Inter-Office Memorandum

To	Distribution	Date	July 25, 1979
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Subject	SYMS file format	Organization	PARC/CSL

XEROX

File: <AltoDocs>SYMSFormat.press

This memo summarizes the format of the SYMS files produced by BLDR. All numbers in this memo are in octal.

A SYMS file begins with a 20-word description vector. The "addresses" in this vector are word addresses relative to the beginning of the file.

word	contents
0	1000 (a version number)
1	E, the length of the file (in words)
2	S, the address of the string area, currently always 20
3	N, the address of the symbol table
4	R, the address of the BR file table
5	B, the address of the binary output file table
6-17	0, currently unused

The string area, starting at word S of the file, contains all the symbol names, BR file names, and binary file names. Word S contains nS, the length of the string area (including the length word itself). Words S+1 to S+nS-1 contain BCPL strings. Their order is irrelevant, since all references to them are offsets relative to word S.

The symbol table, starting at word N, contains one 4-word entry for each name defined in any of the BR files that was loaded. Word N contains nN, the number of names: the actual length of the symbol table is therefore 4*nN+1. The format of the 4-word entry is as follows:

word	contents
0	the offset, relative to word S, of the symbol's name string
1	a type word whose bits are tttttxrbbbbbbbbb, where:
	t=1 for an ordinary static, 2 for a procedure, 3 for a label;
	x=0 if the name is external;
	r=1 if the name describes a relocatable (swappable) procedure
	b=the number of the BR file in which this name was defined (starting with 1)
2	the address of the static cell
3	the initial value loaded into the static cell

The BR file table, starting at word R, contains a 4-word entry for each BR file that was loaded. Word R contains nR, the number of BR files, so the length of the BR file table is 4*nR+1. The description of the BR file with index i begins at word R+1+4*(i-1). Each BR file table entry has the form:

word	contents
0	the offset, relative to word S, of the file's name string
1	an index identifying the .RUN or .BB file containing this BR (the RUN file has the index 1)
2	The PC of the .BR file (controlled by overlay type and load switch settings)
3	the code length of the .BR file (total length of all concatenated files)

The binary file name table, starting at word B, contains a 4-word entry for each binary (executable or overlay) file produced. As usual, word B contains nB, and the length of the table is 4*nB+1. The format of binary file name table entries is:

word	contents
0	the offset, relative to word S, of the file's name string
1	an index identifying this .RUN or .BB file (the RUN file has the index 1)
2	The number of relocatable statics in this .RUN or .BB file (size of reloc. table)
3	PC of the first .BR file in this overlay (controlled by overlay type and load switch settings)