



## Long Term Mapping 2025 – 26

### **KS3 – Year 11 – Computer Science**

#### **Subject Intent/ Aims:**

At St Philip Howard the Computer Science department provides a high quality computing education that challenges the pupils to use and apply computational thinking and creativity to understand how they can have impact in the wider world through Computer Science.

The core aspects of the computer science curriculum are to support the pupils to develop an understanding of key computational principles; allowing them to learn how digital computer systems work and put this knowledge to use through the progressive use of programming.

The subject's intent is for pupils to build on the knowledge and skills each year as they progress from year 7 to year 11; with the overall aim being that the pupils will leave the school knowing and appreciating the opportunity they were given to learn and develop in an engaging subject that has a huge impact on the wider world.

As well as the Computer Science content delivered through the curriculum there is also an intention to ensure that pupils are given the chance to become digitally literate and be able to express themselves through the key aspects of information and communication technology.

The Computer Science department has a programme of study that follows the aims of the national curriculum. Within this, pupils are given the opportunity to learn how to understand and apply basic principles of computer science, analyse problems whilst confidently providing solutions, and acquire competency in using information and communication technology.

The overall intention of the computer science department at St Philip Howard is to provide the pupils with a safe and engaging learning environment, that will foster a love for learning computer science and acquire a wide range of knowledge and skills that could have a huge benefit on their lives in and out of school.



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ADVENT- Key Concepts:		LENT- Key Concepts:		PENTECOST- Key Concepts:
Topic 1: Computer Technology Issues		Term 1	Term 2	GCSE prep
Topic 2: Additional Programming		Producing Robust Programs and Languages	GCSE prep	
Assessment Objectives:		Assessment Objectives:		Assessment Objectives:
A01, A02, A03		A01, A02, A03	A03	A01, A02, A03
Components (Key Content)		Components (Key Content)		Components (Key Content)
Term 1	Term 2	Term 1	Term 2	Topic 1 Computer Systems
Topic 1 The Impact of digital technology on the wider society.  Relevant legislation for computer use.  Topic 2 Additional programming techniques	Topic 1 Computer Systems  Topic 2 Computational thinking, algorithms and programming	Defensive design Testing Languages The Integrated Development Environment	Topic 1 Computer Systems  Topic 2 Computational thinking, algorithms and programming	Topic 2 Computational thinking, algorithms and programming
Composite Skills:		Composite Skills:		Composite Skills:
<ul style="list-style-type: none"> <li>Ethical Issues</li> <li>Legal issues</li> <li>Cultural issues</li> <li>Environmental issues</li> <li>Privacy issues</li> <li>Basic use of string manipulation.</li> <li>The use of basic file handling operations</li> <li>The use of SQL to search for data</li> <li>The use of arrays including both one-dimensional (1D) and two-dimensional arrays (2D)</li> <li>How to use sub programs</li> </ul>	<ul style="list-style-type: none"> <li>Systems architecture</li> <li>Memory and storage</li> <li>Computer networks, connections and</li> <li>Protocols</li> <li>Network security</li> <li>Systems software</li> <li>Issues with Technology</li> <li>Algorithms</li> <li>Programming fundamentals</li> <li>Boolean logic</li> </ul>	<ul style="list-style-type: none"> <li>Defensive design considerations</li> <li>Input validation</li> <li>Code maintainability</li> <li>The purpose of testing</li> <li>Types of testing</li> <li>Identify syntax and logic errors</li> <li>Selecting and using suitable test data</li> <li>Characteristics and purpose of different levels of programming languages.</li> <li>The purpose of translators</li> <li>Common tools and facilities available in an IDE.</li> </ul>	<ul style="list-style-type: none"> <li>Systems architecture</li> <li>Memory and storage</li> <li>Computer networks, connections and</li> <li>Protocols</li> <li>Network security</li> <li>Systems software</li> <li>Issues with Technology</li> <li>Algorithms</li> <li>Programming fundamentals</li> <li>Boolean logic</li> <li>Producing robust programs</li> <li>Common tools of IDEs</li> </ul>	<ul style="list-style-type: none"> <li>Systems architecture</li> <li>Memory and storage</li> <li>Computer networks, connections and</li> <li>Protocols</li> <li>Network security</li> <li>Systems software</li> <li>Issues with Technology</li> <li>Algorithms</li> <li>Programming fundamentals</li> <li>Boolean logic</li> <li>Producing robust programs</li> <li>Common tools of IDEs</li> </ul>



