



# King George V Primary School

## Curriculum Skills Progression Map

**Subject Area: Computing**

Skill	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Algorithms</b>	<p>I can begin to understand what an algorithm is.</p> <p>I can begin to write a simple set of instructions for a purpose using symbols.</p>	<p>I understand what an algorithm is and is able to express simple linear (non-branching) algorithms as symbols.</p> <p>I understand that computers need precise instructions.</p> <p>I can demonstrate care and precision to avoid errors.</p> <p>I understand that algorithms are used on digital devices as programs.</p> <p>I can devise simple algorithms using loops and selection (as statements).</p> <p>I can use logical reasoning to predict outcomes.</p> <p>I can detect and correct errors (debugging) in algorithms</p>	<p>I can design solutions (algorithms) that use repetition and two way selection (i.e if, then, else.)</p> <p>I can use diagrams to express solutions.</p> <p>I can use logical reasoning to predict outputs, showing some awareness of inputs.</p>	<p>I can describe which tasks best completed by human or computers.</p> <p>I can design solutions by decomposing a problem and creating a sub-solution for each part of the problem (decomposition)</p> <p>I can recognise that there is more than one solution to a problem.</p>	<p>I can identify and explain which tasks are best completed by human or computers.</p> <p>I can design solutions by decomposing a problem and create a sub-solution for each part of the problem (decomposition).</p> <p>I can recognise that there are several solutions to the same problem.</p> <p>I understand that various algorithms exist for different functions.</p> <p>I can begin to identify patterns in algorithms that help to solve specific problems.</p>	<p>I understand that iteration is the repetition of a process such as a loop.</p> <p>I can recognise that different algorithms exist for the same problem.</p> <p>I can detect errors in algorithms.</p> <p>I can rewrite and test my own tests and sequences.</p> <p>I can identify similarities and differences in situations and can use these to solve problems (pattern recognition)</p>

<p><b>Programming and Development</b></p>	<p>I know that users can develop their own programs.</p> <p>I can demonstrate this by creating simple programs e.g. on programmable robots.</p> <p>I can execute, check and change programs.</p> <p>I understand that programs execute by following precise instructions.</p>	<p>I can develop my own programs e.g. robots.</p> <p>I can use arithmetic operators and 'what if' statements and loops within programs.</p> <p>I can use logical reasoning to predict the behaviour of programs</p> <p>I can detect and correct simple semantic errors i.e. debugging.</p>	<p>I can create programs that implement algorithms to achieve given goals.</p> <p>I can identify and assign variables in programs.</p> <p>I can use loop commands 'until' and sequences of selection statements in programs, including 'if', 'then', 'else' statements.</p>	<p>I understand differences between and appropriately uses 'if' and 'if, then' and 'else' statements.</p> <p>I can use variable and relational operators within a loop to control 'endings' in programs.</p> <p>I can design, write and debug (modular) programs using procedures (algorithms).</p> <p>I know that a procedure can be used to hide details in programs.</p>	<p>I understand that programming bridges the gap between algorithmic solutions and computers.</p> <p>I can demonstrate practical experience of high level textual languages e.g. standard libraries when programming.</p> <p>I can use some operators and expressions e.g. Boolean.</p> <p>I can start to apply these in the context of program control ( e.g. input/process/output.)</p>	<p>I understand that programming bridges the gap between algorithmic solutions and computers.</p> <p>I can demonstrate practical experience of high level textual languages e.g. standard libraries when programming.</p> <p>I can use a range of operators and expressions e.g. Boolean and apply them in the context of program control ( e.g. input/process/output.)</p> <p>I can begin to select the appropriate data types.</p>
<p><b>Data and Data Representation</b></p>	<p>I can recognise that digital content can be represented in many forms.</p> <p>I can begin to distinguish between some of these forms and can explain the different ways that they communicate information.</p> <p>I can organise, store, edit and manipulate data in different digital formats.</p>	<p>I can recognise the different types of data e.g. text and number.</p> <p>I can appreciate that programs can work with different types of data.</p> <p>I can recognise that data can be structured in tables to make it useful.</p> <p>I can confidently organise, store, edit and manipulate data in a range of digital formats.</p> <p>I can begin to</p>	<p>I can understand and can explain the difference between data and information.</p> <p>I know why sorting data in a 'flat file' can improve searching for information.</p> <p>I can use filters or can perform single criteria searches for information.</p>	<p>I can understand and can clearly explain the difference between data and information.</p> <p>I can explain why sorting data in a 'flat file' can improve searching for information.</p> <p>I can perform more complex searches for information e.g. using Boolean and relational operators.</p> <p>I can analyse and evaluate data and information and recognises that poor quality data leads to unreliable results and inaccurate conclusions.</p>	<p>I can explain why sorting data in a 'flat file' can improve searching for information.</p> <p>I can perform more complex searches for information e.g. using Boolean and relational operators.</p> <p>I can analyse and evaluate data and information and recognises that poor quality data leads to unreliable results and inaccurate conclusions.</p> <p>I can begin to understand that digital computers are binary to represent all data.</p>	<p>I know that digital computers use binary to represent all data.</p> <p>I understand how bit patterns represent numbers and images.</p> <p>I know that computers transfer data in binary (code).</p> <p>I can recognise the relationship between binary and file size (uncompressed)</p> <p>I can define data types: real numbers and Boolean.</p> <p>I can query data on one table using typical query language.</p>

