October 1972

B72-10607

NASA TECH BRIEF

Langley Research Center

Automatic Computer Subprogram Selection From Application-Program Libraries-ALTLIB

The problem:

Modular programming techniques are currently in widespread use in the development of scientific and engineering computer programs at the NASA Langley Research Center. These techniques involve the development of frequently used algorithms into modular (subprogram) form and the collection of application modules supporting a particular area into an application-oriented library. This library can then be employed repeatedly by programmers working in the same area of application to simplify new-program development.

A major problem, however, for people maintaining their own application-oriented library is the complexity and volume of control-card programming that must be performed to achieve subprogram selection.

The solution:

A general-purpose program that enables access and use of an alternate library file with minimum programming effort by the user was developed.

How it's done:

The program is used, prior to loading, to select and combine required subprograms from an alternate library file with the user's object file. It employs the user's program field length and is called into operation by a control card. The program structure that the user program can utilize includes overlay or segmentation.

ALTLIB is a general-purpose program that automates the subprogram selection process. ALTLIB analyzes the user's program to determine all external requirements; ALTLIB then proceeds to select from the alternate library file all subprograms that a user's program requires. The selected subprograms and the user's object file are then merged onto a file designated by the user for subsequent loading and execution.

Notes:

1. This program was developed for the CDC-6400 computer, Scope 3.2, but should be usable on any 6000 series computer. The program is programmed in FORTRAN IV (53%) and COMPAS (47%).
2. Inquiries concerning this program should be directed to:

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