

SEVA PROGRAM FOR
IBM 7030 DATA PROCESSING SYSTEMS

11 July 1961

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ABSTRACT

The System Evaluation (SEVA) program is designed specifically for the purpose of testing the IBM 7030 Data Processing System as a total system, not as a group of subsystems. Experience has shown that by far the most difficult type of malfunction to detect and/or correct is that which occurs while a computer system is being used in its entirety, i.e., all areas operating simultaneously. SEVA was written by IBM to test the 7030 system in just this manner.

The effectiveness of similar SEVA programs has been confirmed in several comprehensive tests at various customer locations, each having different requirements. These programs have proven their validity and have been very favorably accepted.

Six basic goals have been achieved by SEVA:

1. The program is capable of running on any system regardless of I/O or memory configuration.
2. The maximum amount of I/O equipment is kept operating at all times.
3. The system is utilized in a stringent manner, similar to utilization by a customer.

4. Depending on operator selection, varying amounts of information relevant to a specific malfunction are given whenever such a malfunction occurs.
5. The program is open-ended so that additional routines may be added with virtually no program reorganization or modification necessary.
6. The program permits the operator to participate in the actual running as much or as little as he desires, thus adding an element of interest for the operator.

These goals are achieved by the following SEVA routines:

1. SYSTEM DEFINER. This routine issues various combinations of I/O instructions to all I/O channels and, depending on the interrupts generated, ascertains what type of device, if any, is associated with each channel. Channel addresses for all I/O instructions are generated from the results obtained by this routine.
2. I/O ROUTINES. Eight tape routines and one disc routine keep the maximum permissible amount of I/O equipment operative at all times. All the various modes of operation are exercised by these routines. A loop routine permits utilization of the console(s), reader, and punch.
3. CPU and MEMORY ROUTINES. The CPU (Central Processor Unit) routines perform mathematical computations by two essentially different techniques with each technique done in both floating-point and variable-field-length arithmetic, and the results checked for tolerance limitations.
4. INTERRUPT CONTROL ROUTINE. This routine handles all interrupts, both error and operational. Twelve levels of nesting are permitted for end-of-operation (EOP) interrupts and eleven

levels for channel signals (CS). Every five minutes, as determined by time signal (TS) interrupts, various counters and computational results are printed to indicate the program's progress. All other interrupts from 0 through 21 are treated as errors.

The SEVA program is designed to run for 30 minutes, after which time a thorough exercising of the total system shall have been accomplished. However, a sense switch option permits indefinite running of the program.