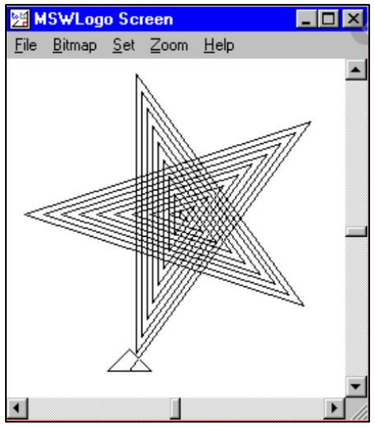
COMPUTING: PROGRAMMING- Repetition in Shapes

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KNOWLEDGE ORGANISER

Overview



Repetition in Shapes

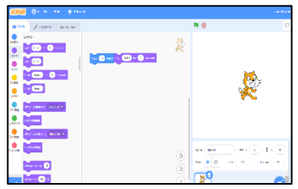
- Programming is when we make a set of instructions for computers to follow.

-Logo is a text-based program that we can use in order to create shapes and patterns.

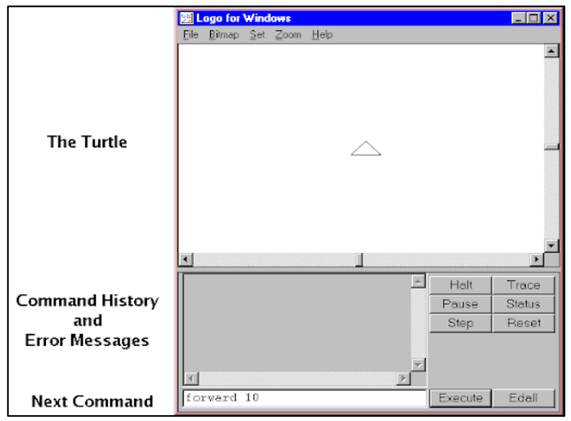
-We use algorithms (a set of instructions to perform a task) which we can plan, model and test, in order to create accurate and imaginative shapes and patterns.

The Basics of FMS Logo

-**What is FMS Logo?** Logo is a text-based programming language, where we can type commands which are then drawn on the screen.
-Logo helps us to learn how to use programming language, whilst also being creative and using problem-solving skills.



The Display:

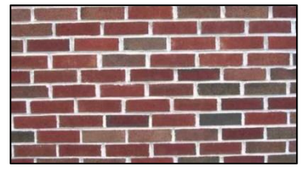


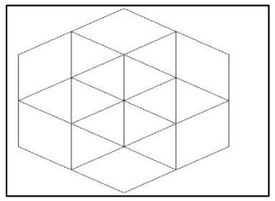
Basic Commands:

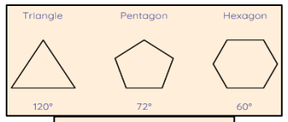


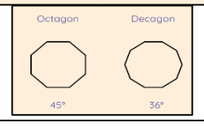
-FD: Forwards. Always followed by a space and the number of steps, e.g. FD 50
-BK: Backwards. As above, e.g. BK 50
-LT: Left turn. Always followed by a space and then the degrees to turn, e.g. LT 90
-RT: Right turn. As above, e.g. RT 90
-CS: Clears any pen marks on your screen and gets the turtle back to the centre.
-PU: Stops turtle from leaving a pen trail.
-PD: Makes turtle leave a pen trail again.

Programming Patterns









-Patterns: Patterns are things that repeat in a logical way. In everyday life, patterns are everywhere!

-Patterns in Logo: Instead of typing in the code to create each individual shape, we can save time by repeating a sequence of instructions. We use the 'repeat' function.

-Repeat: Type the command 'repeat' — this repeats commands a set number of times. The number following repeat is the number of times to repeat the code, and the code to be repeated is in square brackets, e.g. repeat 4 [FD 100 LT 90]

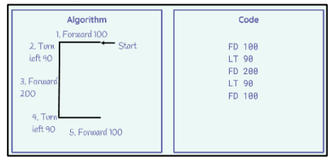
The above code will repeat FD 100 LT 90 four times.

-Creating Shapes and Loops: To make shapes, we need to know the angles of corners of different shapes (see right). Using the repeat function with shapes can help us to make spirals.

Sequencing and Algorithms

-A **sequence** is a pattern or process in which one thing follows another.

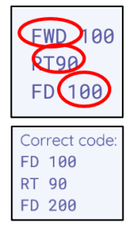
-We design **algorithms** (sets of instructions for performing a task) to help us program the sequence that we require to achieve our desired outcomes.



-**Programming** is the process of keying in the code recognized by the computer (using your algorithm).

Trialling and Debugging

-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.

Important Vocabulary

commands code snippet pattern repetition repeat value trace decompose procedure