

Year 8 Computing

	FOUNDATION	DEVELOPING	SECURE	EXCELLING
Computer Systems	<ul style="list-style-type: none"> * I can identify input and output devices *I can explain how raw data is processed by the CPU and output as information *I can explain why data must be saved to be used in the future *I am able to discuss the role of the Central Processing Unit (CPU) * I am discussing the difference between hardware and software *I can describe the purpose of a logic gate. 	<ul style="list-style-type: none"> * I can explain how input and output devices communicate with software *I can describe the role of the CPU and how it affects the speed of the computer *I can describe a range of storage devices, internal and external *I can suggest software for different tasks *I can explain how electrical circuits work using logic gates. 	<ul style="list-style-type: none"> * I can discuss the difference between ROM and RAM I can describe using examples embedded software *I can explain how the CPU's cache and cores affect the speed of the computer *I can describe how Cloud storage is used *I can discuss suitable software and hardware for people with disabilities * I can complete a Boolean expression and truth table using appropriate symbols: AND, OR and NOT. 	<ul style="list-style-type: none"> * I can discuss the difference between ROM and RAM * I can discuss benefits and drawbacks of embedded systems *I can discuss the impact of AI in the development of software and hardware *I can discuss ethical, legal and environmental impacts of Cloud storage * I can discuss the ethics of surveillance and privacy whilst using hardware devices *I can complete a truth table based on logical operators.
Networks	<ul style="list-style-type: none"> * I can define a network *I can explain how I use the network at school and home *I can describe how to connect to WiFi *I recognise the importance of passwords to keep a network secure * I am identifying nodes of a network. 	<ul style="list-style-type: none"> * I can explain the difference between the world wide web and the internet *I can identify three network topologies *I can identify benefits and drawbacks of using a network *I recognise how networks are used at home and school 	<ul style="list-style-type: none"> * I can explain the difference between a LAN and a WAN I can discuss benefits and drawbacks of three network topologies *I can discuss risks and preventative measures when using networks *I can identify factors that affect network performance * I can explain the acronyms: IP, DNS , ISP and URL 	<ul style="list-style-type: none"> * I can explain how DNS works and what it is used for * I can discuss features, benefits and drawbacks of mesh network topology *I can discuss ethical, legal and environmental impacts of Cloud storage * I can discuss network protocols * I can discuss the ethics of surveillance and privacy whilst using networks
Databases	<ul style="list-style-type: none"> * I can define a database * I can set up a table and add at least three fields *I can identify rows and columns *I can add data into a table *I can save a database using a relevant file name *I can explain what a database should do. 	<ul style="list-style-type: none"> * I can set short text and number fields *I can set a primary key *I can explain the purpose of a primary key *I can design at least three queries using criteria * I add use the wizard to create a data entry form and report * I can add fields to a data entry form. 	<ul style="list-style-type: none"> * I can select data types to restrict entry to add only Yes or No *I can explain the purpose of a validation and descending *I can add length checks design a data entry form with a button to add a new record *I can explain benefits of using databases 	<ul style="list-style-type: none"> * I can select a data type to add an image *I can set a validation and a validation message. *I can adjust field sizes to minimise memory *I can format the appearance of queries and reports *I can add navigation buttons to a data entry form * I can identify risks of using databases.

<p>Binary</p>	<ul style="list-style-type: none"> * I can explain why computers use binary data *I understand that binary represents electrical current *I can explain the difference between 0 and 1 *I can describe the difference between denary and binary *I can define Boolean: True or False. *I can create an image using pixels *I am aware that sound can be analogue or digital 	<ul style="list-style-type: none"> * I can use a table to convert denary to an 8-bit binary number *I can apply binary to computer memory *I can explain place values *I can explain steps to convert data * I can describe the difference between analogue and digital data * I can compare ASCII to Unicode 	<ul style="list-style-type: none"> * I can convert binary to denary numbers *I can order units of computer memory from 1 nibble to 1 petabyte (PB) *I can add together two 8-bit binary numbers *I can suggest suitable storage media for specific purposes / file types * I can discuss the difference between denary (base 10), binary (base 2) and hexadecimal (base 16) *I can discuss the effect of colour depth and resolution on the size and quality of an image file *I can explain the need for compression 	<ul style="list-style-type: none"> * I can convert binary and denary numbers to hexadecimal *I can identify ASCII code for specific characters *I can explain an overflow error *I can describe a binary shift *I can convert binary numbers to text *I can assess the social and ethical image of metadata *I can explain the difference between sound bit depth and bit rate *I can compare the difference between lossy and lossless compression
<p>Algorithms</p>	<ul style="list-style-type: none"> * I can describe an algorithm *I understand that I don't need programming skills to write algorithms *I can explain that an algorithm is used to solve a problem, using a set of step-by-step instructions *I can write an algorithm to show the steps to run a bath *I understand that an algorithm is used to plan a computer program 	<ul style="list-style-type: none"> *I understand that I don't need programming skills to write algorithms *I can explain the link between algorithms and computational thinking *I understand that an algorithm must have a starting point, a finishing point and a set of clear instructions in between 	<ul style="list-style-type: none"> * I understand that algorithms can be written using flowcharts or Pseudocode *I can demonstrate computational thinking using flow charts *I understanding that algorithms are used for calculations, data processing and automation *I understand that a program is only as good as the algorithm used to plan it *I am able to design a flow chart using symbols for start/stop, process, decision, input/output and direction. 	<ul style="list-style-type: none"> *I can adapt an algorithm to solve a similar problem *I can write Psuedocode to plan code *I can demonstrate the difference algorithms and computational thinking using Pseudocode *I can write Pseudocode using uppercase for instructions, variables in lowercase, messages in sentence case and questions (INPUT) and messages (OUTPUT) are in uppercase.

<p style="text-align: center;">Game Design</p>	<ul style="list-style-type: none"> * I can follow instructions to create a basic game using block code *I can use game coding to tell a story *I can experiment with different backgrounds and characters *I can use computational thinking to solve coding puzzles and problems *I can experiment with different instruments and sequences 	<ul style="list-style-type: none"> * I can navigate a game environment using movement and applying critical skills *I can explain the concept of Artificial Intelligence (AI) *I understand potential impacts of AI on people and society *I understand the importance and benefits of computer science in all aspects of life *I can create coding solutions to successfully design a game and solve a problem. 	<ul style="list-style-type: none"> * I can apply key coding concepts such as sequences, loops and debugging *I can fix unexpected issues *I can add sounds to enhance the game mood *I can discuss how Artificial Intelligence (AI) is relevant to different aspects of our daily lives * I can utilize coding concepts and computational thinking to develop algorithmic reasoning and problem decomposition skills for creating effective game development 	<ul style="list-style-type: none"> * I can develop unique solutions experimenting with coding tasks, iterating on designs for costumes, sets, and routines * I can reflect on the role of creativity in coding, discussing how coding can enhance performances and real-world experiences *I can discuss future related careers related to my learning, such as game design and digital music *I can apply learning about AI to gain awareness of CS career connections *I can discuss how computational thinking can be applied to other subjects.
---	--	---	---	--