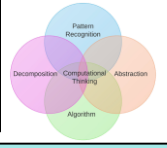
Computational Thinking

Breaking a problem down into smaller parts to find a solution. There are 4 stages.



1. Decomposition

Breaking a problem down into smaller parts to make it easier to tackle. E.g. Making a cup of tea – 1. Get a cup. 2. Get a teabag. 3. Boil Kettle etc…

2. Pattern Recognition

Spotting similarities/differences to be able to find a pattern to help solve a problem. e.g. all cars have wheels, bonnet, boot – these are common characteristics. Once we know how to describe 1 car we can use this to describe others, just changing the specifics like shape, model and colour.

3. Abstraction

Identifying key details to find the general pattern for solving problems by removing specific details. E.g. baking a cake – need ingredients, mix up, bake. This is a general pattern for baking all cakes with specifics like quantities & flavours removed.

4. Algorithm

The step by step instructions that are carried out to complete a task.

Variables

Variables are used by computer programs to store information.
E.g. 'myName = James' Name is the variable, James is the information stored.

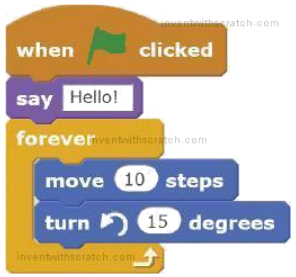
Basic Conditions

Sequence: Step by step instructions to complete a task.
Selection: A way of including a decision within the code using the keywords: IF, ELSE and ELIF.
Iteration: To include a loop within a program. Two types of loops: FOR & WHILE.

Scripting

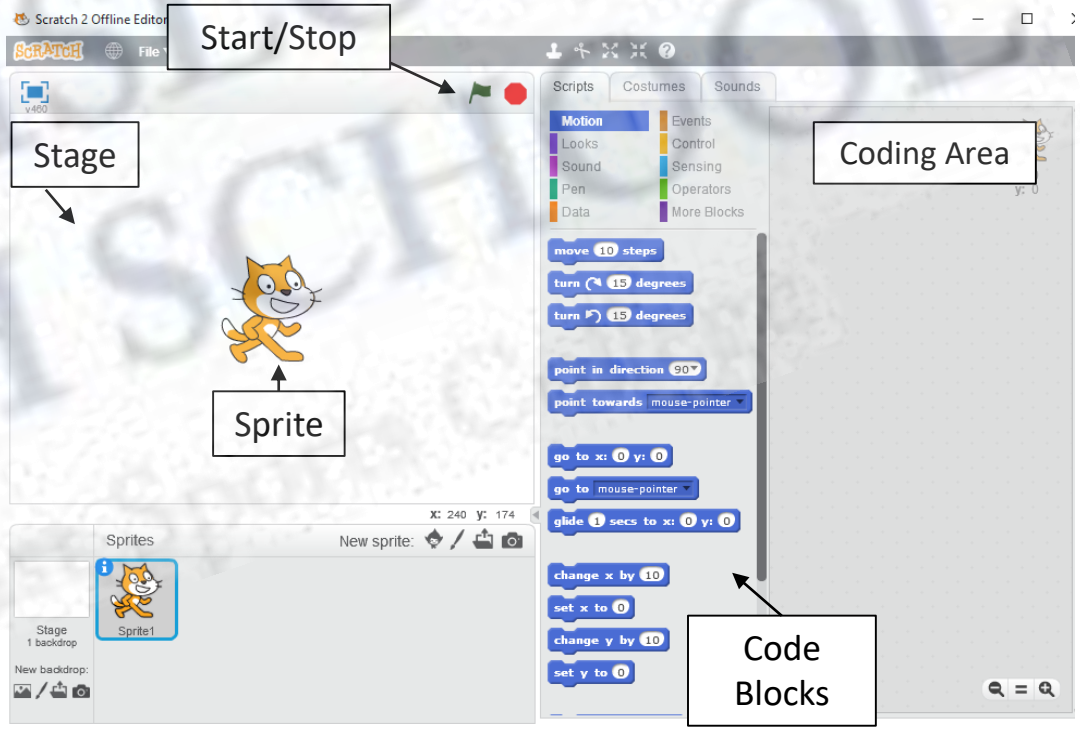
When flag is clicked the Sprite will switch costumes every 2 seconds forever, until told to stop.

When flag is clicked the Sprite will say hello and move 10 steps then turn 15 degrees until told to stop.



What is Scratch?

Scratch is a visual programming language used to program projects, such as games & quizzes using code blocks.
Sprites are programmed in on the stage using script – which is built from code blocks in the coding area.



Keywords

Variable	Sprite	Stage	Blocks	Selection
Iteration		Sequence		Decomposition
Pattern Recognition		Abstraction		Algorithm