**Elworth CE Primary School**

**UKS2 Programming Skills Progression**

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|  | **Y5 (A)** | **Y5 (B)** | **Y6©** | **Y6 (D)** |
| **UKS2 Programming** | To control a simple circuit connected to a computer   * I can build a simple circuit to connect a microcontroller to a computer * I can program a microcontroller to light an LED * I can explain why I used an infinite loop | To explain how selection is used in computer programs   * I can recall how conditions are used in selection * I can identify conditions in a program * I can modify a condition in a program | To define a ‘variable’ as something that is changeable   * I can identify examples of information that is variable * I can explain that the way that a variable changes can be defined * I can identify that variables can hold numbers or letters | To create a program to run on a controllable device   * I can apply my knowledge of programming to a new environment * I can test my program on an emulator * I can transfer my program to a controllable device |
| To write a program that includes count-controlled loops   * I can connect more than one output device to a microcontroller * I can design sequences for given output devices * I can decide which output devices I control with a count controlled loop | To relate that a conditional statement connects a condition to an outcome   * I can use selection in an infinite loop to check a condition * I can identify the condition and outcomes in an if..then… else statement * I can create a program with different outcomes using selection | To explain why a variable is used in a program   * I can identify a program variable as a placeholder in memory for a single value * I can explain that a variable has a name and a value * I can recognise that the value of a variable can be changed | To explain that selection can control the flow of a program   * I can identify examples of conditions in the real world * I can use a variable in an if… then… else… statement to select the flow of a program * I can determine the flow of a program using selection |
| To explain that a loop can stop when a condition is met, e.g. number of times   * I can explain that a condition is something that can either be true or false (e.g. whether a value is more than 10, or whether a button has been pressed) * I can experiment with a do until loop * I can program a microcontroller to respond to an input | To explain how selection directs the flow of a program   * I can explain that program flow can branch according to a condition * I can design the flow of a program which contains if… then… else... * I can show that a condition can direct program flow in one of two ways | To choose how to improve a game by using variables   * I can decide where in a program to change a variable * I can make use of an event in a program to set a variable * I can recognise that the value of a variable can be used by a program | To update a variable with a user input   * I can use a condition to change a variable * I can experiment with different physical inputs * I can explain that if you read a variable, the value remains |
| To conclude that a loop can be used to repeatedly check whether a condition has been met   * I can explain a condition being met can start an action * I can identify a condition and an action in my project * I can use selection (an if… then… statement) to direct the flow of a program | To design a program which uses selection   * I can outline a given task * I can use a design format to outline my project * I can identify the outcome of user input in an algorithm | To design a project that builds on a given example   * I can choose the artwork for my project * I can explain my design choices * I can create algorithms for my project | To use an conditional statement to compare a variable to a value   * I can explain the importance of the order of conditions in else if statements * I can use an operand (e.g. <>=) in an if… then… statement * I can modify a program to achieve a different outcome |
| To design a physical project which includes selection   * I can identify a condition to start an action (real world) * I can describe what my project will do (the task) * I can create a detailed drawing of my project | To create a program which uses selection   * I can implement my algorithm to create the first section of my program * I can test my program * I can share my program with others | To use my design to create a project   * I can create the artwork for my project * I can choose a name that identifies the role of a variable * I can test the code that I have written | To design a project that uses inputs and outputs on a controllable device   * I can decide what variables to include in a project * I can design the algorithm for my project * I can design the program flow for my project |
| To create a controllable system which includes selection   * I can write an algorithm to control lights and a motor * I can use selection to produce an intended outcome * I can test and debug my project | To evaluate my program   * I can identify ways the program could be improved * I can identify what setup code my project needs * I can extend my program further | To evaluate my project   * I can identify ways that my game could be improved * I can extend my game further using more variables * I can share my game with others | To develop a program to use inputs and outputs on a controllable device   * I can create a program based on my design * I can test my program against my design * I can use a range of approaches to find and fix bugs |