		recognise the difference between data and information.			I can begin to understand how bit patterns represent numbers and images.	
<b>Hardware and Processing</b>	<p>I understand that computers have no intelligence and can do nothing unless a program is used.</p> <p>I recognise that all software executed (used) on digital devices is programmed (look at examples)</p>	<p>I recognise that a range of digital devices can be considered a computer (look at examples).</p> <p>I can recognise and use a range of input and output devices (e.g. robotics)</p> <p>I understand how programs specify the function of a general purpose computer.</p>	<p>I recognise that computers collect data from various input devices e.g. sensors and application software.</p> <p>I understand the difference between hardware and application software and their roles within a computer system.</p>	<p>I understand why and when computers are used.</p> <p>I understand the main functions of the operating systems.</p> <p>I know the difference between physical, wireless and mobile networks. Look at examples e.g. internet: how they provide multiple services such as the world wide web.</p>	<p>I can recognise the function of the main internal parts of basic computer designs (architecture.)</p> <p>I can begin to understand the concept behind the fetch-execute cycle.</p> <p>I can begin to appreciate that there is a range of operating systems and application software for the same hardware.</p>	<p>I can recognise and understand the function of the main internal parts of basic computer designs (architecture.)</p> <p>I understand the concepts behind the fetch-execute cycle.</p> <p>I know that there is a range of operating systems and application software for the same hardware.</p> <p>I can test, contrast and evaluate the effectiveness of operating systems (eg. Windows android)</p>
<b>Communication and Networks</b>	<p>I can obtain content from the world wide web using a web browser.</p> <p>I understand the importance of communicating safely and respectfully on line and the need for keeping personal information private.</p> <p>I know what to do when concerned about content or being contacted.</p>	<p>I can navigate the web and can carry out simple web searches to collect digital content.</p> <p>I can demonstrate use of computers safely and responsibly, knowing a range of ways to report unacceptable content and contact when online.</p>	<p>I understand the difference between the internet and internet services e.g. world wide web.</p> <p>I can show an awareness of, and can use some internet services such as VOIP.</p> <p>I can recognise what is acceptable and unacceptable behaviour when using technologies and online services.</p>	<p>I understand how to effectively use search engines and knows how search results are selecting including that search engines are 'web crawler programs'</p> <p>I can select, combine and use internet services.</p> <p>I can demonstrate responsible use of technologies and online services and knows a range of ways to report concerns.</p>	<p>I understand how search engines rank search results and test some of these systems.</p> <p>I understand how to construct static web pages using HTML and CSS.</p> <p>I understand data transmission between digital computers over networks including the internet (i.e. IP addresses and packet switching).</p>	<p>I understand how search engines rank search results.</p> <p>I can clearly evaluates these systems.</p> <p>I understand how to construct static web pages using HTML and CSS.</p> <p>I can design and create my own web pages for a purpose.</p> <p>I understand data transmission between digital computers over networks including the internet i.e. IP addresses and packet switching.</p>

<p><b>Information Technology</b></p>	<p>I can use software under supervision to create, store and edit digital content using appropriate files and folder names.</p> <p>I understand that people interact with computers.</p> <p>I can share their use of technology in school.</p> <p>I know common use of information technology outside school.</p> <p>I can talk about their work and makes changes to improve it.</p>	<p>I can use technology with increasing independence to purposely organise digital content.</p> <p>I can show an awareness of the quality of digital content collected.</p> <p>I can use software to manipulate and present digital content: data and information.</p> <p>I can share my experiences of technology in school and outside school.</p> <p>I can talk about their work and makes some improvements to solutions based on feedback received.</p>	<p>I can confidently collect, organise and present data and information in digital content.</p> <p>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).</p> <p>I can make effective improvements to solutions based on feedback received and can comment on the success of the solution.</p>	<p>I can make judgements about digital content when evaluating and assigning it for a given audience.</p> <p>I can recognises the audience when designing and creating digital content.</p> <p>I understand the potential of information technology for collaboration when computers are networked.</p> <p>I can use criteria to evaluate the quality of solutions.</p> <p>I can identify improvements, making some refinements to the solution and future solutions.</p>	<p>I can evaluate the appropriateness of digital services, internet services and application software to achieve given goals.</p> <p>I can recognise ethical issues surrounding the application of information technology beyond school.</p> <p>I can design criteria to critically evaluate the quality of solutions.</p> <p>I can use the criteria to identify improvements, and can make appropriate some refinements to the solution.</p>	<p>I can justify the choice of, combines and uses multiple digital devices, internet services and application software to achieve given goals.</p> <p>I can evaluate the trustworthiness of digital content.</p> <p>I know how the use of technology can impact on society.</p> <p>I can begin to design criteria for users to evaluate the quality of solutions and use the feedback to identify some improvements.</p>
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