Year 4 Creating a Simple Database Knowledge Organiser v2

Key words and prior learning from year 3 - Creating a Branching Database and Interrogating Simple Databases

Branching/Binary Database - a way of classifying a group of objects

Record - fields and data about one thing in a database

Database - a way of storing and organising information

Form View - shows you an individual record about one thing

Table View - shows you more than one record in rows

Field Name - the title of data in a record or table

Data Types - the options the answers can be displayed as. This can be letters, words, images, numbers or a mixture of them

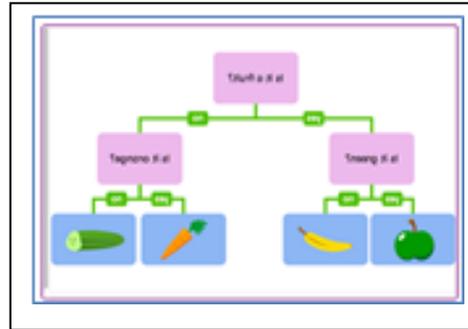**Discrete Data -** data from counting separate items

Continuous data - data from measuring something

Chart - a chart displays discrete data

Graph - a graph displays continuous data

Simple Search - when you look for one thing at a time

Sort - putting data into an order for example alphabetical or numerical

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Who uses skills like these?

- Shopworkers to organise stock
- Police to track crime and people
- Engineers to develop new designs and products
- Scientists to investigate, discover and analyse new things
- Doctors and nurses to track patient's health
- Computer game designers to store information about players and competitions

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record 7 of 28

Breed	German Shepherd
Image	
Size	4
Rarity	1
Good temper	4
Cuteness	15
Top trumps rating	51

Breed ↓	Image	Size	Rarity	Good temper	Cuteness	Top trumps rating
Wolf		6	10	2	27	99
Staffordshire Bull Terrier		3	4	5	14	60
Shih Tzu		2	7	5	25	35
Saint Bernard		6	8	4	25	94

New key words we will use in year 4 'Creating a simple database'

Paper Database - data recorded on paper

Electronic Database - data recorded on a computer

Complex Search - when you look for more than one criterion at once

Criteria - something which can be judges or decided

Boolean Operators - Using the words AND, OR and NOT to link or exclude key words in a search, to make the results more useful and focused

Data - raw and unorganised facts which seem random and useless until organised

Information - Data that has been sorted and organised to make it useful

Data Protection Act 2018 - a set of rules which show us how to keep our own and other people's data safe

Year 4 On the Move with Programming Knowledge Organiser

Key words and prior learning from Year 4 Scratch Programming from Algorithm to Code

Scratch –block-based programming language by MIT

Controlled count loop - this is used in a program when we need to repeat something a number of times

Input – this is an event that triggers an action/code block

Costumes – the way a sprite looks – these can be used to show movement

Broadcast – an input that can be used to trigger events


```
when [flag] clicked
repeat until < key space pressed? >
  pen down
  turn ↻ 15 degrees
  change pen color by 10
  move 10 steps
```



```
when [flag] clicked
go to x: -277 y: -20
set size to 100 %
show
glide 2 secs to x: -39 y: 17
say Anyone here? for 2 secs
broadcast Giga Enters

when I receive Cat Replies
say Well hello! for 2 secs
broadcast Goodbye

when I receive Goodbye
hide
```

```
when [flag] clicked
go to x: 300 y: -147
set size to 100 %
show

when I receive Giga Enters
glide 1 secs to x: 89 y: 16
say Hi there. Here I am for 2 secs
broadcast Cat Replies

when I receive Goodbye
hide
```

```
when [flag] clicked

when space key pressed

when this sprite clicked

when I receive message1
```

Key Learning	Self-Assessment		
	WT	A	WA
I understand what an input is			
I can move a sprite up, down, left and right using different inputs such as keyboard and mouse			
I can change the look of a sprite, through code, to switch between costumes			
I understand how and when to use the wait command in coding			
I understand the need for a continuous loop in programming			
I understand that selection in programming uses if then statements			
I can compare block-based code to an algorithm and identify where changes need to be made in the code to match the algorithm			

New key words we will use in Year 4 On the Move with Programming

Quadrant x and y axis – x axis is the horizontal line and the y axis is the vertical line which divide the plane into four sections called quadrants which provide coordinates

Initialisation – to give an object (sprite) a starting value or variable which it uses to reset itself

Continuous loop – a program that runs the same instruction continuously until it is either stopped or interrupted

Selection/condition – an action that occurs if something specific happens

If..then..Statement – used in programming to trigger a set of instructions

Decomposition – breaking down a complex problem or system into smaller parts that are more manageable and easier to understand. The smaller parts can then be examined and solved, or designed individually, as they are simpler to work with

Who uses skills like these?

