KS3 ASSESSMENT

Computing

BRAMHALL HIGH SCHOOL

	Acquiring	Developing	Secure	Mastered
	Is beginning to acquire the necessary knowledge for the topic(s)	Is developing the knowledge necessary to understand the topic	Understands the topic and is able to make links using the knowledge	Fully understands the topic and is able to confidently link knowledge.
Term 1a Impact of Technology	**Acquiring** Knows and mostly respects the basic rules of a computer room Recognises what Cyberbullying is, the dangers involved and how to report any instances	**Developing** Follows the rules of a computer room Recognises what Cyberbullying is, the harms caused, dangers involved and how to report any instances Can create a presentation on cyberbullying that informs an audience	**Secure** Follows the rules of a computer room at all times Understands what Cyberbullying is, the harms caused, dangers involved and how to report any instances Can create a detailed presentation on cyberbullying that informs and educates an audience	**Mastered** Ensures the computer room is respected at all times by all users Understands the all aspects of what Cyberbullying is in detail, the harms caused, dangers involved and how to report any instances Can create an extensive presentation on cyberbullying that informs and educates an audience on many aspects of cyberbullying

Term 1b Spreadsheets	Identify columns, rows, cells, and cell references in spreadsheet software Use formatting techniques in a spreadsheet	Use basic formulas with cell references to perform calculations in a spreadsheet (+, -, *, /) Use the autofill tool to replicate cell data	Explain the difference between data and information Explain the difference between primary and secondary sources of data Use the functions SUM, COUNTA, MAX, and MIN in a spreadsheet Use a spreadsheet to sort and filter data and collect data	Analyse data Create appropriate charts in a spreadsheet Use the functions AVERAGE, COUNTIF, and IF in a spreadsheet Use conditional formatting in a spreadsheet Apply all of the spreadsheet skills covered in this unit
Term 2a Scratch Part 1	Create a simple script that moves the sprite create and edit new costumes for an existing sprite	Create a simple script that animates the sprite automatically Delete, resize and draw new sprites Animate a sprite using costumes	Create variables to set up scoring in the game Make an autonomous sprite chase the sprite controlled by the player Use coordinates and random numbers to set start position of sprites	Use broadcast to start the game Combine different conditions using If...Else... to govern the game outcome Draw using the pen feature of Scratch Create simple subroutines

		Make sprites start in a pre-set starting position using coordinates	Give the user instructions at the beginning of the game	Use the broadcast feature in Scratch to create subroutines Enable user input to set the number of sides of each shape
Term 2b Networks	Know what a computer network is and explain how data is transmitted between computers across networks List examples of the hardware necessary for connecting devices to networks	Define 'protocol' and provide examples of non-networking protocols Compare wired to wireless connections and list examples of specific technologies currently used to implement such connections	Define 'bandwidth', using the appropriate units for measuring the rate at which data is transmitted, and discuss familiar examples where bandwidth is important Define what the internet is Explain how data travels between computers across the internet Describe key words such as 'protocols', 'packets', and 'addressing'	Explain in detail the difference between the internet, its services, and the World Wide Web Describe in detail how services are provided over the internet List all of these services and the context in which they are used Explain the term 'connectivity' as the capacity for connected devices ('Internet of Things') to collect and share information about me with or without my knowledge (including microphones, cameras, and geolocation)

				Describe in detail how internet-connected devices can affect me
Term 3a Zoo Project	Can research given topics on the internet and save resources Can create a basic artefact displaying some factual information	Know the difference between fact and opinion Create a factsheet on a chosen zoo animal Create a logo for a local zoo	Can clearly identify the difference between fact and opinion Create a good quality factsheet that is informative and attractive Create 3 logos and then research which is the most effective Write an evaluation of the final product	Use research effectively when creating resources Select appropriate resources and reject Inappropriate resources from the Internet Create a high quality factsheet that is very informative and attractive Create 3 logos, researches which is the most effective and makes clear adjustments to final product based on feedback Writes a detailed evaluation of the final product that looks at the WHAT, HOW and WHY

