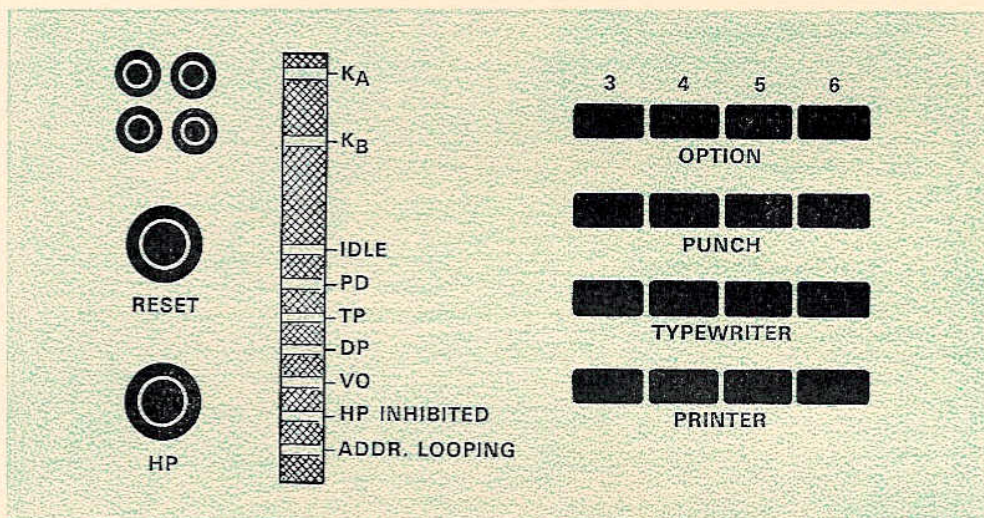


SPECIFICATION

GIER
ELECTRONICS

SOFTWARE



HELP ADMINISTRATIVE SYSTEM

HELP is an administrative system designed for the GIER Computer to promote the testing and running of programs. Besides a central administration program, monitored by typewriter input, and a number of subroutines, the System has an interrupt facility: by pressing the so-called HP button the program in progress is interrupted and the contents of the immediate access store and appropriate registers are transferred to secondary storage.

While the SLIP Input Program, the largest and most important of the subroutines, is described in a separate Specification, the chief aspects of the central administration program and some of the utility subroutines, such as those used for normal output, storage dumps, initializing, comparison of storage sections, and tracing programs during a run, are outlined here.



HP Button and HELP Administrator

Since the immediate access store is rather small, the System is designed to occupy only 10 cells of the former during a program run; on the other hand, it is obvious that during an interrupt the System must be able to use a much larger part of the immediate access store and yet restore its contents before the run is continued.

At present this is accomplished by reserving the last 26 tracks of the drum store for an "image" of the immediate access store during the interrupt. Since the System proper occupies the first 58 tracks of the drum, the total storage available to the programmer consists of the 1024 cells of the immediate access store and about three-fourths of the 320 drum tracks.

Since writing is inhibited on the first 32 of the 58 reserved tracks, it is impossible to destroy the basic part of the HELP System during a normal run.

One may call for an interrupt at any stage of a run. Pressing the HP Button causes the contents of the registers and the immediate access store to be stored in the image on the last 26 tracks of the drum and control to be transferred to the HELP Administrator, which waits for typewriter input describing what action is required. One can now activate any of the HELP subroutines or make corrections in the stored program.

When the desired operation has been completed, one must type an end signal, thereby causing the immediate access store and the registers to be restored from the image and control to be transferred to the point in the program where the interrupt was called for.

HELP Utility Subroutines

The subroutines described here may be divided into three groups according to use before, during, or after a run.

Before a run one may use a subroutine to initialize the entire computer. After input of the program, this can be copied to an unused part of the secondary store for later comparisons or for restoring the initial situation, should something go wrong during the run.

During a run one may use tracer subroutines to follow the program's activities, for example to make reports when jumps are performed or when the contents of selected registers or cells change value. One may also cause storage dumps to be made every time a selected instruction is executed. In addition, HELP includes subroutines for the standard output of texts and numbers.

After a run one may use subroutines for dumps of any part of the store, for comparison of the program before and after the run, and for output of the corrected program in condensed form suitable for fast input.

If additional facilities are desired, it is easy to extend the HELP System to include new subroutines, either in addition to or instead of some of the standard routines.

If maximum available storage is required on the other hand, the HELP System can be confined by sacrificing some of the facilities to 26 + 39 drum tracks (needed to keep the interrupt facility, the Administrator, and the SLIP input routine intact) instead of 26 + 58 tracks.

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