

## THE KEYBOARD - Part 1

There are many different keyboard layouts for the PC, usually, but not always, being associated with a specific country. For that reason, we shall assume a Spanish layout keyboard. Unlike, for example, French and German keyboards, the UK and Spanish layouts both conform to the traditional "qwerty" layout in the arrangement of the main keys. This makes changing from one to the other a comparatively easy exercise.

There are many minor variations in layout even amongst keyboards nominally of the same country, and this is particularly true of laptops. The picture on the next page is of a standard Spanish keyboard, and it is to this we will make reference, although to get it on the page, the right hand side - the cursor and number pads - has been placed underneath the main block.

### Terminology.

There are four blocks of keys.

- The function keys, F1 to F12, along the top row (also, usually, the escape key).
- The main block, at the left, containing letters numbers and a few others.
- The action block, to the right of the main block.
- The number pad, at the right, which contains duplicates of keys found elsewhere.

The keys themselves can be divided into five main types.

- Character keys. These are the keys that, when pressed, will place a character on the screen - press the "a" and the letter a appears. If you keep a key pressed down too long, it will repeat, so instead of a single a you will get a whole line of aaaaaaaaaas. If this happens to you, you will need to learn to tap a key rather than pressing and holding.
- Alternative keys. These, the Shift, Caps Lock, Control, Alt and Alt-Gr keys, change the character associated with a character key, or the function of a function key.
- Function keys. These are programmable by the software author to carry out a specific action, and you often need to read the software instructions to find out what they are. However, there is a recognised set of function key actions that we talk about at another stage - for example pressing the F1 key almost always initiates some sort of help system.
- Sticky (or lock or toggle) keys. There are three of these - Caps lock, Scroll lock, and number pad lock. You press them once to turn them on - a light will show on the top right of the keyboard - and again to turn them off.
- Action keys. These, the keys between the main block and the number pad, move your position on the screen (or in a document).

Some keys cannot be categorised; these are dealt with individually.



## The main block.

Most of the keys in the main block are character keys - letters, numbers and punctuation. Press one and a character appears on the screen. What the character is depends not only on the key pressed, but what, if any, alternative key is pressed. A character key pressed on its own will produce the lower case letter in the case of a letter key, or the lower character of the other keys. If a key has three characters on it, such as some of the number keys, it is the lower left character which appears. The big key on the bottom row is the space bar. Press that and a space appears.

To get a capital letter, or the upper character, you first need to press the shift key. There are two of these, one each side of the bottom row of letters, usually with an upward facing arrow on them. They are equal; the reason there are two is to assist touch typists. So, to get an "A", press and hold down a shift key, tap the "a" key and release the shift key. If you wish to produce a series of CAPITALS you can continue to hold the shift key down whilst typing the letters; the same applies, should the need arise, to the upper characters on the other keys.

Another way of producing A SERIES OF CAPITALS is the Caps Lock key to the left (usually) of the A key and marked "Bloq Mayús" in Spanish. This is a sticky key. Press it (and release it) and from then on all letters will appear as CAPITALS. However, it ONLY works on the 28 letters (26 for a UK keyboard). It has NO effect on any other keys; for example to produce the \$, you must press and hold the shift key down whilst tapping the 4 key, even with the Caps Lock on. When the Caps Lock is on, a light will shine (the middle one of the three) at the top right of the keyboard. When you wish to return to normal, press the Caps Lock again and the light will go out.

Some keys have three characters on them. To get the third character, the lower right, you need to use the Alternative Graphics key, abbreviated both on Spanish and UK layouts to AltGr, and to be found to the right of the space bar. Please be aware that the key the other side of the space bar, the Alt key, is NOT a duplicate. They have very different functions. So, to get the # which I've just typed, I pressed and held down the AltGr key, tapped the "3" and released the AltGr. The US layout keyboard doesn't make use of the AltGr key at all (which is why it's confusing to read keyboard tutorials written for the US) and the UK layout uses it for just one character - the | found on the key next to the "1", the only UK layout key with three characters.

