

BlitzOp Guide v1.0 by Paul Bowlay

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Chapter 1

BlitzOp Guide v1.0 by Paul Bowlay

1.1 CONTENTS

*** THE BLITZOP GUIDE ***
(Version 1.0 - 47 Tips)

INTRODUCTION

Legal Information	Where you can spread the BlitzOp Guide.
What Is This Guide?	What the BlitzOp Guide is designed for.
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THE OPTIMIZING TIPS

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GENERAL TIPS

Executable Options	What to do before creating an executable.
The Amiga Libraries	Possibly the Biggest Tip Of Them All!
Variable Tips	Using variables with efficiency.
Miscellaneous Tips	Keeping it small in general.

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1.2 LEGAL INFORMATION

>>> LEGAL INFORMATION

This AmigaGuide document was entirely and solely the work of Paul Bowlay, and thus is © Copyright 1997 by him. However, some tips were E-Mailed to him by the generosity of others, and such contributions have the person's name credited alongside the tip.

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- No commercial distribution is permitted, except for distribution on any future Aminet CD compilations by Urban Mueller.

If the above two conditions are not met, you can expect a lawsuit. It's really not too much to ask, so please respect the author's wishes.

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1.3 PAUL BOWLAY

>>> PAUL BOWLAY

The sole author of this AmigaGuide document is Paul Bowlay. You can only contact me via E-Mail, so those of you without E-Mail access will have to rely on a friend or a public-access Internet terminal (eg: try your local library) to contact me.

My E-Mail address: cat@aic.net.au

=====

1.4 ABOUT THIS GUIDE

>>> WHAT IS THIS GUIDE ALL ABOUT?

This guide shows you how to re-write your Blitz2 programs so that you get a smaller executable than you normally would. Most Blitz2 commands cause

your executables to bloat up in size when you can replace such commands with sleeker ones. This guide lists all such commands and shows you how to replace them with routines that accomplish exactly the same result.

SPECIAL NOTE!

Some of the tips in this guide will only work if you have third-party libraries added to your Blitz2 system! You can tell if a tip doesn't work on your system by typing its name and pressing the Help key. If the name doesn't change colour and re-format itself, then you don't have access to it and thus can't make use of it.

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1.5 CONTRIBUTIONS

>>> YOU CAN HELP!

If you know of any optimizing tips of your own, why not consider E-Mailing them to the author for inclusion in future releases of this guide? Your name will naturally be credited to them and you'll earn the respect and gratitude of every Blitz2 programmer in existence. :)

There is only one rule for contributing a tip: it must do exactly the same thing as the command/function you're replacing, but with less executable size! I don't care if your routine is more memory-efficient or uses less system power: this guide is for reducing executable size and nothing more.

When contributing a tip, it is essential that you make your E-Mail address available to be included alongside your name. This is so programmers can contact you if they experience trouble with your tip. Thus, only submit a tip if you're willing to be asked more info about it - the author cannot always help out with a tip query if he hasn't used it himself.

Lastly, if you ever change your E-Mail address, please inform the author so he can adjust this guide accordingly.

=====

1.6 EXECUTABLE OPTIONS

>>> EXECUTABLE OPTIONS

In the Compiler menu of Blitz2 is an item called Compiler Options. Select it and look at the window that appears. We are interested in only two items: Runtime Error Debugger and Create Debug Info For Executable Files.

Runtime Error Debugger will add error-checking code to your executable so that it won't crash if an error occurs. If you're absolutely 100% sure that your program won't crash, then you can safely turn off this option to save on final executable size.

Create Debug Info For Executable Files is used to add debug code to your

executable for third-party software to examine. Again, if your program is fine and you don't intend to scan it with other software, then you can turn off this option to save on final executable size.

One other option may have caught your eye: Make Smallest Code. Don't be misled: this option does not have to be turned on for it to work. It is automatically turned on internally when creating an executable, so playing with it here has no affect on your final executable size.

Lastly, some of you may look at the six buffers and wonder if reducing the values will save executable size. It won't; their values get automatically changed during compilation.

