





























# Computing Curriculum Assessment using CAS Digital Badges & Progression Pathways

 <p><b>ALGORITHMS</b></p>	 <p><b>PROGRAMMING</b></p>	 <p><b>DATA</b></p>	 <p><b>HARDWARE</b></p>	 <p><b>NETWORKS</b></p>	 <p><b>INFORMATION</b></p>
 <p><b>ALGORITHMS</b></p>	 <p><b>PROGRAMMING</b></p>	 <p><b>DATA</b></p>	 <p><b>HARDWARE</b></p>	 <p><b>NETWORKS</b></p>	 <p><b>INFORMATION</b></p>















# CAS Progression Pathways and 'I can' Statements Assessment





PROGRESSION PATHWAYS

'I CAN' STATEMENTS

BADGE	COMPUTER SCIENCE	BADGE	INFORMATION TECHNOLOGY	BADGE	DIGITAL LITERACY
 ALGORITHMS   PROGRAMMING   HARDWARE	<p>Understands what an algorithm is and is able to express simple linear (non-branching) algorithms symbolically. Understands that computers need precise instructions. Demonstrates care and precision to avoid errors.</p> <p>Knows that users can develop their own programs, and can demonstrate this by creating a simple program in an environment that does not rely on text e.g. programmable robots etc. Executes, checks and changes programs. Understands that programs execute by following precise instructions.</p> <p>Understands that computers have no intelligence and that computers can do nothing unless a program is executed. Recognises that all software executed on digital devices is programmed.</p>	 DATA   NETWORKS   INFORMATION	<p>Recognises that digital content can be represented in many forms. Distinguishes between some of these forms and can explain the different ways that they communicate information.</p> <p>Obtains content from the world wide web using a web browser.</p> <p>Uses software under the control of the teacher to create, store and edit digital content using appropriate file and folder names. Understands that people interact with computers.</p> <p>Talks about their work and makes changes to improve it.</p>	 NETWORKS   INFORMATION	<p>Understands the importance of communicating safely and respectfully online, and the need for keeping personal information private. Knows what to do when concerned about content or being contacted.</p> <p>Shares their use of technology in school. Knows common uses of information technology beyond the classroom.</p>
 ALGORITHMS   PROGRAMMING   HARDWARE	<ul style="list-style-type: none"> <li>I know what an algorithm is and I can express simple algorithms using symbols.</li> <li>I know that computers need precise instructions.</li> <li>I can show care and precision to avoid errors</li> <li>I know that computers have no intelligence and that computers can do nothing unless a program is run.</li> <li>I know that all software executed on digital devices is programmed.</li> <li>I know that users can write their own programs.</li> <li>I can create a simple program.</li> <li>I can run, check and change programs.</li> <li>I know that programs run by following precise instructions.</li> </ul>	 DATA   NETWORKS   INFORMATION	<ul style="list-style-type: none"> <li>I know that digital content can be represented in many forms.</li> <li>I know the difference between some of these digital forms and can explain the different ways that they communicate information.</li> <li>I can find content from the World Wide Web using a web browser.</li> <li>I can use software under the control of the teacher to create, store and edit digital content using appropriate file and folder names.</li> <li>I can talk about my work and make changes to improve it.</li> </ul>	 NETWORKS   INFORMATION	<ul style="list-style-type: none"> <li>I know the importance of communicating safely and respectfully online, and the need for keeping personal information private.</li> <li>I know what to do when concerned about content or being contacted.</li> <li>I know that people interact with computers.</li> <li>I can share my use of technology in school. I know common uses of information technology beyond the classroom.</li> </ul>