Term 3b Scratch Part 2	Understand how humans and computers recognise instructions Define a sequence as instructions performed in order Predict the outcome of a simple sequence	Modify a sequence Recognise that computers follow the control flow of input/process/output Trace the values of variables within a sequence Make a sequence that includes a variable	Define a condition as an expression that will be evaluated as either true or false Modify a program to include selection Identify where selection statements can be used in a program that include comparison and logical operators Describe the need for iteration	Independently design and apply programming constructs to solve a problem (subroutine, selection, count-controlled iteration, operators, and variables) Detect and correct errors in a program (debugging) Identify where count-controlled iteration can be used in a program Implement count-controlled iteration in a program

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Term 1a Introduction to Programming	Understands that python is a computing language. Recognises and can use some command words like print	Understands that python is a high-level computing language Recognises and can use several command words like print, Input Can write a simple program and undertake some problem solving Begins to understand what a variable is and uses them in their program	Can effectively use Python as a programming language Recognises and can use most key words like print, input, +, if Can write a simple program and undertake most problem solving Confidently understands what a variable is and uses it in the program Can write if statements and understands their use	Can independently create programmes using Python Recognises and uses key words like print, input, +, if, elif confidently and creatively Can write a detailed program and undertake problem solving effectively Confidently understands what a variable is and how to use them Can create fully working if statements and understands their use and limitations

Term 1b Website Development	Can describe what HTML is Can display images within a webpage Describe what a search engine is	Use HTML to structure static web pages Use search technologies effectively	Modify HTML tags using inline styling to improve the appearance of web pages Explain how search engines 'crawl' through the World Wide Web and how they select and rank results	Apply HTML tags to construct a web page structure from a provided design Discuss the impact of search technologies and the issues that arise by the way they function and the way they are used
Term 2a Computer Systems	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 Explain the difference between a general-purpose computing system and a purpose-built device	Describe the function of the hardware components used in computing systems Describe how the hardware components used in computing systems work together in order to execute programs Recall that all computing systems, regardless of form, have a similar structure ('architecture')	Define what an operating system is, and recall its role in controlling program execution Describe the NOT, AND, and OR logical operators, and how they are used to form logical expressions Use logic gates to construct logic circuits, and associate these with logical operators and expressions	Analyse how the hardware components used in computing systems work together in order to execute programs Describe the steps involved in training machines to perform tasks (gathering data, training, testing) Describe how machine learning differs from traditional programming

			Describe how hardware is built out of increasingly complex logic circuits Recall that, since hardware is built out of logic circuits, data and instructions alike need to be represented using binary digits Identify examples of artificial intelligence and machine learning in the real world	Associate the use of artificial intelligence with moral dilemmas Explain the implications of sharing program code Provide broad definitions of 'artificial intelligence' and 'machine learning'
Term 2b Mobile Technology	Can compare two types of mobile phone and their respective technologies Knows what megapixels, cores and processors are Knows what phone apps are	Can explain various features of a modern mobile phone Can make some evaluation comments over the importance of these features Can identify different apps and how they are used	Can explain how different users require different levels of phone technologies according to their needs Can evaluate and make decisions over which technology is the best for a given user	Can explain in detail how different users require different levels of phone technologies according to their needs Can evaluate and make decisions over which technology is the best for a given user giving detailed reasons

			Can evaluate various apps available to users, both paid and free Can explain various methods of data transfer and evaluate them according to given criteria	Can evaluate various apps available to users, both paid and free with sound reasoning Can explain in detail various methods of data transfer and evaluate them according to given criteria
Term 3a Mobile App Development	Identify when a problem needs to be broken down 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 programming environment Identify and fix common coding errors	Implement and customise GUI elements to meet the needs of the user Develop a partially complete application to include additional functionality Pass the value of a variable into an object Use user input in a block-based programming language Use a block-based programming language to create a sequence	Establish user needs when completing a creative project Apply decomposition to break down a large problem into more manageable steps 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

			Use variables in a block-based 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 Evaluate the success of the programming project
Term 3b Representations - from clay to silicon	List examples of representations Recall that representations are used to store, communicate, and process information	Provide examples of how different representations are appropriate for different tasks	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 between different units and multiples of representation size Provide examples of the different ways that binary digits are physically represented in digital devices

