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Hardware representation of ALGOL basic symbols in the ISO 7-bit coded character set for information processing interchange

Représentation machine des symboles de base d'ALGOL dans le jeu de caractères codés ISO à 7 éléments pour l'échange d'information entre matériels de traitement de l'information

This Technical Report was drawn up by Technical Committee ISO/TC 97, *Computers and information processing*. It results from successive revisions of draft ISO Recommendation No. 1672, upon which voting by the ISO Member Bodies took place in 1969. Failure to reach the general agreement necessary for publication of the document as an International Standard led to a decision by the members of ISO/TC 97 to publish it as a Technical Report. The difficulties preventing agreement on an International Standard are discussed in detail in annex D.

In October 1976, this document was submitted to the ISO Council, which approved its publication as a Technical Report.

Possibility of a future International Standard

IFIP Working Group 2.1, which has responsibility for ALGOL, is considering a possible revision of the ALGOL 60 language. It is suggested that any further attempt to produce an International Standard on this subject should await news from IFIP of whether or not such a revision is to be made.



0 INTRODUCTION

0.1 The ALGOL 60 programming language (ISO/R 1538) contains 116 "basic symbols". It has always been recognised that the character sets available on computing equipment could not be expected to coincide with these symbols, and consequently that hardware representations were needed that would enable the ALGOL language to be used in practice.

0.2 In 1967, ISO Recommendation R 646, *6- and 7-bit coded character sets for information processing interchange*, was published, giving the possibility of an internationally agreed hardware representation in terms of the character sets described therein.

0.3 However, ISO/R 646-1967 was superseded by ISO 646-1973, which standardized only the 7-bit character set, relegating the 6-bit set to an appendix for information only. Since the representation of ALGOL in the 6-bit code had been the cause of some of the difficulties of the project, the proposal was recast in terms of the 7-bit code only (while retaining the equivalents of the 6-bit representations as alternatives where these caused no difficulties).

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1 SCOPE AND FIELD OF APPLICATION

This Technical Report suggests a relationship between the ALGOL symbols shown in ISO/R 1538-1972 (sub-clauses 2.1, 2.2 and 2.3) and the ISO 7-bit coded character set which is the subject of ISO 646-1973. The international reference version of ISO 646 is assumed, and the characters @ [] { and } are used.

2 REFERENCES

ISO 646, *7-bit coded character set for information processing interchange*.

ISO/R 1538, *Programming language ALGOL*.

3 REPRESENTATION

3.1 In the following table, the left-hand column shows the reference form of the ALGOL basic symbols. The right-hand column shows the equivalent symbols of the 7-bit coded character set. Some basic symbols are represented by a single character; others by a sequence of characters.

3.2 For certain ALGOL basic symbols, alternative representations are given. Any of the given representations should be recognized as valid, even if a document is not self-consistent but sometimes uses one representation and sometimes another, except that the characters [] and { } may be disallowed in contexts where they are inconsistent with national usage.

TABLE — Basic symbol representations

Reference form	Hardware representation	col/row	Reference form	Hardware representation	col/row
⟨letter⟩	corresponding upper case or lower case letter		,	,	2/12
⟨digit⟩	corresponding digit		.	.	2/14
true	'TRUE' 'true'		10	@	4/0
false	'FALSE' 'false'		:	:	3/10
+	+	2/11	:	:	3/11
−	−	2/13	:=	:=	3/10, 3/13
×	*	2/10	⌊		2/0
/	/	2/15	step	'STEP' 'step'	
÷	% '/'	2/5 2/7, 2/15, 2/7	until	'UNTIL' 'until'	
↑	^ * *	5/14 2/10, 2/10	while	'WHILE' 'while'	
<	< 'LT' 'lt'	3/12	comment	'COMMENT' 'comment'	
≤	<= 'LE' 'le'	3/12, 3/13	(	(	2/8
=	= 'EQ' 'eq'	3/13	)	)	2/9
≥	>= 'GE' 'ge'	3/14, 3/13	[	[	5/11
>	> 'GT' 'gt'	3/14	/	/	2/8, 2/15
≠	◇ 'NE' 'ne'	3/12, 3/14	]	]	5/13
≡	'EQV' 'eqv'		/)	/)	2/15, 2/9
⊃	'IMPL' 'impl'		{	{	7/11
∨	'OR' 'or'		'{	'{'	2/7, 2/8, 2/7
∧	'AND' 'and'		}	'}'	7/13 2/7, 2/9, 2/7
¬	'NOT' 'not'		begin	'BEGIN' 'begin'	
go to	'GOTO' 'goto'		end	'END' 'end'	
if	'IF' 'if'		own	'OWN' 'own'	
then	'THEN' 'then'		Boolean	'BOOLEAN' 'boolean' 'Boolean'	
else	'ELSE' 'else'		integer	'INTEGER' 'integer'	
for	'FOR' 'for'		array	'ARRAY' 'array'	
do	'DO' 'do'		real	'REAL' 'real'	
			switch	'SWITCH' 'switch'	
			procedure	'PROCEDURE' 'procedure'	
			string	'STRING' 'string'	
			label	'LABEL' 'label'	
			value	'VALUE' 'value'	