

INTENT

Our faculty mission is to equip students with a robust understanding of computer science principles, practical programming skills, and the ability to apply computational thinking to solve real-world problems. We aim to develop students who are not only proficient users of technology but also creative thinkers and informed digital citizens. The curriculum is designed to challenge and **Develop Computational Thinking**: Teach students how to think logically, solve problems efficiently, and understand the principles of computer systems and networks, **Advance Programming Proficiency**: Introduce students to programming languages such as Python, ensuring they understand basic syntax, control structures, and algorithms. Mature **Digital Literacy skills**: Ensure students are competent and safe users of technology, understanding online safety, data privacy, and the ethical implications of technology.

	Prior learning	The KS2 Computing curriculum teaches pupils to understand the basics of computer science, including programming and how digital systems work. They learn to use technology purposefully to create and present content, and to stay safe and responsible online. The aim is to develop logical thinking, creativity, and digital literacy to prepare them for the digital world.
	Conscious curriculum links	Data representation – methods of addition and setting out maths problems, shared vocab between them are: Integer, Addition, Multiple, Divide, Carrying, Colum addition, Place value
	Extra-curricular	Bebras Computing Challenge is an international competition that promotes computational thinking among students aged 6 to 18. Organized in over 80 countries.

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC/KNOWLEDGE	Computer Components Learn the different types of input and output devices and how the different for various systems Know the 3 types of storage and their characteristics Understand the purpose of the CPU, motherboard, RAM, NIC, GPU, PSU Differences between the operating systems and applications why the need for both Need for utility software. Encryption - unplugged task defrag, compression, backup	Digital Literacy (Office 365) Logging in, Create folders, accessing documents (pupil shared), Internet - Use web browsers confidently and to search up specific information online safely. E-safety - secure password, digital footprint(ip addresses, cookies), sexting, grooming, cyberbullying, secure websites, ceop, childline, thinkyouknow emails - know how to safely send and receive emails and the tools used in email software, - how to set up formal email?? Sig, bcc, cc etc? word - Know how to correctly lay out a formal business letter using Microsoft Word. powerpoint - Understand how to create a presentation to suit different audiences using PowerPoint.	Microbits parts of the micorbits and use of the block code emulator skill building with some of the main blocks analyse problem and create project, then extend	Data Representation What is binary? Converting binary to denary. Denary to Binary 4 bit, 8 bit Add two binary numbers together & overflow error understand the way computers store images as binary, colourdepth, resolution understand the way computers store text as binary understand the way computers store sound digitally as binary	Python Basics Intro to programming & python, print, operators, concatenation debug, comments, variables (operators) input in variables selection, if & else, elif boolean logic with ifs (AND OR NOT	Web Design Analyse websites, good sites bad sites, types of websites, fit for purpose, sitemaps & structure Introduction to rockercake, tools- create a basic website layout. Rocketcake - adding images, rollover, sizes, position Rocketcake - Text, Headings, Paragraph, Fonts, alignment, webpage colours, alternative text Rocketcake - buttons, hyperlinks & emails, Sound & videos
	Create a program Demonstrate simple computational thinking methods Be able to use all Microsoft packages and know how to use essential tools to complete tasks or present work in the correct way. Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems Create a program with basic functionality e.g sound, buttons, score Converting between Binary and Denary Explain the use of binary codes to represent characters That bitmap images are made up of pixel					
ASSESSMENT	Low stakes test – categories devices into three categories input, output & storage Identify different computer components RAM, Motherboard etc., and explain their role	ESafety quiz – How to keep safe using technology. Identify key sections of Microsoft package tool bar/layout.	Identify the different parts of the Microbit and explain their purpose. Create a simple Microbit program that uses inputs & variables. End of Microbit topic assessment	Low stakes testing – convert binary-denary and hex exam style questions. MCQs bitmaps, characters (ASCII) sound. End of Data Representation topic assessment	Quiz – Python programming – basic syntax Debug simple python programs and get them to run.	Analyse the strengths and weaknesses of different websites. Explain what makes a good website and explain how navigation should work. End of Web Sites topic assessment
VOCAB	Key terminology: Inputs, Outputs, Hardware, Software, Peripheral, devices, Processes, Motherboard, Power, Case, Processor, hard drive and RAM, CPU, Storage	Key terminology: Formula, text, header, footer, page number, sum, average, =, cell, referencing, active cell, transitions, animation, hyperlinks, text box, word art, styles.	Key terminology: Code, Programming, Syntax, Data type, String, integer, Float /Real, Variable, Operators, Algorithms, sequences, iteration, Selection, concatenation, run time, loop, elseif, statements, Decomposition , Abstraction, Pattern recognition, Algorithm, flowchart, computational thinking, pseudocode	Key terminology: ASCII Unicode Sound Bitmap Character Set Binary Denary Bits Base 2 Binary Pixels Pixel depth Direct colour Converted	Key terminology: Code, Programming, Syntax, Data type, String, integer, Float /Real, Variable, Operators, Algorithms, sequences, iteration, Selection, concatenation, run time, loop, elseif, statements, Decomposition , Abstraction, Pattern recognition, Algorithm, flowchart, computational thinking, pseudocode	Key terminology: Independently Investigation Technical Analysis Documented Design Technical Solution Testing Evaluation Objectives Critical Path