		Recall that characters can be represented as sequences of symbols and list examples of character coding schemes Measure the length of a representation as the number of symbols that it contains Provide examples of how symbols are carried on physical media	Describe how natural numbers are represented as sequences of binary digits Convert a decimal number to binary and vice versa	Apply all of the skills covered in this unit

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Term 1a Advanced Python Programming	Can write basic code on Python Can use REPL and produce an Output	Able to write code based on own questions Can explain what different lines of code do	Can create different IF, ELIF and ELSE code with appropriate responses Can write professional questions and responses Can create a random number generator Make some attempt at the extension task	Can create many different IF, ELIF and ELSE code with detailed and appropriate responses Can write highly professional questions and responses Can create a sophisticated and meaningful random number generator Can complete extension task to a high level
Term 1b Everyday Algorithms	Can write a simple step by step list to solve an everyday problem Can use flow chart shapes effectively and link them accordingly	Can write step by step algorithm stages for problems Can create a flow chart based on a sequence of steps in a process with all types of shapes used	Can write detailed step by step algorithm stages for problems which includes decisions and repeated tasks Can create a flow chart based on a sequence of steps in a process using correct sequencing,	Can write complex step by step algorithm stages for all problems which includes decisions and repeated tasks Can create a flow chart for each task based on a sequence of steps in a process using correct sequencing, Iteration and

			Iteration and decision boxes Can explain how abstraction, decomposition, Iteration and decisions are used	decision boxes with loops included and no errors Can explain in detail how abstraction, decomposition, Iteration and decisions are used for every example given
Term 2a Cybersecurity	Identify what happens to data entered online Recognise how human errors pose security risks to data List the common malware threats	Explain the difference between data and information Explain the need for the Data Protection Act Define hacking in the context of cyber security Identify the most effective methods to prevent cyberattacks	Implement strategies to minimise the risk of data being compromised through human error Explain how a DDoS attack can impact users of online services Identify strategies to reduce the chance of a brute force attack being successful Examine how different types of malware causes problems for computer systems	Critique online services in relation to data privacy Explain the need for the Computer Misuse Act Question how malicious bots can have an impact on societal issues Compare security threats against probability and the potential impact to organisations Explain how networks can be protected from common security threats

Term 2b Representations - audio to visual	Describe how digital images are composed of individual elements Recall that the colour of each picture element is represented using a sequence of binary digits	Define key terms such as 'pixels', 'resolution', and 'colour depth' Describe how an image can be represented as a sequence of bits	Describe how colour can be represented as a mixture of red, green, and blue, with a sequence of bits representing each colour's intensity Compute the representation size of a digital image, by multiplying resolution (number of pixels) with colour depth (number of bits used to represent the colour of individual pixels) Perform basic image editing tasks using appropriate software and combine them in order to solve more complex problems requiring image manipulation Recall that sound is a wave	Describe the trade-off between representation size and perceived quality for digital images Explain how the manipulation of digital images amounts to arithmetic operations on their digital representation Describe and assess the creative benefits and ethical drawbacks of digital manipulation Define key terms such as 'sample', 'sampling frequency/rate', 'sample size' Describe how sounds are represented as sequences of bits Calculate representation size for a given digital sound, given its attributes

			Explain the function of microphones and speakers as components that capture and generate sound	Explain how attributes such as sampling frequency and sample size affect characteristics such as representation size and perceived quality, and the trade-offs involved Perform basic sound editing tasks using appropriate software and combine them in order to solve more complex problems requiring sound manipulation Recall that bitmap images and pulse code sound are not the only binary representations of images and sound available Define 'compression', and describe why it is necessary

Term 3a Extended Vector Graphics				
Term 3b Media Animations	Can add, delete, and move objects Can scale and rotate objects Use a material to add colour to objects	Can add, move, and delete keyframes to make basic animations Can play, pause, and move through the animation using the timeline Can create useful names for objects	Can Join multiple objects together using parenting Can use edit mode and extrude Can use loop cut and face editing Can apply different colours to different parts of the same model Create a short animation	Can Use proportional editing Can use the knife tool Can use subdivision Can add and edit set lighting Can set up the camera Compare different render modes Create a 3–10 second animation Can render out the animation