Some keys on the main block I'll leave until another session, but at this stage we should mention the large odd shaped key with an arrow pointing down then left to be found on the right above the shift key. This is the "Enter" key often, but incorrectly, referred to as the "Return" key. When you are typing, this will work as the carriage return on a traditional typewriter, moving down one line and to the left hand margin, but it's other important use is as a confirming key - often you will need to confirm to the computer that you wish to do something - "OK". The Enter key is how you do it. Above the Enter key is the backspace or "rubout" key; it has a left facing arrow. The action this performs can vary, but in general, it erases the character to the left of the cursor (the cursor marks where you're working on the screen) and the resultant gap is filled by everything being moved up one character. If you're an inaccurate typist, the backspace key is your friend. You didn't think I typed this in 100% correctly first time round, did you?

## The Function Keys.

Along the top of the keyboard are the twelve function keys, marked F1 to F12. These do not have any pre-ordained meaning - they are for the author of any software to program. However, certain standard uses for these keys have developed by custom and practice, and it is usual for pressing the F1 key to invoke some sort of help system. Similarly, F5 usually redraws your screen, useful when browsing the web, and F7 invokes a spellcheck. Just to make life more interesting, there are actually 48 functions, because the use of an Alternative key (Shift, Alt or Control) in combination with a function key performs a completely different action. Probably the best known is Alt-F4 (hold the Alt key down, press F4, release the Alt key) to close a program. Perhaps this is the best point to mention the other key on that row, at the very top left, the Escape key. This usually has the meaning "get me out of here" and is the first port of call when things seem to be going wrong, or you wish to cancel an action in progress.

On some keyboards, three of the action keys are located to the right of F12. We'll deal with these in a minute.

## The Action Keys

The arrangement of these keys, to the right of the main block, can vary considerably. There is a bottom set of four, in the shape of an inverted T, each with a directional arrow on it. These are the cursor keys. On the screen there will always be some sort of symbol, usually flashing, to show your current position. When you are working with text, this will normally be a flashing vertical bar. The cursor keys are used to move the cursor around the screen, so that you can work in a different place. They can also be used as a mouse substitute, although it's slow and painful. The cursor keys can be used in combination with the alternative keys for various purposes beyond the scope of this session.

Above the cursor keys are three keys marked, from left to right, "Supr", "Fin" and "Av. Pág" or Delete, End and Page Down. Above those another three marked "Insert", "Inicio" and "RePág", or Insert, Home and Page Up. The top three, sometimes next to the function keys, are "Impr Pant Pet Sis", "Bloq Despl" and "Pausa Inter", or Print Screen System Request, Scroll Lock and Pause Break. Only some of these need concern us at this stage. The delete key deletes the character to the RIGHT of the cursor, unlike the backspace key, which deletes the character to the left. RePág and AvPág will move us up and down one screen in a block of text. Also worth mentioning is Impr Pant Pet Sis, as this does NOT print the screen to the printer (although many years ago it did). If pressed, what it does is to take a snapshot of the screen and copy it to a special tool called the Clipboard, which we'll learn later.

## The Number Pad

If you wish, you can, at this stage ignore the number pad altogether. Except for one specialist operation, it merely duplicates keys found elsewhere for the benefit, mainly, of those who need to key in lots of figures. For those keys on the number pad which have an action and a number, the numbers apply if the NumLock light (above) is on, toggled by the "Bloq Num" key. If the light is off, the action (i.e. cursor key) alternative applies.

## THE KEYBOARD - Part 2

In this session, I aim to show some of the more advanced uses and tricks available with the keyboard. I am assuming a Spanish layout.

Let's start with some of the keys we didn't mention in part 1.

The Alt key to the left of the space bar is a pure alternative key, working with the function keys and one or two others (except as below)

The Control key (duplicate - one at the bottom left and bottom right of the main block). The main use of the control key is as an alternative key in conjunction with the function keys - Ctrl-F1 etc. Its original use, which gave it its name, was that it could be used to access the control function associated with a letter. This is expanded on in the sheets on ASCII, but there is one trick worth mentioning. From a command prompt, Ctrl-G, the bell, will still make the computer "beep".

The Tab key (next to the "Q") is used in text work to move the cursor a predefined number of spaces across the screen. There is a special use - Alt-Tab can be used to cycle through the programs active on your computer at any given time.

The Win key (duplicate - one to the left of the Alt key, the other to the right of the Alt-Gr) is, when you are working in Windows, equivalent to pressing Ctrl-Esc and brings up the start menu.

The RightWin key (between the Win key and the right Control) has the same action as pressing the right mouse button, and what appears depends on where the mouse cursor is.