## CAS Progression Pathways and 'I can' Statements Assessment














BADGE	COMPUTER SCIENCE	BADGE	INFORMATION TECHNOLOGY	BADGE	DIGITAL LITERACY
 ALGORITHMS   PROGRAMMING   HARDWARE	<p>Understands that algorithms are implemented on digital devices as programs. Designs simple algorithms using loops, and election i.e. if statements. Uses logical reasoning to predict outcomes. Detects and corrects errors i.e. debugging, in algorithms.</p> <p>Uses arithmetic operators, if statements, and loops, within programs. Uses logical reasoning to predict the behaviour of programs. Detects and corrects simple semantic errors i.e. debugging, in programs.</p> <p>Recognises that a range of digital devices can be considered a computer.</p> <p>Understands how programs specify the function of a general purpose computer.</p>	 DATA   HARDWARE   NETWORKS   INFORMATION	<p>Recognises different types of data: text, number. Appreciates that programs can work with different types of data. Recognises that data can be structured in tables to make it useful.</p> <p>Recognises and can use a range of input and output devices</p> <p>Navigates the web and can carry out simple web searches to collect digital content</p> <p>Uses technology with increasing independence to purposefully organise digital content.</p> <p>Uses a variety of software to manipulate and present digital content: data and information. Shares their experiences of technology in school and beyond the classroom. Talks about their work and makes improvements to solutions based on feedback received.</p>	 NETWORKS   INFORMATION	<p>Demonstrates use of computers safely and responsibly, knowing a range of ways to report unacceptable content and contact when online.</p> <p>Shows an awareness for the quality of digital content collected.</p>
 ALGORITHMS	<ul style="list-style-type: none"> <li>I know that algorithms are implemented on digital devices as programs.</li> <li>I can design simple algorithms using loops, and selection i.e. if statements.</li> <li>I can use logical reasoning to predict outcomes.</li> <li>I can find and correct errors i.e. debugging, in algorithms.</li> </ul>	 DATA   HARDWARE	<ul style="list-style-type: none"> <li>I know different types of data: text, number.</li> <li>I know that programs can work with different types of data.</li> <li>I know that data can be structured in tables to make it useful.</li> <li>I know and can use a range of input and output devices.</li> </ul>	 NETWORKS   INFORMATION	<ul style="list-style-type: none"> <li>I can show use of computers safely and responsibly, knowing a range of ways to report unacceptable content and contact when online.</li> <li>I can show an awareness for the quality of digital content collected.</li> </ul>




 PROGRAMMING	<ul style="list-style-type: none"> <li>• I can use arithmetic operators, if statements, and loops, within programs.</li> <li>• I can use logical reasoning to predict the behaviour of programs.</li> <li>• I can find and correct simple semantic errors i.e. debugging, in programs.</li> </ul>	 NETWORKS	<ul style="list-style-type: none"> <li>• I can navigate the web and can carry out simple web searches to collect digital content.</li> </ul>		
 HARDWARE	<ul style="list-style-type: none"> <li>• I know that a range of digital devices can be considered a computer.</li> <li>• I know how programs specify the function of a general purpose computer.</li> </ul>	 INFORMATION	<ul style="list-style-type: none"> <li>• I can use technology with increasing independence to purposefully organise digital content.</li> <li>• I can use a variety of software to manipulate and present digital content: and information.</li> <li>• I can share my experiences of technology in school and beyond the classroom.</li> </ul> <p>I can talk about my work and make improvements to solutions based on feedback received.</p>		

# CAS Progression Pathways and 'I can' Statements Assessment















## PROGRESSION PATHWAYS





## 'I CAN' STATEMENTS

BADGE	COMPUTER SCIENCE	BADGE	INFORMATION TECHNOLOGY	BADGE	DIGITAL LITERACY
 ALGORITHMS   PROGRAMMING   HARDWARE   NETWORKS	<p>Designs solutions (algorithms) that use repetition and two-way selection i.e. if, then and else. Uses diagrams to express solutions. Uses logical reasoning to predict outputs, showing an awareness of inputs.</p> <p>Creates programs that implement algorithms to achieve given goals. Declares and assigns variables. Uses post-tested loop e.g. 'until', and a sequence of selection statements in programs, including an if, then and else statement.</p> <p>Knows that computers collect data from various input devices, including sensors and application software.</p> <p>Understands the difference between hardware and application software, and their roles within a computer system.</p> <p>Understands the difference between the internet and internet service e.g. world wide web.</p>	 DATA   NETWORKS   INFORMATION	<p>Understands the difference between data and information. Knows why sorting data in a flat file can improve searching for information. Uses filters or can perform single criteria searches for information.</p> <p>Shows an awareness of and can use a range of internet services e.g. VOIP (Voice over Internet Protocol)</p> <p>Collects, organises and presents data and information in digital content. Creates digital content to achieve a given goal through combining software packages and internet services to communicate with a wider audience e.g. blogging. Makes appropriate improvements to solutions based on feedback received, and can comment on the success of the solution.</p>	 NETWORKS	<p>Recognises what is acceptable and unacceptable behaviour when using technologies and online services.</p>
 ALGORITHMS   PROGRAMMING	<ul style="list-style-type: none"> <li>I can designs solutions (algorithms) that use repetition and two-way selection i.e. if, then and else.</li> <li>I can use diagrams to express solutions.</li> <li>I can use logical reasoning to predict outputs, showing an awareness of inputs.</li> <li>I can create programs that implement algorithms to achieve given goals.</li> <li>I can declare and assign</li> </ul>	 DATA   NETWORKS	<ul style="list-style-type: none"> <li>I know the difference between data and information.</li> <li>I know why sorting data in a flat file can improve searching for information.</li> <li>I can use filters or can perform single criteria searches for information.</li> <li>I can show an awareness of, and can use a range of internet services e.g. VOIP.</li> </ul>	 NETWORKS	<ul style="list-style-type: none"> <li>I know what is acceptable and unacceptable behaviour when using technologies and online services.</li> </ul>

