Algorithmic Doodle Art 4: Recursive Wrapping

Next time you find yourself doodling, draw an algorithmic doodle and explore recursive algorithms and self-similar shapes. Here is an example Doodle Algorithm. Even though you only ever fill in half of the squares remaining how quickly does it fill?

1. Start by drawing an undecorated box (as below)
2. DoodleDraw the box as below.

To DoodleDraw a box:

1. If no uncoloured square is big enough to draw in then colour in the bow and **FINISH**
2. Otherwise
   1. Pick a new uncoloured square
   2. Pick a new colour pen
   3. Split the square into 4 equal squares by drawing a cross in the middle.
   4. Colour in two of the new squares that are in diagonally opposite corners.
   5. **DoodleDraw** the box

Notice that recursive algorithms have two parts. One part, called the **base case**, is a stopping condition. It stops you going on forever. The other part is called the **step case**. It takes steps towards the base case, using its own definition to do so.