Year 7 Computing – Computer Systems 1

Learning about this topic is important because:

Computer systems are an essential part of modern life. From smartphones and laptops to games consoles and smart devices, technology is used every day at home, school and work. Understanding how these systems work helps us become informed and responsible users of technology rather than simply consumers.

In this unit, students will explore the hardware and software that make computer systems function, learn how data is stored and processed, and develop an understanding of how to stay safe online. They will also begin to understand some of the cyber security threats that individuals and organisations face and how these risks can be reduced.

The knowledge and skills developed in this unit provide the foundation for future study in Computing and Computer Science.

This builds on:

At Key Stage 2, students used a range of digital devices and software and learned how to use technology safely and responsibly.

This unit develops that understanding by introducing the components that make up computer systems and exploring how these systems store, process and communicate information.

This leads to:

Year 8 – Computer Systems 2

Students will build on their understanding of computer systems by learning about:

- **The Fetch-Decode-Execute Cycle**
- **The role of the CPU**
- **CPU performance factors**
- **Types of memory**
- **Computer networks**

GCSE Computer Science

Students will revisit and deepen their understanding of:

- **Hardware and software**
- **Storage devices**
- **Cyber security**
- **Computer architecture**
- **Data representation**

Year 7 Computing – Computer Systems 1

West Kirby Grammar School

We will learn:	We will develop/practise skills including:
• **How to distinguish between hardware and software** • **Give examples of computer hardware and software** • **Name different types of permanent storage device** • **Suggest appropriate input and output devices for a simple scenario** • **Understand the units of storage from the bit to gigabyte.** • **How to keep personal data safe and secure** • **Common types of malware** • **Phishing scams and how to spot them.**	- **Application of knowledge to different scenarios** - **Numeracy skills (storage unit calculations and conversions)** - **Research skills**
Some of the vocabulary that we will use includes: **Input, process, output, device, hardware, software, malware, phishing, virus, bit, byte, kilobyte, megabyte, gigabyte.**	You could learn more about this topic by: **BBC Bitesize Digital Devices click here** **BBC Bitesize Hardware and Software click here** **The Computing Café – How Computers Work – Click here**
Your teacher will assess your knowledge & understanding throughout the topic by looking at your work, questioning, discussion and giving you feedback in lots of different ways. The key pieces of work in this topic are: **Input/Output/Storage devices – Homework 1** **End of unit assessment**	

Year 7 Computing – Staying Safe Online

Learning about this topic is important because:
Technology plays a major role in our everyday lives. We communicate with friends, complete schoolwork, shop online, play games and access information using digital devices. While technology provides many opportunities, it also presents risks that users need to understand and manage.
In this unit, students will learn how to use technology safely, responsibly and securely. They will explore common online threats such as phishing, malware and scams, learn how to create strong passwords, and understand the importance of protecting personal information. Students will develop the knowledge and confidence needed to make safe decisions online and become responsible digital citizens.
The skills developed in this unit are essential not only for school but also for life beyond education, where digital safety is increasingly important.

This builds on:
At Key Stage 2, students learned how to use technology safely, respectfully and responsibly. They developed an awareness of online risks and began to understand how to protect themselves when using digital technologies.
This unit develops that understanding by exploring cyber security threats in greater depth and examining practical strategies that can be used to stay safe online.

This leads to:
Computing Impacts Project– Year 8 (Summer term) where we will look in more depth about the potential misuse of computing technology when we learn about the use of generative AI.

We will learn:

- **How to keep personal data safe and secure**
- **What makes a strong password.**
- **Common types of malware such as virus and ransomware**
- **Phishing scams and how to spot them.**

We will develop/practise skills including:

- Application of knowledge to different scenarios.
- Research skills – current relevant case studies.

Some of the vocabulary that we will use includes:

Malware, phishing, virus, phishing, hacking, ransomware, password.