 	<p>variables.</p> <ul style="list-style-type: none"> <li>• I can use post-tested loops e.g. 'until', and a sequence of selection statements in programs, including an if, then and else statement.</li> <li>• I know that computers collect data from various input devices, including sensors and application software.</li> <li>• I know the difference between hardware and application software, and their roles within a computer system.</li> <li>• I know the difference between the internet and internet service e.g. World Wide Web.</li> </ul>		<ul style="list-style-type: none"> <li>• I can collect, organise and present data and information in digital content.</li> <li>• 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.</li> <li>• I can make appropriate improvements to solutions based on feedback received, and can comment on the success the solution.</li> </ul>		
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# CAS Progression Pathways and 'I can' Statements Assessment








	BADGE	COMPUTER SCIENCE	BADGE	INFORMATION TECHNOLOGY	BADGE	DIGITAL LITERACY
PROGRESSION PATHWAYS		Shows an awareness of tasks best completed by humans or computers. Designs solutions by decomposing a problem and creates a sub-solution for each of these parts (decomposition). Recognises that different solutions exist for the same problem.		Performs more complex searches for information e.g. using Boolean and relational operators. Analyses and evaluates data and information, and recognises that poor quality data leads to unreliable results, and inaccurate conclusions.		Selects, combines and uses internet services.
		Understands the difference between, and appropriately uses if and if, then and else statements. Uses a variable and relational operators within a loop to govern termination. Designs, writes and debugs modular programs using procedures. Knows that a procedure can be used to hide the detail with sub- solution (procedural abstraction).		Knows the difference between physical, wireless and mobile networks.		Demonstrates responsible use of technologies and online services, and knows a range of ways to report concerns.
		Understands why and when computers are used. Understands the main functions of the operating system.		Recognises the audience when designing and creating digital content.		Makes judgements about digital content when evaluating and repurposing it for a given audience.
		Understands how to effectively use search engines, and knows how search results are selected, including that search engines use 'web crawler programs'.		Uses criteria to evaluate the quality of solutions, can identify improvements making some refinements to the solution, and future solutions.		Understands the potential of information technology for collaboration when computers are networked.
		<ul style="list-style-type: none"> <li>I can show an awareness of tasks best completed by humans or computers.</li> <li>I can designs solutions by decomposing a problem and creates a sub-solution for each of these parts (decomposition).</li> <li>I know that different solutions exist for the same problem.</li> </ul>		<ul style="list-style-type: none"> <li>I can perform more complex searches for information e.g. using Boolean and relational operators.</li> <li>Analyses and evaluates data and information, and I know that poor quality data leads to unreliable results, and inaccurate conclusions.</li> </ul>		<ul style="list-style-type: none"> <li>Selects, combines and I can use internet services.</li> <li>I can show responsible use of technologies and online services, and I know a range of ways to report concerns.</li> </ul>
'I CAN' STATEMENTS				<ul style="list-style-type: none"> <li>I know the difference between physical, wireless and mobile networks.</li> </ul>		<ul style="list-style-type: none"> <li>I can make judgements about digital content when evaluating and repurposing it for a given audience.</li> <li>I know the potential of information technology for collaboration when computers are networked.</li> </ul>



