

Poughkeepsie, New York
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PROJECT STRETCH
FILE MEMO # 18

COMPANY CONFIDENTIAL

SUBJECT: Stretch Selector System
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The instruction "Test and Set Selector" will specify the selector to be set and contain an address indicating the logical expression to be evaluated to determine whether to set the selector on or off. The logical expression may be more than one word long.

The logical expression must be put in the form of a disjunction of conjunctions. For example: $A \cdot \bar{B} \cdot C \vee \bar{A} \cdot B \vee \bar{B} \cdot \bar{C} \cdot D$. Then the word controlling the test is divided into three digit groups:

XXX XXX XXX XXX XXX

In each group of three digits, two digits are used to specify a particular selector. The third digit is used to indicate whether that selector is to be used directly or denied and to indicate the connective following that term. The possible connectives are: \cdot , \vee , stop.

The calculator will look at group after group and whenever it comes to a \vee it will decide whether the result is yes or no. If the result is yes the operation will stop with that answer. If the result is no the calculator will go on to the next group. Whenever the calculator comes to a stop it will stop the operation and use the result to that point as the result of the test.

This scheme may be used to set a selector to agree with some function. Or the denial of the function may be used to set the selector in the opposite sense. Or if S designates the selector in question and F designates the function in question, then the expression

$$S \cdot \bar{F} \vee \bar{S} \cdot F$$

may be used to reverse the selection.

More complicated logical expressions such as

$$A \cdot \overline{(B \vee \bar{C} \vee \bar{D} \cdot E)} \vee F \cdot \bar{G}$$

may be evaluated by two tests. The first would set a selector X and the second would set the selector S which was the desired result:

$$X = B \vee \bar{C} \vee \bar{D} \cdot E$$

$$S = A \cdot \bar{X} \vee F \cdot \bar{G}$$

In this way, expressions with brackets may conveniently be handled. Actually, all expressions may be converted to a disjunction of conjunctions, but in some cases the programming will be easier or the test may be quicker if several steps are used to simplify the expression.

The people present in this discussion were E. M. Boehm, J. E. Griffith, G. M. Amdahl, S. W. Dunwell, W. Hunt, and N. Rochester.

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Stretch Memo #9 describes notation that could be used in a more complex machine that could manage parentheses.