

Uplands Computing Progression of Skills 2021-2022

Digital Programmer		
<u>National Curriculum Objectives</u>		
<p>Co2/1.1 Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>Co2/1.2 Use sequence, selection, and repetition in programs; work with variables and various forms of input and output</p> <p>Co2/1.3 Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</p> <p>Co2/1.4 Understand computer networks including the internet; how they can provide multiple services, such as the world-wide web; and the opportunities they offer for communication and collaboration</p>		
<p><u>Prior Learning (Year 2)</u></p> <p>Co2/1.1 Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions</p> <p>Co2/1.2 Create and debug simple programs</p> <p>Co2/1.3 Use logical reasoning to predict the behaviour of simple programs.</p>	<p><u>Vocabulary</u></p> <ul style="list-style-type: none"> -Forward -Backward -Right-Angle Turn -Algorithm -Sequence -Debug -Predict - Sequence Instructions -Sequence debugging -Test & Improve/Review - Commands -Sensors -Open ended problems -Bugs/Errors -Explore/Refine Procedures -Variables -Hardware -Change inputs -Different outputs -Solutions -Predict -Devices 	<p><u>Apps & Links</u></p> <p>Scratch Junior</p> <p>https://www.j2e.com/j2code/</p> <p>Scratch</p> <p>Kodu</p>

Progression of Skills
Digital Programmer

Knowledge:

- I know that 'Computational Thinking' is all about solving problems effectively with or without a computer.
- I know that 'Computational Thinking' is about looking at a problem in a way in which a computer can help us to solve it.
- I know what an algorithm is.
- I know how to sequence steps (an algorithm) in order to solve a problem or reach a desired outcome.
- I know that I need to keep testing my program while I am putting it together.
- I know how to apply my technical skills to get the computer working on the problem as I implement my algorithm as code.
- I know how to find mistakes and fix them (debugging.)
- I know how to evaluate my program and look at different ways to achieve the same goal and which method is most effective.
- I know ways in which to reduce my algorithm.
- I know that as I get older I will be able to create more complex algorithms as a result more complex programs using a range of constructs such as sequence, selection, repetition and variables in my programs.
- I know that using algorithms will also help solve problems in other learning such as Maths, Science and Design and Technology.

Year 2	Year 3	Year 4	Year 5	Year 6
Skills:	Skills:	Skills:	Skills:	Skills:
<ul style="list-style-type: none"> - I can create programs on a variety of digital devices. -I can debug programs of increasing complexity. -I can use logical reasoning to predict the outcome of simple programs. -I can design algorithms and then code them. -I can compare different object types. -I can use the repeat and timer command. -I can use design mode to set up a scene. -I can add characters and make it move. 	<ul style="list-style-type: none"> -I can design and create programs. -I can write programs that accomplish specific goals. -I can use repetition in programs I can work with various forms of input. •I can break an open-ended problem up into smaller parts. -I can put programming commands into a sequence to achieve a specific outcome. -I can keep testing my program and can recognise when I need to debug it. -I can use repeat commands. 	<ul style="list-style-type: none"> -I can use simple selection in programs. -I can work with various forms of output. -I can use logical reasoning to systematically detect and correct errors in programs. -I can use logical thinking to solve an open-ended problem by breaking it up into smaller parts. -I can use an efficient procedure to simplify a program. -I can use a sensor to detect a change which can select an action within my program. 	<ul style="list-style-type: none"> -I can decompose a problem into smaller parts to design an algorithm for a specific outcome and use this to write a program. -I can refine a procedure using repeat commands to improve a program. -I can use a variable to increase programming possibilities. -I can change an input to a program to achieve a different output. -I can use 'if' and 'then' commands to select an action. -I can talk about how a computer model can provide 	<ul style="list-style-type: none"> -I can deconstruct a problem into smaller steps, recognising similarities to solutions used before. -I can explain and program each of the steps in my algorithm. -I can increase my confidence in the process to plan and evaluate the effectiveness and efficiency of my algorithm while I continually test the programming of that algorithm. -I can recognise when I need to use a variable to achieve a required output.

<ul style="list-style-type: none"> -I can use collision detection. -I can save and share work. -I can save, print, open and create a new icon. -I can follow and create simple instructions on the computer -I can consider how the order of instructions affects the result. -I can understand and use the direction keys. -I can create, extend and debug a set of instructions (algorithm.) 	<ul style="list-style-type: none"> -I can describe the algorithm I will need for a simple task. -I can detect a problem in an algorithm which could result in unsuccessful programming. 	<ul style="list-style-type: none"> -I can use a variety of tools to create a program. -I can recognise an error in a program and debug it. 	<p>information about a physical system.</p> <ul style="list-style-type: none"> -I can use logical reasoning to detect and debug mistakes in a program. -I can use logical thinking, imagination and creativity to extend a program. -I can group commands as a procedure to achieve a specific outcome within a program. 	<ul style="list-style-type: none"> -I can use a variable and operators to stop a program. -I can use different inputs (including sensors) to control a device or onscreen action and predict what will happen. -I can use logical reasoning to detect and correct errors in algorithms and programs.
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