Subject: Computing

Year: 8

Topic 1 **Cyber Security & Computer Safety**	**Topic 2** **Data Representation**	**Topic 3** **Mobile App Development**	**Topic 4** **Computer Systems**	**Topic 5** **Introduction to Python**	
• State the definition of phishing • Recognise the features of a phishing email ▪ Assess the impact that phishing can have on individuals • The impact of hacking • Explain the different types of malware that could infect a computer system • Methods of reducing the risk to a computer system • State examples of personal data	• List examples of representations • Provide examples of how different representations are appropriate for different tasks • Recall that representations are used to store, communicate, and process information • Measure the length of a representation as the number of symbols that it contains • Provide examples of how symbols are carried on physical media	• Identify when a problem needs to be broken down • Implement and customise GUI elements to meet the needs of the user • Develop a partially complete application to include additional functionality • Recognise that events can control the flow of a program • Use user input in an event-driven programming environment • Use variables in an event-driven	• Explain the difference between a general-purpose computing system and a purpose-built device • Recall that a general-purpose computing system is a device for executing programs • Recall that a program is a sequence of instructions that specify operations that are to be performed on data	• Describe what algorithms and programs are and how they differ • Locate and correct common syntax errors • Recall that a program written in a programming language needs to be translated in order to be executed by a machine • Write simple Python programs that display messages, assign values to variables, and receive keyboard input -Describe	

• Assess the impact of leaking personal data • State the role of copyright • Evaluate the impact copyright theft can have on stakeholders • Explain the use of Creative Commons within the industry • State the health and safety risks that exist when using computer systems • Establish best practice for mitigating health and safety risks	• Recall that characters can be represented as sequences of symbols and list examples of character coding schemes • Explain what binary digits (bits) are, in terms of familiar symbols such as digits or letters • Measure the size or length of a sequence of bits as the number of binary digits that it contains • Convert a decimal number to binary and vice versa • Describe how natural numbers are represented as sequences of binary digits • Convert between different units and multiples of	programming environment • Establish user needs when completing a creative project • Identify and fix common coding errors • Pass the value of a variable into an object • Apply decomposition to break down a large problem into more manageable steps • Use a block-based programming language to create a sequence • Use user input in a block-based programming language • Use variables in a block-based	• Describe how the hardware components used in computing systems work together in order to execute programs • Describe the function of the hardware components used in computing systems • Recall that all computing systems, regardless of form, have a similar structure (‘architecture’) • Analyse how the hardware components used in computing systems work together in order to execute programs • Define what an operating system is, and recall its	the semantics of assignment statements • Receive input from the keyboard and convert it to a numerical value • Use simple arithmetic expressions in assignment statements to calculate values - Generate and use random integers • Use binary selection (if, else statements) to control the flow of program execution • Use relational operators to form logical expressions • Describe how iteration (while statements) controls the flow	

	representation size • Provide examples of the different ways that binary digits are physically represented in digital devices • Apply all of the skills covered in this unit	programming language • Reflect and react to user feedback • Use a block-based programming language to include sequencing and selection • Use user input in a block-based programming language • Use variables in a block-based programming language	role in controlling program execution • Describe how hardware is built out of increasingly complex logic circuits • Describe the NOT, AND, and OR logical operators, and how they are used to form logical expressions • Recall that, since hardware is built out of logic circuits, data and instructions alike need to be represented using binary digits • Use logic gates to construct logic circuits, and associate these with logical	of program execution • Use multi-branch selection (if, elif, else statements) to control the flow of program execution • Use iteration (while loops) to control the flow of program execution • Use variables as counters in iterative program • Combine iteration and selection to control the flow of program execution • Use Boolean variables as flags	

			operators and expressions • Associate the use of artificial intelligence with moral dilemmas • Describe how machine learning differs from traditional programming • Describe the steps involved in training machines to perform tasks (gathering data, training, testing) • Identify examples of artificial intelligence and machine learning in the real world • Provide broad definitions of 'artificial intelligence' and 'machine learning • Explain the implications of		

			sharing program code		