Only more recent keyboards have the Win and RightWin keys.

The Insert key (on the action block) is a toggle key, toggling whether, when you insert characters into text the insert is additional, and nothing is deleted or whether for each character that is inserted the character already in that place is deleted. The former is the norm and the safer; my advice is not to meddle.

The Scroll Lock (Bloq Despl) is, essentially, redundant. When scrolling through masses of text under DOS, the scroll lock would stop the scrolling until you were ready to move on - it's a sticky key with a status light. The Pause / Break (Pausa / Inter) is equally redundant, again used to control screen movement under DOS. I sometimes use it to pause the display of the POST if I suspect something is wrong, but that's all.

## Characters NOT on the keyboard

In addition to the characters available directly from the keyboard, there are many others available.

Accented characters.

You may have noticed that if you type certain characters, such as "`", "`" and "´", the character only appears after you have typed the next character. If the next character is a vowel, the first character typed will appear as an accent on the vowel. In other words, to type the French name "Hélène", I type, in order, H `e l `e n and e. Although in Castellano the only accent we use is the acute, the Spanish keyboard copes with all accented letters, such as ü ô and à. It also has the extra letters ñ (for use in Castellano) and ç (for use in Catalan as well as French).

The "Alt" trick.

Every character available (without the use of special character maps) has a code, called an ASCII code, about which there is a separate handout. Whether or not it appears on the keyboard, it can be produced by means of the Alt key. What you need to do is to make sure the Num Lock is ON. Then, hold down the Alt key, type out the three figure ASCII code of the character on the Number Pad, and release the Alt key. The character will then appear. It only works on the number pad (not on the numbers on the top row) and then only if the Num Lock is on. On the Spanish keyboard, there is only one character you'll probably need to produce in this way and that's the pound sign (£) which I've just made appear by holding down the Alt key and pressing 1 5 and 6 before releasing the Alt key - the ASCII code for the pound sign is 156. If you're using a UK keyboard, you will need to use this way to produce accented characters as well as ñ and ç. You'll need to learn, for example that é is code 130.

There is a drawback to this. There is no universal agreement as to what character the codes 128 to 255 (the so called "high ASCII" correspond to, and all accented characters and currency signs are high ASCII. Therefore, if some of the characters on the ASCII code sheet don't work for you, at least you know why!

And finally - control codes.

ASCII codes 0 to 31 are designated control codes. When everything was controlled by ASCII, these codes gave instructions - for example, Code 12 told a printer to do a form feed, or a monitor to clear the screen. Some could be emulated from the keyboard by holding down Control and tapping the letter whose position in the alphabet corresponded to the ASCII code (punctuation characters were used for 27 to 31). These are of no relevance today, except as heritage curiosities - tapping Ctrl-G at a command prompt will make the computer speaker "beep" and using some of the others may have unexpected effects.

## ASCII CODES

When the computer sends text to the printer, to another computer, or even to the screen, it does not actually send the pattern of dots which would make up the text characters, but rather a number between 0 and 255. The other device will then convert this number to a character or an operation such as a line feed. Handling text in this way is much faster, and requires much less memory than sending a dot pattern or 'bit-map'. It is therefore rather important for the devices to have the same code for the same character. The set of codes almost universally used by all micros is known as the ASCII set. ASCII stands for American Standard Code for Information Interchange, and was agreed in 1966 for use in teleprinter and other datacommunications applications. It was derived from an earlier five-bit code, named Baudot after its inventor, which had been used since the last century for tickertape machines, telexes and teleprinters. ASCII was originally defined as a seven-bit code, allowing 128 combinations (0-127). Codes 32 to 126 are defined characters, whilst 0-31 and 127 define operations, and are called Control Codes. For micro-computers, whilst the characters assigned to 32-127 are more or less universal, the same cannot be said for some of the control codes 0-31. The standard ASCII control codes 0 to 31 are as follows:

CODE	NAME	STANDARD MEANING
0	NUL	Null or blank (i.e. nothing)
1	SOH	Start of header
2	STX	Start of text
3	ETX	End of text
4	EOT	End of transmission
5	ENQ	Enquiry
6	ACK	Acknowledge (positive)
7	BEL	Bell, buzzer or sounder
8	BS	Backspace
9	HT	Horizontal tab
10	LF	Line feed
11	VT	Vertical tab
12	FF	Form feed /CLS
13	CR	Carriage return (enter)
14	SO	Shift out
15	SI	Shift in
16	DLE	Data link escape
17	DC1	Device control 1
18	DC2	Device control 2
19	DC3	Device control 3
20	DC4	Device control 4
21	NAK	Negative acknowledge
22	SYN	Synchronisation
23	ETB	End text block
24	CAN	Cancel
25	EM	End of medium
26	SUB	Substitute or end of file
27	ESC	Escape
28	FS	File separator
29	GS	Group separator
30	RS	Record separator
31	US	Unit separator

Code 127 means backspace and delete.