You could learn more about this topic by:

BBC Bitesize – Online dangers – Click here
How secure is your password? – Find out here

Year 7 Computing – Staying Safe Online

Your teacher will assess your knowledge & understanding throughout the topic by looking at your work, questioning, discussion and giving you feedback in lots of different ways. The key pieces of work in this topic are: **Staying Safe Online – Homework 1** **End of unit assessment**	

Year 7 Computing – Data Representation 1

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Learning about this topic is important because:
Everything we use on computers such as programs and files are ultimately represented as a binary, a sequence of 1s and 0s. Understanding this number system is vital in building our understanding later of how complex things like pictures and sounds can be stored on a computer in binary form. We will also learn about logic circuits which form the basis for how computers make decisions.

This builds on:
N/A (You may have come across binary at Primary School)

This leads to:
Data Representation 2 which you will study in Year 8. Here we will investigate how computers use the number system you have learnt about here to represent text and images.

We will learn:

- **Why computers use the binary number system to represent data.**
- **How to convert a decimal value into binary.**
- **How to convert a binary value into decimal.**
- **How to add binary numbers together**
- **The concept of Boolean Logic.**
- **How to create simple Boolean logic circuits using AND/OR/NOT gates.**
- **How to create truth tables for Boolean logic circuits.**

We will develop/practise skills including:

- **Mathematical Skills (binary/decimal conversion)**
- **Logical reasoning**
- **Developing/understanding Venn diagrams.**
- **Drawing logic circuit diagrams.**

Some of the vocabulary that we will use includes:

Binary, bit, nibble, byte, overflow, carry, Boolean logic, AND/OR/NOT, gate, Truth Table

You could learn more about this topic by:

How computers See the world – Click here
Boolean Logic – BBC Bitesize – Click here

Your teacher will assess your knowledge & understanding throughout the topic by looking at your work, questioning, discussion and giving you feedback in lots of different ways. The key pieces of work in this topic are: **End of Topic Test, Key Homework**

Year 7 Computing – Computational Thinking

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Learning about this topic is important because:
Computational thinking helps you understand not just about how computer programs are designed, but also provides you with really useful skills for other subjects. Some of the skills are very useful for general problem solving. What you learn in this topic is really useful for when you start to learn how to write computer programming code later in the year.

This builds on:
You may have done some work on algorithms in Primary School, possibly using Scratch to create simple programs.

This leads to:
Programming with Python later in Year 7 where we will be writing algorithms using the Python programming language. We will also learn about algorithms which are used to search for information in Year 8.

We will learn:

- **What 'algorithms' are and the concept of 'algorithmic thinking'.**
- **How algorithms can be refined using repetition of commands.**
- **How to design algorithms for specific purposes.**
- **How flowcharts can be used to model algorithms.**
- **The concept of abstraction and how it can be used for designing algorithms and problem solving.**
- **The concept of decomposition and how it can be used for designing algorithms and problem solving.**

We will develop/practise skills including:

- **Logical thinking and reasoning.**
- **Recognising patterns in algorithms and where elements of a solution can be reused.**
- **Drawing flowcharts.**
- **Using decomposition to break down complex problems.**

Some of the vocabulary that we will use includes:

- **Algorithm, problem solving, pattens, steps, repetition, loops, flowchart, abstraction, decomposition, computational thinking**

You could learn more about this topic by:

- **Computational Thinking Bitesize – Click here**
- **Draw.io (flowchart design software) – Click here**
- **Getting started with Scratch (designing algorithms) – Click here**

Your teacher will assess your knowledge & understanding throughout the topic by looking at your work, questioning, discussion and giving you feedback in lots of different ways. The key pieces of work in this topic are: **End of Topic Test, Key Homework,**

Year 7 Computing – Programming with Python 1

West Kirby Grammar School

Learning about this topic is important because:
All of the programs on our computers and apps we use on our phones have been created using computer programming languages. Not only is being able to program an important thing to learn for school, but we are learning a language which is used to create lots of real world programs/apps.

This builds on:
Computational Thinking (Y7) – Earlier this year, we looked at the idea of algorithms and some of the methods used when designing and creating algorithms (abstraction, composition etc). Now we look at how to write computer programs using the Python programming language where we can bring these algorithms to life.

