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| **E** | | **Binary manipulation** |
| **Binary shift** | Adding or taking a zero at the end of a binary number | |
| **Left shift** | Adding a zero to the end of a binary number, multiplying it by 2 | |
| **Right shift** | Taking a bit from the end of a binary number, dividing by 2 and rounding down | |
| **Binary addition** | Adding binary numbers together | |
| **Overflow error** | A carried digit which is lost because the number is too big for the space allotted to it. ie 1111 + 0011 = 0010 (4 bit addition) | |

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| **B** | **Number Systems** | |
| **Binary** | | Counting system using 1s and 0s. Computers use it because transistors can be used as switches: 1 is 'on' and 0 is 'off'. |
| **Denary** | | Our normal numbering system with digits from 0 to 9 |
| **Hexadecimal** | | A number system using the digits from 0 to 9 and A to E. Easy to convert to and from binary and easier to read than binary |

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| **C** | **Data types** | **Python** |
| **Array** | An indexed list of values. The index normally starts at 0. Unlike a Python list, all values have the same data type and the maximum size is normally declared | [‘o’,‘m’,‘g’]  [6, 0, 8, 1]  [0.1, 5.0] |
| **Boolean** | A data type which is either true or false | True, False |
| **Character** | A single alphanumeric symbol | ‘B’, ‘@’, ‘8’ |
| **Integer** | A data type which is a whole number | 50, -7, 2 |
| **List** | An indexed collection of data in Python | [“a”, 2, True] |
| **Real / Float** | A number with a decimal point | 5.0, 3.14, 1.9 |
| **String** | A data type which is a collection of any number of characters | “hello”, “”, “01273” |

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| **A** | **Key vocab** | |
| **Alphanumeric** | | Containing letters, digits and symbols |
| **Data** | | A unit of information without context, measured in bits |
| **Information** | | Data, made intelligible by context |
| **Typecast** | | Force a variable into a certain data type |

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| **D** | **Data measurements** | | |
| **Bit** | | A single unit of information. A 1 or a 0. A binary digit. | *b* |
| **Nibble** | | Half a byte. Four bits. |  |
| **Byte** | | Eight bits | *B* |
| **Kilobyte** | | 1000 B | *KB* |
| **Megabyte** | | 1000 KB | *MB* |
| **Gigabyte** | | 1000 MB | *GB* |
| **Petabyte** | | 1000 GB | *PB* |
| **Terabyte** | | 1000 PB | *TB* |

Programming: Data and Data types