Converting positive denary whole numbers | Part B

The binary we have been using so far has four place values, so it is known as 'four bit binary'. Now that we are comfortable at converting from denary to binary let's double the number of bits so we get to 8 bit binary! We do this by adding on more places to the left, so our first extra place is worth 16, the next is worth 32, the one after that is worth 64 – do you see the pattern?

128	64	32	16	8	4	2	1

Even though we've now got more bits, we can still write small numbers, we just don't use any of the bigger place values. For example here's the number 2 in 8 bit binary:

00000010

Now we know how to convert from denary to binary, let's see if we can go the other way and convert a binary number back to denary. Take this number in 8 bit binary:

01010101

It looks a bit scary, doesn't it? It's actually very easy to convert if we plug the number places back in:

128	64	32	16	8	4	2	1
0	1	0	1	0	1	0	1

Now that we know what the places are worth, we just add together all of the places that have been used – those which have a 1 in them.

64 + 16 + 4 + 1 = 85

Congratulations, you now know how to use binary!