This leads to:
Programming with Python 2 (Year 8) where we will learn about some more advanced programming techniques.

We will learn:

- **Learn about how computer programs are made up of sequences of instructions.**
- **Learn some basic input and output commands using Python.**
- **Learn what variables are and how they can be used in computer programs.**
- **Learn about different types of variables to store different sorts of data (data types).**
- **Understand the concept of selection – how you can write a program which makes decisions.**

We will develop/practise skills including:

- **Writing programming code using Python.**
- **Testing a program and fixing errors (debugging)**
- **Developing code for particular scenarios.**

Some of the vocabulary that we will use includes:

Input, output, variable, data type, sequence, selection, instruction, integer, string, float, Boolean

You could learn more about this topic by:

Online Python tutorial (W3Schools) – Click here
Time2Code (may be a little advanced for Y7 in places – Click here

Your teacher will assess your knowledge & understanding throughout the topic by looking at your work, questioning, discussion and giving you feedback in lots of different ways. The key pieces of work in this topic are: **End of topic test. Key Homework**

Year 7 Computing – Programming with Python 1

West Kirby Grammar School

Year 7 Computing – Web Design

West Kirby Grammar School

Learning about this topic is important because:
The world wide web is a huge part of our everyday lives. In this topic, we learn about the basics of how these web pages are created. We will learn about how the content of a web page is defined using a language called HTML, and how the style of a website is defined using a language called CSS.

This builds on:
N/A

This leads to:
Computer Networks (Year 9) where we will learn how these web pages are transferred via the Internet.

We will learn:

- **The structure of HTML (web) pages.**
- **HTML 'tags' which define the content of pages.**
- **How to create simple web pages using HTML tags.**
- **How style (colour/layout etc) is applied to web pages using CSS (Cascading Style Sheets).**
- **How to add user input elements (buttons, drop down menus etc) to a web page using web forms.**

We will develop/practise skills including:

- **Writing and testing HTML code.**
- **Creating mini web sites using HTML code**
- **Writing and testing and applying Cascading Style Sheets (CSS) code to web pages.**

Some of the vocabulary that we will use includes:

Website, web design, world wide web, HTML, CSS, tag, web form, style sheet.

You could learn more about this topic by:

W3Schools HTML tutorial – Click here
Using HTML to create websites – Click here
JavaScript tutorial (if you want to take your understanding of web page coding to the next level!) – Click here.

Your teacher will assess your knowledge & understanding throughout the topic by looking at your work, questioning, discussion and giving you feedback in lots of different ways. The key pieces of work in this topic are: **End of topic test. Key Homework**

Year 7 Computing –
Computing Impacts Project: Environmental

Learning about this topic is important because:
Computing technology is all around us, our PCs, laptops, mobile phones and many other devices in our homes. The rapid expansion in computing technology in recent years has not come without an impact on the environment.

This builds on:
N/A

This leads to:
Year 8 Computing Impacts Project 2 – This will lead on to a research project in Year 8 where we consider further social impacts of the widespread use of computing.

We will learn:

- **The scale of growth in computing technology over the last 20 years.**
- **The raw material components of computing devices / sustainability issues.**
- **The disposal of computing devices (E-Waste) and the environmental consequences.**
- **The environmental consequence of the production of computing devices.**
- **Some of the positive impacts computing/digital technology may have on the environment.**

We will develop/practise skills including:

- **Researching for information online, considering trust and reliability of sources and making effective use of search engines.**
- **Analysing data, drawing conclusions from sets of data and graphing results.**
- **Presenting findings in a meaningful way which is appropriate for the intended audience.**

Some of the vocabulary that we will use includes:

Fossil fuels, sustainability, mining, e-waste, disposal, cooling, data centre, campaign, petition, research, validity, bias, conclusions, analysis.

You could learn more about this topic by:

Environmental effects of computing – Click here

Your teacher will assess your knowledge & understanding throughout the topic by looking at your work, questioning, discussion and giving you feedback in lots of different ways. The key pieces of work in this topic are: **Research homework / project presentation**