KS3 Computing - Assessment Without Levels (AWOL)

The statements used represent the skills and competencies covered at KS3. Skills covering Digital Literacy, IT and Computer Science are taught incrementally from year 7 to year 9. To reach an Assessment Point (AP) grade, a holistic view of the pupil's progress is taken. Students sit a baseline test at the beginning of year 7 – results from the test inform the target setting process. Each skill is assessed as having been Mastered, Secured, or is being developed. Any variations in the sub grades reflect both the fraction of the skills developed at a particular grade i.e. 0.25, 0.5, 0.75 and the competency with which the skills have been mastered.

Grade	Competency Indicator	Algorithms	Programming & Development	Data & Data Representation	Hardware & Processing	Communication & Networks	Information Technology
1	"Beginning"	I know what an algorithm is and I can express simple algorithms using symbols.	I know that users can write their own programs.	I know that digital content can be represented in many forms.	I know that computers have no intelligence and that computers can do nothing unless a program is run.	I can find content from the world wide web using a web browser.	I can use software under the control of the teacher to create, store and edit digital content using appropriate file and folder names.
		I know that computers need precise instructions.	I can create a simple program.	I know the difference between some of these digital forms and can explain the different ways that they communicate information.	I know that all software executed on digital devices is programmed.	I know the importance of communicating safely and respectfully online, and the need for keeping personal information private.	I know that people interact with computers.
		I can show care and precision to avoid errors	I can run, check and change programs.			I know what to do when concerned about content or being contacted.	I can share my use of technology in school. I know common uses of information technology beyond the classroom.
			I know that programs run by following precise instructions.				I can talk about my work and make changes to improve it.
2	"Emerging"	I know that algorithms are implemented on digital devices as programs.	I can use arithmetic operators, if statements, and loops, within programs.	I know different types of data: text, number.	I know that a range of digital devices can be considered a computer.	I can navigate the web and can carry out simple web searches to collect digital content.	I can use technology with increasing independence to purposefully organise digital content.
		I can design simple algorithms using loops, and selection i.e. if statements.	I can use logical reasoning to predict the behaviour of programs.	I know that programs can work with different types of data.	I know and can use a range of input and output devices.	I can show use of computers safely and responsibly, knowing a range of ways to report unacceptable content and contact when online.	I can show an awareness for the quality of digital content collected.
		I can use logical reasoning to predict outcomes.	I can find and correct simple semantic errors i.e. debugging, in programs.	I know that data can be structured in tables to make it useful.	I know how programs specify the function of a general purpose computer.		I can use a variety of software to manipulate and present digital content: and information.
		I can find and correct errors i.e. debugging, in algorithms.					I can share my experiences of technology in school and beyond the classroom.
							I can talk about my work and make improvements to solutions based on feedback received.

Level	Stage						
3	"Attempting"	I can design solutions (algorithms) that use repetition and two-way selection i.e. if, then and else.	I can create programs that implement algorithms to achieve given goals.	I know the difference between data and information.	I know that computers collect data from various input devices, including sensors and application software.	I know the difference between the internet and internet service e.g. world wide web.	I can collect, organise and present data and information in digital content.
		I can use diagrams to express solutions.	I can declare and assign variables.	I can use filters or can perform single criteria searches for information.	I know the difference between hardware and application software, and their roles within a computer system.	I can show an awareness of, and can use a range of internet services e.g. VOIP.	I can create digital content to achieve a given goal through combining software packages and internet services to communicate with a wider audience e.g. blogging.
		I can use logical reasoning to predict outputs, showing an awareness of inputs.	I can use post-tested loops e.g. 'until', and a sequence of selection statements in programs, including use of if…then… else statement.			I know what is acceptable and unacceptable behaviour when using technologies and online services.	I can make appropriate improvements to solutions based on feedback received, and can comment on the success the solution.
4	"Developing"	I can show an awareness of tasks best completed by humans or computers.	I know the difference between, and appropriately I can use if and if, then and else statements.	I can perform more complex searches for information e.g. using Boolean and relational operators.	I know why and when computers are used.	I know how to effectively use search engines, and I know how search results are selected, including that search engines use 'web crawler programs'.	I can make judgements about digital content when evaluating and repurposing it for a given audience.
		I can design solutions by decomposing a problem and creates a sub-solution for each of these parts (decomposition).	I can use variable and relational operators within a loop to govern termination.		I know the main functions of the operating system.	Selects, combines and I can use internet services.	I know the audience when I am designing and creating digital content.
		I know that different solutions exist for the same problem.	I can design, write and debug modular programs using procedures.	Analyses and evaluates data and information, and I know that poor quality data leads to unreliable results, and inaccurate conclusions.	I know the difference between physical, wireless and mobile networks.	I can show responsible use of technologies and online services, and I know a range of ways to report concerns.	I know the potential of information technology for collaboration when computers are networked.
			I know that a procedure can be used to hide the detail with sub-solution (procedural abstraction).				I can use criteria to evaluate the quality of solutions and can identify improvements making some refinements to the solution, and future solutions.

