enum)**

Obtains the RGB value of the **enum** element from palette associated to the img bitmap.

#### **SetPalette(DevCon img,float enum,RGB pix)**

Sets the RGB value of the **enum** element in the palette associated to the img bitmap.

### Pixel access:

#### **RGB=GetPixel(DevCon img,float x,float y)**

Reads the RGB value of the x,y pixel inside img bitmap.

#### **val=GetPixelVal(DevCon img,float x,float y)**

Reads the numeric value of the x,y pixel inside img bitmap, usefull to get pixel numeric values (palette index) of 4/8 bit images.

**SetPixel(DevCon img,float x,float y, RGB pix)**

Sets the RGB value of the x,y pixel inside img bitmap.

**SetPixelVal(DevCon img,float x,float y, float val)**

Sets the numeric value of the x,y pixel inside img bitmap, faster than SetPixel bypassing palette.

**Flow:****If (cond)**

...

**[else**

**...]**

**endif**

If **cond** is TRUE (TRUE <> 0) execute following commands until **else**, if **cond** is FALSE program flow skip to the command following **else**.

**Cond** could be any sequence of operator evaluated from left to right, operator inside bracket are evaluated first.

**For var=(exp1) To (exp2) [Step (exp3)]****Next var**

Executes a loop from **exp1** to **exp2** counting in **var**, increment is **exp3** or 1 if not specified.

**Return**

Terminates the program execution.

**Exit**

Exit from BmpWiz, it is used for batch called image filters that needs automatic program exit (see the External batch operation chapter for more information).

**Display & I/O:****string=GetFileName(string Title)**

Asks a file name using the Windows common dialog, return a string value.

**string=FileFind(string Mask)**

Return a file name, command could be iterate to return all files names.

**DspMes(...)**

Displays a sequence of variable and constants in any order.

**Debug()**

Suspend program execution and shows variables contents in a window.

**[if]/[val=] DspWhile(string text,float perc)**

Displays a dialog with a message and a cursor with a percentage value.

Value returned is TRUE if stop button has been pressed.

**Preview(DevCon img,string title,float x, float y [, float xdim,float ydim])**

Displays the img bitmap in a window with the specified characteristics.

## Operators:

Operators are evaluated in expression from the left to the right, operator inside bracket are evaluated first.

### Arithmetic operators:

+	sum
-	subtract
*	multiply
/	divide
%	module
<b>Sin(exp)</b>	sines
<b>ASin(exp)</b>	arcsine
<b>HSin(exp)</b>	hyperbolic sine
<b>Cos(exp)</b>	cosine
<b>ACos(exp)</b>	arccosine
<b>HCos(exp)</b>	hyperbolic cosine
<b>Tan(exp)</b>	tangent
<b>ATan(exp)</b>	arctangent
<b>HTan(exp)</b>	hyperbolic tangent
<b>Sqr(exp)</b>	square root
<b>Abs(exp)</b>	absolute
<b>Exp(exp)</b>	exponential
<b>Log(exp)</b>	logarithm
<b>LogT(exp)</b>	logarithm base 10
<b>Pow(x,y)</b>	x raised to the power of y
<b>Rand(exp)</b>	random number in 0-exp range
<b>Min(a,b)</b>	minimum between <b>a</b> e <b>b</b>
<b>Max(a,b)</b>	maximum between <b>a</b> e <b>b</b>
<b>Int(a)</b>	integral part of <b>a</b>

### Logical:

>	greater
<	less
=	equal
>=	greater or equal
<=	less or equal
<>	not equal
&	and
	or
^	xor
!	not

## External batch operation:

Using command line is possible to load and execute a script, es. BmpWiz caos.bas.

It is also possible to concatenate multiple file filtering using the new START command present on WIN95 batch language:

```
multif.bat
    START /w BmpWiz caos.bas inp1.bmp out1.bmp
    START /w BmpWiz caos.bas inp2.bmp out2.bmp
    ...
caos.bas
    inpFile=CIArg[2]
    outFile=CIArg[3]
    ...
```

Exit()

## File menu

<u>N</u> ew	Create a new script.
<u>O</u> pen	Load a script from disk.
<u>S</u> ave	Save current script.
<u>S</u> ave <u>A</u> s	Save current script with a different name.
<u>P</u> rint	Print current script.
<u>P</u> rint <u>P</u> review	Print preview.
<u>P</u> rint <u>S</u> etup	Select printer.
<u>E</u> xit	Exit.

