Year 9 Curriculum Overview ICT 2023-24

	Autumn term Web design	Spring term Advanced Python programming	Summer term 1 Supporting a cause	Summer term 2 Cyber security
Approx No. Lessons	14	12	6	6
Curriculum Content	Students will study how a business is set up and how to create a website for the business.	Students will use PRIMM to study how the computational constructs can be used in Python to solve complex problems including searching and sorting algorithms.	Students will study how technology can be used to promote a cause and how these can be used effectively.	Students will study the issues surrounding the use of personal and sensitive data and how to keep data safe.
Links to Prior learning	Students will build on their understanding of research, using software tools and the internet from previous years.	Students will need an understanding of breaking problems down and reading and writing code from introduction to Python unit.	Students will develop their understanding of searching the internet and online tools.	This will build on students' prior knowledge of how the internet and computers work.
Cultural Capital Opportunities	Watch The social network Careers bios One minute mentor videos	Myths that need debunking about programmers https://recruitingtimes.org/recruitment-and-hr-technology-news/21724/myths-need-debunking-programming-jobs/ Careers bios One minute mentor videos	What charities, community organisations exist in your community? Careers bios One minute mentor videos	Film – sneakers Safer internet day Careers bios https://www.thinkuknow.co.uk/ One minute mentor videos
Assessment focus	Website hand in	Spring assessment covering e-commerce, web design, Python and all year 7 and 8 topics marked out of 50	n/a	End of year assessment covering content from 7, 8 and 9 out of 50 marks.
Link to detailed content	Web design knowledge organiser E-commerce knowledge organiser	Python knowledge organiser	Supporting a cause knowledge organiser	Cyber security knowledge organiser

Web design

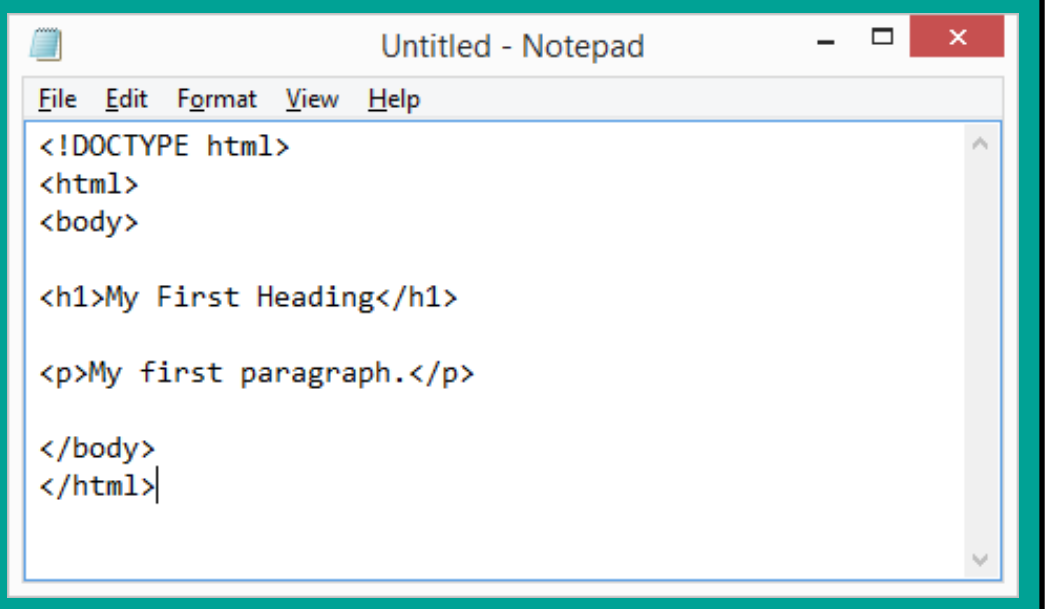
What do I need to know?

- **The difference between a web page and a website**
- **The reasons master or template pages are used**
- **How to set up suitable website navigation**
- **The reasons why interactive content is used**
- **How to make a website suitable for a specific target audience**
- **What HTML is**

HTML

This consists of a number of tags used to tell a web browser what content to show and how to show it.