Reading Skills

Pupils develop critical reading skills by interpreting and understanding complex programming documentation. Pupils learn to extract relevant information, understand technical jargon, and comprehend detailed instructions. Computing emphasizes the importance of clear and precise writing. Pupils engage in writing code comments, documentation, and project reports, which require them to explain their thought processes and solutions in a coherent manner. This practice enhances their ability to articulate complex ideas. Digital literacy skills pupils will understand how to navigate and utilise various software tools, platforms, and online resources which is crucial in today's digital world. This competence supports their ability to research, learn independently, and engage with digital content critically and safely.

CAREERS LINKS

- Computer technicians
 - Computer Developer
 - Computer hardware engineer
- Software Developer
 - Photo Editor
 - UIX Designer
- Electrical Engineer

CORE

In computing, these values support problem-solving, persistence in debugging, effective project management, and striving for high-quality work. The curriculum reinforces personal development, emotional wellbeing, and responsible online behaviour, helping pupils build resilience and strong character both digitally and personally.

SUPPORTING STUDENT'S AT HOME

we support pupils' learning at home through a combination of structured homework tasks and knowledge organisers that reinforce key concepts. We provide clear how-to guides and curated YouTube videos to offer step-by-step help with practical skills. Additionally, pupils can access ongoing support via email, ensuring they have timely assistance outside of classroom hours.

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	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC/KNOWLEDGE	Digital Literacy (Office 365) Logging in, Create folders, accessing documents (pupil shared), Internet - Use web browsers confidently and to search up specific information online safely. E-safety - secure password, digital footprint(ip address, cookies), sexting, grooming, cyberbullying, secure websites, ceop, childline, thinkyouknow emails - know how to safely send and receive emails and the tools used in email software. - how to set up formal email?? Sig, bcc, cc etc? word - Know how to correctly lay out a formal business letter using Microsoft Word. powerpoint - Understand how to create a presentation to suit different audiences using PowerPoint.	Microbits parts of the micorbits and use of the block code emulator skill building with some of the main blocks analyse problem and create project, then extend	Computer Components Learn the different types of input and output devices and how the different for various systems Know the 3 types of storage and their characteristics Understand the purpose of the CPU, motherboard, RAM, NIC, GPU, PSU Differences between the operating systems and applications why the need for both Need for utility software. Encryption - unplugged task defrag, compression, backup	Data Representation What is binary? Converting binary to denary. Denary to Binary 4 bit, 8 bit Add two binary numbers together & overflow error understand the way computers store images as binary, colourdepth, resolution understand the way computers store text as binary understand the way computers store sound digitally as binary	Python Basics Intro to programming & python, print, operators, concatenation debug, comments, variables (operators) input in variables selection, if & else, elif boolean logic with ifs (AND OR NOT	Web Design Analyse websites, good sites bad sites, types of websites, fit for purpose, sitemaps & structure Introduction to rockercake, tools- create a basic website layout. Rocketcake - adding images, rollover, sizes, position Rocketcake - Text, Headings, Paragraph, Fonts, alignment, webpage colours, alternative text Rocketcake - buttons, hyperlinks & emails, Sound & videos
	SKILLS Create a program Demonstrate simple computational thinking methods Be able to use all Microsoft packages and know how to use essential tools to complete tasks or present work in the correct way. Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems Create a program with basic functionality e.g sound, buttons, score Converting between Binary and Denary Explain the use of binary codes to represent characters That bitmap images are made up of pixel					
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CURRICULUM AND ASSESSMENT PLAN

Computing

YEAR 8



INTENT

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	Prior learning	They'll be familiar with key computer components, understand how data is represented using binary, and have used block-based programming with tools Micro:bits to create basic programs. They have had early exposure to text-based coding, including simple Python commands, laying the groundwork for more advanced programming in KS3.
	Conscious curriculum links	Logic Gates – using bracket as separators to show what must be completed first in order of priority, Excel – ensuring graphs are set out with X and Y axis. Vocab – Quantitative, qualitative data, trends, tally, expression, operations
	Extra-curricular	Bebras Computing Challenge is an international competition that promotes computational thinking among students aged 6 to 18. Organized in over 80 countries.

