

XXXV. COMPUTER RESEARCH*

Academic and Research Staff

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RESEARCH OBJECTIVES

The purpose of this group, which is operated jointly by the Research Laboratory of Electronics, the Electronic Systems Laboratory, and the Department of Electrical Engineering, M. I. T. , is fourfold:

1. To provide a flexible and readily accessible computation facility oriented toward the Laboratory's research goals.
2. To provide an educational facility where students may learn the principles of automatic computation, and undergraduate and graduate thesis projects may be carried out.
3. To develop computation techniques, especially methods that make program design and construction more convenient, and allow easier communication with the machine.
4. To investigate new principles for organizing multiprogrammed computer systems.

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STATUS OF RESEARCH

The Computer Research Group operates two general-purpose machines. The TX-0 computer was built by Lincoln Laboratory, M. I. T. , as an experimental machine, and was turned over to the Department of Electrical Engineering in 1958. The Digital Equipment Corporation donated one of their PDP-1 machines in 1961. The PDP-1 has become the central processor of a time-shared multiuser system implemented by the group.

Plans for a redesigned operating system for the PDP-1 installation were reported in Quarterly Progress Report No. 80 (page 255). The new design required substantial changes in the central processor of the PDP-1 computer. These changes have been completed and the new computer organization is called the PDP-1-X. The complete operating system as envisioned is being realized by increments. The current version already uses most of the features of the PDP-1-X to advantage. In particular, the parallel programming primitives fork, join, and quit have been implemented and used in parts of the software. Checkout of the microtape controller and three transports has been completed and the programming of the file system is under way.

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