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|  | Year 1 (KS1) | Year 2 (KS1) | Year 3 (KS2) | Year 4 (KS2) | Year 5 (KS2) | Year 6 (KS2) |
| Skills | Create symbolic algorithm  Use this to program Beebots or other programmable toys | Inputs commands to control events for a predicted outcome  Create and edit digital content | Using repeat  Creating “efficient” code  Create a program that implements algorithms to achieve a given goal  Design a solution that uses repetition  Uses logical reasoning to predict outputs, showing an awareness of inputs  Uses diagrams to express solutions | Using “if/then” statements  Using loops  Using co-ordinates  Use relational operator within a loop to govern termination | Create code using simple and  two way selection  Uses nested statements  Use diagrams to express solutions  Design algorithms using loops and selection | Reading a flow chart  Converting algorithm into code  Subtracting from a variable |
| Concepts/computational thinking | Knows that computers need precise instructions  Know what an algorithm is | Know that users can create their own programs  Know that solutions can be applied in different situations  Understand that algorithms are implemented on digital devices as programs | Abstraction (removing part of the procedure and making a sub-procedure)  Generalisation/patterns (solutions which can be adapted to suit any shape)  Knows that a procedure can be used to hide the detail with a sub-solution  Recognise that different solutions exist for the same problem |  | Understands the difference between if and if, then and else statements | Pattern recognition |
| Skills |  | Find and fix errors |  | Adapting and applying solutions  Debugging  Abstraction  Decomposition | Uses a range of operators and negation expressions (eg Boolean )  Uses arithmetic operators  Uses random selection | Converting algorithm into code. |
| Concepts/computational thinking |  | Understand that humans make errors and that programs sometimes need de-bugging |  | Know that different solutions exist for the same problem  Know that a procedure can be used to hide the detail | Shows an awareness of tasks best completed by humans or computers  Can identify similarities and differences in situations and can use these to solve problems  Understand that iteration is the repetition of a process such as a loop | Recognises that some problems share the same characteristics and use the same algorithm to solve both |
| Skills |  |  |  | Has practical experience of high level textual language including using standard libraries when programming | Uses broadcast and receive | Use a mark up text – HTML  Use a VBA Code |
| Concepts/computational thinking |  |  |  | Understand that programming languages are text based. Opportunities for de-bugging as this is live coding. | Recognise that different algorithms exist for the same problem  Understands the notion of performance for algorithms | Detects and corrects syntactical errors |

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