Component 1: Data representation and storage

Key terminology

Term	Definition
Denary	Base 10 number system. Uses digits 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9
Binary	Base 2 number system. Uses digits 0 and 1 only
Hexadecimal	Base 16 number system. Uses digits 0 – 9 and characters A(10), B(11), C(12), D(13), E(14) and F(15) The notation is used as shorthand for binary numbers to avoid errors

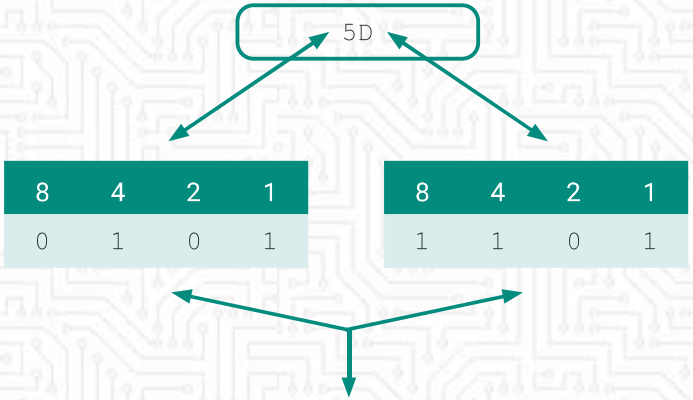
Data types

Data type	Description	Examples
Integer	Whole numbers, positive or negative	42, -11, 0
Real	Numbers, including fractions or decimal points	12.9, -17.50, 28.0
Boolean	True or false	1 or 0 TRUE or FALSE
Character	Letter, digit, space, punctuation mark or various other symbols	'A', 'b', '7','?'
String	A sequence of characters	'Computer science'

Representation of numbers

Conversion between denary, binary and hexadecimal:

Hexadecimal



Binary

Denary

64 + 16 + 8 + 4 + 1 = 93

Sign and magnitude representation

+/-	64	32	16	8	4	2	1
1	0	0	0	1	0	1	0

The most significant bit is used to represent the sign of the number, where 1 means the number is negative and 0 means the number is positive. The number above represents -10_{10}.

Binary addition