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5	"Competent"	I know that iteration is the repetition of a process such as a loop.	I know that programming bridges the gap between algorithmic solutions and computers.	I know that digital computers use binary to represent all data.	I know the function of the main internal parts of basic computer architecture.	I know how search engines rank search results.	I can evaluate the appropriateness of digital devices, internet services and application software to achieve given goals.
		I know that different algorithms exist for the same problem.	I have practical experience of a high-level textual language, including using standard libraries when programming.	I know how bit patterns represent numbers and images.	I know the concepts behind the fetch-execute cycle.	I know how to construct static web pages using HTML and CSS.	I can recognise ethical issues surrounding the application of information technology beyond school.
		I can represent solutions using a structured notation.	I can use a range of operators and expressions e.g. Boolean, and applies them in the context of program control.	I know that computers transfer data in binary.	I know that there is a range of operating systems and application software for the same hardware.	I know data transmission between digital computers over networks, including the internet i.e. IP addresses and packet switching.	I can design criteria to critically evaluate the quality of solutions, I can use the criteria to identify improvements and can make appropriate refinements to the solution.
		I can identify similarities and differences in situations and can use these to solve problems (pattern recognition).	I can select the appropriate data types.	I know the relationship between binary and file size (uncompressed).			
				I can define data types: real numbers and Boolean.			
				I can query data on one table using a typical query language.			
6	"Confident"	I know a recursive solution to a problem repeatedly applies the same solution to smaller instances of the problem.	I can use nested selection statements.	I know how numbers, images, sounds and character sets use the same bit patterns.	I know the von Neumann architecture in relation to the fetch-execute cycle, including how data is stored in memory.	I know names of hardware e.g. hubs, routers, switches, and the names of protocols e.g. SMTP, iMAP, POP, FTP, TCP/IP, associated with networking systems.	I can justify the choice of and independently combine and I use multiple digital devices, internet services and application software to achieve given goals.
		I know that for some problems I can share the same characteristics and use the same algorithm to solve both (generalisation).	I know the need for, and can write, custom functions including use of parameters.	I can perform simple operations using bit patterns e.g. binary addition.	I know the basic function and operation of location addressable memory.	I can use technologies and online services securely, and I know how to identify and report inappropriate conduct.	I can evaluate the trustworthiness of digital content and consider the usability of visual design features when designing and creating digital artefacts for known audience.
		I know the notion of performance for algorithms and I know that some algorithms have different performance characteristics for the same task.	I know the difference between, and I can use appropriately, procedures and functions.

I know and I can use negation with operators.

I can use and manipulate one dimensional data structures.

I can find and corrects syntactical errors. | I know the relationship between resolution and colour depth, including the effect on file size. | | | I can design criteria for users to evaluate the quality of solutions, and can use the feedback from users to identify improvements and can make appropriate refinements to the solution. |
| | | | | I can distinguish between data used in a simple program (a variable) and the storage structure for that data. | | | I can identify and explain how the use of technology can impact on society. |

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7	"Convincing"	I know that the design of an algorithm is distinct from its expression in a programming language (which will depend on the programming constructs available).	I know the effect of the scope of a variable e.g. a local variable can't be accessed from outside its function.	I know the relationship between data representation and data quality.	I know that processors have instruction sets and that these relate to low-level instructions carried out by a computer.	I know the purpose of the hardware and protocols associated with networking computer systems.	I can undertake creative projects that collect, analyse, and evaluate data to meet the needs of a known user group.
		I can evaluate the effectiveness of algorithms and models for similar problems.	I know and apply parameter passing.	I know the relationship between binary and electrical circuits, including Boolean logic.		I know the client-server model including how dynamic web pages use server-side scripting and that web servers process and store data entered by users.	I can effectively design and create digital artefacts for a wider or remote audience.
		I know where information can be filtered out in generalizing problem solutions (abstraction).	I know the difference between, and I can use, both pre-tested e.g. 'while', and post-tested e.g. 'until' loops.	I know how and why values are data typed in many different languages when manipulated within programs.		I know that persistence of data on the internet requires careful protection of online identity and privacy.	I consider the properties of media when importing them into digital artefacts.
		I can use logical reasoning to explain how an algorithm works.	I can apply a modular approach to error detection and correction.				I can document user feedback, the improvements identified and the refinements made to the solution.
		I can represent algorithms using a structured language.					I can explain and justify how the use of technology impacts on society, from the perspective of social, economical, political legal, ethical and moral issues.
8	"Skilful"	I can design a solution to a problem that depends on solutions to smaller instances of the same problem (recursion).	I can design and write nested modular programs that enforce reusability utilising sub-routines wherever possible.	I can perform operations using bit patterns e.g. conversion between binary and hexadecimal, binary subtraction etc.	I have practical experience of a small (hypothetical) low level programming language.	I know the hardware associated with networking computer systems, including WANs and LANs, I know their purpose and how they work, including MAC addresses.	I know the ethical issues surrounding the application of information technology, an existence of legal frameworks governing its use e.g. Data Protection Act, Computer Misuse Copyright etc.
		I know that some problems cannot be solved computationally.	I know the difference between 'While' loop and 'For' loop, which I can use a loop counter.	I know and can explain the need for data compression, and performs simple compression methods.	I know and can explain Moore's Law.		
			I know and I can use two dimensional data structures.	I know what a relational database is, and I know the benefits of storing data in multiple tables.	I know and can explain multitasking by computers.		