Year 9	Emerging	Developing	Secure	Excelling
Computer Systems (Theory)	• **Knows** what a wired and wireless network is • **Knows** the different topologies • **Knows** Wan and LAN • **Knows the** difference between Memory and storage	• **Is able to** demonstrate the difference between a Star and Mesh network • **Is able to** describe how LANS are used and how Wans fit into global connectivity **Is able to** explain using system architecture the use of memory again storage.	• **Understands** the benefits of the different topology of networks and can explain using Key word such as cost, robust and expandable • **Understands** how different sized companies would use LAN's and how big multinational companies would link a number of Land across a WAN • **Understands** and can explain the differences between memory and storage and uses key word such as robust, expandable and cost. Uses speed but in the context of the FDE cycle and use of the CPU	• Shows **a developed understanding** of the FDE and use of CPU for memory and storage. And can explain how this is the Von Neumans architecture • Shows **a developed understanding** the different cabling and cost associated with the topology models and can justify the use of these within any given context
Data Representation and Types of Algorithm (Theory)	• **Knows** why computers use Binary • **Knows** why we use Hexidecimal • **Knows** the use of base systems • **Knows** the different search and sort algorithms	• **Is able to** convert to and from Binary • **Is able to** convert to and from Hexidecimal • **Is able to** explain the different search and sort algorithms	• **Understands** how to manipulate Binary and hexadecimal. Addition, subtraction, multiplication and division • **Understands** how the Base of the system impacts the processes of conversion and optimisation • **Understands** how to demonstrate using computational thinking the different search and sort algorithms	• Shows a **developed understanding** of how to develop programming code that would convert binary and hexadecimal. • Shows a **developed understanding** of how to develop programming code that would use arithmetic on binary numbers • Shows a **developed understanding** of how to develop programming code that would demonstrate the different search and sort algorithms.

Year 9	Emerging	Developing	Secure	Excelling
Algorithms, flowcharts and Pseudocode	• **Knows** what an algorithm is • **Knows** what pseudocode is and how it can be used to form programming developments • **Knows** the importance abstraction and computational thinking when designing programs	• **Is able to** express basic algorithms using flow diagrams • **Is able to** demonstrate pseudocode for sequence, selection and iteration • **Is able to** plan, through computational thinking and abstraction and produce basic programs as solutions	• **Understands** that algorithms are implemented on digital devices as programs • **Understands** how to **design simple** algorithms using loops, and selection i.e. 'If' statements • **Understands** how to use Boolean logic within algorithms • **Understands** how to read and correct errors in Pseudocode and flow diagrams i.e. debugging in algorithms	• shows a **developed understanding** of what an algorithm is and their importance in computing • shows a **developed understanding** of how to **design more complex** algorithms that use repetition and two-way selection i.e. if, then, else • Shows a **developed understanding** of how to use logical reasoning to predict outputs, showing an awareness of inputs
Programming and development	• **Knows** How to use Python and scratch and can run simple programs through flowgorithm • **Knows** how to **run, check and change** programs following systematic analysis of errors. • **Knows** what sequencing, selection and iteration looks like in at least 2 programming languages	• **Is able to** create a range of programs in python to demonstrate sequencing • **Is able to** create a range of programs in python to demonstrate selection • **Is able to** create a range of programs in python to demonstrate iteration	• **Understands** how to use comparison statements in a range of different ways using selection and iteration • **Understands** how to use Boolean logical in selection and iteration • **Understands** how to demonstrate the use of arrays 1D and 2 D • **Understands** how to input and output from files into python	• Shows a **developed understanding** of how to declare and assign both constant, global and local variables. • Shows a **developed understanding** of how to use GUI processes such as TKinter to produce robust and professional programs • Shows a **developed understanding** of how to develop overall programming techniques to produce solutions to a given task or problem