November 1967 Brief 67-10411

NASA TECH BRIEF

Computer Program Generates Averaged Value Data Tapes

The problem:

To generate a magnetic output tape containing time and averaged data values, in floating point, of a specified number of major frames over a specified time interval.

The solution:

A decommutation system is used to acquire the raw data, which is then reformatted and averaged for a specified number of major frames over a specified time interval. The average values obtained are converted to some engineering unit and placed on magnetic tape along with its corresponding time. These average values are used to obtain the net and/or absolute values of parameters.

How it's done:

The input to the program consists of cards and two magnetic tapes. The cards contain control information and the list of measurements desired by the user. One of the magnetic input tapes contains the degree, coefficients, and decommutation information relative to each of the measurements in the list. The other magnetic input tape contains the raw data from which the samples of the parameters are to be taken. Utilizing the decommutation information, the data for each measurement are obtained from the raw data input tape, and averaged for a specified number of frames as a time over some specified time interval.

After the initialization phase, the program reads in all card input. Using this input, the program reformats each data value of a record and then converts it to floating point format. Then it converts the floating words to IBM 7094 floating point format. This is repeated for each successive record of a file. The options of obtaining averaged, nonaveraged, net, or absolute values are exercised by using the subroutines of the program. In either case the raw data values are then converted to engineering units utilizing the degree coefficients attendant to each measurement. The program is limited to a polynomial of the sixth degree. The processed data are then placed on magnetic tape.

Notes:

1. This program was written in Fortran IV for use on the SDS 920 computer.
2. The program is being used to process Saturn II Test Data. The principle and theory of unpacking and reformatting data may be used or applied in situations where data are packed and put in a format of some predetermined peculiarity. The technique of accessing or acquiring certain pieces of data from the entire mass of data could be useful in any situation where a selected sample is wanted from the population.
3. Inquiries concerning this program may be directed to:

   COSMIC
   Computer Center
   The University of Georgia
   Athens, Georgia 30601
   Reference: B67-10411

Patent status:

No patent action is contemplated by NASA.

Source: Frank L. Watkins
of North American Aviation, Inc.
under contract to
Marshall Space Flight Center
(MFS-12728)

Category 06