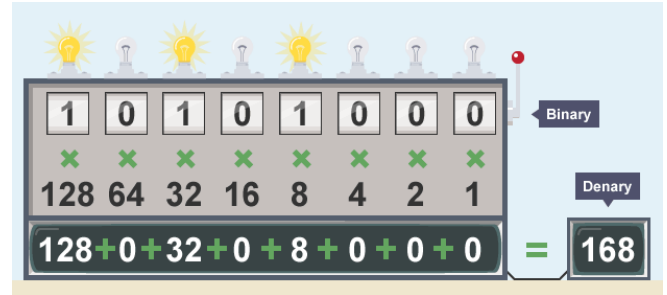


Knowledge Organiser

Hardware	Any physical part of a computer system. You can touch it, e.g. a screen, printer or keyboard.
Software	Sets of instructions also known as programs. You can't touch them!
CPU	Central Processing Unit, the "brains" of the computer which runs the processes.
Storage	Where we save data and programs forever, e.g. hard disk drive. It never forgets.
Main Memory	Sometimes called RAM. Temporary store of data and programs, it is "volatile" so it forgets everything when turned off.
ROM	Read-only memory, it cannot be changed. Holds the computer's start-up instructions and is "non-volatile" or permanent.
Input Device	Hardware that takes data from the real world into the computer for processing, e.g. mouse.
Output Device	Hardware that sends information out of the computer to us, e.g. monitor, speakers
Hard Disk	A type of non-volatile storage that uses magnetic platters to store lots of data, typically up to 1 Terabyte (1TB)
Process	What a computer runs to turn input data into information to be output. E.g, when you put a filter on an image, or calculate a total.
Clock Speed	How many instructions a CPU can process in a single second. Measured in "Hertz" or "Hz". 3 GigaHertz (3GHz) means 3 billion instructions every second.

Binary Numbers

Computers use binary because 0 and 1 can be stored as "on" and "off" in its electronic circuits. To convert binary to denary (our usual number system) just write the column headings 1,2,4,8,16 etc right to left, then add up where you see a "1" like this:



ASCII

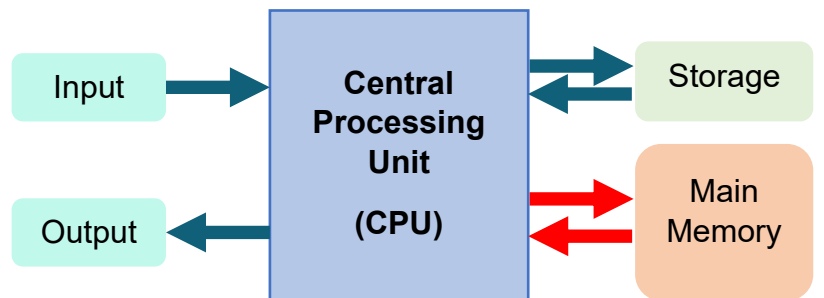
To store letters, we convert to numbers first, then we can store as binary.

We use a code called **ASCII** for this:

Code	Char	Code	Char
64	@	96	`
65	A	97	a
66	B	98	b
67	C	99	c
68	D	100	d
69	E	101	e
70	F	102	f
71	G	103	g
72	H	104	h

Storage Units

Name	Size	What can it store?
Byte	8 bits	A single letter, like "A"
Kilobyte (KB)	1000 bytes	An e-mail or a small Word document.
Megabyte (MB)	1000 KB	A good-sized novel or a PowerPoint with a few pictures in.
Gigabyte (GB)	1000 MB	Roughly 300 MP3s or 40 minutes of video at DVD quality. A CD holds about three quarters of a gigabyte.
Terabyte (TB)	1000 GB	1000 copies of the Encyclopaedia Britannica. Or 40 full HD movies. Or the school database.



The "input-process-output" model

All digital computers, from the earliest examples like the "Manchester Baby" to the coolest modern smartphone, use this "Input-Process-Output" model. They all run programs that take input, process it and produce output, and they all need some storage and main memory too.

Computing

Knowledge Organiser – Scratch

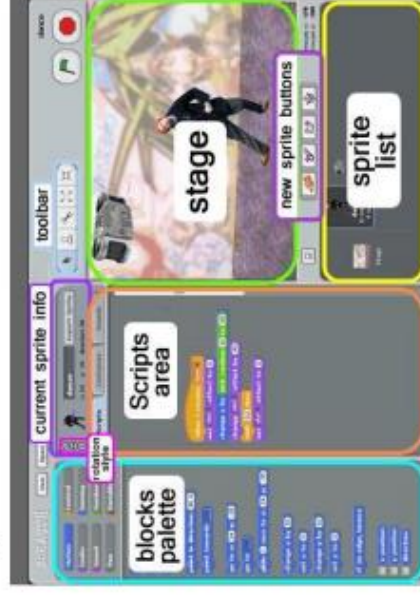
In Key Stage 2, children build on skills and extend their mastery of computers, as both user and creator. The computing curriculum aims to make children computationally aware, teaching them concepts (how to predict and analyse results, how to break a problem down into parts, how to spot and use similarities and how to evaluate) and approaches to help them problem-solve.





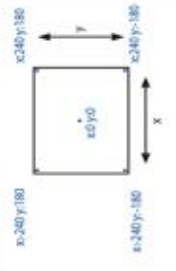



Computing projects might include developing a simple computer game using a visual, interactive programming language such as Scratch. Scratch provides access to over 100 code blocks. These code blocks are organized into eight categories and are made available on the blocks palette. Each of these categories of code blocks is described in the following list:

- **Motion.** Code blocks that control sprite placement, direction, rotation, and movement.
- **Looks.** Code blocks that affect sprite and background appearance and provide the ability to display text.
- **Sound.** Code blocks that control the playback and volume of musical notes and audio files.
- **Pen.** Code blocks that can be used to draw using different colours and pen sizes.
- **Control.** Code blocks that trigger script execution based on predefined events, repeatedly execute programming logic using loops, and perform conditional logic.
- **Sensing.** Code blocks that can be used to determine the location of the mouse-pointer, its distance from other sprites, and whether a sprite is touching another sprite.
- **Operators.** Code blocks that perform logical comparisons, rounding, and other arithmetic operations.
- **Variables.** Code blocks that can be used to store data used by applications when they execute.



You can view the code blocks belonging to a given category by clicking on one of the eight labelled buttons controls at the top of the blocks palette. Note that each category of code block is colour coded, making it easy to distinguish between code blocks from different categories.

A typical Scratch interface:



Green Flag	Sometimes simply called the 'flag,' this is what starts most projects' scripts running	
Costumes	Images that are used to represent a sprite on the stage	
Script	A collection of code blocks that outlines the programming logic that influences the operation of a sprite	
Red Stop Sign	The button that usually stops a project	
X__Y__	The coordinates on the stage where you want the sprite to move to	
<p>Did you know that Scratch is freely available and can be accessed from https://scratch.mit.edu/ where you will find lots of ideas and support ... do take a look</p> <div style="display: flex; justify-content: space-around; align-items: center;">    </div>		

Other useful terms include:

Sprite	An object in Scratch which performs functions controlled by scripts	
Stage	The background of a project, performs functions through scripting	
Scratch Cat	Scratch's mascot and default sprite	