=====

1.7 THE AMIGA LIBRARIES

>>> THE AMIGA LIBRARIES - THE BIGGEST TIP OF THEM ALL!

Okay, I'm going to tell you a little secret on how to keep your Blitz2 executables really small. Ready? Promise not to tell anyone? Here:

Use the Amiga Library Routines.

That's it. Look at your Blitz2 reference manual from pages A3-1 onwards. See all those commands that look like FindResident(name)(a1) and so on? Well, using those instead of the equivalent Blitz2 command will literally save hundreds of bytes in your executable size.

For instance, on my system, the small CLI-Only Example 1 program creates an executable of 9588 bytes. By replacing Reboot with the Amiga Library ColdReboot_ command, and Print with the Amiga Library PutStr_ command, the executable becomes a tiny 968 bytes in size! That's a massive saving of 8620 bytes (over 8K!), yet the programs do exactly the same thing!

EXAMPLE 1:

```
; All Runtime Errors On
; Create Debug Info On
;
Print "Click LMB to reset!"
MouseWait
Reboot
```

EXAMPLE 2:

```
; All Runtime Errors Off
; Create Debug Info Off
;
PutStr_ "Click LMB to reset!"
MouseWait
ColdReboot_
```

The only problem with using the Amiga Libraries is that beginners won't know how to use them. They aren't described in the Blitz2 manuals (hmmm, is anything really?) and you can't just switch to them as easily as the above examples illustrate (if you do, 99% of the time you'll get a guru and your Amiga will crash). However, experiment with them as you will, and if you find something that does work, please E-Mail me for inclusion in future releases of this guide.

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1.8 VARIABLES

>>> VARIABLE TIPS

CONSTANTS VS VARIABLES

If you're using a numeric integer variable that never changes value during your program, then make it a constant instead of a variable. This means instead of using `width=640`, use `#width=640`. Constants save space compared to their normal variable counterparts, but remember: they can only be used for numbers (not strings) and integers (numbers without a decimal point).

TOGGLING A NUMERIC VARIABLE

Sometimes you may want to have a numeric variable constantly switch between 0 and 1. Don't use `If a=0 Then a=1 / If a=1 Then a=0` because it's a waste of size. Use this instead: `a=1-a`.

USELESS VARIABLES

Using variables for unnecessary work is a size-wasting idea. For example, don't use a variable to hold the result of something that you just want to print - just print the result instead. You should only ever use a variable if you intend to reference it again later in your code; otherwise, use the `Select` command for things like checking the result of a gadget hit or menu selection.

VARIABLE SWAPPING

Use the `Exchange` command to swap the contents of two variables. Don't use a third temporary variable (`temp$=one$:one$=two$:two$=temp$`) to do the work because it's a waste of size.

=====

1.9 MISCELLANEOUS

>>> MISCELLANEOUS TIPS

ASSEMBLER

Replace as much of your code with assembler as possible, because nothing gets smaller than pure hand-coded assembler, not even the best C compilers.

GOSUB IS YOUR FRIEND

Some people use the same routine over-and-over in their code. This is a waste and you should use the `Gosub` command to replace each routine, and have the routine defined just once in your code. For example, don't have the code `If AvailMem_($0)<1024 Then Print "Out of RAM!"` in your program at every place you wish to check RAM. Instead, do a `Gosub` to that code so that it becomes `If AvailMem_($0)<1024 Then Print "Out of RAM!" : Return`.

USELESS COMMANDS

Don't use a command that's irrelevant to your code. For example, some people actually use the `EventWindow` command when they only have one window open! What a waste, because it's obvious which window caused the event!

YOU ARE WHAT YOU EAT

Just as the more you eat the fatter you get, the same principle applies to

Blitz2 programs: the more commands you use, the bigger the executable gets. Thus, think about what you're doing, and write your routines so that they use the least amount of commands as possible.

=====

1.10 UNAVAILABLE

>>> NO TIPS AVAILABLE!

Unfortunately, there are no tips yet for the letter you selected. However, the author hopes this will change, so you can help by E-Mailing him if you have any to add. See this section for more details.

