AQA Computer Science A-Level

4.5.2 Number bases

Concise Notes

Specification:

3.5.2.1 Number base:

Be familiar with the concept of a number base, in particular:

- decimal (base 10)
- binary (base 2)
- hexadecimal (base 16)

Convert between decimal, binary and hexadecimal number bases.

Be familiar with, and able to use, hexadecimal as a shorthand for binary and to understand why it is used in this way.

Decimal (base 10)

- The number base used by humans for counting
- Uses the ten digits 0 through to 9 to represent numbers
- Sometimes called denary
- Denoted with a subscript 10

Binary (base 2)

- Uses only two characters for each digit, either a 1 or a 0
- Easily be represented by computers with high or low current
- Denoted with a subscript 2

Hexadecimal (base 16)

- Uses the digits 0 through to 9 followed by the uppercase characters A to F
- Denoted with a subscript 16
- Can represent numbers using far fewer digits than binary or even decimal
- Useful as a shorthand representation for binary

Base 10 Decimal / Denary	Base 2 Binary	Base 16 Hexadecimal
0	0000	0
1	0001	1
2	0010	2
3	0011	3
4	0100	4
5	0101	5
6	0110	6
7	0111	7
8	1000	8
9	1001	9
10	1010	A
11	1011	B
12	1100	C
13	1101	D
14	1110	E
15	1111	F