Virtual Curriculum 2023-2024

Alt Bridge School

Virtual Curriculum Cluster

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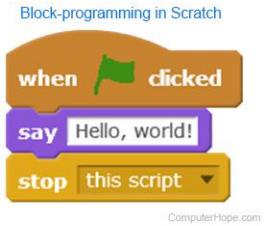
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Yr. 7	**E-safety, Security and Digital Footprints** **Students are able to:** • Understand that they can go to exciting places online, but they need to follow certain rules to remain safe. • Understand that they should stay safe online by choosing websites that are good for them to visit, and avoid sites that are not appropriate for them. • Explore reasons why people use passwords, learn the benefits of using passwords, and discover strategies for creating and keeping strong, secure passwords. • Explore what it means to be responsible to and respectful of their offline and online communities as a way to learn how to be good digital citizens.	**Understanding Computers – Computer Systems** **Students are able to:** • Explain the function of the main internal parts of basic computer architecture. • Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems. • Understand the function and purpose of a computer. • Understand that not every computer looks like a PC and that many everyday devices contain computers. • Describe the computer system (Input – Process – Output). • To be able to describe the hardware components found in a computer. • Describe how calculations are performed by the CPU. • Classify a range of software including operating systems, utility and application software. Explains the difference between hardware and software, and their roles within a computer system.	**How data is represented in computers – Intro to Languages** **Students are able to:** • Understand how data is stored in computers using Binary • Convert positive denary whole numbers into binary numbers • Convert binary numbers to denary. • Explain what binary digits (bits) are, in terms of familiar symbols such as digits or letters • Measure the size or length of a sequence of bits as the number of binary digits that it contains. • Describe how natural numbers are represented as sequences of binary digits	**Programming (Block based - Scratch)**  **Students are able to:** • Use logical reasoning to predict the behaviour of programs. • Builds programs that implement algorithms to achieve given goals. • Demonstrates how arithmetic operators, if statements, and loops, are used within programs. Declares and assigns variables. • Apply decomposition to break down a large problem into more manageable steps. • Use user input in a block-based programming language. • Use a block-based programming language to create a sequence. • Use variables in a block-based programming language.	**Digital Creativity – Animations** **Students are able to:** • Create a 3–10 second animation • Add, move, and delete keyframes to make basic animations • Play, pause, and move through the animation using the timeline • Render the animation and present it to an audience.	**Collaborative Project – Planning A School Trip** **Students are able to:** • Combine Information technology and the wider life around school to research, plan and implement a project and then complete peer and self-evaluations. • Working as part of a team for this project so will allow them to practise teamwork and leadership skills and also their creativity.

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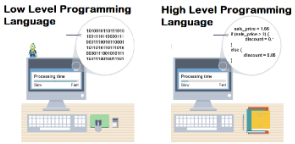
		• Describe systems software and application software. • Identify the different application software on the school network. • Describe the different types of secondary storage. • Can give examples of how data is stored on a computer.				
Yr. 8	**E-safety, Security and Ethics** **Students are able to:** • Recognise the 24/7, social nature of digital media and technologies, and gain basic vocabulary and knowledge for discussing the media landscape. • Review their media habits and the array of media they use on a weekly basis, and reflect on the role of digital media in their lives. • Recognise that they have a digital footprint and that this information can be searched, copied and passed on, but that they can take some control based on what they post online. • Consider test their knowledge of digital media and talk about the role media plays in their lives.	**Understanding Computers – Hardware & Software** **Students are able to:** • Describe the computer system (Input – Process – Output). • To be able to describe the hardware components found in a computer. • To be able to describe the different types of secondary storage. • To be able to describe systems software and application software. • To be able to identify the different application software on the school network.	**How data is represented in computers – Languages and Programming**  **Students are able to:** • Use a basic computer language and investigate making digital media such as images and sounds, and discover how media is stored as binary code. • They will draw on familiar examples of composing images out of individual elements, mix elementary colours to produce new ones, take samples of analogue signals to illustrate these ideas. • This will help the students to understand how the underlying principles of digital representations are applied in real settings.	**Programming – Intro to Python** **Students are able to:** • Describe what algorithms and programs are and how they differ • Recall that a program written in a programming language needs to be translated in order to be executed by a machine • Write simple Python programs that display messages, assign values to variables, and receive keyboard input • Locate and correct common syntax errors	**Digital Creativity – Image Manipulation & Editing** **Students are able to:** • Draw basic shapes (rectangle, ellipse, polygon, star) with different properties (fill and stroke, shape-specific attributes) • Manipulate individual objects (select, move, resize, rotate, duplicate, flip, z-order) • Manipulate groups of objects (select, group/ungroup, align, distribute)	**Collaborative Project – App Lab** **Students are able to:** • Identify when a problem needs to be broken down • Implement and customise GUI elements to meet the needs of the user • Recognise that events can control the flow of a program • Use user input in an event-driven programming environment • Use variables in an event-driven programming environment • Develop a partially complete application to include additional functionality • Identify and fix common coding errors • Pass the value of a variable into an object • Establish user needs when completing a creative project • Apply decomposition to break down a large