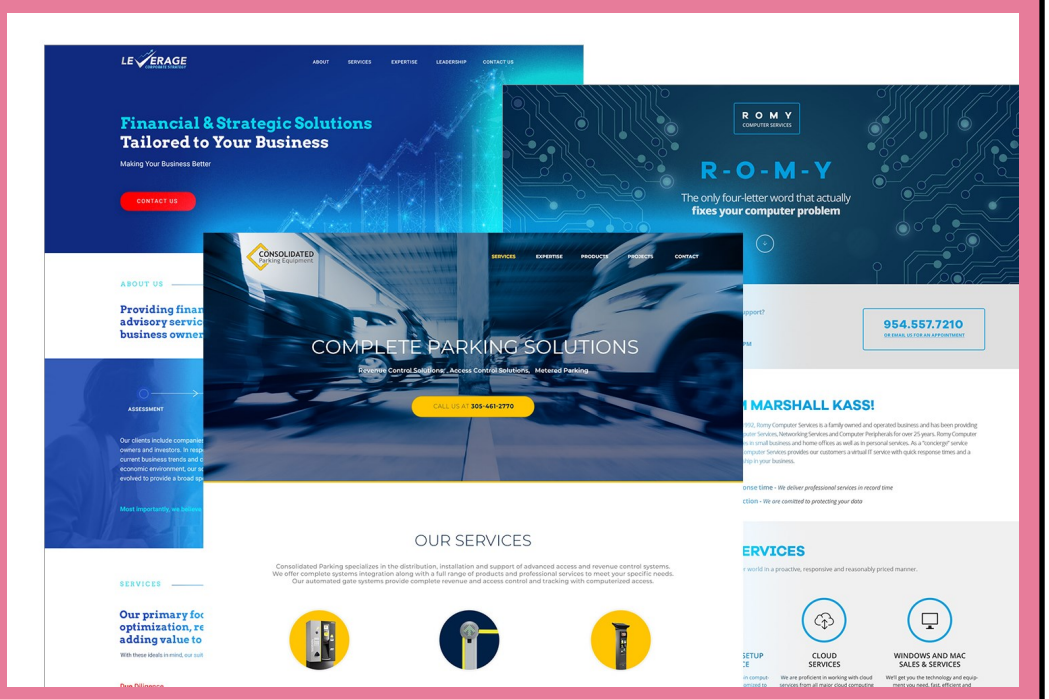
It was created by Tim Berners-Lee in 1990.



Examples of web pages

Web pages should have:

- Clear layout
- Simple navigation
- Suitable use of colours
- An easy to read font
- Interactive content



Web design tools

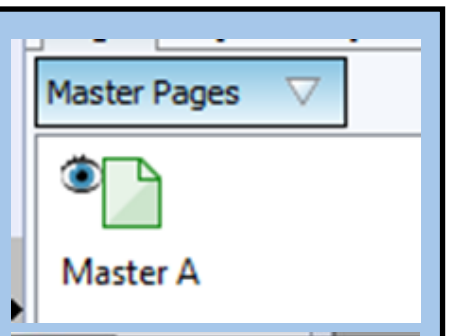
1) Master page– Use this to create the design for your website so all pages look the same

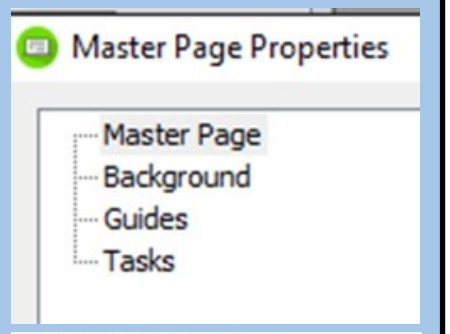
2) Page properties– Used to set the background colours and other settings on the page

