## PROGRESSION IN COMPUTING – COMPUTER SCIENCE - PROGRAMMING

| Year 1 |
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| • I can give instructions to a robot.<br>• I can describe what happens when I press buttons on a robot.<br>• I can press the buttons in the correct order to make my robot do what I want.<br>• I can describe what actions I will need to do to make something happen and begin to use the word algorithm.<br>• I can begin to predict what will happen for a short sequence of instructions.<br>• I can begin to use software/apps to create movement and patterns on a screen.<br>• I can use the word debug when I correct mistakes when I program.<br>• I can use the direction keys to control. |
| **Year 2** |
| • I can give instructions to my friend (using forward, backward and turn) and physically follow their instructions.<br>• I can tell you the order I need to do things to make something happen and talk about this as an algorithm.<br>• I can program a robot or software to do a particular task.<br>• I can look at my friend's program and tell you what will happen.<br>• I can use programming software to make objects move.<br>• I can watch a program execute and spot where it goes wrong so that I can debug it. |
| **Year 3** |
| • I can break an open-ended problem up into smaller parts.<br>• I can put programming commands into a sequence to achieve a specific outcome.<br>• I keep testing my program and can recognise when I need to debug it.<br>• I can use repeat commands.<br>• I can describe the algorithm I will need for a simple task.<br>• I can detect a problem in an algorithm which could result in unsuccessful programming. |
| **Year 4** |
| • I can use logical thinking to solve an open-ended problem by breaking it up into smaller parts.<br>• I can use an efficient procedure to simplify a program<br>• I can use inputs and decisions.<br>• I can use a sensor to detect a change which can select an action within my program.<br>• I can use if, then and else commands.<br>• I can use and understand variables.<br>• I know that I need to keep testing my program while I am putting it together.<br>• I can recognise an error in a program and debug it.<br>• I recognise that an algorithm will help me to sequence more complex programs. |
| **Year 5** |
| • 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 use logical reasoning to detect and debug mistakes in a program.
- I use logical thinking, imagination and creativity to extend a program.
- I can program a physical device.
- I can use variables when programming a physical device.

**Year 6**

- 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 evaluate the effectiveness and efficiency of my algorithm while I continually test the programming of that algorithm.
- I can use 'if', 'else' and 'then' conditions.
- I can test and debug my code.
- I can control multiple inputs.
- I can design and use subroutines.
- I understand I can use loops to create repetition.