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC/KNOWLEDGE	Computational Logic AND OR NOT, NAND, NOR, XOR, NAND Using AND OR NOT gates - Use online builder Purpose of truth tables, how to complete them, how to draw gates from them Purpose of expressions, using expressions, drawing logic gates from them.	Algorithms & Computational Thinking Look into abstraction, What is it? How it works? Look into decomposition, What is it? How it works? Look into pattern recognition, what is it? How it works? Algorithms - Look at algorithms, What are they? Apply all to computers. Use the insertion sorting algorithm to organise data Use the Merge sorting algorithm to organise data How computers search data using the linear and binary search. Use the bubble sorting algorithm to organise data	Flowcharts Create flowcharts to include Sequence & Selection Create flowcharts to include Recap & Iteration Create flowcharts to include While loop, Forever loops and for loops. Create flowcharts to include use of variables and subroutines	Python Advanced Create programs to include print, vars,input,ifs Create programs to include While loops Create programs to include For loops Create programs to include Arrays Create programs to include Procedures	Excelling Demonstrate a basic Understanding excel Demonstrate in excel Applying conditional formatting to cells Creating basic formulas and their purpose Write formulas that include IF and VLOOKUP Using build in functions in excel	Mobile App Development Identify when to breakdown a problem & implement/customise GUIs for user needs User inputs and variables to complete applications with additional functionality Identify and fix common coding errors while looking at user needs for completing a creative project Apply decomposition with user inputs with block based programming
SKILLS	Create a program with basic functionality e.g sound, buttons, score.. Describe what an algorithm is and be able to create sequences Be able to enter data into a spreadsheet Knowing the difference between the module and shell. Describe what an algorithm is and be able to create sequences Create a Truth Table for AND, OR and NOT gates Draw the XOR, NOR, XNOR and NAND gates Identify the different flowchart symbols Utilizing the correct flowchart symbol depending on the scenario given. To be demonstrate an ability to deconstruct a problem into small tasks Show an ability to draw out patterns within similar problems					
ASSESSMENT	Identify Logic gate symbols – AND, OR & NOT Complete a truth table for a logic circuit that uses two gates. End of Logic Gates topic assessment	Demonstrate how to perform a binary and linear search State the differences between all aspects of computational thinking End of Algorithms and computational thinking topic assessment	Create a basic flowcharts using sequence and selection for a scenario Create a flowchart that uses iteration and identify the flowchart components. End of Flowcharts topic assessment	Create a python program that uses variables, inputs and selection. Quiz – Iteration, FOR and WHILE loops. End of Python Advanced topic assessment.	MCQ – Excel formatting, cell references and basics. Write an IF and VlookUp formula. End of Excel topic assessment.	Breakdown a scenario into inputs, outputs, process and decisions (IPOD table) Debug programming of block based app programming End of Mobile App Development topic assessment
VOCAB	Key terminology: •Logic Gate Transistor Bit (Binary Digit) Logic Circuit AND OR NOT (Inverter) A A B A v B ~A	Key terminology: Decomposition, pattern recognition, Abstraction, Algorithms, Flowchart, process, sequences, computational thinking, pseudocode, decision, Input/Output	Key terminology: • Input • Output • Process Decision Subroutines/programs Pseudocode Computational thinking abstraction Decomposition Pattern Recognition Algorithm Sequence Selection Iteration Start & end Count controlled Condition controlled.	Key terminology: Code, Programming, Syntax, Data type, String, integer, Float /Real, Variable, Operators, Algorithms, sequences, iteration, Selection, concatenation, run time, loop, elseif, statements	Key terminology: cell referencing, spreadsheet, absolute, relative, excel, workbook, worksheet, sheet, columns, rows, conditional formatting, calculations, grid, chart/graph, sum, formula, currency, percentage	Key terminology: Code, Programming, Syntax, Data type, String, integer, Float /Real, Variable, Operators, Algorithms, sequences, iteration, Selection, concatenation, run time, loop, elseif, statements

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- Software Developer
- Data analyst
- UIX Designer
- Electrical Engineer
- Program devlooper

Software Engineer

CORE

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CURRICULUM AND ASSESSMENT PLAN

ORMISTON
SWB
ACADEMY

Computing

YEAR 9

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INTENT

	Prior learning	Created algorithms using tools like Flowol, developing computational thinking through abstraction, decomposition, pattern recognition. They may have used Excel for basic data entry, formulas, and chart creation, and had hands-on experience with Python, focusing on loops, arrays, and procedures. Logical reasoning will have been introduced through decision-making and condition-based logic, providing a foundation for understanding logic gates. Mobile app development may have been explored using beginner platforms like App Lab.
	Conscious curriculum links	N/A
	Extra-curricular	Bebras Computing Challenge is an international competition that promotes computational thinking among students aged 6 to 18. Organized in over 80 countries.