- Mobile app developers
- Computer game developers
- Programmers who create safety features for systems e.g. fairground rides, carpark barriers

Year 4 What is Computer Technology? Knowledge Organiser v2

entrust
Education Technologies

This will be the first unit on Computer Science that the pupils will have encountered.

New key words we will use in Year 4 What is Computer Technology?

Hardware – physical parts that make up a computer

Software – programs which tell a computer what to do

Input – allows information and data to be put into a computer through a device e.g. keyboard, microphone

Output – allows the computer to send information and data out to the user through a device e.g. screen, speakers

Central Processing Unit (CPU) – acts like the brain of the computer which receives the data and instructions and carries out what to do with the data it has been given
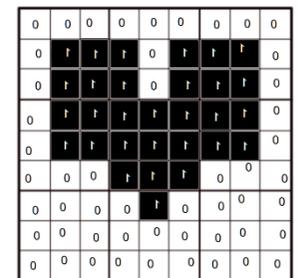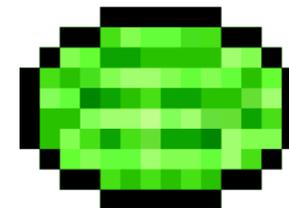
Random Access Memory (RAM) – is where the CPU's short-term data is stored. It stores the information the CPU is actively using so that it can be accessed quickly. Files cannot be stored here as the RAM is cleared every time you turn off the computer

BITS – The basic unit of everything in a computer's memory. Each is stored in a memory cell which switches between two states 0 and 1

Byte – Eight bits together are called a byte

Hard drive – is for long term storage and files. This data is kept even when the computer is turned off

Pixel – short for picture element. Images are broken down into tiny elements called pixels for a computer to store the image

Key Learning	Self-Assessment		
	WT	A	WA
I can explain the difference between hardware and software			
I can explain the difference between an input and an output device			
I can name the internal parts of a computer that make it work			
I know that data stored in the computer's memory are called BITS			
I know that a BIT can either be 1 or 0			
I know how the RAM helps the CPU to carry out tasks			
I know that 8 bits is known as a 1 byte			
I can explain what a pixel is			
I understand how a computer stores the data required to display a black and white image			
I understand binary data and can re-create a binary image following bit data			
I know that coloured images have more data per pixel than a black and white image.			

The human computer

know that there are key parts needed to make a computer work which are kept safe inside the computer's cel

Computer part	What it does	Example human part
Hard Drive	Where information is stored for a long time	I remember my birthday party when I was 4
RAM (Random Access Memory)	Information that I keep for only a short time	
Power Supply	The battery that gives us power	
CPU/ Processor	The brains of the computer	I can process calculations 5 +8=16
Input devices	The device that puts information in (senses, images, sounds)	

1 OR 0

11010101

Who uses skills like these?

- IT systems manager and engineer
- Software engineer
- Robotics – designers, creators and programmers
- Web developers and web designers
- Computer game developers and designers

Year 4 - Multimedia Fact File – Knowledge Organiser

entrust
Inspiring Futures

New key words we will use in Year 4 'Multimedia Fact file'

Hyperlinks – A link from text or images that open another location or file

Nonlinear - doesn't follow a one-way structure for view information and instead allows free movement around all aspects of the multimedia in any order the viewer wants.

Embedded sounds – a sound that is linked to text or images that can be played when clicked

Embedding YouTube video – this is a link on a webpage using simple HTML code that links to a video that is hosted on a streaming site (e.g. YouTube)

Transparent images - an image that is clear and can take the effect of any images behind it.

Copyright and citing resources - Copyright Laws and Citing Sources Copyright laws are used to protect the intellectual property created by a person's mental or creative effort. You may only use copyrighted material as the law allows and must clearly cite the source; otherwise, you could be subject to a fine. If you use an image you may need to cite who the image belongs to

Who uses skills like these?

Magazine creators, and publishers who make books and digital books.

