



St Philip Howard Catholic Voluntary Academy Department Planning 2025-26



Long Term Mapping 2025 – 26

KS3 – Year 9 – 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 an 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 of 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 the 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 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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Key Concepts - Advent		Key Concepts - Advent		Key Concepts - Advent	
Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Project	Programming	Data Representation – L3	Networks	End of Year Exam	Network Security
National Curriculum Coverage		National Curriculum Coverage		National Curriculum Coverage	
✓ Engage in innovative projects by selecting and integrating various apps, while creating, updating, and repurposing digital content with a focus on trustworthiness, design, and usability for a specific audience, all while practicing safe, respectful, and responsible use of technology.	✓ Use programming languages to solve computational problems and work with data in variables and various data types	✓ Understand binary number representation and perform simple operations on binary numbers.	✓ Understand the hardware and software components of computer networks, and how they communicate with each other and with other networks to facilitate the exchange of data and information.	✓ All of previous	✓ Understand how changes in technology affect safety, including new ways to protect their online privacy and identity, and how to report a range of concerns
Components	Components		Components		
Software Development Life Cycle: <ul style="list-style-type: none"> Planning: Design Development: Testing & Deployment 	<ul style="list-style-type: none"> Re-Introduction of python and year 8 content Selection Iteration Practical Exercise Mini Projects 		<ul style="list-style-type: none"> Year 8 Binary recap HEX Storing Sound Storing Images 		<ul style="list-style-type: none"> Network Types Network Hardware Network Performance
All components: <ul style="list-style-type: none"> Year 7 Year 8 Year 9 				<ul style="list-style-type: none"> Network Threats Network Prevention 	
HO Knowledge	HO Knowledge		HO Knowledge		
<ul style="list-style-type: none"> ❖ Critical Thinking: Analyzing internet dangers and their impact on users critically. ❖ Synthesis: Integrating different aspects of internet dangers into a cohesive app design. ❖ Evaluation: Assessing the effectiveness of the app in educating users about online risks. 	<ul style="list-style-type: none"> ❖ Algorithmic Thinking: Breaking down complex problems into clear, step-by-step sequences (algorithms) for effective solutions. ❖ Problem-Solving: Approaching challenges systematically, identifying patterns, and devising creative solutions. 		<ul style="list-style-type: none"> ❖ Analytical Thinking: Analyzing binary concepts, character encoding, sound formats, and image storage methods. ❖ Critical Evaluation: Assessing the pros and cons of binary representations, character encodings, sound formats, and image storage methods. 		<ul style="list-style-type: none"> ❖ Critical Thinking: Analyzing and evaluating network types, hardware, performance. ❖ Problem-Solving: Applying knowledge to troubleshoot network issues and optimize performance ❖ Comparative Analysis: Comparing and contrasting network elements.
					<ul style="list-style-type: none"> ❖ Synthesis: Integrating knowledge from different subjects and years to answer complex questions or solve multidisciplinary problems.
					<ul style="list-style-type: none"> ❖ Critical Analysis and Evaluation: Assess network threats and security measures to identify risks and vulnerabilities. ❖ Problem-Solving and Strategic Thinking: Develop and implement solutions to prevent or mitigate cybersecurity threats.



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Composite Skills		Composite Skills		Composite Skills	
<ul style="list-style-type: none"> ✓ Requirement Analysis and Documentation. ✓ Project Scoping and Timeline Management. ✓ System Architecture Design. ✓ User Interface (UI) and User Experience (UX) Design. ✓ Code Implementation and Integration. ✓ Manual Testing. ✓ Deployment and Monitoring 	<ul style="list-style-type: none"> ✓ Review of Input and Output ✓ Understanding the importance of selection and iteration. ✓ Conditional statements ✓ If statements ✓ Elif statements ✓ Embedded if statements ✓ Loop Statements ✓ For Loops ✓ While Loops 	<ul style="list-style-type: none"> ✓ Conversion number sets: <ul style="list-style-type: none"> ○ Binary ○ Denary ○ HEX ✓ Adding Binary numbers ✓ Converting ASCII code ✓ Understand the role of Unicode 	<ul style="list-style-type: none"> ✓ Identifying network hardware and its function ✓ Measuring and improving network performance ✓ Choosing appropriate network types ✓ Configuring network hardware for optimal performance 	<ul style="list-style-type: none"> ✓ All of the previous 	<ul style="list-style-type: none"> ✓ Identifying and Analyzing Network Threats: ✓ Designing and Implementing Security Measures: ✓ Monitoring and Responding to Security Incidents: ✓ Evaluating and Enhancing Network Security:

