

our Binary number 11101101110 becomes a nice manageable 76EH. As there are only six letters to learn to replace the Decimal numbers 10 - 15, a little practice will soon dispense with the intermediate Decimal stage, and you can do Binary to HEX conversions direct. (To tell the truth I still have difficulty doing it backwards, and end up jotting down a Binary table from 10 - 16.)

Decimal to HEX is easiest achieved using a conversions table written in powers of 16, expressed in 'base 10'. The table looks like this:

HEXADECIMAL COLUMNS							
4		3		2		1	
0	0	0	0	0	0	0	0
1	4,096	1	256	1	16	1	1
2	8,192	2	512	2	32	2	2
3	12,288	3	768	3	48	3	3
4	16,384	4	1,024	4	64	4	4
5	20,480	5	1,280	5	80	5	5
6	24,576	6	1,536	6	96	6	6
7	28,672	7	1,792	7	112	7	7
8	32,768	8	2,048	8	128	8	8
9	35,864	9	2,304	9	144	9	9
A	40,960	A	2,560	A	160	A	10
B	45,056	B	2,816	B	176	B	11
C	49,152	C	3,072	C	192	C	12
D	53,248	D	3,328	D	208	D	13
E	57,344	E	3,584	E	224	E	14
F	61,440	F	3,840	F	240	F	15

Right, now what to do with it ? Think of a number, an easy one, say, 49. Look in column 4, is there a number less than 49 ? Yes that number is 0, so the first digit is 0. Try in column 3, 0 again. Try column 2, Ah hah, 48 is less than 49, so the HEX digit is 3. Now subtract 48 from 49 and look in column 1 for the HEX equivalent to the answer. Yes, you got it, 1 !!! So the HEX equivalent of 49 is 0031. We don't write the Decimal number 0049, so it follows that the HEX number is 31. Also as we can't assume it's to 'base 10' (because it isn't), we'd better tell the customers that its HEX, so:

Decimal 49 = 31H

Now that is a lot easier than writing 49 in Binary (which would be 110001), and even vaguely understandable to the uninitiate. Now try 19,514, and see if you understand how I got 4C3AH out of that. Go on try a few numbers of your own.

The whole object of this exercise has been to point out that different numbering systems exist and that HEX numbers are just as real and meaningful as counting from 1 to 10 (in Decimal of course). How computers make the conversion from HEX to Binary for internal use will be revealed in the next chapter. Meantime, try getting to grips with HEX, and relating it Decimal and Binary counting systems.