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A COMPARISON OF THE FAMULUS AND GOS PACKAGES FOR HANDLING MUSEUM DATA

INTRODUCTION

While awaiting the completion of the GOS package, Manchester Museum has been using the FAMULUS package to produce computer-aided catalogues of certain collections. As the results from this FAMULUS work appear satisfactory it has been asked 'why consider changing to GOS ?' To answer this query the present paper has been written; it is aimed at non-computer trained Museologists and so the jargon has been kept to a minimum and certain finer technical points have had to be glossed over.

THE PACKAGES

The two packages are large but of roughly equal size; although either can be run on a dedicated mini-computer, they require a fairly big machine if they are to handle large files of data in a reasonable time.

FAMULUS is written in standard FORTRAN, and FORTRAN compilers are available for most machines; FAMULUS is already implemented on a wide range of computers and is comparatively easy to transfer to most machines. GOS is written in BCPL, a powerful but comparatively little-used language, originally designed for writing compilers for computers. Although theoretically BCPL is easy to transfer between different computers, few manufacturers yet seem to offer BCPL compilers for their machines, which means the implementation of GOS can involve quite a lot of preliminary work in first implementing a BCPL compiler. However, recently a Cambridge firm have taken on development and support of BCPL and will write a compiler for it on any machine for about £2, 500.

DATA INPUT

Both packages require a record to be broken down into its discrete data 'elements'; FAMULUS is limited to 60 elements and to a maximum of 4000 characters per record, although longer records may be accommodated by using duplicate entries. Theoretically the number of GOS elements is unlimited as is the total length of the record, but in practice speed of execution will introduce a space limitation. The breakdown of the data into elements for both packages would normally follow the MDA data standards for the subject of the record. Both require each 'element' to be labelled uniquely within a record. Data prepared for input to FAMULUS can generally be made GOS compatible; the reverse is also possible but may prove more complicated.

FORMATS

Each package requires a 'formatting statement' to enable it to 'understand' the data input. For FAMULUS this consists merely of a list of the data element labels or 'fields', given in the order of their occurrence within a record; all the fields are of one type and are of equal status.

For GOS the field names are again declared, but fields ('elements') may vary in type depending on the sort of data to be placed in them (e.g. Integer); also one may link fields into a hierarchical structure of several levels.

Thus in FAMULUS the data field DATE '16 MAR 1978' would be treated as one unit for manipulation (although 'MAR' or '1978' can be searched for), but in GOS the 'day', 'month' and 'year' may be treated as sub-elements to the main element 'DATE', if desired.

With both packages fields, although 'declared', may be null i.e., neither the label nor any data needs to be entered for a record, if none exists.

HANDLING DATA ITEMS (or 'ELEMENTS' or 'FIELDS')

If a FAMULUS field contains more than one item of data it needs considerable juggling with extra "delimiters" to enable individual items to be operated upon independently (eg: to produce an index of donors from an ACQUISITION field when that field may also contain date of acquisition and the names of people from whom collections have been purchased). It can be done but it is complicated and time consuming.

With GOS the problem does not arise as all the items within the main field ACQUISITION can be themselves labelled as sub-elements and thus independently accessed and manipulated.

OPERATION: 'DRIVING' THE PACKAGES

A major difference between the packages lies in the method of operation. FAMULUS consists of 12 sub-programs which cover all the main operations required on a data-file, such as sorting, searching, editing, printing-out, etc. Each sub-program has a small range of options, e.g. for SORT - one can select the field or fields upon the contents of which the file is to be ordered, for GALLEY (to print-out data) one can select the width of the output, i.e. the number of characters to be printed across the page, etc. These options are chosen by placing 'control cards' in the instructions to the computer, e.g. '/FIELDS/ (GLAS, GENR)' or '/WIDTH/(68)'; only rarely are more than 6 such control cards required to drive a FAMULUS sub-program. Thus FAMULUS is very easy to use, but this simplicity carries the penalty of a strictly limited range of, for example, output formats. The FAMULUS sub-programs may be run alone or they may be linked together within one 'job', e.g. to produce a catalogue plus three different indices in one go.

GOS, on the other hand, has far more sub-programs or 'processors', ca. 60 of them, and these can be linked in a great variety of ways, including the ability to act recursively (i.e. a processor may call itself again within the process job it is doing). Again, the processors offer a large range of options, but those required for a given job have to be set by means of "control statements", and these can be quite complex, it is expected that most of the 60 or so processors available will be used but rarely. Thus GOS is very much more complicated to use than FAMUS, but is considerably more flexible; the user has a virtually unlimited range of output formats available, for example.

Of course, if a limited, preferred, range of option is accepted then the control statements have to be written only once for each set of options, whereafter GOS can be 'driven' in a similar manner to FAMULUS. This is the expected way the GOS package will be used in service, although the operator will retain the advantage of being able readily to produce new option choices as the need arises. MDA expect, in time, to provide GOS with a full library of control statements or specifications; these would allow, inter alia, some hundred or so index specifications.

To a Museum Curator, probably the most important difference between the packages is the ability of GOS to 'layout' its output in almost any format that may be designed. To do this with FAMULUS would require writing a set of FORTRAN programs to 'post-process' the output before printing.

CONCLUSION

To sum-up, FAMULUS permits a strictly limited range of options but is simple to use, whereas GOS requires considerable expertise to run, but permits choice from a wide range of options. FAMULUS was originally designed for handling bibliographic information, while GOS is specifically designed to handling the often complex data attaching to museum objects. In basic terms the intending user has the choice between an airbus and Concorde - remembering an airbus at the moment can land at many more airfields!

NOTE 1

The current FAMULUS package suffers one or two minor constraints in the EDIT and INDEX sub-programs which have been ignored for the purposes of this comparison, as it is intended to eradicate them in the near future.

FAMULUS is currently upper-case only at Manchester and because of the complications involved in a upper and lower case implementation, Manchester GOS initially also would be in upper case only.

For both packages, however, it is relatively simple to convert some outputs from the package so they can be printed in upper and lower case, ie., a "cosmetic" job.

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THE BOTANICAL COLLECTIONS AT DERBY MUSEUM

The Derby Town and County Museum was founded in 1836. It was a private Society originally but in 1870 the collections were transferred to the Borough of Derby and were finally housed in the present building in the Wardwick in 1876.

Alexander Croall was Librarian and Curator from 1864 until 1873, and was a botanist of some repute, but sadly he does not appear to have contributed to the botanical collections, and we have no records of botanical specimens acquired by the Museum until 1878.

In 1889 the Rev. W. H. Painter published "A Contribution to the Flora of Derbyshire" followed by 'A Supplement to a Contribution to the Flora of Derbyshire including a list of mosses found in the county", 1902. His collections given to the Museum support many of the records in these publications, see below.

"The Flora of Derbyshire", by William Richardson Linton was published in 1903, and much of his herbarium is now in the collections of the Merseyside County Museums in Liverpool. There are only a few plants collected by him in the Gibbs Herbarium at Derby.

In 1949 a committee of local botanists was formed to work on a revision of Linton's Flora. A. L. Thorpe, Curator of Derby Museum from 1942-1971, was one of the members and in 1968, "The Flora of Derbyshire", ed. A. R. Clapham was published. Subsequent recording stimulated by this publication necessitated "a Supplement to the Flora of Derbyshire", in 1974. Many recent specimens in the Herbarium support records for these publications.