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The reconstruction of the DYSMAP compiler undertaken in the last year has covered three main areas:

- 1) enhancements (dimensional analyser, loop analyser, graph-plotting routines)
- 2) diagnostics
- 3) documentation

#### Enhancements

Automatic checking of the dimensional consistency of the model equations, is a major help especially in the early stages of a System Dynamics study and can prevent lengthy searches for the causes of inadequate model behaviour. The dimensional analyser is described in greater detail in the last issue of Dynamics<sup>a</sup> (1).

Any System Dynamics work is based on studying the feedback structure of the systems and the importance of detection of the feedback loops in the model is obvious. The loop analyser prints out the list of all the loops present in the model; it is often a surprise - especially with more complicated models - how many loops would otherwise escape the author's attention.

The CALCOMP graphical outputs look better than the ordinary graphs produced by the line printer and are easier to read, which is even more important. They are particularly useful in the final stage of a System Dynamics study when the results are being prepared for publishing. These routines can be also applied for on-line modelling, using the TEKTRONIX video-display unit.

Nineteen continuation cards are permitted now in accordance with the FORTRAN compiler standards.

### Diagnostics

Unfortunately, the least frequent errors in the models are likely to be the most difficult to discover and this is why improving the diagnostic facilities of the DYSMAP compiler seems a virtually permanent task.

Among the 'new' errors, detected by the present compiler, are e.g. the incorrect ending of a table (T equation) with a 1, and missing 9DPLEND, RUN and \* cards.

The classification of the errors (warning - card fatal - model fatal) was altered in a few cases.

### Documentation

The updated edition of the DYSMAP compiler corresponds to the recently published Users' Manual (2). The compiler is delivered in its 'master' version, i.e. as a package of 37 FORTRAN routines and working data files, as created for the ICL 1904S<sup>\*</sup>/George 3 system at the University of Bradford. To aid the system programmers setting up the executable package on other systems, a basic documentation (3) of the master package is provided, together with pattern outputs.

References:

- (1) Ballico-Lay, B.                    A Dimensional Analyser for System Dynamics Models; Dynamica, Vol. 3, Part 1, Autumn 1976
- (2) Ratnatunga, A.K. & Stewart, C.J.                    DYSMAP Users' Manual; System Dynamics Research Group, University of Bradford, 1977
- (3) Zachoval, J.                        Setting up the DYSMAP Compiler (System Programmers' Guide); System Dynamics Research Group, University of Bradford, May 1977.