**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
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| 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
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| 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
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| 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
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| 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
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| 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
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