## Edit menu

<u>U</u> ndo	Undo last editing.
<u>C</u> ut	Cut current selection.
<u>C</u> opy	Copy current selection.
<u>P</u> aste	Paste data in clipboard.

## View menu

<u>T</u> oolbar	Display the Toolbar.
<u>S</u> tatus <u>B</u> ar	Hide the Status Bar.


## Help menu

<u>I</u> ndex	Help index.
<u>U</u> sing <u>H</u> elp	Help on help.
<u>A</u> bout	About program.

## Run/Stop

Pressing this buttons execute current script language or stop the running one.

## Shortcuts

Toolbar:   
Keys: CTRL+R



## **New (File menu)**

Clear editing window and display a base script.

## **Shortcuts**

Toolbar:



Keys: CTRL+N

## Open (File menu)

Load a script (\*.bas) file from disk.

## Shortcuts

Toolbar:



Keys: CTRL+O


### **File Open dialog box**

Permit to specify input file.

## **Save (File menu)**

Save current script.

## **Shortcuts**

Toolbar:   
Keys: CTRL+S

**Save As (File menu)**

Save current script with a different name, display the Save As Dialog.

### **File Save As dialog box**

Permit to specify output file.

**Exit (File menu)**

Exit from the program.

**Shortcuts**

Mouse:	Double-click the application's Control menu button.
Keys:	ALT+F4

### **Undo/Can't Undo command (Edit menu)**

Undo last editing.

### **Shortcuts**

Keys:      CTRL+Z or  
             ALT-BACKSPACE



**Redo (Edit menu)**

Replay editing.

## Cut (Edit menu)

### Shortcuts

Toolbar:



Keys: CTRL+X

**Copy (Edit menu)**

**Shortcuts**


Toolbar:



Keys: CTRL+C

**Paste (Edit menu)**

### Shortcuts

Toolbar:   
Keys: CTRL+V

## Toolbar



New create a new script.



Open load a script from disk.



Save memorize a script on disk.



Print the active document.



Run/Stop current script.



Cut.



Copy.



Paste.

**Status Bar**



Codice	Significato
CAP	Caps lock.
NUM	Num lock.
SCRL	Scroll lock.

## **Index (Help menu)**

Help index.

## Using Help (Help menu)

Help on help.



## About (Help menu)

Program information.

**Context Help command**



**Shortcut**

Keys:      SHIFT+F1

## Examples:

<b>3D</b>	3d effect on B/N images
<b>BRI_SAT</b>	Demonstrate how to modify pixel brightness an saturation
<b>LOGO</b>	Substitute Win95 startup logo with a fern and a moving background
<b>LOGO1</b>	An other startup logo substitute
<b>MOSAIC</b>	Mosaic effect with black line separator
<b>MOSAIC1</b>	Mosaic effect with black line separator with variable size tessera.
<b>LAKE</b>	Simulate water reflection
<b>CATODE</b>	Scompose RGB components in separate pixel like CRT
<b>FLAG</b>	Flag distortion
<b>LUMINOSI</b>	Modify brightness
<b>ANTILIAS</b>	Antialias on B/W images
<b>RAND</b>	Modify randomly pixel brightness
<b>RAND1</b>	Random BW image
<b>TAP</b>	Distortion
<b>SPHERE</b>	Distortion
<b>SPHERE1</b>	Distortion
<b>SPHERE2</b>	Colored spheres
<b>SPHERE3</b>	Distortion
<b>SEPARATE</b>	Separate RGB colors components.
<b>BRICK</b>	Pattern blend
<b>PEAKS</b>	Pattern blend
<b>EROSION</b>	Eliminate noise from BW images
<b>CAOS</b>	Random mix pixel
<b>CAOS1</b>	Random mix pixel
<b>SEPPIA</b>	Modify to purple tone
<b>FADE</b>	Brightness fade
<b>FADE1</b>	Color fade
<b>BNSCALE</b>	Gray scale
<b>GRANITE</b>	Granite pattern blend
<b>PATTERN</b>	Repeats image as a pattern
<b>CLPBRD</b>	Demonstrate Clipboard interaction
<b>CUBE</b>	Construct a cube
<b>TO16GRY</b>	Reduct with antialiasing
<b>EXT</b>	Chroma key with background change
<b>EXT1</b>	Modify color image
<b>TRIANGOL</b>	Pattern blend
<b>SIZE2-</b>	Resize image
<b>SIZE4-</b>	Resize image
<b>SIZE2X</b>	Double size
<b>SIZE2XT</b>	Double with interpolation
<b>ITALICO</b>	Image distortion
<b>SHADE</b>	Shade on BW image
<b>CNV16GRY</b>	Convert to 4 bit gray scale
<b>SWITCH</b>	Switch color components
<b>CNV24BIT</b>	Convert to 24 bit images
<b>NEG</b>	Invert brightness
<b>SPECULA</b>	Mirror
<b>SCAL8RGB</b>	RGB scale
<b>RIS_DEF</b>	Demonstration of resolution vs. definition
<b>SCALA8CO</b>	Color scale
<b>SCALABN</b>	Gray scale
<b>SCALACO</b>	24 bit color scale
<b>SCALAHBS</b>	24 bit color scale