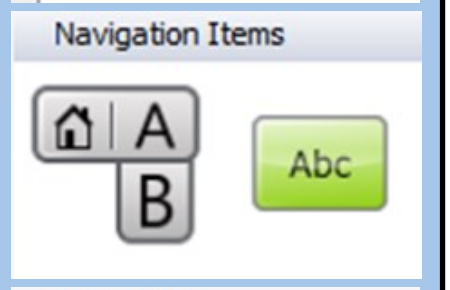
3) Navigation– Added to link the pages together

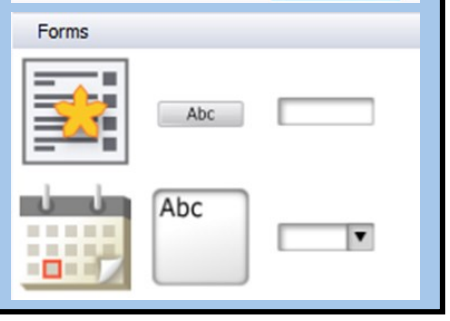
4) Interactive content– Used to make the website more interesting

5) Forms– Allows the user to give data to the owner of the website









Vocabulary

HTML	**The language used to create web pages.**
Tim Berners-Lee	**The developer of the world wide web.**
World wide web	**The collection of web pages with information on.**
Internet	**The collection of devices used to store and access websites.**
Web page	**A single file with information on, accessed using the internet.**
Website	**A collection of web pages linked together.**
Navigation bar	**A collection of links which allow a user to access the different pages on a website.**
Master page	**A page used to make sure all pages look the same.**
Interactive content	**Content that a user can change the behaviour of based on clicking on buttons or hovering over the content.**
URL	**Uniform Resource Locator. This is the address of the website.**
Browser	**A piece of software used to view web pages by interpreting the HTML.**

E-commerce

What do I need to know?

- What a business is
- What e-commerce means
- Advantages of e-commerce for a business
- Disadvantages of e-commerce for a business
- Advantages of e-commerce for a customer
- Disadvantages of e-commerce for a customer
- Why security is important
- What an entrepreneur is
- Why market research is important

Market research

This allows a business to find out what how best they can sell their products. This will hopefully lead to making more profit.

Primary research

- Carried out by the person who needs the information
- Will get more accurate results than secondary
- Takes more time and money to carry out

Secondary research

- Carried out by another organisation
- Quicker to carry out
- Results may not be specific for what is needed

Importance of security

Without security hackers may be able to:

- Get hold of customer contact details
- Get hold of customer bank details
- Put in fake orders

All of this could lead to the business losing money and/ or the trust of its customers.

Advantages and disadvantages of e-commerce

For the Business:

Advantages	Disadvantages
A chance to sell products 24/7	The website will need suitable security
Fewer staff are required	A suitable delivery service will need to be found
Fewer buildings are required	There may be issues with returns of items
Can be cheaper to run	

For the customer:

Advantages	Disadvantages
Shopping can be bought from the comfort of the home	There may be added costs of delivery
Shopping can be bought at any time	There is a higher chance of buying something that is not suitable
Easier to compare the best deals	Returning items can be a problem
No need to pay for parking or travel	

Vocabulary

Business	**An organisation where goods or services are exchanged.**
E-commerce	**Buying and selling items using the internet. This can be between customers or between businesses and customers.**
Entrepreneur	**A person who sets up a business in the hope of making profit.**
Primary research	**Gaining information directly from possible customers. Usually in the form on interviews or questionnaires.**
Secondary research	**Gaining information from research which has already been done. Can come from books, the interenet or other businesses primary research.**
HTTPS	**A method for making sure data, such as credit card information, is protected when being sent over the internet.**
Viable	**Being capable of working successfully. In a business, this would mean that enough people want to buy your product in order for you to make money.**

Python Programming

What do I need to know?

- **Explain the 3 computational constructs**
- **Describe what algorithms will do**
- **Use a range of programming functions, for example:**
  - **Print**
  - **Input**
  - **Variables**
  - **Loops**
  - **If statements**

Programming examples

Task	Python Code
Output	`print("Text")`
String Input	`input("Prompt :")`
Int Input	`int(input(" : "))`

Decision	`if pass == "1234":`
	`  print("login")`
	`else:`
	`  print("failed")`

Conditional loop - While **Unknown number of iterations**	`While pass != "1234":` `  Pass = input(":")`

Iterator Loop
FOR
Known number of iterations
	`for i in range(0,5):`
	`  print(i)`
	`for item in list:`
	`  print(item)`

Understanding code

The code below will count from 0 up to the number typed in.

