

Computing, Year 8, Long Term Plan

Week/ Lesson	Term	Topic	Knowledge	Complex activity: Writing genre:
1	Autumn T1	Cyber-crime (Revisit networking access & file management)	<ul style="list-style-type: none"> ● School network systems & protocols ● Effective file/folder/password management system 	
2			<ul style="list-style-type: none"> ● Identify common types of computer crime ● Look at examples of computer crime on the Internet ● Learn about different types of email scam ● Recognise the signs of fraudulent emails 	
3			<ul style="list-style-type: none"> ● Learn about the Computer Misuse Act – which makes certain activities illegal ● Look at examples of computer misuse ● Understand what is meant by hacking ● Understand what is meant by malware ● Learn ways to protect yourself from malware & hacking 	
4			<ul style="list-style-type: none"> ● Be aware of who might hold personal data about you ● Discuss the need for various organisations to hold data about you ● Be aware of the possibility of identity theft ● Know how to minimize the chance of identity theft 	

5			<ul style="list-style-type: none"> • Learn about Copyright law, what it says and what it means • Look at examples of copyright infringement • Understand the damage that illegal copying does to individuals, companies and society • Compare copyright infringement with plagiarism 	
6			<ul style="list-style-type: none"> • Learn about some of the common health and safety problems associated with computer use • Learn ways of avoiding these problems • Learn about Health and Safety law <p>*Model informative text by using the School's AUP</p>	Writing genre: Informative in the form of a Policy Document
7			<p>Reteach Week Health and safety at work, H&S Policies</p> <p>Monthly review</p> <p>RETRIEVAL ACTIVITY Given scenarios, identify cyber security issues and provide advice to solve them.</p> <p>- RECALL ACTIVITY Low stake test on theory so far in year 8</p>	Complex activity (Homework):: Create a pledge or privacy policy for a business that deals with online music.
8			SUMMATIVE FORMAL ASSESSMENT	
9	Autumn T2	Control Systems (Flowol)	<ul style="list-style-type: none"> • Identify control flowchart symbols and understand how they are used to describe systems • Develop a control flowchart solution for a simple problem 	
10			<ul style="list-style-type: none"> • Understand why a control system might fail and explain the impact this can have on safety 	

			<ul style="list-style-type: none"> Develop a control solution for a system that uses two flowcharts operating in sequence 	
11			<ul style="list-style-type: none"> Identify common types of sensors used in control systems Use decision symbols in a flowchart Develop a control solution for a system that uses multiple sensors. 	
12			<ul style="list-style-type: none"> Develop a control solution for a system that includes a subroutine Understand how the use of subroutines can make programs more efficient be explained in a little more detail. How do computers store numbers greater than 255? <p>*Model Descriptive text (Mimic solution)</p>	Writing genre: Descriptive
13			<p>Reteach Week</p> <p>Control systems in real life, where are they found and how are they controlled</p> <p>Monthly review</p> <p>RETRIEVAL ACTIVITY Solve a problem with a Greenhouse to automate it while the owners are on holidays.</p> <p>Cyber security: How can they ensure the system is hacker-proof?</p> <p>- RECALL ACTIVITY Low stake test on theory so far in year 8</p>	Complex activity (Homework):: Students to study a mimic in Flowol for them to create a flowchart and describe how it works and how it can be refined
14			<ul style="list-style-type: none"> Understand what an actuator is used for in a control system 	

			<ul style="list-style-type: none"> • Understand what a variable is and explain how variables can be used to help control systems • Develop a control solution for a system that uses actuators and variables 	
15			SUMMATIVE FORMAL ASSESSMENT	
16	Spring T1	Text-based programming (Introduction to Python)	<ul style="list-style-type: none"> • Learn what Python is and some of the applications it is used for • Run a simple Python program in Interactive mode using the input and print functions • Write, save and run a program in Script mode • Understand what a syntax error is and how to interpret an error message • Know the rules for variable names and use variables in a program <p>Understand the use and value of comments in a program</p>	
17			<ul style="list-style-type: none"> • Understand the importance of using correct data types <i>string, integer, float</i> • Understand how to use assignment statements correctly • Perform arithmetic using the BIDMAS rule • Use the <i>int, float</i> and <i>round</i> functions • Write a program involving input, calculation and output 	
18			<ul style="list-style-type: none"> • Use selection statements <i>if, else</i> and <i>elif</i> in a program • Use indentation correctly to define a block of code 	Writing genre: Informative

			*Model Informative text (historical report)	
19			<p>Monthly review</p> <p>RETRIEVAL ACTIVITY Use 3 algorithms to code their corresponding programs in Python Cyber security: How can a cipher be coded in Python? - Flowol/control systems: Write a Python program from one of the flowcharts created in Flowol.</p> <p>RECALL ACTIVITY Low stake test on theory so far in year 8</p>	<p>Complex activity (Homework)::</p> <p>Write a report on the history of programming languages in the 20th century, including Python.</p>
20			<p>Reteach Week</p> <ul style="list-style-type: none"> • Learn to write algorithms in pseudocode • Review the difference between syntax errors, run-time errors and logic errors • Learn techniques for debugging programs 	
21	Spring T2	Understanding computers (part 2)	<ul style="list-style-type: none"> • Why data for computers need to be stored in binary • Convert integers to binary numbers • Convert binary numbers to integers 	
22			<ul style="list-style-type: none"> • Add two binary numbers (each less than 7 binary digits) • Multiply a binary number by 2 • Identify a binary number as being odd or even 	
23			<ul style="list-style-type: none"> • State the typical capacities, strengths and weaknesses of different storage devices • Describe how data is stored on a CD • Describe how 0s and 1s are represented by pits and lands on a CD 	

