

4. MORE PROGRAMMING UTILITIES

4.1 INTRODUCTION

This section describes the DUMP and SIZE68 programming utilities. DUMP displays the contents of files in hexadecimal and ASCII notation. SIZE68 displays the total size of a memory image command file and the size of each of its program segments.

4.2 DUMP UTILITY

The DUMP utility (DUMP) displays the contents of a GEM DOS file in both hexadecimal and ASCII notation. You can use DUMP to display any GEM DOS file regardless of the format of its contents (binary data, ASCII text, an executable file).

4.2.1 Invoking DUMP

Invoke DUMP by entering a command with the following input components in the following format:

```
DUMP [ -sxxxx ] filename1 [ >filename2 ]
```

Table 4-1 lists the DUMP command line components and their meanings.

Table 4-1. DUMP Command Line Components

Component	Meaning
-----------	---------

-sxxxx	
--------	--

	xxxx is an optional offset (in hexadecimal) into the file. If specified, DUMP starts dumping the contents of the file from the byte-offset xxxx and continues until it displays the contents of the entire file. By default, DUMP starts dumping the contents of the file from the beginning of the file until it dumps the contents of the entire file.
--	--

filename1	
-----------	--

	Name of the file you want to dump.
--	------------------------------------

>filename2	
------------	--

	The greater than sign (>) followed by a filename or logical device redirects the output of DUMP. You can specify any valid GEM DOS specification, or one of the logical device names, CON: (console) or LST: (list device). If you do not specify this optional parameter, DUMP sends its output to the console.
--	--

4.2.2 DUMP Output

DUMP sends its output to the console (or to a file or device, if specified), 8 words per line, in the following format:

```
rrrr oo (fffff): hhhh hhhh ... hhhh *aaaaaaaaaaaaaaaa*
```

The components of a DUMP command line are as follows:

Component	Meaning
-----------	---------

rrrr	Record number (GEM DOS records are 128 bytes) of the current line of the display.
------	---

oo	Offset (in hex bytes) from the beginning of the GEM DOS record.
----	---

fffff	Offset (in hex bytes) from the beginning of the file.
-------	---

hhhh	Contents of the file displayed in hexadecimal
------	---

aaaaaaaa	Contents of the file displayed as ASCII characters. If any character is not representable in ASCII, it is displayed as a period (.).
----------	--

4.2.3 DUMP Examples

In the following example, DUMP is invoked to display the contents of a command file that contains data in both binary and ASCII form.

```
{a}dump dump.68k
```

```
00 (000000): 601a 0000 .... 0000 *'....4.....^..*
10 (000010): 0000 0000 .... 4320 *.....'4C *
20 (000020): 5275 6e74 .... 6768 *RuntimeCopyright*
30 (000030): 7420 3139 .... 7461 *t 1982 by Digita*
40 (000040): 6c20 5265 .... 2c30 *l Research V01.0*
50 (000050): 3320 206f .... 001c *3 o.."h..&Ish..*
```

.... (and so on) ...

4.3. DUMP ERROR MESSAGES

DUMP returns fatal, diagnostic error messages at the console. Table 4-2 lists the DUMP error messages in alphabetical order with explanations and suggested user responses.

Table 4-2. DUMP Error Messages

Message	Meaning
---------	---------

Unable to open filename	
-------------------------	--

Either the path name for the input file indicated by the variable filename is incorrect, or the filename is misspelled. Check the filename and path name before you reenter the DUMP command line.

Usage: dump [-shhhhhh] file

The command line syntax is incorrect. The correct syntax is given in the error message. Specify the DUMP command and the filename. If you want to display the contents of the file from a specific address in the file, specify the -S option followed by the address. Refer to Section 4.2 for discussion of the DUMP command line and options.