<b>SCALRGB</b>	24 bit color scale
<b>SCOMPONE</b>	Color separation
<b>STATS</b>	Calculate single palette element use
<b>STATSBN</b>	Count black pixel
<b>FERN</b>	Calculate a fern (fractal)

## Versions:

1.3

- 32 bit version
- Clipboard support

1.50

- New filters

1.51

- Minor bug fix
- Error editing scripts of different len.

1.6

- New feature
  - Arrays
  - Negative numeric constant
- New instructions
  - Debug
  - GetPixelVal
  - SetPixelVal
- New filter
  - Pattern
  - Fern
  - Stats
  - StatsBN
  - Logo

1.7

- New feature
  - Pentium optimisation
  - An interface more Win95 compliant
  - Automatic execution of the script specified on the command line.
- New instructions
  - New function
    - Exit**
  - New constants
    - PI, CArg[], CNum**
  - New arithmetic functions
    - Sqr, ASin, HSin, ACos, HCos, Tan**
    - ATan, HTan, Abs, Exp, Log, LogT, Pow**
- New filter
  - logo1
  - 3D


**No Help Available**



## **Print command (File menu)**

Use this command to print a document. This command presents a Print dialog box, where you may specify the range of pages to be printed, the number of copies, the destination printer, and other printer setup options.

### **Shortcuts**

Toolbar:   
Keys: CTRL+P



## **Print dialog box**

The following options allow you to specify how the document should be printed:

### **Printer**

This is the active printer and printer connection. Choose the Setup option to change the printer and printer connection.

### **Setup**

Displays a Print Setup dialog box, so you can select a printer and printer connection.

### **Print Range**

Specify the pages you want to print:

**All** Prints the entire document.

**Selection** Prints the currently selected text.

**Pages** Prints the range of pages you specify in the From and To boxes.

### **Copies**

Specify the number of copies you want to print for the above page range.

### **Collate Copies**

Prints copies in page number order, instead of separated multiple copies of each page.

### **Print Quality**

Select the quality of the printing. Generally, lower quality printing takes less time to produce.

### **Print Progress Dialog**

The Printing dialog box is shown during the time that <<YourApp>> is sending output to the printer. The page number indicates the progress of the printing.

To abort printing, choose Cancel.

**Print Preview command (File menu)**

Use this command to display the active document as it would appear when printed. When you choose this command, the main window will be replaced with a print preview window in which one or two pages will be displayed in their printed format. The print preview toolbar offers you options to view either one or two pages at a time; move back and forth through the document; zoom in and out of pages; and initiate a print job.

## **Print Preview toolbar**

The print preview toolbar offers you the following options:

### **Print**

Bring up the print dialog box, to start a print job.

### **Next Page**

Preview the next printed page.

### **Prev Page**

Preview the previous printed page.

### **One Page / Two Page**

Preview one or two printed pages at a time.

### **Zoom In**

Take a closer look at the printed page.

### **Zoom Out**

Take a larger look at the printed page.

### **Close**

Return from print preview to the editing window.

**Print Setup command (File menu)**

Use this command to select a printer and a printer connection. This command presents a Print Setup dialog box, where you specify the printer and its connection.

## **Print Setup dialog box**

The following options allow you to select the destination printer and its connection.

### **Printer**

Select the printer you want to use. Choose the Default Printer; or choose the Specific Printer option and select one of the current installed printers shown in the box. You install printers and configure ports using the Windows Control Panel.

### **Orientation**

Choose Portrait or Landscape.

### **Paper Size**

Select the size of paper that the document is to be printed on.

### **Paper Source**

Some printers offer multiple trays for different paper sources. Specify the tray here.

### **Options**

Displays a dialog box where you can make additional choices about printing, specific to the type of printer you have selected.

### **Network...**

Choose this button to connect to a network location, assigning it a new drive letter.

## **Page Setup command (File menu)**

<< Write application-specific help here. >>