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1.11 'A' TIPS

>>> TIPS FOR COMMANDS STARTING WITH "A"

ACTIVATE (Paul Bowlay, cat@aic.net.au)

If you're opening a window and instantly activating it with Activate, then you're wasting bytes. Instead, just add the value \$1000 to the window's flags.

OLD: Window #,X,Y,Width,Height,\$Flags,Title,DPen,BPen : Activate #

NEW: Window #,X,Y,Width,Height,\$Flags|\$1000,Title,DPen,BPen

=====

1.12 'B' TIPS

>>> TIPS FOR COMMANDS STARTING WITH "B"

BEEPSCREEN (Paul Bowlay, cat@aic.net.au)

If you're using BeepScreen with screen 0 then use DisplayBeep_ instead. Note that this tip only works for screen 0 and no others.

OLD: BeepScreen 0

NEW: DisplayBeep_0

=====

1.13 'C' TIPS

>>> TIPS FOR COMMANDS STARTING WITH "C"

CHANGEDIR (Paul Bowlay, cat@aic.net.au)

Use CHDir instead.

OLD: ChangeDir dir\$
NEW: CHDir dir\$

CHIPFREE (Paul Bowlay, cat@aic.net.au)

Use AvailMem_ instead.

OLD: chip=ChipFree
NEW: chip=AvailMem_(\$20002)

1.14 'E' TIPS

>>> TIPS FOR COMMANDS STARTING WITH "E"

EXEC (Paul Bowlay, cat@aic.net.au)

Use Execute_ instead. If you don't include the run >nil: part, then your program will halt until the DOS command ends.

OLD: Exec dos\$
NEW: Execute_ "run >nil: "+dos\$,0,0

1.15 'F' TIPS

>>> TIPS FOR COMMANDS STARTING WITH "F"

FASTFREE (Paul Bowlay, cat@aic.net.au)

Use AvailMem_ instead.

OLD: fast=FastFree
NEW: fast=AvailMem_(\$20004)

FILTER OFF (Paul Bowlay, cat@aic.net.au)

Use assembler instead.

OLD: Filter Off

NEW: MOVE #253,\$bfe001

FILTER ON (Paul Bowlay, cat@aic.net.au)

Use assembler instead.

OLD: Filter On

NEW: MOVE #2,\$bfe001

FLOATMODE (Paul Bowlay, cat@aic.net.au)

If you're using the Format command, then you don't need to use FloatMode because Format automatically invokes a floatmode of -1.

OLD: Format "0000000000" : FloatMode -1 : NPrint 9^9

NEW: Format "0000000000" : NPrint 9^9

FORCENTSC (Paul Bowlay, cat@aic.net.au)

Use assembler instead.

OLD: ForceNTSC

NEW: MOVE #0,\$dffldc

FORCEPAL (Paul Bowlay, cat@aic.net.au)

Use assembler instead.

OLD: ForcePAL

NEW: MOVE #32,\$dffldc

1.16 'I' TIPS

>>> TIPS FOR COMMANDS STARTING WITH "I"

IF [Tip 1] (Paul Bowlay, cat@aic.net.au)

If you're testing a numeric variable for the value 1, then don't use =1 as part of the test.

```
OLD: If a=1 Then NPrint "1"  
NEW: If a Then NPrint "1"
```

IF [Tip 2] (Paul Bowlay, cat@aic.net.au)

If you're testing two variables and the result will be a small block of code with no Gotos or Gosubs or further test conditions, then use Else instead of two Ifs.

```
OLD: If a=1 Then NPrint "1"  
      If a=2 Then NPrint "2"  
  
NEW: If a=1 Then NPrint "1" Else NPrint "2"
```

IF [Tip 3] (Paul Bowlay, cat@aic.net.au)

If you're testing two variables and the result will be a large block of code, or has Gotos or Gosubs or further test conditions, then use Else and EndIf instead of multiple Ifs.

```
OLD: If a=1 Then NPrint "1" : If b=1 Then Goto loop1  
      If a=2 Then NPrint "2" : If b=2 Then Goto loop2  
  
NEW: If a=1  
      NPrint "1" : If b=1 Then Goto loop1  
      Else  
      NPrint "2" : If b=2 Then Goto loop2  
      EndIf
```

