Some Statistics on a 701 Code.

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The instructions in the principal part of the SNG code have been examined statistically in various ways. The 567 instructions involved were first classified in three groups: (1) addressing instructions, 53%, (2) control instructions, 17%, and (3) arithmetic instructions, 30%.

A count of the 298 instructions falling in category (1) is given in Table I. These instructions are mainly concerned with setting initial addresses or indices, modifying these as required by the problem, and calculating the constants necessary for these two purposes.

Table I

Instr	%	Instr	%
RA, LQ	24	Add	23
R Sub	2	Sub	10
Store	16	Mpy	1
St A	21	Shift	3

For the 99 instructions of type (2), controlling the course of the calculations, the count was as follows: Tr 24%, Tr + 16%, Tr Z 13%, Tr Ov 2%, Sense 8%, plus 63% of the type given in Table I.

For the third category with 170 instructions, the count resulted in the following distribution:

Table II

Instr	%	Instr	%
RA, LQ	25	Add	9
R Sub	1	Sub	7
Store	30	Mpy	11
Shift	11	Div	6

Of the 30% falling in the "Store" classification, 2/3 referred to a temporary storage location.

An approximate dynamic count was also taken with regard to type (3) instructions. These figures may be quite misleading since only two or three code loops contribute significantly to the statistics. Besides, an S_4 ten-group calculation with 50 iterations was taken as an example, and this may not be a very typical case.

Table III

Instr	%	Instr	%
RA, LQ	19	Add	24
R Sub	2	Sub	9
Store	21	Mpy	12
Shift	9	Div	4

The SNG code is essentially a large iteration loop consisting of two quadruple loops, three triple loops, one double loop, and several simple loops. Furthermore, it is a tight code, optimized with respect to both running time and storage space.