introducing a new language for automatic programming

UNIVAC® FLOW-MATIC

by Remington Rand Univac
DIVISION OF SPERRY RAND CORPORATION
UNIVAC FLOW-MATIC is the most far-reaching development ever offered for automatic computer programming. It provides, for the first time, a means whereby the flow chart of the systems expert can be translated automatically, at electronic speed, into the language of the UNIVAC II Data-Automation System.

To program a new application, the user merely describes his systems flow chart in the English-language instructions of FLOW-MATIC. These act as a signalling index to the computer routines of the FLOW-MATIC library. When read by the UNIVAC system, the instructions cause the computer to generate for itself the various subroutines required to process the problem. It then assembles these subroutines into a finished program and records the program on magnetic tape.
A Typical FLOW-MATIC User, After Field Tests, Summarizes These Outstanding Advantages:

"The chief advantage of such a system over previous approaches to the problem is that the use of English words describing the processes and the items concerned permits various levels of management and people most familiar with the business processes to transmit their ideas from system flow charts directly into the running programs.

"FLOW-MATIC will be instrumental in reducing program preparation time. This is accomplished by the fact that the task of writing C-10 coding can be replaced by writing English pseudo-code. Further, the method of writing pseudo-code can be easily taught to clerical workers.

"Debugging time on the computer will be appreciably reduced."

Donald G. McBrine
UNIQUE SAVINGS
of the
UNIVAC
FLOW-MATIC
SYSTEM

1
Virtually Eliminates Your Coding Load
Your skilled programmers are freed from clerical drudgery
to do more creative work. FLOW-MATIC shifts emphasis of
the programming effort from detailed coding to problem
definition and systems analysis. Slashes drastically the time
required to program new or altered UNIVAC applications.

4
Increases Program Efficiency and
Accuracy
FLOW-MATIC uses built-in standard
conventions, based on the extensive
experience of UNIVAC users and the
very best coding techniques. Because
these are introduced automatically into
the program, greater coding efficiency
is achieved. And, since the components
of the program are correct, since they
are compiled by FLOW-MATIC and the
UNIVAC system—a checked routine for
the most reliable computer known—
the checking out of the program design
is both shortened and simplified.

7
Increases the User's Skill in Systems Analysis
By its very nature, FLOW-MATIC concentrates the pro-
gramming effort on problem definition and systems
analysis and design. It is the thought, energy, and in-
genuity devoted to these areas which determine the
extent of the tremendous savings that the UNIVAC
system can accomplish.
Drastically Reduces Training Time

In just a few days, users can be trained in the basic characteristics of the UNIVAC system and in the FLOW-MATIC method of programming. With FLOW-MATIC, it is not necessary to have a large staff of trained programmers. The more complicated, time-consuming training in techniques of computer coding need be taught only to those few people selected to become highly skilled career programmers.

Support of the Leaders in Programming Research

FLOW-MATIC, like nearly all of the UNIVAC automatic programming techniques, has been developed for UNIVAC system users, to meet their individual needs. This is the result of a firm Remington Rand Univac policy that users are to be provided, not with equipment alone, but with the best complete system available. It is your assurance that, as new developments in program design emerge from the research facilities of Remington Rand Univac, they will immediately be made available to you, as one of the ever-growing family of UNIVAC users. You can be sure, too, that you will be sharing the developments of a programming staff that has no equal anywhere, in years of experience, in knowledge of computer techniques, and in engineering of systems design.
SIMPLIFIES FLOW CHARTING AND CODING

The English-language pseudo-code of Flow-Matic causes the Univac system to automatically compile and write its own computer code. Thus, both flow charts and codes are made intelligible to the non-programmer as well as to the programmer. Many weeks of extensive training and the countless hours spent in coding each application are hurdled by this revolutionary new development.
### CONVENTIONAL
**COMPUTER CODE**

<table>
<thead>
<tr>
<th>Line</th>
<th>Code</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>READ INSTR TAPES</td>
</tr>
<tr>
<td>2</td>
<td>B</td>
<td>READ BLOCK C. LIMIT</td>
</tr>
<tr>
<td>3</td>
<td>C</td>
<td>READ DATA</td>
</tr>
<tr>
<td>4</td>
<td>D</td>
<td>FINAL READ TEST</td>
</tr>
<tr>
<td>5</td>
<td>E</td>
<td>INCREMENT READ LINE</td>
</tr>
<tr>
<td>6</td>
<td>F</td>
<td>TO READ TEST</td>
</tr>
<tr>
<td>7</td>
<td>G</td>
<td>READ BACK</td>
</tr>
<tr>
<td>8</td>
<td>H</td>
<td>LABEL CHECK</td>
</tr>
<tr>
<td>9</td>
<td>I</td>
<td>READ LINE</td>
</tr>
<tr>
<td></td>
<td>J</td>
<td>SET CONNECTOR</td>
</tr>
</tbody>
</table>

Mastering a knowledge of the complicated techniques and symbols of conventional computer flow charts requires a long training period. Flow-Matic charting, however, can be easily grasped by anyone with a knowledge of the application to be programmed.

### FLOW-MATIC CODE

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1. INPUT INVENTORY FILE A PRICE FILE B OUTPUT FILE C UNPRICED INV FILE D INDEX FILE E INDEX FILE F INDEX FILE G INDEX FILE H INDEX FILE I INDEX FILE J INDEX FILE K INDEX FILE L INDEX FILE M INDEX FILE N INDEX FILE O INDEX FILE P INDEX FILE Q INDEX FILE R INDEX FILE S INDEX FILE T INDEX FILE U INDEX FILE V INDEX FILE W INDEX FILE X INDEX FILE Y INDEX FILE Z INDEX FILE 
2. COMPARE PRODUCT NO A WITH PRODUCT NO B IF EQUAL GO TO OPERATION 10 OTHERWISE GO TO OPERATION 2 
3. TRANSFER A TO D 
4. WRITE ITEM D 
5. JUMP TO OPERATION 8 
6. TRANSFER A TO C 
7. MOVE UNIT PRICE B TO UNIT PRICE C 
8. WRITE ITEM C 
9. READ ITEM A IF END OF DATA GO TO OPERATION 14 
10. JUMP TO OPERATION 1 
11. READ ITEM B IF END OF DATA GO TO OPERATION 12 
12. JUMP TO OPERATION 1 
13. SET OPERATION 9 TO GO TO OPERATION 2 
14. JUMP TO OPERATION 2 
15. READ ITEM NO B AGAINST SSSSSSSSSSSSS IF EQUAL GO TO OPERATION 16 OTHERWISE GO TO OPERATION 15 
16. REWIND B 
17. CLOSE OUT FILE C D 
18. STOP (END) 
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UNIVAC the first name in electronic computing
...a data-automation system for every need

UNIVAC System. For data-automation which involves large volumes of input and output.

UNIVAC 60 & 120 Punched-Card Computers. For speeding and simplifying the procedures of punched-card systems.

UNIVAC FILE-COMPUTER. For instantaneous random access to large-scale internal storage—plus computation.

UNIVAC SCIENTIFIC System. For complex and intricate computations of engineering and research.

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