 PROGRAMMING   HARDWARE   NETWORKS	<ul style="list-style-type: none"> <li>• I know the difference between, and appropriately I can use if and if, then and else statements.</li> <li>• I can use a variable and relational operators within a loop to govern termination.</li> <li>• I can design, write and debug modular programs using procedures.</li> <li>• I know that a procedure can be used to hide the detail with sub-solution (procedural abstraction).</li> <li>• I know why and when computers are used.</li> <li>• I know the main functions of the operating system.</li> <li>• I know how to effectively use search engines, and I know how search results are selected, including that search engines use 'web crawler programs'.</li> </ul>	 INFORMATION	<ul style="list-style-type: none"> <li>• I know the audience when I am designing and creating digital content.</li> <li>• I can use criteria to evaluate the quality of solutions and can identify improvements making some refinements to the solution, and future solutions.</li> </ul>		
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## CAS Progression Pathways and 'I can' Statements Assessment

BADGE	COMPUTER SCIENCE	BADGE	INFORMATION TECHNOLOGY	BADGE	DIGITAL LITERACY
 ALGORITHMS	<p>Understands that iteration is the repetition of a process such as a loop. Recognises that different algorithms exist for the same problem. Represents solutions using a structured notation. Can identify similarities and differences in situations and can use these to solve problems (pattern recognition).</p> <p>Understands that programming bridges the gap between algorithmic solutions and computers. Has practical experience of a high-level textual language, including using standard libraries when programming. Uses a range of operators and expressions e.g. Boolean, and applies them in the context of program control. Selects the appropriate data types.</p>	 DATA	<p>Queries data on one table using a typical query language.</p> <p>Knows that there is a range of operating systems and application software for the same hardware.</p> <p>Evaluates the appropriateness of digital devices, internet services and application software to achieve given goals. Designs criteria to critically evaluate the quality of solutions, uses the criteria to identify improvements and can make appropriate refinements to the solution.</p>	 INFORMATION	Recognises ethical issues surrounding the application of Information Technology beyond school.
 PROGRAMMING		 HARDWARE			
 DATA	<p>Defines data types: real numbers and Boolean. Knows that digital computers use binary to represent all data. Understands how bit patterns represent numbers and images. Knows that computers transfer data in binary. Understand the relationship binary and file size (uncompressed).</p> <p>Recognises and understands the function of the main internal parts of basic computer architecture. Understands the concepts behind the fetch-execute cycle.</p> <p>Understands how search engines rank search results. Understands how to construct static web pages using HTML and CSS. Understands data transmission between digital</p>	 INFORMATION			
 HARDWARE					
 NETWORKS					

	computers over networks, including the internet i.e. IP addresses and packet switching.			
  	<ul style="list-style-type: none"> <li>I know that iteration is the repetition of a process such as a loop.</li> <li>I know that different algorithms exist for the same problem.</li> <li>I can represent solutions using a structured notation.</li> <li>I can identify similarities and differences in situations and can use these to solve problems (pattern recognition).</li> <li>I know that programming bridges the gap between algorithmic solutions and computers.</li> <li>I have practical experience of a high-level textual language, including using standard libraries when programming.</li> <li>I can use a range of operators and expressions e.g. Boolean, and applies them in the context of program control.</li> <li>I can select the appropriate data types.</li> <li>I know that digital computers use binary to represent all data.</li> <li>I know how bit patterns represent numbers and images.</li> <li>I know that computers transfer data in binary.</li> <li>I know the relationship between binary and file size (uncompressed).</li> <li>I can define data types: real numbers and Boolean.</li> </ul>	  	<ul style="list-style-type: none"> <li>I can query data on one table using a typical query language.</li> <li>I know that there is a range of operating systems and application software for the same hardware.</li> <li>I can evaluate the appropriateness of digital devices, internet services and application software to achieve given goals.</li> <li>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.</li> </ul>	 <ul style="list-style-type: none"> <li>I can recognise ethical issues surrounding the application of information technology beyond school.</li> </ul>

 	<ul style="list-style-type: none"> <li>• I know the function of the main internal parts of basic computer architecture.</li> <li>• I know the concepts behind the fetch-execute cycle.</li> <li>• I know how search engines rank search results.</li> <li>• I know how to construct static web pages using HTML and CSS.</li> </ul> <p>I know data transmission between digital computers over networks, including the internet i.e. IP addresses and packet switching.</p>				
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