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Assessment/s (Formative and Summative):		Assessment/s (Formative and Summative):		Assessment/s (Formative and Summative):
<ul style="list-style-type: none"> <li>Key terms tests</li> <li>Multiple choice quizzes</li> <li>Flipped homework topic assessments</li> <li>Questioning</li> <li>Mocks exams</li> </ul>		<ul style="list-style-type: none"> <li>Key terms tests</li> <li>Multiple choice quizzes</li> <li>Flipped homework topic assessments</li> <li>Questioning</li> <li>Mock exams</li> </ul>		<ul style="list-style-type: none"> <li>Key terms tests</li> <li>Multiple choice quizzes</li> <li>Flipped homework topic assessments</li> <li>Questioning</li> <li>Mock exams</li> </ul>
Key Terms:		Key Terms:		Key Terms:
Term 1	Term 2	Authentication Auto-documentation Code editor Comment Compiled Compiler Debugging Defensive design Test data Testing Test plan Erroneous data Extreme data Normal data Field Final testing high-level language Integrated Development Environment Indentation Interpreter Iterative testing Logic error Low-level language Machine code Maintainability Run-time environment Sanitsation Syntax error Validation	<i>All the specific key terms for all of the specs.</i>	<i>All the specific key terms for all of the specs.</i>
Censorship Computer Misuse Act Cultural issue Creative Commons Cyberbullying Data Protection Act Digital divide Environmental Ethical issue E-waste Data center Hacker Intellectual property Legal issue Sharing economy Social engineering Social media Stakeholder Viral Array Boolean Condition-controlled loop DO WHILE loop File handling Function Local variable Nested IF statement Parameter Record Sub program SWITCH-CASE	<i>All the specific key terms for all of the specs included in the Nov mock.</i>			



# St Philip Howard Catholic Voluntary Academy Department Planning 2025-2026



Literacy/ Numeracy/ Cross-Curricular Links	Literacy/ Numeracy/ Cross-Curricular Links	Literacy/ Numeracy/ Cross-Curricular Links	Literacy/ Numeracy/ Cross-Curricular Links
<p><b>Computer Systems</b> Literacy: Enhance critical thinking through CPU analysis for improved literacy skills.</p> <p>Numeracy: Optimize numerical data manipulation with system architecture for stronger numeracy skills.</p> <p>Cross-curricular: Solve interdisciplinary problems using operating systems, memory management, and utility software.</p> <p><b>Programming basics</b> Literacy: Writing code using variables, operators, and control flow enhances literacy skills through logical thinking, problem-solving, and effective expression.</p> <p>Numeracy: Working with different data types develops numeracy skills by analyzing, interpreting, and manipulating data in various formats.</p> <p>Cross-curriculum: Recognizing programming language differences promotes cross-curricular learning, connecting technological literacy with critical thinking, computational literacy, and problem-solving skills.</p>	<p><b>Programming</b> Literacy: Learning to concatenate and slice strings effectively enhances literacy skills by improving the ability to manipulate and organize textual data.</p> <p>Numeracy: Implementing the generation of random numbers within a given range develops numeracy skills by applying mathematical concepts to create randomization in program outcomes.</p> <p>Cross-curriculum: Applying AND, OR, and NOT operators for logical evaluations and decision-making promotes cross-curricular learning, integrating computational thinking and problem-solving across different subject areas.</p> <p><b>Data Representation</b> Literacy: Converting between decimal, binary, and hexadecimal improves understanding of different number systems.</p> <p>Numeracy: Adding binary integers while considering overflow develops mathematical skills within the binary system.</p> <p>Cross-curriculum: Understanding binary character codes, image representation, and sound sampling techniques integrate literacy and numeracy with technology and multimedia concepts.</p>	<p><b>Logic Gates</b> Literacy: Understanding logic gate functions and truth tables enhances comprehension of complex logical concepts.</p> <p>Numeracy: Recognizing logic gate symbols and working with truth tables applies logical reasoning and mathematical thinking to binary data.</p> <p>Cross-curricular: Building logic diagrams, interpreting truth tables, and using multiple gates integrate literacy, numeracy, problem-solving, and technology skills.</p> <p><b>Defensive Programming Design</b> Literacy: Planning ahead, organizing code, and fixing mistakes improve our problem-solving, communication, and critical thinking skills.</p> <p>Numeracy: Checking data, fixing errors, and using loops enhance our math skills, pattern recognition, and problem-solving abilities.</p> <p>Cross-curricular: Thinking critically, communicating clearly, and staying organized benefit not only computer science but also other subjects like math, language arts, and problem-solving tasks.</p>	<p>Literacy: Reading and understanding code, programming concepts, and technical documentation.</p> <p>Numeracy: Working with numbers, data representation, and mathematical operations in programming.</p> <p>Cross-curriculum: Applying computational thinking to problem-solving in various subjects, developing logical reasoning skills, and integrating computer science knowledge into different areas of study.</p>