- Firstly it asks for a number
- It then sets the starting number
- A loop is set up to repeat until count is no longer less than number
- The loop will print count and then add 1 on to count

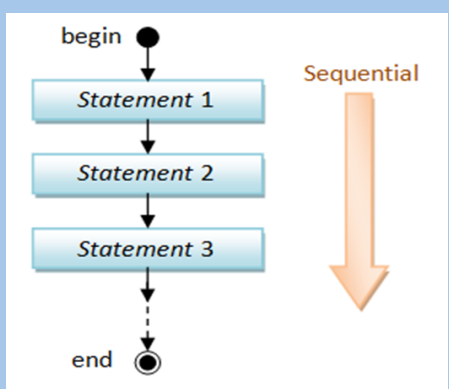
```
number=int(input("Please enter a number: "))
count=0

while count < number:
    print (count)
    count=count+1
```

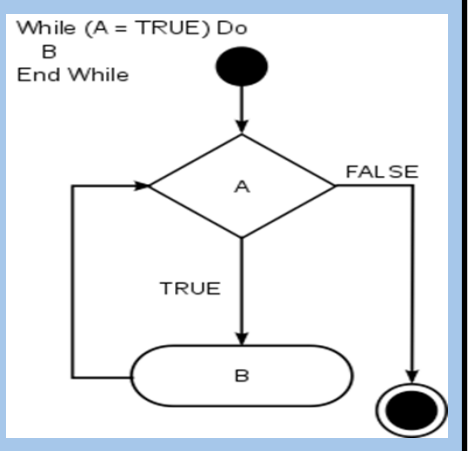
Programming constructs

There are 3 main elements that make up computational thinking. As you learn to program you will learn to use these building blocks to create ever more complex solutions to problems. The 3 computational constructs are explained below.

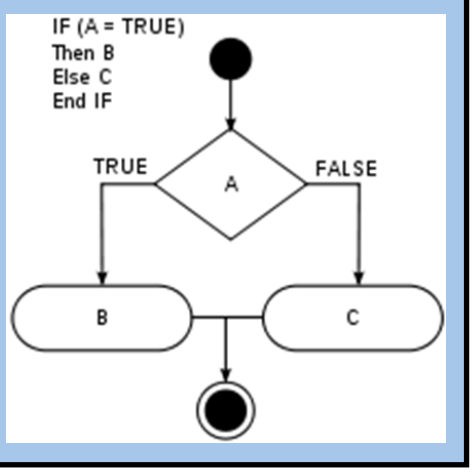
Sequence- This is a set of instructions in order.



Iteration- This is the process of repeating a set of instructions. Also known as a loop.



Selection- Where the **algorithm** makes a decision based on a choice of different paths.



Vocabulary

Algorithm	**A set of instructions to complete a task.**
Logic error	**An error which doesn't stop the program from running but gives an unexpected result, e.g. used + instead of -.**
Syntax error	**An error which won't allow the program to run because the rules of the language have been broken, e.g. incorrect spelling of print.**
Runtime error	**An error which stops the program from running because it is trying to do something that is impossible, e.g. divide by 0.**
IDE	**The software used to help write the code.**
Shell	**Where a Python program is run.**
String	**Data consisting of collections of characters (text).**
Float/ real	**Data which is a decimal number.**
Integer	**Data that is a whole number.**
Boolean	**Data that is either True or False.**
Mathematical operator	**An operator used for Mathematical calculations (+, -, /, *, ^, %)**
Comparison operator	**An operator used to compare two values (==, !=, <, <=, >, >=)**

