

## 2.14 Alphanumeric representations /strings

### 2.14.1 ASCII

is the American Standard Code for Information Interchange (see table overleaf).

Note: the conversion to the character occurs at the peripheral device. The machine itself has no perception of what the bits stand for.

In ASCII, the *control characters* have special significance only in respect of the display (cursor control) of characters.

#### Other obsolete codes

1. Baudot
2. EBCDIC Extended BCD code 8-bit IBM code
3. Hollerith code on punched cards

### 2.14.2 Strings

A string has length and location.

Note that in the “Pascal” notation of ASCII strings the variable is generally a pointer to an array, and the length information appears in the first byte of the array. “C” uses the convention of null terminated strings, which does not limit the length of the string but precludes the use of the null as a string character.

A number of string formats are possible.

Finite runs of characters.

- Binary Strings,
- ASCII strings, up to 65535 chars
- Decimal strings
  - two sorts of decimal supported
  - numerical
  - packed decimal

b7 b6 BITS b5	0		0		1		1		1		1			
	0		0		1		1		0		1			
CONTROL		SYMBOLS NUMBERS				UPPER CASE				LOWER CASE				
b4	b3	b2	b1											
0	0	0	0	0	16	32	48	64	80	96	112			
NUL		DLE		SP		0		@	P	'	p			
1	0	1	0	20	33	49	65	81	97	113				
SOH		DC1		!		1		A	Q	a	q			
2	1	1	1	21	34	50	66	82	98	114				
STX		DC2		"		2		B	R	b	r			
3	2	2	0	22	35	51	67	83	99	115				
ETX		DC3		#		3		C	S	c	s			
4	3	3	1	23	36	52	68	84	100	116				
EOT		DC4		\$		4		D	T	d	t			
5	4	4	0	24	37	53	69	85	101	117				
ENQ		NAK		%		5		E	U	e	u			
6	5	5	1	25	38	54	70	86	102	118				
ACK		SYN		&		6		F	V	f	v			
7	6	6	0	26	39	55	71	87	103	119				
BEL		ETB		'		7		G	W	g	w			
8	7	7	1	27	40	56	72	88	104	120				
BS		CAN		(		8		H	X	h	x			
9	8	8	0	28	41	57	73	89	105	121				
HT		EM		)		9		I	Y	i	y			
10	9	9	1	29	42	58	74	90	106	122				
LF		SUB		*		:		J	Z	j	z			
11	10	10	0	30	43	59	75	91	107	123				
VT		ESC		+		;		K	[	k	{			
12	11	11	1	31	44	60	76	92	108	124				
FF		FS		,		<		L	\	l				
13	12	12	0	32	45	61	77	93	109	125				
CR		GS		-		=		M	]	m	}			
14	13	13	1	33	46	62	78	94	110	126				
SO		RS		.		>		N	^	n	~			
15	14	14	0	34	47	63	79	95	111	127				
SI		US		/		?		O	-	o	DEL			
16	15	15	1	35	48	64	80	96	112	128				
F		1F		2F	57	77	4F	117	5F	137	6F	157	7F	177

LEGEND: 

dec
CHAR
hex
oct

Figure 2.1: American Standard Code for Information Interchange (ASCII)

