KNOWLEDGE

ORGANISER

Year 5 Computing – Programming: Selection in Physical Quizzes

What I should already know

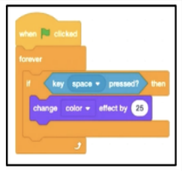
- We use programs such as Scratch to code our own games.
- We can use repeat and loop operator blocks in Scratch to make our programs more logical and efficient. These help us to run code continuously or for a set number of times.
- We use algorithms to sequence movements, actions and sounds to program effective animations.

What I will learn by the end of this unit

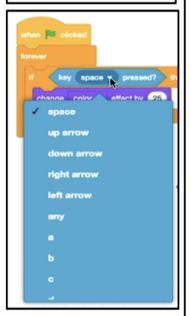
- We can use algorithms to sequence movements, actions and sounds in order to program effective animations.
- Scratch is a program that we can use to code our own quizzes, inputting questions using 'ask' command blocks.
- We can use selections and conditions to ensure that there are different outcomes depending upon a user's response.

Selections and Conditions

-Creating Conditions: The 'If-then' command block helps us to create conditions. It is one of the darker orange control blocks. Other blocks are placed inside the 'If-then' blocks to create conditions.

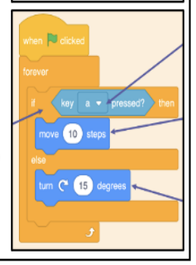


The 'senses' blocks (light blue) create the 'trigger' (e.g. when a certain key is pressed). We can change the trigger by pressing the downward arrow and selecting from the range of keys/ actions. The 'actions' blocks (e.g. motions, sounds, etc). are then used to program what will happen when the 'senses' command is triggered.



-Different Outcomes: The 'If-then-else' command block helps us to write programs that have selections with two outcomes.

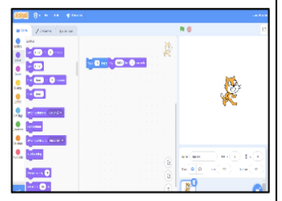
-Actions to be carried out if the condition is 'true' (if the conditions of the 'sense' command are met) are placed below 'then.' Actions to be carried out if the condition is 'false' (e.g. if any other key is pressed) go below 'else.'



-The 'forever' block means that the command will happen continually.

The Basics of Scratch

-What is Scratch? Scratch is a website/ app that lets us code our own quizzes, stories, games and animations.



-Scratch helps us to learn how to use programming language, whilst also being creative and using problem-solving skills.

There are three main areas in Scratch:

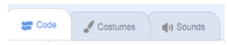
-The Blocks Palette (on the left) contain all of the different blocks: puzzle piece commands which control the animation.

-Code Area (in the middle) is where the blocks are placed to create a program.

-Stage with Sprite (right) is where the output of the program is presented. The sprite is the character.

Attributes: There are three attributes of the sprite which we can change to make our animation: Code, Costumes, Sounds.

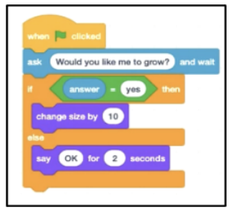
-Event Blocks: Event blocks are coloured yellow and are used to sense different events that happen e.g., the green flag being clicked.



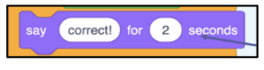
-Action Blocks: Action blocks include 'Motion' blocks, 'Sound' blocks and 'Looks' blocks. They make the sprite move, make sounds and change appearance.

Asking Questions

-Questions can be included by using the 'ask' command blocks.



-If specific answers are needed (e.g. yes or no), these can be typed in when using the 'answer' sensing block within the = 'Operators' block - drag it into the first white space. In the second white space, we can then type in the desired answer.



-The 'say' command block (in looks) is used to inform the user if the response was correct.

Algorithms, Trialling, Debugging

-Designing an **algorithm** (set of instructions for performing a task) will help you to program the sequence that you require.

-Programmers do not put their computer programs straight to work. They **trial** them first to find any errors:

-Sequence errors: An instruction in the sequence is wrong or in the wrong place.

-Keying errors: Typing in the wrong code.

-Logical errors: Mistakes in plan/thinking.

-If your algorithm does not work correctly the first time, remember to **debug** it.

Disciplinary Skills

- Design, write and debug programs that accomplish specific goals.
- Solve problems by decomposing them into smaller parts.
- Use sequence, selection and repetition in programs.
- Work with variables.
- Use logical reasoning to explain how simple algorithms work and to detect and correct errors in algorithms and programs.
- Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration.

Key Vocabulary

selection	condition	true	false
count-controlled loop	outcomes	conditional statement	