4.4 SIZE68 UTILITY

The SIZE68 utility (SIZE68) indicates if the program segments within one or more command files are contiguous or non-contiguous, displays the size of each program segment and the symbol table, and reports if the command files are relocatable or non-relocatable. SIZE68 displays both decimal and hexadecimal values for the sizes of the program segments and the symbol table. GEM DOS command files usually have a filetype of .PRG or .REL. The total size of a command file's segments returned by SIZE68 and the size of a command file returned by the DIR command are not equal. The file size returned by SIZE68 includes the size of the text, data, and bss program segments and the size of the symbol table but does not include the size of the header and relocation bits. For more details on the DIR command, refer to the GEM DOS User's Guide.

4.4.1 Invoking SIZE68

Invoke SIZE68 by entering a command line with the following format:

```
SIZE68 filename [filename2 filename3, ... ] [ >outfile ]
```

The SIZE68 command line components have the following meaning:

Component	Meaning
-----------	---------

filename

File specification of a file whose size you want to determine.

filename2 filename3

One or more additional file specifications of files whose sizes you want to determine. SIZE68 can process multiple files, provided the command line does not exceed 128 bytes. Note that SIZE68 also accepts wildcard file specifications.

>outfile

Specifies the file specification to which SIZE68 sends its output. If you do not specify an output file specification, SIZE68 sends the output to the console. For the output file specification, you can specify a valid GEM DOS filename, or one of the logical device names, CON:(console) or LST: (list device).

4.4.2 SIZE68 Examples and Output

This section contains two examples that show SIZE68 command lines and output.

1. The following SIZE68 command line example returns information about the program segments in one command file.

```
{a}SIZE68 SIZE68.PRG  
SIZE68.PRG:
```

Contiguous		
.text length	=	9312 2460
.data length	=	1178 49A
.bss length	=	9140 2384
Symbol table length	=	0 0
Start of .text	=	0 0
File is relocatable.		

SIZE68.PRG contains a 9312-byte (decimal) text segment, a 1179-byte (decimal) data segment, and a 9140-byte (decimal) bss; the segments are contiguous and SIZE68 is relocatable. Hexadecimal notations for the decimal values are displayed in the last column of SIZE68 output.

2. The following SIZE68 command line uses a wildcard file specification to return information on an object file, a command file, and a text file.

{a}SIZE68 FI*.*

FIND.O:

Contiguous		
.text length	=	1072 430
.data length	=	188 BC
.bss length	=	0 0
Symbol table length	=	1708 6AC
Start of .text	=	0 0
File is relocatable.		

FIND.PRg:

Contiguous		
.text length	=	9888 26A0
.data length	=	1060 424
.bss length	=	9396 2484
Symbol table length	=	0 0
Start of .text	=	0 0
File is relocatable.		

FILE.MSG:

Not a program file.

Notice that when you specify a file that is not a command file (FILE.MSG, an ASCII file, for example), SIZE68 displays:

Not a program file.

When you specify an absolute program file whose segments are non-contiguous in a SIZE68 command line, SIZE68 includes the following messages in its output:

Non-contiguous
No relocation information in file.

4.5. SIZE68 ERROR MESSAGES

SIZE68 returns fatal, diagnostic error messages at the console. Table 4-3 lists the SIZE68 error messages in alphabetical order with explanations and suggested user responses.

Table 4-3. SIZE68 Error Messages

Message	Meaning
---------	---------

File format error: filename	
-----------------------------	--

The file indicated by the variable filename is neither an object file nor a command file. SIZE68 requires either an object file, output by the assembler or the compiler, or a command file, output by the linker. Ensure that the file specified is one of these and reenter the SIZE68 command line.

read error on filename	
------------------------	--

The file indicated by the variable filename is truncated. Rebuild the file. Reassemble or recompile, then relink the source file before you reenter the SIZE68 command line.

unable to open filename	
-------------------------	--

Either the path name is incorrect, or the file indicated by the variable filename does not exist. Check the path name and filename. Reenter the SIZE68 command line.