Mapping KS5 Curriculum (2014) to LGfL History of Computing

KS5

This section focuses on Computing Concepts that form the basis of the AS Computing curriculum. Although this section is less about the History of Computing, the material has been created within the backdrop of the wider History of Computing resource. To understand the core computing concepts requires an appreciation of the context in which these concepts have developed and the way in which the concepts solved real world problems during the past 70 years.

Lesson Plan	Previous knowledge	KS5 Computer Science	HoC resources
01 How computers add	**KS3 Computing** : understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal] **KS4 Computing** : develop their capability, creativity and knowledge in computer science, digital media and information technology		• How computers add section • Binary data (graphic) • Binary Data (presentation) • Representing numbers (video) • Explaining binary (video) • Demonstrating binary (video) •
02 Rules of Logic	**KS3 Computing** : understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal] **KS4 Computing:** develop and apply their analytic, problem-solving, design, and computational thinking skills	**KS5 Computer Science**: Combine logic gates and derive truth tables. **KS5 Computer Science**: Apply problem solving by using Boolean algebra.	• Rules of logic section • Binary adding (presentation) • How computers (video) • Simplifying logic into algebra (video) • Logic gates (video)
03 Types of Logic gates	**KS3 Computing:** Understand simple Boolean logic (such as AND, OR and NOT) and its use in determining which parts of a program are executed; use Boolean logic.	**KS5 Computer Science**: Combine logic gates and derive truth tables.	• Types of Logic gate section • George Boole (graphic) • 4 bit binary addition (presentation)

	KS3 Computing: Explain how data of various types can be represented and manipulated in the form of binary digits including numbers, text, sounds and pictures, and be able to carry out some such manipulations by hand. **KS3 Computing:** understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems **KS4 Computing:** develop and apply their analytic, problem-solving, design, and computational thinking skills	**KS5 Computer Science:** Apply problem solving by using Boolean algebra.	• [Half adders](#) (video) • [Full adders](#) (video)
04 Inside the computer	**KS3 Computing**: Understand the hardware and software components that make up computer systems, how they interact, and how they affect cost and performance **KS3 Computing** understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits **KS4 Computing**: develop their capability, creativity and knowledge in computer science, digital media and information technology	**KS5 Computer Science:** Understand the Fetch Decode Execute Cycle including the role of CPU, RAM, buses and specific registers **KS5 Computer Science:** Be able to trace the execution of machine code (binary) instructions to be able to investigate what a given program in Binary or Machine code does	• [Inside the computer section](#) • [Fetch, decode, execute](#) (graphic) • [Fetch, decode, execute cycle](#) (presentation) • [Computer components](#) (video) • [Stored program concept](#) (video) • [Random Access Memory](#) (video) • [Central Processor Unit](#) (video)
05 Human CPU	**KS3 Computing**: Understand the hardware and software components that make up computer systems, how they interact, and how they affect cost and performance **KS3 Computing** understand how instructions are stored and executed within a computer system; understand how	**KS5 Computer Science:** Understand the Fetch Decode Execute Cycle including the role of CPU, RAM, buses and specific registers	• [Human CPU section](#) • [Human CPU](#) (presentation) • [Human CPU with assembly code](#) (presentation) • [Human CPU Simplified](#) (presentation) • [Help to Print](#) (presentation) • [Memory Data Register](#) (video)

	data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits **KS4 Computing**: Develop knowledge in computer science **KS4 Computing:** develop and apply their analytic, problem-solving, design, and computational thinking skills	**KS5 Computer Science:** Be able to trace the execution of machine code (binary) instructions to be able to investigate what a given program in Binary or Machine code does.	
06 How computers represent text	**KS3 Computing**: Explain how data of various types can be represented and manipulated in the form of binary digits including numbers or text and be able to carry out some such manipulations by hand. **KS3 Computing** understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits **KS4 Computing:** develop and apply their analytic, problem-solving, design, and computational thinking skills	**KS5 Computer Science:** Understand the advantages and limitations of ASCII code and compare with alternatives (such as Unicode). **KS5 Computer Science:** Be able to convert between decimal, binary and hex.	• How computers represent text section • Binary Man (graphic) • ASCII and hex (presentation) • ASCII Code (video) • Hexadecimal code (video)