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SMSC	BV	RSHE
<ul style="list-style-type: none"> <li>✓ There will be multiple opportunities for students develop spiritually; being creative in their learning with the different systems that they will create and programs, they will cultivate.</li> <li>✓ The high expectations placed on the student from the school and department mean that pupils would regularly be made aware of the right and wrong morally.</li> <li>✓ Pupils are expect to share the views morally on the different topics but also show respect and appreciate others in the classroom.</li> <li>✓ The majority of topics will give the students opportunity to develop their social skills; some task will require students to collaborate with others.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Students will further develop their knowledge of using the internet and social media.</li> <li>✓ Students will be taught to fully appreciate other students viewpoints and the importance of being respectful when online as a digital citizen.</li> <li>✓ Students will be taught the importance of selecting valid information from reliable sources for any presentation tasks that they do.</li> <li>✓ Students are taught how to contribute to life in modern Britain by learning about the history of computing.</li> <li>✓ Students will learning how to display British Values to use the internet and social media positively.</li> </ul>	<ul style="list-style-type: none"> <li>✓ The students will be taught about how to be safe online and the dangers.</li> <li>✓ The students will be made aware of online relationships and the sexual issues that may arise.</li> <li>✓ The students will be regularly conversed on their physical and mental health when overusing computers.</li> </ul>

Adaptive Curriculum Content Programming	Adaptive Curriculum Content Further Data Representation and Logic	Adaptive Curriculum Content Networks	Adaptive Curriculum Content App Project	Adaptive Curriculum Content Exam
<ul style="list-style-type: none"> <li>✓ Lesson job lists.</li> <li>✓ Time taken to work on specific programming techniques is adapted accordingly.</li> <li>✓ High achieving classes may be introduced to some topics from the following year, this is judged on class analysis.</li> <li>✓ Adapted handouts for practical tasks. <ul style="list-style-type: none"> <li>○ Full versions</li> <li>○ Partially complete</li> </ul> </li> <li>✓ Extended time provided for certain students.</li> <li>✓ The end of topic online exam modified to reflect the topics covered by certain classes and ability levels.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Lesson job lists.</li> <li>✓ Adapted content of logic covered based on understanding.</li> <li>✓ Adapted handouts.</li> <li>✓ Not all parts of binary (math's) with be covered by all groups based on numeracy ability.</li> <li>✓ Calculators will be used for some students.</li> <li>✓ The end of topic online exam modified to reflect the topics covered by certain classes and ability levels.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Lesson job lists.</li> <li>✓ Adapted handouts.</li> <li>✓ Expectations of detail in work is varied based on ability.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Lesson job lists.</li> <li>✓ Expectations around the number of specific tasks in the project is adapted.</li> <li>✓ Expectations around number of explanations on tasks is based on ability levels.</li> <li>✓ Examples of projects completed for different ability levels.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Lesson job lists.</li> <li>✓ Adapted revision material <ul style="list-style-type: none"> <li>○ Ability level specific.</li> </ul> </li> <li>✓ Assessments adapted to cater for the students ability and what they have covered specifically in the year.</li> </ul>



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### Adaptive Implementation Practices

This is a summary of the practices used throughout the department/curriculum in line with school requests.

<b><i>Differentiated Instruction:</i></b> Tailoring class instructions to meet the diverse needs of students by providing varied materials, activities, and assessments.	<b><i>Scaffolded Instruction:</i></b> Break down complex concepts into smaller, more manageable steps, providing additional support and guidance as students' progress through the material.	<b><i>Formative Assessment:</i></b> Use ongoing assessments, such as quizzes, discussions, and peer reviews, to continuously monitor student progress and provide timely feedback.	<b><i>Self-Paced Learning Job Lists:</i></b> Create self-paced lesson job lists or learning paths that allow students to progress through the lessons at their own speed, enabling them to take ownership of their learning process.
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