Autumn Learning Journey for Y11 Computer Science

How does this unit link to prior learning?
Builds on KS3: Cyber Security, Python programming, and understanding computers. Students develop this into GCSE Paper 1 knowledge.

What will you be learning about?	How does this link to the wider curriculum?
Threats, prevention, system software, Boolean logic, programming languages, translators and IDEs	Links to maths (logic), PSHE (online safety), and careers in cybersecurity and programming. The rule of law (British Values) for safe and secure online behaviour.

We will develop our learning each week by focusing on:

	RAG		RAG
1. Malware & social engineering Describe threats posed to systems; explain the principles of malware and social engineering including phishing and people as the weak point in secure systems.		**7.** Revision & RAG Use the completed learning mat to self-assess understanding; RAG-rate the unit; target weak areas before the topic test.	
2. Brute force, DoS, SQL injection Explain brute-force attacks, denial of service attacks, data interception/theft and SQL injection; describe the purpose of each attack.		**8.** - Assessment Demonstrate understanding of U4 Network & Systems Security through GCSE-style questions; review feedback and identify improvement priorities.	
3. Penetration testing, firewalls Explain how penetration testing, anti-malware software and firewalls help identify or prevent vulnerabilities.		**9.** Boolean logic Recognise AND, OR and NOT gates; complete truth tables; explain the outputs produced by single logic gates.	
4. Passwords, encryption, access control Explain how user access levels, strong passwords, encryption and physical security limit threats and reduce vulnerabilities.		**10** Combined logic Create, complete and edit logic diagrams and truth tables involving more than one gate; apply Boolean operators to solve problems.	
5. Secure programming Apply secure programming principles by designing or refining a simple login or validation routine; link defensive design to secure systems.		**11.** Programming languages Explain characteristics and purposes of high-level and low-level languages; compare benefits and drawbacks for programmers and machines.	
6. Learning mat & exam practice Consolidate knowledge from U4 Network & Systems Security; identify misconceptions; improve accuracy of technical vocabulary and exam command-word responses.		**12.** Translators & IDEs Explain the purpose of translators; compare compiler and interpreter characteristics, benefits and drawbacks.	

Key vocabulary

Malware	Phishing	DoS	SQL injection	Encryption	Firewall				
Authentication	Boolean	Truth table	Compiler	Interpreter	IDE				

How will this help you in the future?	
KS4	**Beyond LHS**
Supports success in GCSE exams for Paper 1 (Networks Knowledge) & 2 (Algorithmic Thinking & Programming)	Careers in cybersecurity and software development. Level 3 course in game development, A-Level Computing and technical/IT apprenticeships.