IF [Tip 4] (Paul Bowlay, cat@aic.net.au)

If you're testing more than two variables, use Select and Case instead of multiple Ifs.

```
OLD: If a=1 Then NPrint "1" : Goto loop1  
      If a=2 Then NPrint "2" : Goto loop2  
      If a=3 Then NPrint "3" : Goto loop3  
  
NEW: Select a  
      Case 1  
          NPrint "1" : Goto loop1  
      Case 2  
          NPrint "2" : Goto loop2  
      Case 3  
          NPrint "3" : Goto loop3  
      End Select
```

1.17 'K' TIPS

>>> TIPS FOR COMMANDS STARTING WITH "K"

KEYCODE (Paul Bowlay, cat@aic.net.au)

Use Peek instead.

OLD: key=KeyCode

NEW: key=Peek(\$bfec00) AND \$ff

KILLFILE (Paul Bowlay, cat@aic.net.au)

Use DeleteFile_ instead.

OLD: KillFile filename\$

NEW: DeleteFile_ filename\$

=====

1.18 'L' TIPS

>>> TIPS FOR COMMANDS STARTING WITH "L"

LOADPALETTE (Paul Bowlay, cat@aic.net.au)

The LoadScreen command can optionally load the associated palette with it, so don't use LoadScreen and LoadPalette for the same screen.

OLD: LoadScreen screen#,filename\$: LoadPalette screen#,filename\$

NEW: LoadScreen screen#,filename\$,palette#

=====

1.19 'M' TIPS

>>> TIPS FOR COMMANDS STARTING WITH "M"

MEMFREE (Paul Bowlay, cat@aic.net.au)

Use AvailMem_ instead.

OLD: free=MemFree
NEW: free=AvailMem_(\$0)

MENUSOFF (Paul Bowlay, cat@aic.net.au)

If you don't intend to use menus with a window, then don't use MenuOff to specify this. Instead, add the value \$10000 to the window's flags.

OLD: Window #,X,Y,Width,Height,\$Flags,Title,DPen,BPen : MenuOff
NEW: Window #,X,Y,Width,Height,\$Flags|\$10000,Title,DPen,BPen

=====

1.20 'N' TIPS

>>> TIPS FOR COMMANDS STARTING WITH "N"

NAMEFILE (Paul Bowlay, cat@aic.net.au)

If you're using variables to specify the old/new names, then use Rename_ instead (and note the &). This tip does not work with literal strings.

OLD: NameFile old\$,new\$
NEW: Rename_ &old\$,&new\$

NPRINT (Paul Bowlay, cat@aic.net.au)

If your executable is for CLI usage only, then use PutStr_ instead, and add a Chr\$(10) to the end (for the carriage-return). This tip does not work for anything other than CLI usage, so window usage and the like will get you nowhere.

OLD: NPrint "Hello!"
NEW: PutStr_ "Hello!"+Chr\$(10)

=====

1.21 'P' TIPS

>>> TIPS FOR COMMANDS STARTING WITH "P"

POKE (Paul Bowlay, cat@aic.net.au)

Use MOVE instead and swap the order of parameters.

OLD: Poke \$address,#value
NEW: MOVE #value,\$address

PRINT (Paul Bowlay, cat@aic.net.au)

If your executable is for CLI usage only, then use PutStr_ instead. This tip does not work for anything other than CLI usage, so window usage and the like will get you nowhere.

OLD: Print "Hello!"
NEW: PutStr_ "Hello!"

=====

1.22 'R' TIPS

>>> TIPS FOR COMMANDS STARTING WITH "R"

REBOOT (Paul Bowlay, cat@aic.net.au)

Use ColdReboot_ instead.

OLD: Reboot
NEW: ColdReboot_

RENAME (Paul Bowlay, cat@aic.net.au)

If you're using variables to specify the old/new names, then use Rename_ instead (and note the &). This tip does not work with literal strings.

