St White's Primary School - Computing

Phase: UKS2 | Topic: Selection in quizzes

What should I already know?

- I know how to control real-world objects
- I know about the levels of abstraction in programming
- I can programme using block-based construction
- I understand the concepts of 'sequence' and 'repetition', and have some experience of using 'selection'

Levels of abstraction

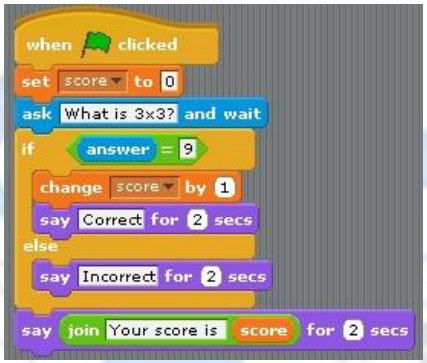
•When programming, there are four levels that can help describe a project (known as 'levels of abstraction').
• This structure can support us in understanding how to create a program and how it works:
•Task — this is what is needed
•Design — this is what it should do
•Code — this is how it is done
•Running the code — this is what it does

Conditions

Conditions are statements that need to be met for a set of actions to be carried out. They can be used in algorithms and programs to control the flow of actions. When a condition is met, it is referred to as 'true' and when it is not met, it is referred to as 'false'. You will need to be able to identify and use conditions in algorithms in the form of statements to both start and stop sets of action.

Selection

- When designing programs, there are often points where a decision must be made
- These decisions are known as selections and are implemented in programming using if statements. Selection is used to control the flow of actions in algorithms and programs by checking if a condition has been met. If it has been met, the identified actions will be carried out.
- When selection is used in programs, loops have to be used to instruct the device to check the condition repeatedly. Without using loops, the condition would only be checked once.



Asking Questions

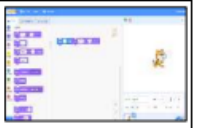
-Questions can be included by using the 'ask' command blocks.

-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.

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.

Technical vocabulary

Condition	A rule that tells the computer when to do something.
Selection	Choosing between options in a program.
Variable	A place to store information that can change.
Debugging	a place where power or information leaves a system.
Logical	Clear, step-by-step thinking to solve problems.
Program	a series of coded software instructions to control the operation of a computer or other machine
Component	a part or element of a larger whole, especially a part of a machine or vehicle.
Algorithms	a process or set of rules to be followed in calculations or other problem-solving operations, especially by a computer

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.