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| **HARDWARE:** the physical components of a computer system that you can see and touch.  An **input** device is any piece of computer **hardware** **used to provide data to a computer system**. | **ALGORITHMS:** Step by step instructions in order to solve a problem. The best algorithms are efficient and concise. They need to have the steps in the right order! Algorithms are used for many different things including calculations, data processing and automation.  **COMPUTING – Y7 Knowledge Map Autumn Term 2** | **BINARY**  **Binary is a number system that only uses two digits: 1 and 0.** All information that is processed by a computer is in the form of a sequence of 1s and 0s. The binary system is known as a **‘base 2’** system.  A picture containing text  Description automatically generated**5 in decimal is  0101 in binary!** |
| An **output** device is any piece of computer hardware that **displays information** (data that has been processed) in a human readable format. This could be as an image, sound, texture or motion.   Some devices can be classed as **both input and output** devices – such as touch screen monitors and headsets | **Dr John Snow’s** germ theory algorithm is considered to be a vital medical breakthrough in the prevention of deaths from chlorea in Victorian England. His careful planning and investigation enabled him to identify the source of the chloera outbreak in the Soho, London in 1854.  Garbage Bin Clipart   Poor algorithms lead to poor results: **Garbage in, Garbage out**! |
| **FILE SIZES**   |  |  | | --- | --- | | **Size** | **Equal to** | | 8 bits | 1 byte | | 4 bits | 1 nibble | | 1024 bytes | 1 kilobyte | | 1024 kilobytes | 1 megabyte | | 1024 megabytes | 1 gigabyte | | 1024 gigabytes | 1 terabyte | | |  |  | | --- | --- | | **Clock speed** | The operating speed of a computer (microprocessor), in cycles per second (Hz) | | **Byte** | A unit of data that is 8 binary digits long | | **Bits** | The smallest unit of data in a computer. A bit has a single binary value, either 0 or 1 | | **Cipher** | A secret or disguised way of writing; a code | | **Morse code** | A communications language that encodes text characters as sequences of two different signal durations called dots and dashes | | **Embedded computer** | A computer that uses computer hardware and software to perform a specific function | | **The Central Processing Unit**  The **CPU** or **microprocessor** is considered to the brain of a computer! **The CPU carries out processes such as calculating, sorting and searching. The CPU will execute sequences of instructions (called a program) – needed to process data on our digital devices. CPUs are found in a range of devices from computers, to washing machines and mobile phones.**  https://icon-library.net/icon/icon-running-3.html  **Computer clock speed is measured in hertz (Hz)  A** **CPU** with a **clock rate of** 1.8 **GHz**  can perform 1,800,000,000 **clock** cycles  per second! |
| |  |  | | --- | --- | | **Decomposition** | Breaking **down a complex problem into smaller parts that are easier to manage and understand** | | **Pattern Identification** | **Finding similarities or patterns among decomposed problems that can help us solve more complex problems more efficiently** | | **Abstraction** | Filtering out the characteristics that we don't need in order to concentrate on those that we do. | | **Algorithm** | A plan, a logical step-by-step process for solving a problem | | |