Marketing and promotions teams

Teachers

Red Eyed Tree Frog

Key Learning	Self-Assessment		
	WT	A	WA
I know what multimedia is and I know that multimedia makes information more engaging			
I know the difference between linear and non-linear presentations			
I can use effective editing tools to present my text clearly			
I can rearrange layers on my page to improve the design			
I know that digital images come in different file type -.PNG JPEG			
I can compare two presentation pages and say why one is better than the other			
When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to reuse it.			
I can record my narration as a sound file and add it to an image or text box in J2e5and add text to the image			
I can embed a YouTube video in my presentation			
I can add links to websites, and links to other pages within my presentation			

Key words and prior learning from Year 3 'Organising, creating and presenting'

View and edit mode – most programs with edit mode toggle between "view" and "edit." When in the "view mode," the user can only look at the file; however, in "edit mode," the user can view and change its contents

Fill borders and frames – a presentation technique used to add colour for effect or meaning

Import and export - importing and exporting allow different computer programs to read each other's' files. "Import" means to bring a file from a different program into the one you're using, and "export" means to save a file in a way that a different program can use it

Layering – to organize the arrangement of objects (phots, text, graphics and background colours) you've placed on a page so that you can manipulate them more easily.

Stop motion animation – take a photo of an object or scene and slightly move the objects before taking another photo. This process is repeated until the scene is completed and uses each photo as a frame in the animation

Onion skinning – a technique used in animation which lets you see a 'ghostly' image of the previous captured frame over your new frame so that you can line up objects accurately before capturing the next frame

GIF – stands for Graphics Interchange Format. GIFs are a series of images or soundless video that will loop continuously and doesn't require anyone to press play

Page orientation - is the direction in which a document is displayed or printed. The two basic types of page orientation are portrait (vertical) and landscape (horizontal)

Year 4 Programming with Scratch from Algorithm to Code Knowledge Organiser

Key Learning	Self-Assessment		
	WT	A	WA
I can change the background			
I can upload a sprite from the sprite library			
I can change costumes of my sprites using a delay command between costume changes			
I can add the music **extension block** to a scratch file			
I can **duplicate and edit sprites** using the drawing tools in scratch			
I can create code using different **inputs** to run the programme			
I can create a **sequence** – a set of programming blocks to play a tune			
I can create a controlled count loop '**repetition**' – a sequence of instructions that is repeated a certain number of times			
I can add a continuous/forever loop 'r**epetition**' to my code			
I can save my work (either to a computer or in my scratch account)			
I can create a **broadcast** message as an input to trigger events and use it in a block of code			
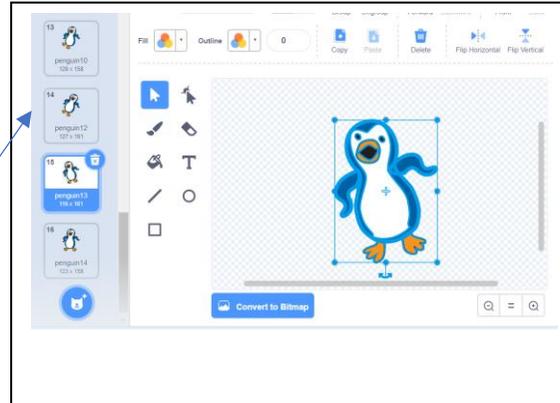
Key words and prior learning from year 3 programming units

Program – a set of instructions in a language that is understood by a computer

Code blocks – the instruction 'block' that joins together to make a program

Sprite – name given for a character in computer software Visual or Scratch

Debug - Look at your program and find where there is a problem and fix it

Unplugged – this is a computer science activity that does not need a computer

Visual – block based programming language by J2e

Repeat loop – this is used in a program when we need to repeat something

Nested Loop – this is repeat loop with another repeat loop 'inside' it

New key words we will use in year 4 Scratch Programming from Algorithm to Code

Scratch –block-based programming language by MIT

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Input – this is an event that triggers an action/code block

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Broadcast – an input that can be used to trigger events

I know about these loops	Continuous loop example	Controlled loop example	Conditional Loop
Design Level (Algorithm & objects) Language a human will understand,	Always loop step forward jump Loop all the time step forward jump	Do 3 times nod wave clap	Do until key is pressed Jump Hop Jump
Code Level How this might look as code			

Who uses skills like these?

- Computer game makers
- Computer programmers when they design and make software to solve problem.
- App makers