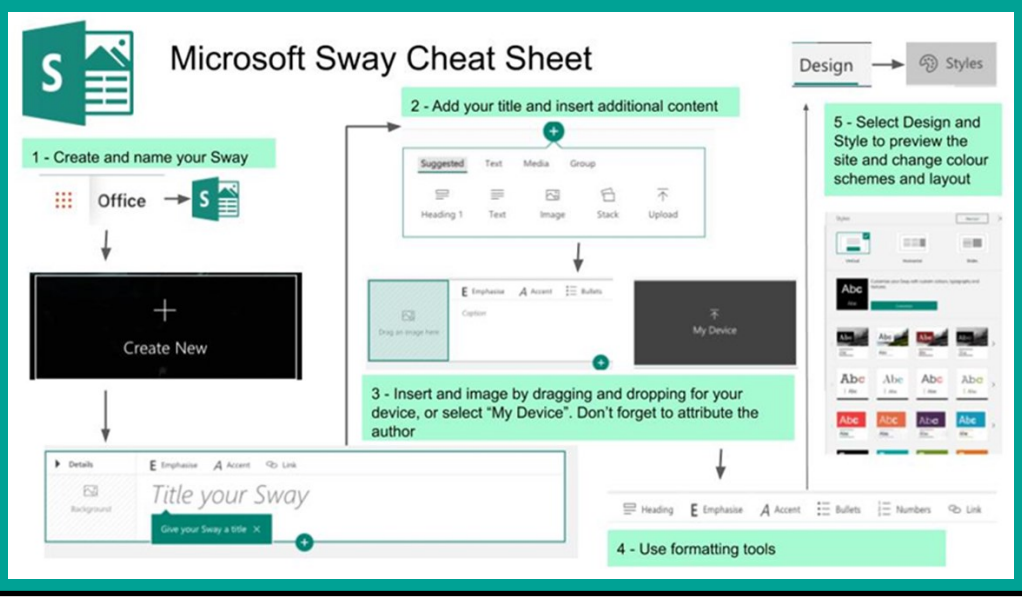
Supporting a cause

What do I need to know?

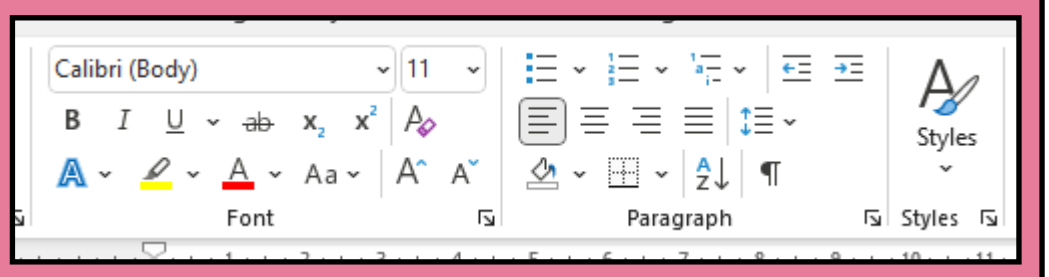
- **How to use word processors appropriately**
- **Licenses for images and other resources**
- **How to use images fairly and appropriately**
- **How to identify trustworthy sources of information**
- **How to avoid plagiarism**
- **How to research appropriately**
- **How to create digital products to promote a cause**
- **How to effectively combine resources into a digital product**

Combining resources to create digital products

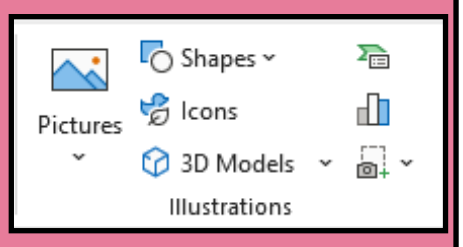
- Audience
  - Think about how they want it to look
  - Think about the language you use
  - Think about the content they would like to see



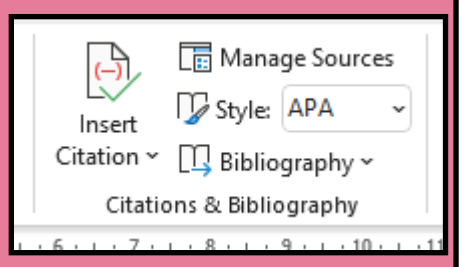
Using word processors



- **Use formatting tools appropriately**
  - Bold– emphasis
  - Underline– titles
  - Italics– emphasis
  - Alignment– move titles to middle
  - Bullets/ numbering– lists
  - Colours– use rarely



