



Y9

- **Fundamentals of computer systems.** This topic introduces computer systems and provides a foundation for the other topics. You will develop a mental model of a computer system which applies to a personal computer, but you should be aware of how it also applies to equipment which uses computer technology.
- **Computing hardware.** In this topic you will physically handle, install and test the hardware devices you have studied. The understanding of the CPU is limited to understanding that instructions are fetched from memory and executed in the processor. These instructions usually involve receiving data, performing calculations and returning the results. Binary logic is also included so that you understand this as the fundamental basis of the circuitry in the processor. After covering this section, it will provide a rationale for studying the binary representation of data in the topic **Representation of data in computer systems**.
- **Software.** This topic will give you the opportunity to have experience of system software. You will be able to perform a range of system maintenance tasks using utilities, comparing a number of operating systems and applications of the same kind and understand the fundamental features of the software types.
- **Representation of data in computer systems.** In this topic, you will gain an understanding of how different data types are internally represented in binary. You are expected to know that a kilobyte = 1024 bytes, a megabyte = 1024 kilobytes etc. And you will learning how character, images, sound and instruction are represented by computer systems.
- **Databases.** In this topic, you will be able to study the content using database management software such as Microsoft Access. However, you will be encouraged to develop a broader view of what a database is, and appreciate how fundamental they are in many applications they use regularly, for example, supermarket point of sale systems etc.

Learners will understand why it is necessary to store entities in separate tables. You will also understand the need to use the primary key from one table as the foreign key in another to link them.

Y10

- **Computer communications and networking.** Including different network types and the internet. This topic should relate to you as you should be familiar with networks and your use of the internet, for example, your school network and networks in your home and handheld devices. This experience should be used as a basis to study this section. It will give you a deeper understanding of networks than what you would be expected to have just from normal use.

Many network devices are multi-purpose, for example, a modem, hub, router etc. You will understand the fundamental role of each of the device types and recognise the different functions within the one device.

- **Programming.** This topic will test your understanding of fundamental programming concepts which are common to most imperative languages. The ability to program will normally take time and it is **not** advised to consider this topic as a separate theory topic.

Y11

We will use Python and other high level programming languages for you to be able to understand and explain the concepts.

- **Programming.** Mastering decomposing skills to design and implement algorithms using a variety of programming languages on different contexts and scenarios to prepare you for the controlled assessment.
- **Programming Project**
- Revision for **Computer Systems** examination
- Revision for **Computational Thinking, Algorithms and Programming** examination

### How will my work be assessed? / assessment components

The assessment consists of two written examinations and an externally moderated non-exam assessment.

Assessment	Title/Coverage	Marks	Duration	Weighting
Written examination Component 1	<b>Computer Systems</b> <ul style="list-style-type: none"><li>• Systems architecture</li><li>• Memory</li><li>• Storage</li><li>• Wired and wireless networks</li><li>• Network topologies, protocols and layers</li><li>• System security</li><li>• Systems software</li><li>• Moral, legal, cultural and environmental concerns</li></ul>	80	1 hour 30 minutes	40% of the total GCSE
Written examination- Component 2	<b>Computational Thinking, Algorithms and Programming</b> <ul style="list-style-type: none"><li>• Algorithms</li><li>• Programming techniques</li><li>• Producing robust programs</li><li>• Computational logic</li><li>• Translators and facilities of languages</li><li>• Data representation</li></ul>	80	1 hour 30 minutes	40% of the total GCSE
Controlled assessment- Component 3	<b>Programming Project</b> <ul style="list-style-type: none"><li>• Programming techniques</li><li>• Analysis</li><li>• Design</li><li>• Development</li><li>• Testing and evaluation and conclusions</li></ul>	40	20 hours	20% of the total GCSE

### Why study Computing / Learning Aims / Learning Objectives

GCSE Computing will enable learners to:

- Develop their understanding of current and emerging technologies, understanding how they work and how to apply this knowledge and understanding in a range of contexts
- Acquire and apply a knowledge, some technical skills and an understanding of the use of algorithms in computer programs to solve problems using programming
- Develop computer programs to solve problems
- Acquire and apply creative and technical skills, knowledge and understanding of computers in a range of contexts

- Use their knowledge and understanding of computer technology to become independent and discerning users of computers, able to make informed decisions about the use and implications of different technologies
- Develop the skills to work collaboratively
- Evaluate the effectiveness of computer programs/solutions and the impact of and issues related to the use of computer technology in society

### Extra-curriculum activities/ Trips

Lunchtime Robotics Club

### What would this subject enable me to do when I finish school?

This subject is useful to students who are considering careers in ICT, Business, Manufacturing, Art and Design, Media Studies, Design and Technology, Engineering or Technical jobs.

### How parents or other members of the public can find out more about the curriculum your subject is following

<http://ocr.org.uk/Images/230613-gcse-9-1-computer-science-summary-brochure.pdf>