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC/KNOWLEDGE	Computer Networks What is a network? Where are networks found? LANs vs WANs, wired & Wireless networks Hardware required for a network - router, Hub, cabling, NIC, Switch, WAP & WIFI Network topologies - Star, Mesh, partial mesh, peer to peer, client server Advantages/disadvantages Network performance - Bandwidth, wired performance, Wi-Fi, latency Network threats - malware (virus, worms) , phishing & Preventing vulnerabilities - user access rights, passwords, network policy, anti-malware, firewall, encryption	Augmented Reality Review Client brief, design tool such as mind map Develop a visualisation diagram for your augmented reality app. And gather resources/assets needed images, sound ect Develop your augmented reality software for the clients brief Complete your app and test that it is fit for purpose. Record videos using OBS	Python Expert Tasks to recap inputs, variables, strings, integers and IF, Elif and Else Using IF, ELIF and ELSE programs and use nested ifs to add more options. Using For loops and while loops, using break with both and building in IF statements. Reading, writing and appending files in python. Using string manipulation to reference specific sections in a string and joining multiple strings together, using build in functions like upper and lower.	Web Design Analyse websites, good sites bad sites, types of websites, fit for purpose, sitemaps & structure Introduction to rockercake, tools- create a basic website layout. Rocketcake - adding images, rollover, sizes, position Rocketcake - Text, Headings, Paragraph, Fonts, alignment, webpage colours, alternative text Rocketcake - buttons, hyperlinks & emails, Sound & videos	Robotics laws & Ethics How are computers misused? What are the dangers of misuse? How is data protected? What can be done to protect data? How to you prove ownership? What is the purpose of copyright? How is it used? How does CS affect the environment positive & negative? How to ensure computers are used in an appropriate manner?	Artificial Intelligence explore the current state of artificial intelligence (AI) and how it is used in the world around them. They will consider some of the benefits and drawbacks of AI systems. think critically about which parts of a system use AI principles, and the role machine learning plays in creating the models introduced in Lesson 1. Create their own machine learning model. The model will classify images of apples and tomatoes, but students will discover that their model is flawed due to the limited data set they will use to train their models. Next, students will explore how bias can appear in sets of data used to train models. training and test data, and the data-driven nature of models. The aim of this lesson is for students to gain an understanding of the processes used to create machine learning models. AI project lifecycle and use it to create a machine learning model to solve a problem of their choice evaluating and explaining a model. To help them explain their model, students will be introduced to model cards, which are a way for the developers of a model to share important information about how to use the model, the results of testing, and any limitations relating to the accuracy of the model.
SKILLS	A learner can describe the basic structure of the four types of network that are covered Learners can describe the role of each of the components needed to create a LAN Learners can identify the factors that affect the performance of a network Able to draw a visualisation diagram for a resource Be able to make adjustments to design Able to design a specification for a virtual or augmented reality resource Being able to identify ethical issues with using computers Apply the laws that govern computer to a scenario					
ASSESSMENT	Identify different network hardware devices and state the role of each device. Draw the four main network topologies and discuss the advantages/disadvantages of each. End of Networks topic assessment	Explain why and the need for augmented reality Demonstrate basic augmented reality techniques End of Augmented reality topic assessment	Break down a python brief into the IPOD table. MCQs of different python syntax from basics to advanced. End of Python Project topic assessment	Analyse the strengths and weaknesses of different websites. Explain what makes a good website and explain how navigation should work. End of Web Sites topic assessment	Explain how computers can be misused and the dangers. MCQs Laws & ethics select items of each law. End of Robotics Law and Ethics topic assessment.	AI Principles and roles of machine learning Project life cycle and the benefits and drawbacks of AI End of Artificial Intelligence Unit
VOCAB	Key terminology: Network LAN WAN Client-server Peer-to-peer LAN Wireless access point (WAP) Router Switch Network Network interface card (NIC) Transmission media Network performance Internet Virtual network	Key terminology: Augmented Reality, Aesthetics, data, model, prototype, interactive, real-world, generated perceptual information sensory modalities, visual, auditory	Key terminology: Review, Multipage, Structure, HTML, CSS, Links, roll over images, Hot linking, critical, review	Key terminology: Independently Investigation Technical Analysis Documented Design Technical Solution Testing Evaluation Objectives Critical Path	Key terminology: Ethical issues, Legal issues, Cultural issues, Environmental issues, Privacy issues, Stakeholder, Open source software, Proprietary software, Data Protection Act, Computer Misuse Act, Copyright Designs and Patents Act, Creative commons licensing, Freedom of Information Act	Key terminology: Artificial intelligence Machine learning (ML) Bias Decision tree Supervised learning Reinforcement learning Neutral network

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CAREERS LINKS

- Network Manager
- IT Technician
- Security Engineers
- Computer Science Teacher
- Graphic Designer

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