- **Images/ shapes**
  - Use sparingly
  - Use text wrap
  - Shapes can be used to high-light certain sections of text



- **Referencing**
  - Use manage sources to add details of all sources
  - Use insert citation every time a source is used
  - Add a reference list/ bibliography at the end of your work

Using online resources

Finding information

- Use appropriate search terms
- Check the dates on the source
- Use trusted sources
- Does the source look professional?
- Check the author and the source
- What's the purpose of the article?
- Check when the article was written
- Check the facts

Using information– avoiding plagiarism

- Make sure quoted information is highlighted using quotation marks or similar
- Use citations to show the source of the quote
- Make sure there are full details of each source used

Finding images

- Images are protected by the Copyright, Designs and Patents act
- Creative commons allows some images to be used without obtaining permission
- Search engines have a tool to only find creative commons images

Using images

- Make sure source of the image is attributed
- Make sure the image is saved for later use or reference
- Always resize by height and width equally
- Make use of formatting tools to edit the image if required

Vocabulary

Application software	**Software used to complete tasks useful for people**
Word processor	**Software used to create pieces of written work**
Formatting	**Changing how text or shapes look**
Attribution	**Giving credit/ acknowledging work not created by you**
License	**Allowing to use a resource**
Commercial	**To be used for sale or by an organisation trying to make a profit**
Trustworthy	**Able to be relied on as honest and truthful information**
Credibility	**Being trusted or believable**
Audience	**The person or group of people a document is aimed at**
Plagiarism	**Using someone's work without acknowledging it is not your own**
Citation	**A reference to another piece of work to acknowledge the original work and author**

Cyber Security

What do I need to know?

- Difference between data and information
- How data can be protected
- Different types of attacks including
  - Social engineering
  - Hacking
  - Malware
- How the Computer misuse act helps prevent attacks
- What individuals can do to protect their devices and data

Cyber security Risks:

- Social engineering
  - Phishing
  - Blagging
  - Shouldering
- Malware
- Hacking

Protecting your devices:

- Strong passwords
- Be suspicious of all digital communication
- Use encryption
- Install anti malware and firewalls
- Two factor Authentication

Data:

Raw facts and figures about people or objects

2	Angus	Scotland	Male	1
3	Benazir	England	Female	2
4	Charlie	England	Male	3
5	Dawn	Wales	Female	4

Information:

Data which has been given meaning to show what the facts and figures are representing

1	Name	Nationality	Gender	Value
2	Angus	Scotland	Male	1
3	Benazir	England	Female	2
4	Charlie	England	Male	3
5	Dawn	Wales	Female	4

Data Protection Act:

- Use data fairly and in accordance with the law
- Only use data for the specified purpose
- Only use data in a way that is necessary
- Ensure data is kept accurate and up to date
- Only keep data as long as necessary
- Protect data against loss, damage and unauthorised access

Computer Misuse Act:

- Unauthorised access to computer material
- Unauthorised access with intent to commit or facilitate further offences
- Unauthorised access with intent to impair the operation of a computer

Vocabulary

Cyber attack	Using techniques to harm a device or access data
Password	A phrase which allows you access to a computer system
Malware	Software which is designed to damage a device or access data
Brute force	Attempting to gain access to a system by repeatedly guessing log on details
Social engineering	Communicating with people or using deceitful behaviour to access data
Hacking	Accessing a device or data without permission
Anti malware	Software designed to find and remove malware
Firewall	Software used to prevent access to a device
DoS (Denial of Service)	Bombarding a server with more requests than it can handle to disrupt its operation
Computer Misuse Act	A law which outlines acceptable use of technology and shows the consequences for misuse
Data Protection Act	A law which outlines how personal data can be used and shows the consequences for misuse
Phishing	Sending emails to trick people into handing over personal data