

Topic: 8.4 Programming Development		Duration: 5 weeks	Composite: Project
Key vocabulary:	Core knowledge questions / skills development	Powerful knowledge crucial to commit to long term memory	Links to previous and future topics
Boolean Logic Conditionals Float Function IDE/IDLE Input Integer Iteration Loops Operators Output Print Random Selection Sequence String Syntax Variables	<ol style="list-style-type: none"> 7. What is programming? Programming is the process of writing a computer program. 8. What is syntax? Syntax are the rules of a programming language which must be followed in order to reduce errors occurring in the program code. 9. How are programs developed? By using the iterative process Design, Write, Test, Refine to produce successful programs in Python 10. What is a variable? A variable is a storage container for a value that can be changed. 11. What is sequencing? Sequencing is the order in which instructions are processed 12. What is iteration? Iteration is how programs repeat instructions. These can be count-controlled (FOR loop) or condition controlled (WHILE loop) 13. What is selection? Selection is how programs can be used when a decision needs to be made based on a condition. In Python this is achieved by using IF, ELIF and ELSE. 14. What is a function? A function is used to avoid having to duplicate code. It's used to make programs more efficient. 	<ul style="list-style-type: none"> • Programming refers to the art of writing instructions, known as algorithms, to tell a computer what to do • In order to make a program in any programming language, you need to think through the sequence of steps • Iteration refers to the repetition of a series of instructions. Scratch uses the repeat, repeat until or forever blocks • A conditional statement is a set of rules performed if a certain condition is met. In Python, the if and elif and else commands check for a condition (selection) • A variable stores specific information that may change. The most common variables in computer games for example, are score and timer • Boolean logic is a form of algebra in which all values are reduced to either <u>true</u> or <u>false</u>. The <u>and</u>, <u>or</u>, <u>not</u> statements are examples of Boolean logic. 	<ul style="list-style-type: none"> • The three basic constructs of programming: Sequence, Selection and Iteration are a theme throughout all programming topics and will lead nicely into programming in Python • Boolean logic, or a form of it, is also used in My Digital World topic in Year 7, for narrowing searches • Variable and Random are also functions that would have been used in Scratch and Python units in Year 7

Topic: 8.5 Networks		Duration: 5 weeks	Composite: EoU Test	
Key vocabulary:	Core knowledge questions / skills development		Powerful knowledge crucial to commit to long term memory	Links to previous and future topics
Cables Client Communication Connected Data Devices Emails File Storage Hackers Hardware Hub Internet Internet LAN Network Packet Switching Server Software Standalone Topologies Viruses WAP Wi-Fi	15. What is a network? A Network is a group (two or more) of interconnected computers/devices, connected in order to share and transmit data 16. How are networks connected? Networks are connected either by cables or wirelessly via Wi-Fi 17. How are networks controlled? Some networks may have a server, which acts as a central hub for services in a network 18. What are devices on a network known as? Each device connected to a network is known as a client, a device not connected to a network is called a standalone computer 19. What are the benefits of networking? Benefits of networking include: <ol style="list-style-type: none"> The ability to share hardware (such as printers); Allowing multiple users to run the same software/program at the same time on different computers Other network users can access shared work and data from any computer on the network 20. Why do we need networks? Networking is critical if you want to be able to communicate electronically and efficiently 21. What is the largest network? The Internet is the largest network (a network of interconnected networks), which is used on a daily basis worldwide 22. What are the drawbacks of networking? Drawbacks associated with networking include: <ol style="list-style-type: none"> Reliability, if the network breaks a number of tasks it is used for will become difficult to complete Exposure to threats such as hackers and viruses 23. What hardware is needed for a network? A variety of components such as NIC, hub, switch, cables, WAP, clients and router. 24. How is data sent over networks? Data is sent across a network using the packet switching method	<ul style="list-style-type: none"> A network is a group of interconnected computers/devices A client is any device that can be connected to a network e.g. laptop, printer, tablet smartphone A server is a computer that holds data to be shared with other computers, for example a web server stores and shares websites The components needed to establish a network include: a client, Network Interface Cards (NIC), switch/hub, cable and router (if access to internet is required). Some networks can connect devices wirelessly in which case they will require a Wireless Access Point (WAP) Information is transferred through a network by splitting the data into packets. These are then sent to a client through the network before being re-assembled by the recipient's computer. 	<ul style="list-style-type: none"> Builds upon previous knowledge on computer hardware as well as differences between internet and World Wide Web Builds on content learnt in Y7 (Introduction to Networking) Will serve as an introduction to how data is transferred and leads into unit on System Security looking at how networks are exploited. 	