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	• Discuss their understanding of ethical behaviour and are introduced to the concept of online ethics. • Explore how they and others represent themselves online and the relationship between online and offline selves.					problem into more manageable steps • Use user input in a block-based programming language • Use a block-based programming language to create a sequence • Use variables in a block-based programming language • Use a block-based programming language to include sequencing and selection • Use user input in a block-based programming language • Use variables in a block-based programming language • Reflect and react to user feedback • Use a block-based programming language to include sequencing and selection • Use user input in a block-based programming language • Use variables in a block-based programming language • Evaluate the success of the programming project

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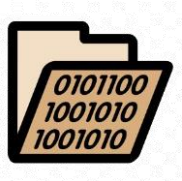
Yr. 9

Computer Systems - Understanding Computers

Students are able to:

- Describe the computer system (Input – Process – Output).
- To be able to describe the hardware components found in a computer.
- Describe how calculations are performed in CPU.
- Carry out calculations in CPU.
- To be able to describe systems software and application software.
- To be able to identify the different application software on the school network.
- To be able to describe the different types of secondary storage.

Representation of Data (Binary & Beyond)



Students are able to:

- Develop an understanding how data is represented in a computer
- Convert denary numbers and characters into binary numbers

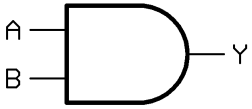
Knowledge

- Students will know that computers represent data as binary
- Students will know how to convert denary numbers and characters to binary numbers

Skills

- Be able to convert denary numbers and characters to binary numbers

Binary: Logic Gates & Boolean



Students are able to:

- Develop an understanding of what an algorithm is
- Represent an algorithm as a flowchart
- Develop an understanding of different types of algorithms
- Demonstrate an understanding of binary numbers and algorithms

Knowledge

- Students will know what an algorithm is
- Students will be able to identify different types of algorithm

Skills

- Be able to design an algorithm, using a flowchart

Programming: Python – Programming Skills

Students are able to:

- Write programs that display messages, receive keyboard input, and use simple arithmetic expressions in assignment statements
- Use selection (if-elif-else statements) to control the flow of program execution
- Locate and correct common syntax errors
- Create lists and access individual list items

Programming: Python – Advanced (Chatbot)

Students are able to:

- Use iteration (while statements) to control the flow of program execution.
- Perform common operations on lists or individual items.
- Perform common operations on strings or individual characters
- Use iteration (for statements) to iterate over list items.
- Perform common operations on lists or strings.
- Use iteration (for loops) to iterate over lists and strings
- Use variables to keep track of counts and sums
- Combine key programming language features to develop solutions to meaningful problems

Collaborative Project – Planning a DofE Expedition

Students are able to:

- Prepare a printed report for their Duke of Edinburgh Bronze Award. They gather, process and output information in text and image form. Pupils work to complete different aspects of a report then join together to form a full report and then work to produce an itinerary and plan.
- They learn to develop strategies of group working including data sharing. There are a variety of opportunities for cross curricular links e.g. English, Geography (weather), etc.

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Yr. 10

Fast Food Project

Students are able to:

- Identify, Interact with and use ICT systems to meet requirements of a straightforward task in a familiar context.
- Manage information storage by working with files and folders.
- Follow and demonstrate understanding of the need for safety and security practices.
- Use search techniques to locate and select relevant information.
- Select information from a variety of ICT sources for a straightforward task.
- Enter, develop and refine information using appropriate software to meet requirements of straightforward tasks.
- Use appropriate software to meet requirements of straightforward data-handling task.
- Use communications software to meet requirements of a straightforward task.
- Combine information within a publication for a familiar audience and purpose.
- Evaluate own use of ICT tools.

Combining & Presenting Information

Students are able to:

- Understand the purpose of different document types
- Explain the purpose of different document types
- Know appropriate software to present and communicate information
- Describe the features of applications which make them suitable for presenting and communicating information
- Be able to produce appropriate documents for different audiences
- Produce documents that meets the needs of defined audiences
- Use tools and techniques to enhance the presentation of information
- Be able to review documents
- Carry out a document review

Using ICT to communicate (Word Processing)

Students are able to:

- Learn to use the application to create new documents, and to add and edit content
- Use application tools to design a document's look-and-feel by manipulating page layout, fonts, styles and images
- Learn to create text structures that make content easier to read and understand, including tables, and bulleted and numbered lists
- Learn to collaborate on word-processing projects by editing and sharing documents