ASCII	CHR\$	ASCII	CHR\$	ASCII	CHR\$	ASCII	CHR\$	ASCII	CHR\$
32	Space	33	!	34	"	35	#	36	\$
37	%	38	&	39	'	40	(	41	)
42	*	43	+	44	,	45	-	46	.
47	/	48	0	49	1	50	2	51	3
52	4	53	5	54	6	55	7	56	8
57	9	58	:	59	;	60	<	61	=
62	>	63	?	64	@	65	A	66	B
67	C	68	D	69	E	70	F	71	G
72	H	73	I	74	J	75	K	76	L
77	M	78	N	79	O	80	P	81	Q
82	R	83	S	84	T	85	U	86	V
87	W	88	X	89	Y	90	Z	91	[
92	\	93	]	94	^	95	_	96	`
97	a	98	b	99	c	100	d	101	e
102	f	103	g	104	h	105	i	106	j
107	k	108	l	109	m	110	n	111	o
112	p	113	q	114	r	115	s	116	t
117	u	118	v	119	w	120	x	121	y
122	z	123	{	124		125	}	126	~

Computers commonly use an eight-bit (1 byte) character set, which doubles the number of characters to 255. There is no common agreement as to the use of these codes. On the IBM P.C. and its derivatives, 128-168 represent 'foreign' characters (156 is the æ sign); 169 to 223 are 'graphic' characters usable in text mode; 224 to 239 are Greek alphabet characters, and 240 to 253 are additional mathematical symbols. Most printers have the Epsom Italic Set as their default setting. This is incompatible with the IBM set beyond number 127, and this gives rise to the problems when trying to print out, for example, the boxes obtainable using the IBM graphic characters. Many printers can be configured to the IBM set to avoid these problems. In most PC applications, any character can be obtained by holding down the ALT key while tapping out the ASCII code on the numeric key pad, then releasing the ALT key. For example, to get « on screen, tap 171 while holding down ALT, then release ALT.

There is one minor addition. In order to accommodate the Euro, a new ASCII code has been created. Alt-128 remains Ç, but Alt-0128 is now the Euro

The IBM characters from 128 to 255 are as follows:

ASCII	CHAR	ASCII	CHAR	ASCII	CHAR	ASCII	CHAR	ASCII	CHAR
128	Ç	129	ü	130	é	131	â	132	ä
133	à	134	å	135	ç	136	ê	137	ë
138	è	139	ï	140	î	141	ì	142	ì
143	Å	144	É	145	æ	146	Æ	147	ô
148	ö	149	ò	150	û	151	ù	152	ÿ
153	Ö	154	Û	155	ø	156	£	157	Ø
158	×	159	f	160	á	161	í	162	ó
163	ú	164	ñ	165	Ñ	166	ª	167	º
168	¿	169	®	170	¬	171	½	172	¼
173	¡	174	«	175	»	176		177	
178	—	179		180		181	Á	182	Â
183	À	184	©	185		186		187	+
188	+	189	¢	190	¥	191	+	192	+
193	-	194	-	195	+	196	-	197	+
198	ã	199	Ã	200	+	201	+	202	-
203	-	204		205	-	206	+	207	α
208	ð	209	Ð	210	Ê	211	Ë	212	È
213	ì	214	Í	215	Î	216	Ï	217	+
218	+	219		220	—	221		222	Ï
223	-	224	Ó	225	ß	226	Ô	227	Ò
228	õ	229	Õ	230	μ	231	þ	232	Þ
233	Ú	234	Û	235	Û	236	Ý	237	Ý
238	-	239	´	240		241	±	242	=
243	¾	244	¶	245	§	246	÷	247	,
248	º	249	¨	250	·	251	¡	252	³
253	²	254		255		0128	€		