Year 8 Curriculum Plan

Computing

	Autumn 1 Data representation	Autumn 2 Mobile phone app development	Spring 1 Animations	Spring 2 Cyber security and data encryption	Summer 1 Developing for the web	Summer 2 Creating an audio advert in Audacity
PRIOR LEARNING	Students will have a brief understanding of what binary is due to the Computer Hardware topic in Autumn where they learned the foundational knowledge about logic gates and Boolean.	Students have previously studied a block-based programming language through the Microbit and have learned about design and layout through the practical elements of the Year 7 teaching through the software packages.	Students have previously learned how to select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs and learned to be discerning in evaluating digital content from the work they did on the Using Computers Safely, Effectively and Responsibly in Year 7 as well as any multimedia editing they did at primary school.	Students have previously covered how to stay safe online and cyber security from the Using Computers Safely, Effectively and Responsibly unit in Autumn 1of Year 7 and learned what networks are, how computers are connected and the advantages and disadvantages of using a network in Spring 2 of Year 7.	Students have previously learned what the Internet and WWW is from the Networks unit in Spring 2 of Year 7 so have some awareness of the languages of the web. They have learned elements of design and JavaScript coding through the mobile app development unit in Autumn 2 of Year 8 and throughout the various practical units students have learned how to be discerning in sourcing digital content.	In Spring 1 of Year 8 students have completed a unit on animations in Spring 1 of Year 8 where they learned how to interpret a client brief and create a storyboard plan as well as how to select and import audio into their creation. They have also covered sound files within the Binary unit in Autumn 1 of Year 8 plus how to create, reuse, revise and repurpose digital artefacts for a given audience throughout the units.
KNOWING WHAT…	In this theoretical unit, students will learn about the binary and hexadecimal numbering systems, why they are used, how they work and how to convert between number systems. They will then explore how text, images and sound are represented in computer systems and how and why Boolean logic gates are used in computing.	In this practical unit, students will be taken through the entire process of designing, sourcing assets, creating, testing and publishing their own mobile app using Code.org's App Lab. They will build on the programming concepts used in the Flowol and Microbit units of work by learning how to combine design elements with JavaScript coding blocks in constructing their app screens.	In this practical unit, students will explore the importance and types of animation and will discover how professionals create 3D animations using industry-standard software packages. They will learn the features of animations and storyboarding, layouts and graphics to create their own animation including audio.	In this theoretical unit students will go on a journey of discovery of techniques that cybercriminals use to steal data, disrupt systems and infiltrate networks by first considering the value of data then learning about social engineering and other common cybercrimes then explore the different methods to protect themselves against these attacks.	Students will learn the basics of HTML and CSS, and how to create a webpage which adapts to any size of screen for viewing on. They will learn how to create text styles and add content, including text and graphics, in a specified position on a page, as well as navigation links to other pages on their website and to external websites. Students will learn effective design and develop their own webpages in a text editor.	Students will learn how sound is digitized and stored on computers. They will learn basic sound editing techniques and how to add sound effects and mix tracks. They will explore different ways of creating different sound effects (the job of a "Foley artist") are described. Students will undertake a creative project to analyse, plan, record and edit a short radio advertisement or podcast.

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KNOWING HOW…	Students will be able to explain what binary is, why it is used and how to convert from binary to denary and vice versa, what ASCII is and how it is used to represent characters, why we need Unicode, what a pixel is and how pixels relate to bitmap images, what colour depth and resolution are, why analogue sound needs to be converted to digital, what sampling is in sound and how AND, OR and NOT logic gates are used in computer circuits.	Students will be able to apply computational thinking through decomposition to break down the app challenge into manageable steps, use the block-based programming language of App Lab to create a sequence, use event-driven code blocks to control the flow of their apps, use selection to determine the path through the app, add graphical user interface design elements to meet the needs of the user, use variables to store data that changes,	Students will be able to explain the types and methods of animation and the methods used to create them, when and where different types of animation are used, different types of audio, conventions used in audio to meet a purpose such as humour and Foley sound effects, the purpose of and methods of creating pre-production documentation such as storyboards.	Students will be able to identify what happens to data entered online, how data breaches are caused by humans, explain what hacking is and how to reduce the chance of data being accessed by unauthorised bodies, explain the impact of a DDoS attack to users, examine the different types of malware and their impact and identify the most effective methods to prevent cyberattacks and network security risks and the different methods and purpose of data encryption.	Students will be able to explain what HTML is, recognise the purpose of and use basic HTML tags and elements, edit HTML and view changes in a browser, insert hyperlinks and multimedia and explain the purpose of and use CSS to set styles in their webpages and improve the appearance by changing the layout, images and fonts.	Students will be able to explain how sound is digitised, identify different audio file formats, explain and label the different properties of digital sounds such as bit depth and sample rate, interpret a client brief and create a storyboard and script, import assets into sound editing software, use a range of features such as fade, gain, pitch and tools and techniques such as looping, compression and export the digital sound sequence in an appropriate file format.
ASSESSMENT	Formatively through the various data representation challenges in lessons and at the end of the unit through an on-screen Office Forms test consisting of questions binary conversions, ASCII conversions, calculating sample rate, image types and pixels.	Formatively through the practice app challenges and quizzes within lessons and at the end of the unit through; -An on-screen Office Forms test with questions about app design, code blocks, debugging sections of code and animation in the real world. -A practical assessment where students design, source assets, create and test their own mobile app in App Lab for a given scenario.	Formatively through their learning portfolio of animation work and at the end of the unit through; -An on-screen Office Forms test covering what is animation, labelling the software features and their purpose, interpretation and evaluation of pre-production documents, different animation types, sound types and their use, editing, interactivity and frame rates.	Formatively within lessons through the various quizzes and challenges within lessons and at the end of the unit through an on-screen Office Forms test covering different types of cybersecurity risks, methods of preventing cyberattacks and network security risks and recognising different methods of data encryption.	Formatively through the various HTML and CSS mini webpage tasks that they complete during the lessons and at the end of the unit through; -An interactive set of HTML and CSS exercises such as add the missing brackets, correct the sections of HTML and CSS code, matching up the tags and elements to their descriptions. -A practical assessment where students design, source assets, create and test their own webpages for a given scenario.	Formatively through the various sound activities within the lessons and at the end of the unit through; -An on-screen Office Forms test covering questions on types of sound files, features of audio files, labelling the tools and techniques, sample rate and interpreting a storyboard. -A practical assessment through means of an Assessment Portfolio, to include a description, critical review and evidence of an advertisement planned and recorded by the pupil, and a self-evaluation.

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