Using Spreadsheets

Students are able to:

- Identify columns, rows, cells, and cell references in spreadsheet software
- Use formatting techniques in a spreadsheet
- Use basic formulas with cell references to perform calculations in a spreadsheet (+, -, *, /)
- Use the autofill tool to replicate cell data
- Explain the difference between data and information
- Explain the difference between primary and secondary sources of data

Collaborative Project

TBD

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Yr. 11	Managing Information - eSafety	Finding and Selecting Information	Assessment Prep – Advanced Spreadsheets (Basic Formulas, IF Functions, Absolute function, Lookup formula)	Assessment Prep - Using ICT to communicate (Email)	Assessment Period	
			Advanced Spreadsheets			
	Students are able to: • Identify, Interact with and use ICT systems to meet requirements of a straightforward task in a familiar context. • Manage information storage by working with files and folders. • Follow and demonstrate understanding of the need for safety and security practices. • Use search techniques to locate and select relevant information. • Select information from a variety of ICT sources for a straightforward task. • Enter, develop and refine information using appropriate software to meet requirements of straightforward tasks. • Use appropriate software to meet requirements of straightforward data-handling task. • Use communications software to meet requirements of a straightforward task. • Combine information within a publication for a familiar audience and purpose. • Evaluate own use of ICT tools.	**Students are able to:** • Use equipment safely, e.g. arrange hardware, cables, adjust seating, lighting, avoid hazards, take breaks 2 Select and use appropriate ICT-based information sources • Recognise different sources of information, ICT-based and other forms • Know how to use ICT-based information sources, e.g. Internet, apps, social media, USB, SD card, CD, DVD • Use correct procedures to access, use and close application • Search to find specific information • Use input devices • Use appropriate search techniques, e.g. search, menu, contents list, index, key word, find tool Use internet sources of information, i.e. enter a web address, use search engine, follow links, use forward, back and use bookmarks • Use Help facilities to find information within applications • Use removable media	• Collect data • Analyse data • Create appropriate charts in a spreadsheet • Use the functions SUM, COUNTA, MAX, and MIN in a spreadsheet • Analyse data • Use a spreadsheet to sort and filter data • Use the functions AVERAGE, COUNTIF, and IF in a spreadsheet • Use conditional formatting in a spreadsheet	• Use equipment safely, e.g. arrange hardware, cables, adjust seating, lighting, avoid hazards, take breaks • Access email application • Keep information secure, e.g. password, PIN, keep copies safe • Open mailbox • Use input devices, e.g. keyboard, mouse • Create and send an email message 3.1 Create an email message • Enter an email address • Enter an appropriate subject • Enter text in the message area • Check meaning, accuracy and suitability of the email • Send an email • Print an email • Receive and read email messages • Open an email that has been received • Read the email • Print the email • Reply to an email • Prepare a reply to the received email • Use the reply facility • Enter text in the message area		

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		• Insert, use and remove media safely, e.g. USB, SD card, CD, DVD, zip disc/drive, , etc. 5 Select and present information • Recognise when appropriate information has been found • Know how to present information, e.g. printouts, written reports		• Check meaning, accuracy and suitability of the email • Send the email • Print the email • Delete an email • Find the received email • Delete an email		

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Curriculum Opportunities

Term & Date	Event	Year Group	Aim
HT 1 – TBC	Ada Lovelace day	KS3 (7-9)	Highlight women in Computing / History – (Now & Then)
HT 2 – TBC	BIMA – Digital day	KS4 (10 & 11)	Introduce & insight in careers in digital world
HT 2 – Nov '23 (TBC)	Bebras Challenge	KS3 (8&9)	Introduce to Computational thinking - Welcome - UK Bebras
HT 3 - TBC	Bletchley Park Visit of Virtual learning	KS3 7 & 8	History of computing – Discover, explore & be inspired Alan Turing – LGBTQ+ - Stonewall
HT 4 - TBC	Barclays IT allowed day	KS3 8	Enrich girls & highlight how computing used within industry context
HT 4 & 5 Apr '24 (TBC)	Industry WOW DAY – insight & highlight into careers in the digital sector	KS3 8 & 9	Insight & insight into careers in the industry: • BIMA • InnovateHer • Briggs Automotive Company • Work alongside CAS/NCCE & MGL Target half term before options to increase uptake at KS4

- Target **innovateher** pupils (Year 9 15 pupils to uptake CS) - https://innovateher.co.uk - libby@innovateher.co.uk
- Pupil survey **– Opinions & thoughts of 'computing'**
  - Use the results in the design & development of resources of the KS3 curriculum
- Highlight careers within the industry using industry role models
  - National Centre for Computing Education Curriculum Updates
  - STEM Curriculum Updates via Gaynor Hudson