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FOCAL MODIFIED FOR RL MONITOR

DECUS Program Library Write-up

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DEC's FOCAL 1969 (DEC-Ø8-AJAE) has been slightly modified and added to the RL Monitor system so that it can accept input from RL source files.

To run FOCAL from a tape upon which it has been added as a system, you type the command

```
RUN FOCAL=parm, file1, file2, ..., filen
```

where parm is an octal parameter to be passed to FOCAL (and explained below) and file₁ through file_n are the names of the source files containing the characters to be passed as input to FOCAL. ⁿn must be ≤ 15 . If no file names are specified, FOCAL runs as usual, taking all its input from the teletype.

parm is a parameter used by FOCAL; when expressed as a 12-bit binary number, bits Ø, 1Ø and 11 are significant whereas bits 1 through 9 are not used.

If bit Ø is off (a binary Ø), FOCAL will type (on the teletype) each line that is inputted to it from the tape as it processes it. If bit Ø is on (a binary 1), FOCAL will not echo these inputted lines. In this mode, however, anything else typed by FOCAL (such as error messages or output from a type command) will appear correctly on the teletype.

If bits 1Ø and 11 are both on or both off, FOCAL will retain all the extended functions (SIN, COS, ATN, EXP, LOG). If only bit 11 is on, FOCAL will retain only the functions SIN and COS but will delete the others (ATN, EXP, LOG). If only bit 1Ø is on, FOCAL will delete all the extended functions.

This parameter is in lieu of the initial dialogue. If no parameter is explicitly specified, a zero is assumed.

The RL source files which are passed to FOCAL should contain exactly the information which would normally be typed into the teletype. This includes FOCAL line numbers on statements to be used as your FOCAL program. Thus, while you are using the RL editor, your listings will contain both RL line numbers and possibly FOCAL line numbers. The RL line numbers will not be passed to FOCAL but determine the order in which the text is passed. The FOCAL line numbers need not appear in order; they will be ordered by FOCAL itself. If the RL source contains any direct FOCAL commands (i.e., statements without FOCAL line numbers), these will be executed by FOCAL immediately as they are processed. When all the source files have been exhausted, if FOCAL requests more input, it will take it from the teletype. Until this point has been reached, however, FOCAL will be running with interrupts off so the user is cautioned that it might be risky to include a GO command in a tape source file. Also, any extended functions, if requested, will not be loaded until this time. If a GO command should occur, and/or any ASK commands are encountered, input will be from the tape source file until this supply is exhausted at which point all further input will be from the teletype.

To ensure that interrupts are turned on and that any requested extended functions are loaded, your tape source file must either not contain a direct GO command, or if it does, it must then execute further FOCAL commands which request input until all the input from the tape is exhausted. Until this condition occurs (and FOCAL is taking input from the teletype), if FOCAL should start executing, it cannot be interrupted from the keyboard reader; nor can any of the extended functions be used even if you requested they be loaded. Any attempt to use them will result in the error message ?31.<7 (unavailable function).

Once all file transfer operations have been completed, and more input is requested, FOCAL will behave normally and any functions requested will be available.

If some or all of the extended functions are requested to be deleted, the extra space will not be available until all tape data files have been read in. Thus for large programs, some of it may have to be typed in manually after its beginning has been read in from the tape in order to make it fit.

After FOCAL begins accepting input from the teletype, any source changes you make will still be available to FOCAL; however these will not be made on the tape. Permanent source changes should be made to the RL files via the RL editor. FOCAL cannot write on the DECTape.

Your FOCAL program may be made to bootstrap back to the RL Monitor by executing the LINK command.

In this version of FOCAL, the FDIS function does not use a type VC8 CRT display to do any display. Instead, it uses a type AAØ1A digital to analog converter to do its point displays. Channel 1 of the converter should be hooked to the x-axis control of an oscilloscope and channel 2 should be hooked to the y-axis control.

Also, this version of FOCAL does not print an equals sign (=) when printing.

When in the no-echo mode, FOCAL may print out some asterisks; however there may not be an asterisk for each line inputted. After all tape files have been exhausted, FOCAL automatically goes back into echo mode.

NOTE: Some earlier versions of the RL Monitor used the name FO to denote the program FORMAT which formats DECTapes. [Since only the first two letters of a system name are significant, this could be confused with FOCAL.] The program FORMAT is now called 4MAT. If your RUN FOCAL command should produce the response, 'DTA?', you know that you do not have FOCAL on your tape. You should rebootstrap in this case.

FOCAL need not have write enabled on the DECTape and it is recommended that you have the write disabled while running FOCAL.

Dedicated to
Rick Merrill

Note: The P?S does not encourage the use of FOCAL, however it will maintain any changes made to it. In the near future, the ability to save FOCAL programs as RL files will probably be added.