Final composition/ Deliberate Practice		Final composition/ Deliberate Practice		Final composition/ Deliberate Practice	
<ul style="list-style-type: none"> ○ Submit and evidence document 	<ul style="list-style-type: none"> ○ Submit Evidence documents ○ End of Term Exam 	<ul style="list-style-type: none"> ○ Online Exam 	<ul style="list-style-type: none"> ○ Online Exam 	<ul style="list-style-type: none"> ○ Online Exam 	<ul style="list-style-type: none"> ○ Submit and evidence document
Assessment/s (Formative and Summative)		Assessment/s (Formative and Summative)		Assessment/s (Formative and Summative)	
<ul style="list-style-type: none"> ❖ RRR ❖ Key terms tests ❖ Quizzes ❖ Flipped homework activities 	<ul style="list-style-type: none"> ❖ RRR ❖ Key terms tests ❖ Quizzes ❖ Flipped homework activities ❖ End of Topic Exam 	<ul style="list-style-type: none"> ❖ RRR ❖ Key terms tests ❖ Quizzes ❖ Flipped homework activities ❖ End of Topic Exam 	<ul style="list-style-type: none"> ❖ RRR ❖ Key terms tests ❖ Quizzes ❖ Flipped homework activities ❖ End of Topic Exam 	<ul style="list-style-type: none"> ❖ RRR's ❖ Practice questions. ❖ Practice online quizzes 	<ul style="list-style-type: none"> ❖ RRR ❖ Key terms tests ❖ Quizzes ❖ Flipped homework activities
Key Terms		Key Terms		Key Terms	
Some key terms will be: 1. App Planning 2. User Interface Design 3. Code Development 4. App Testing 5. Bug Fixing	Some key terms will be: 1. Input/Output (I/O) 2. Selection 3. Iteration 4. Boolean Logic 5. Conditional Expression	Some key terms will be: 1. Binary 2. HEX 3. Characters 4. Convert 5. ASCII	Some key terms will be: 1. LAN (Local Area Network) 2. WAN (Wide Area Network) 3. Router 4. Switch	Some key terms will be: 1. Firewall 2. Encryption 3. Malware 4. Phishing 5. Denial-of-Service (DoS)	Some key terms will be: 1. Firewall 2. Encryption 3. Malware 4. Phishing 5. Denial-of-Service (DoS)



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6. App Deployment 7. Project Management 8. Team Collaboration 9. Requirement Gathering 10. App Prototyping 11. Quality Assurance 12. User Feedback 13. Code Review 14. Version Control	6.Control Flow 7.Nested Conditions 8.Loop Control Variable 9.Iteration Count 10.Infinite Loop	6.Extended ASCII	5. Modem 6. Bandwidth 7. Latency 8. Network Performance		6.Intrusion Detection System (IDS) 7.Access Control 8.Vulnerability 9.Authentication 10.Security Patch
Literacy/ Numeracy/ Cross-Curricular Links		Literacy/ Numeracy/ Cross-Curricular Links		Literacy/ Numeracy/ Cross-Curricular Links	
<ul style="list-style-type: none"> ○ Literacy: Improving writing skills for app descriptions and instructions, and effective communication in project reports. ○ Numeracy: Utilizing math for timelines, resource management, and data analysis within the app. ○ Cross-Curricular Links: Creating connections across subjects like digital citizenship, art, language arts, and social studies to explore diverse aspects of internet dangers and its impact on society. 	<ul style="list-style-type: none"> ○ Literacy Link: Enhancing reading comprehension and logical reasoning by analyzing and constructing complex conditional statements in code. ○ Numeracy Link: Applying mathematical reasoning to understand loop iteration, including calculating the number of iterations and understanding loop boundaries. ○ Cross-Curricular Link: Connecting the concept of selection and iteration in programming to problem-solving strategies in mathematics and science, such as decision-making processes and repetitive experiments. 	<ul style="list-style-type: none"> ○ Literacy: Reading technical explanations, writing about the topics, and expanding vocabulary. ○ Numeracy: Applying binary conversion, data storage calculations, and analyzing compression ratios. ○ Cross Curricular Links: Mathematics, Design and Technology, Media Studies, Physics, and IT/Computer Science. 	<ul style="list-style-type: none"> ○ Literacy: Reading technical materials, writing about networks, and presenting their knowledge. ○ Numeracy: Analyzing network metrics and dealing with data rates and capacities. ○ Cross Curricular Links: Connections with Mathematics, Science, Geography, Computing/IT, and Citizenship. 	<ul style="list-style-type: none"> ○ Numeracy: Applying math to integrate data, ○ Literacy: Comprehending texts, synthesizing information. ○ Cross Curricular Links: Connecting subjects, assessing information from multiple disciplines, and applying skills to address complex interdisciplinary challenges. 	<ul style="list-style-type: none"> ○ Literacy: Developing skills in writing clear and concise documentation for security protocols and incident reports. ○ Numeracy Link: Applying mathematical concepts to understand encryption algorithms and secure data transmission. ○ Cross-Curricular Link: Exploring the ethical implications of network security, including privacy concerns and data protection laws.



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

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



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✓ The end of topic online exam modified to reflect the topics covered by certain classes and ability levels.				
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Adaptive Implementation Practices

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

Differentiated Instruction: Tailoring class instructions to meet the diverse needs of students by providing varied materials, activities, and assessments.	Scaffolded Instruction: Break down complex concepts into smaller, more manageable steps, providing additional support and guidance as students' progress through the material.	Formative Assessment: Use ongoing assessments, such as quizzes, discussions, and peer reviews, to continuously monitor student progress and provide timely feedback.	Self-Paced Learning Job Lists: 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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