

SUBJECT: Computing

UNIT: Scratch Programming



All computer programs are designed with three key programming constructs in mind: **sequence, selection and iteration**. This unit introduces you to these constructs using Scratch and a range of block-based programming activities. Understanding them will make you a better problem-solver, both in everyday life and as a computer programmer.

Scratch is a program that allows you to piece blocks of code together to solve problems. It is a block-based programming language because you do not need to type any code.

New blocks:

A Scratch 'say' block with the text 'Hello!' in the white area and '20 seconds' in the duration field.

The 'say' block makes the cat say whatever is in the white area for as long as you specify.

A Scratch 'join' block with the text 'The final number you entered was:' and a variable block labeled 'number'.

The 'join' block is used to join text together with variables. This is called **concatenation**.

A Scratch 'say' block where the white area contains a 'join' block with 'The final number you entered was:' and a 'number' variable block. The duration is '20 seconds'.

You can combine the 'say' block and the 'join' block. This line of code would **output** The final number you entered was: and then the value that is stored in the number variable.

A Scratch 'say' block where the white area contains three 'join' blocks: 'Hello', 'name', 'you are', and 'age'. The duration is '10 seconds'.

Multiple 'join' blocks can be used to join together multiple strings and variables.

A Scratch script starting with 'when clicked', followed by 'ask What colour is the traffic light? and wait', 'set colour to answer', an 'if' block with 'colour = Red' then 'say Stop! for 5 seconds', and an 'else' block with 'say Go! for 5 seconds'.

CONDITION CHECK: this is what is being checked.

DO IF TRUE: This is what the program will do if the condition is True.

DO IF FALSE: This is what the program will do if the condition is False.

If-else statements will perform one action if the condition is **True** and another if it is **False**. They will not perform both actions.

A Scratch script starting with 'when clicked', followed by 'ask What colour is the traffic light? and wait', 'set colour to answer', an 'if' block with 'colour = Red' then 'say Stop! for 5 seconds', an 'else' block with an 'if' block 'colour = Amber' then 'say Get ready! for 5 seconds', and another 'else' block 'say Go! for 5 seconds'.

FIRST CONDITION CHECK: this is what is being checked first.

DO IF TRUE: This is what the program will do if the first condition is True.

SECOND CONDITION CHECK: This is what the program will do if the first condition is False. It will check a second condition.

DO IF TRUE: This is what the program will do if the first condition is False and the second condition is True.

DO IF FALSE: This is what the program will do if the first condition is False and the second condition is False.