

NAME

`tcmp` — text comparison for crash dump

SYNOPSIS

`tcmp [-Iusvtabcdho] crashfile [offset][.][m] [file]`

DESCRIPTION

When a unix system crashes with no console message, it is sometimes fruitful to determine whether any parts of the operating system have been destroyed. *Tcmp* is a program for comparing the text (instructions) of a program or the operating system with the text that appears in a crash dump. The differences can be printed in summary form or the contents of the modified and original locations can be printed. There are a number of options which allow the differences to be printed in ascii, octal, etc. and options which allow the address of the differences to be printed in absolute, virtual or symbolic terms. If the values of the differences are not explicitly requested by using one of the format options, only a summary of the differences is printed.

There are several options which select whether a user program or the operating system is to be compared. The default is to compare the text in the file `/unix` with the *crashfile* and to assume that the system is in an I and D space format. The options are,

- I** indicates that an I space only operating system (all 11/40's) is to be compared.
- s** This option allows the specification of a file other than `/unix` for the comparison. No *offset* argument needed when comparing the operating system text with the *crashfile*.
- u** indicates that a user program is to be compared. The address (*offset*) of the user program must be specified and the file name of the user program must be given (see below).

The following options select the type of address to be printed. The default is to print the absolute address. The address options are,

- v** indicates that the virtual address of the start address is to be printed.
- t** indicates that a symbolic address is to be constructed from the namelist for the start address.

If only the above options are used, a summary of the differences is printed. The summary consists of the absolute address of the first difference followed by a byte count of the number of locations starting at that address which differ. If the **v** and/or **t** options are used, then the start address is repeated and interpreted in virtual and/or symbolic terms. In all cases, when a summary is requested, the absolute memory address and the byte count are printed.

If any of the following options are used, the contents of the modified locations are printed. The differences are printed as two line pairs. The first line prints what the location should contain and the second prints the contents of the location from the crashfile. (An asterisk is printed at the beginning of each line containing modified data.) The meaning of the format argument options are:

- a** interprets words as PDP-11 instructions and dis-assembles the operation code. Unknown operation codes print as ???.
- b** interprets bytes in octal.
- c** interprets bytes in ascii. Unknown ascii characters are printed as \?.
- d** interprets words in decimal.
- h** interprets words in hex.
- o** interprets words in octal.

The *crashfile* argument specifies a file which contains a system crash dump.

The *offset* argument is used when comparing a user program with the crash file and specifies the offset in the crash file where the text is to be found. This offset can be found by using the **-m** option of the *dead(1)* command which produces a sorted memory map for the crash file. For nonreentrant programs, the offset is simply the address given by the *dead(1)* command. For reentrant programs, the **-m** option of the *dead(1)* command indicates where the text is located by appending a **T** as a subscript to the memory address.

The *offset* is normally interpreted as octal bytes. If **'.'** is appended, the offset is interpreted in decimal. If an **m** is appended, the offset is interpreted in memory blocks (64 bytes). The address printed by the *dead* command is in memory blocks.

The *file* argument specifies where the object for the operating system resides when a file other than **"/unix"** contains the object (**s** option) or the pathname of a file containing the object for a user program when a user program's text is being compared (**u** option). *Tcmp* complains if the file specified does not have a namelist and the **t** option has been selected.

As part of every invocation, *tcmp* gives the absolute and virtual address range for the program being compared.

The command

```
tcmp /dev/mem
```

should produce no differences while the system is running.

SEE ALSO

od(1), dead(1M)

BUGS

The **'-t'** option is slow.

Crashfiles produced on I space only systems have locations 04-034 modified by the system dump routine.