			<ul style="list-style-type: none"> Name three types of optical storage device 	
24			<ul style="list-style-type: none"> Review the history and development of communication. Understand how modern communication and computing devices combine multiple technologies Discuss the different ways and applications in which modern technology is used Discuss future uses of technology and the pace of change (Moore's Law) <p>*Model Informative text (magazine article)</p>	Writing genre: Informative
25			<p>Monthly review</p> <p>RETRIEVAL ACTIVITY Binary conversion, binary addition, data conversion/capacity. Storage devices. Python coding: How can a binary-denary convertor be coded in Python? Flowol/control systems: How can the users operate a automated home remotely? Mention the technologies.</p> <p>- RECALL ACTIVITY Low stake test on theory so far in year 8</p>	Complex activity (Homework):: Create a magazine article on the differences in communication in the 80s and nowadays using technologies. What is waiting for us in the future as far as computers are concerned?
26			SUMMATIVE FORMAL ASSESSMENT	
27	Summer T1	Creating a podcast using Audacity (iMedia)	<ul style="list-style-type: none"> Demonstrate a thorough understanding of the audience and purpose of digital sounds. Be able to identify good points, bad points and improvements of digital sounds. 	
28			<ul style="list-style-type: none"> Understand what should be included on a script. Create a sound script, that suits the purpose and meets the scenario. 	

			*Model Persuasive text (podcast script)	
29			<ul style="list-style-type: none"> • Identify most of the resources needed to create a digital sound, demonstrating a thorough understanding of their purpose. • Demonstrate a thorough understanding of legislation in relation to the use of sounds in digital sound sequences. 	
30			<ul style="list-style-type: none"> • Record and source consistently appropriate sounds from a wide range of sources to create assets for the digital sound sequence. • Use a wide range of sound editing, mixing and enhancement tools and techniques in ways that are appropriate. • Produce a complex digital sound sequence which clearly reflects planning and fully meets the client requirements • Provide evidence of using a wide range of sound editing, mixing and enhancement tools and techniques in ways that are appropriate. 	Writing genre: Persuasive
31			<p>Monthly review</p> <p>RETRIEVAL ACTIVITY Vocabulary, definitions, advantages, and disadvantages of the different audio effects and project & planning techniques. Appropriateness of audience, purpose and styles.</p> <p>Python coding: Create a Python program that allows the user to select the sound file and open it using a command line environment.</p> <p>Computer Systems: Binary applied to sound files and data.</p>	Complex activity (Homework):: Create a script for the audio recording with persuasive language in order to attracts the audience.

			RECALL ACTIVITY Low stake test on theory so far in year 8	
32			<ul style="list-style-type: none"> • Produce a review of the digital sound sequence which demonstrates a thorough understanding of what worked and what did not, fully referencing back to the brief. • Review / identify areas for improvement and further development of the digital sound sequence, which are wholly appropriate and justified. 	
33	Summer T2	Data used in Businesses (Data analysis and manipulation)	<ul style="list-style-type: none"> • Introduction on break-even analysis • Understand the following: <ul style="list-style-type: none"> • what a break even chart looks like • what information is used in a break even chart 	
34			<ul style="list-style-type: none"> • Interpret break-even diagrams • Understand The impact of changes in revenue and costs • Identify Break-even level of output • Identify Margin of safety • Describe Profit and loss 	
35			<ul style="list-style-type: none"> • Understand the importance of having a low break-even important and how to achieve tha 	

		<ul style="list-style-type: none"> • Be able to describe the factors that have an impact on a breakeven point • Understand impact on a business of a low/high breakeven point 	
36		<ul style="list-style-type: none"> • Understand the importance of margin of safety and the impact it has on the business • Identify different ways the margin of safety could be improved 	
37		<ul style="list-style-type: none"> • Create a breakeven chart using given data • Analyse the state of the business based on the results • Evaluate ways the business could improve 	Writing genre: Informative
38		<ul style="list-style-type: none"> • Explain and evaluate the impact on break-even on given scenarios based on prior learning <p>*Model Informative text (business report)</p>	<p>• Complex activity (Homework):</p> <p>Create a report that assesses and evaluates the situation of a given business based on their break-even information in a case study provided.</p>
39		<p>Monthly review</p> <p>RETRIEVAL ACTIVITY</p> <p>The different parts of a break-even chart. Understand the information in tables and business charts and write a brief analysis. Fill in a table with low and high break-even points based on a scenario.</p>	

			<p>Flowol/control systems: Understand a flowchart used for a business to solve different situations depending on YES-NO choices.</p> <p>Cyber security: Types of cyber attacks on businesses and how to prevent them for a specific company.</p> <p>RECALL ACTIVITY Low stake test on theory so far in year 8</p>	
40			SUMMATIVE FORMAL ASSESSMENT	