Year 4 Programming Progression 2020 - 2021

Y4	Programming – Repetition	Computational Thinking – Decomposition	What this looks like - Example Projects
GDS	• Experiment and debug a **program** using repetition to improve on a simple electronic circuit. • I can experiment with another's code to improve a program incorporating **repetition**.	Can use decomposition to solve problems by breaking them into their smaller parts to predict how a **program** might run and use it to identify areas to improve.	In Y4 using **Hopscotch** lets you break down (decompose) the system as you attach sequences of code to different elements for different functions. It can be used to code the components for a game including: characters and how we make them move etc. Hopscotch could be used to code a project displaying an interactive water cycle. In Terms of repetition children could be challenged to draw a regular polygon in scratch that uses repeated sequences. Or a quiz game which uses elements of repetition blocks in questions and code.
EXS	• Read, design, write and debug a **program** using repetition to control a simple circuit. • I can plan and run a **program** of simple commands incorporating **repetition**.	Can use decomposition to ensure their program follows a precise **sequence** and identify ways of improving their code.	
WTS	• Read, design and write a **program** using repetition. • I know what a **repetition** is.	Can use decomposition to ensure their program follows a simple **sequence**.	Children could use circuitry in science and apply the micro:bits to program elements of their circuits – linking this to Greece and Zeus's lightning bolts. BBC What is Sequencing? BBC What is Repetition? BBC What is Decomposition?

#WeAreLemington

Key Vocabulary		Apps	Breakdown
Repetition	Repetition is when events in programs recur. Being able to spot repetition in code builds on children's abilities to spot repeatable patterns.		This is made more challenging in Y4 by introducing different ways to program interaction. In Hopscotch children will code games that incorporate repetition. Tynker lets children practice elements they may have used in Y3, expanding this to make simple games – like a quiz game to show topic knowledge.

Children can continue work on Scratch although move from Jr to Scratch online. Code for Life could still be used to practice using block style coding. The aim is to ensure children are using repetition within their sequences. Linking to France topic children can use a new element within scratch to code their own google translator.

The Y4 Science topic, circuitry, could allow children to code a physical system using the BBC Micro:Bit to form an input. This program be to turn a bulb off and on or to play a musical note. |
| Decomposition | Decomposition is the process of breaking down a task into smaller, moremanageable parts. With decomposition, a task can be tackled by several people working together as a team. | | |

NC KS2 Objectives
- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs