

Topic: Computing - Computer Science	Year group	Term
Espresso Repetition and loops	Year 4	Spring 2 6 sessions

Background knowledge

Children will have completed the first unit of Espresso Coding in Year 4, Introduction to variables.

What should I already know?

Children know how computers use variables to count things and keep track of what is going on. They can create simple games which use a score variable.

National Curriculum Objectives / Key Skills	The Journey
<p>To design, write and debug programs using if, then, else statements and with guidance begin to program simple hardware.</p> <p>To use sequence, selection, and repetition in programs; work with variables.</p> <p>To use logical reasoning to explain how some simple algorithms work and to begin to detect and correct errors independently.</p> <p>I can create programs that use if, then and else statements to achieve given goals.</p> <p>I can program simple hardware.</p> <p>I am beginning to detect and correct errors independently.</p>	<ol style="list-style-type: none"> 1. Children learn why we need loops. They will make simple loops to count up and down using "every second" and "if" blocks. 2. Make a stopwatch app that you can use to time things. 3. Make a countdown app that counts down in seconds. 4. Make two different space based animations that use loops. 5. Learn to use loops to make more animations. 6. Children add their own pictures, buttons and variables. They add event boxes and code to make their own program.

Outcomes

An overview of what children will know / can do

Working towards: With support, children will start to include repetition in their code through the use of variable blocks.

Expected: Children will know how computers use repetition and loops to do things over and over again. Children will design their own apps including variables.

Exceeding: Children will know how computers use repetition and loops to do things over and over again. They can design their own apps event boxes, pictures, buttons and variables and other blocks from their previous learning including directions and conditionals.

Key Vocabulary

Algorithm - The set of steps to solve a problem.

Code - A list of commands in a computer program.

Conditional - a part of the code that will only happen "if".

Debugging - To correct mistakes or problems in a computer program.

Ifeq - If... equals.

Ifgt - If ... greater than.

Iflt - If ... less than.

Loop - Repeating a set of instructions.

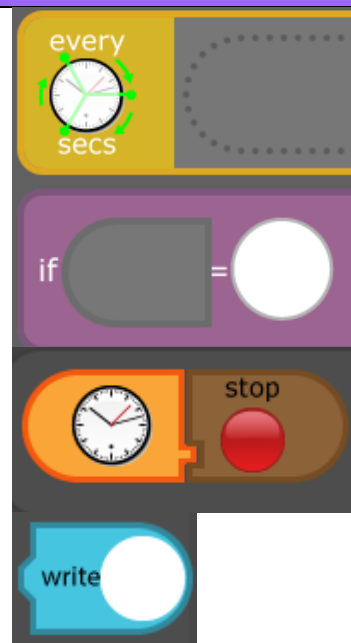
Program - A set of instructions in a programming language or code that tells a computer what to do.

Repeat - to make an event happen again.

Run - To make a program follow its instructions.

Variable - An object used to store a simple piece of information, such as a score or the time taken.

Timeline / Diagrams



Key people / places

"Most good programmers do programming not because they expect to get paid or get adulation from the public, but because it is fun to program." Linus Torvalds, software engineer who developed the Linux operating system.

Assessment questions / outcomes

What is a 'variable'? Where have you used variables in computer programming before?

How did we use loops to count up in multiples?

What does a timer do? What does a stopwatch do?

How is a countdown timer different from a stopwatch?

When might we use a countdown timer in an app?

How did we make the rocket orbit the planet in a clockwise direction?