OLD: Rename old\$,new\$
NEW: Rename_ &old\$,&new\$

REPLACE\$ (Paul Bowlay, cat@aic.net.au)

Don't use Replace\$ and Instr together, because Replace\$ does its own check of the string without needing Instr. If the string isn't found when using Replace\$, then the string in question is left intact; but if it is found, then it gets replaced, thus doing what you wanted without using Instr!

OLD: If Instr(a\$,"old")<>0 Then Replace\$(a\$,"old","new")
NEW: Replace\$(a\$,"old","new")

RUN (Paul Bowlay, cat@aic.net.au)

Use Execute_ instead, but only if you're not using the optional stacksize parameter of the command. If you don't include the run >nil: part, then your program will halt until the DOS command ends.

OLD: Run filename\$,args\$

NEW: Execute_ "run >nil: "+filename\$+" "+args\$,0,0

=====

1.23 'S' TIPS

>>> TIPS FOR COMMANDS STARTING WITH "S"

SAVESCREEN (Paul Bowlay, cat@aic.net.au)

This one is a killer, and the one responsible for motivating me to write this guide in the first place. It adds a whopping 8192 bytes to your final executable size. That's right: this single command stacks on another 8K!

So what can we do? To be honest, I don't know. This is the only tip in this guide to which I don't have an optimized version for. I've tried just about everything, from ScreensBitMap and SaveBitMap (no luck) to grabbing the screen as a Shape and saving the shape (again, no luck).

The only thing I can suggest is to IncBin a tiny third-party screen grabber and call it from your code. However, there's no point in doing this if the external grabber's size is larger than 8K, because then SaveScreen would become the better option.

OLD: SaveScreen screen#,filename\$

NEW: Call ?savescreen

.savescreen:

IncBin "external_grabber.exe"

=====

1.24 'V' TIPS

>>> TIPS FOR COMMANDS STARTING WITH "V"

VPOS (Paul Bowlay, cat@aic.net.au)

Use VBeamPos_ instead.

OLD: pos=VPos
NEW: pos=VBeamPos_

1.25 'W' TIPS

>>> TIPS FOR COMMANDS STARTING WITH "W"

WAITEVENT (Paul Bowlay, cat@aic.net.au)

If you're waiting for a single IDCMP event with a window, then don't use the WaitEvent and related testing commands; use WaitFor instead.

OLD: Repeat : Until WaitEvent=\$200
NEW: WaitFor \$200

WBHEIGHT (Paul Bowlay, cat@aic.net.au)

WBHeight has a severe bug, in that the maximum value it returns is 512. Thus, Workbench screens higher than 512 pixels will give a false result. To fix this, use the ScreenHeight command instead (assuming you've already made Workbench the current screen).

OLD: height=WBHeight
NEW: height=ScreenHeight

WBSTARTUP (Paul Bowlay, cat@aic.net.au)

This should go without saying, but... If your program is for CLI usage only, then don't have WBStartup in your code. WBStartup is only needed if you want your program to be run from a Workbench icon.

WBTOSCREEN (Paul Bowlay, cat@aic.net.au)

If you want to use Workbench as your screen, don't assign it to a number and then bring that screen to the front. Instead, bring Workbench to the front first (with WBenchToFront_) and then FindScreen it.

OLD: WbToScreen # : ShowScreen #
NEW: WBenchToFront_ : FindScreen #

WBWIDTH (Paul Bowlay, cat@aic.net.au)

WBWidth has a severe bug, in that the maximum value it returns is 640. Thus, Workbench screens wider than 640 pixels will give a false result. To fix this, use the ScreenWidth command instead (assuming you've already made Workbench the current screen).

OLD: width=WBWidth
NEW: width=ScreenWidth

WINDOWOUTPUT (Paul Bowlay, cat@aic.net.au)

If you're using WindowOutput after Use Window, then you're wasting bytes because Use Window automatically does a WindowOutput by itself.

OLD: Use Window # : WindowOutput #
NEW: Use Window #

=====
