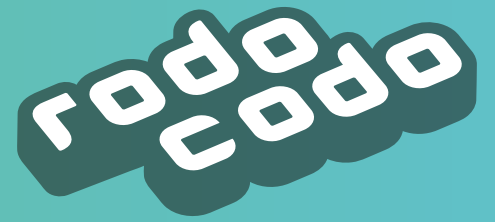
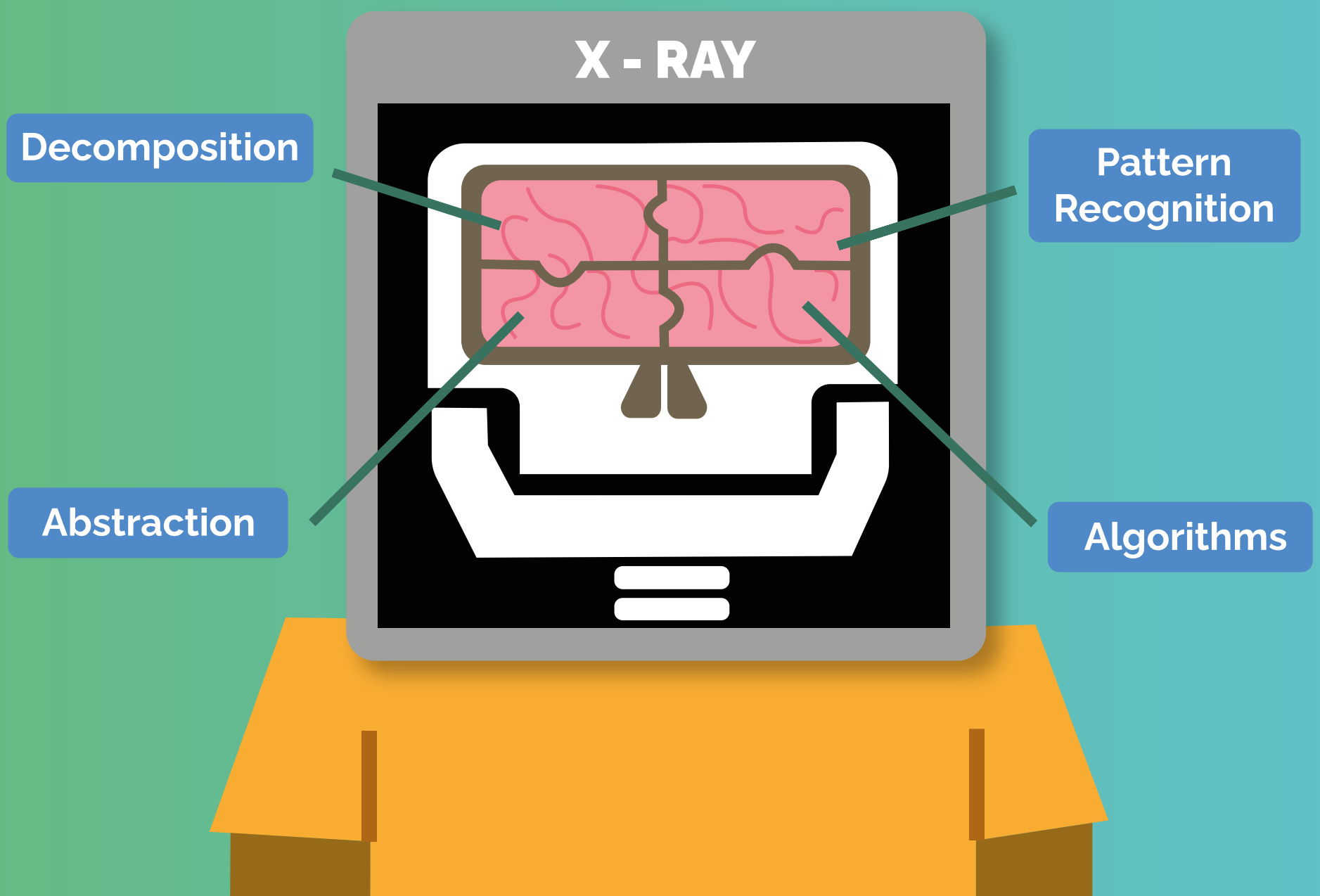


# Computational Thinking: What is it?



Computational thinking allows us to take a complex problem, understand what the problem is and develop possible solutions.

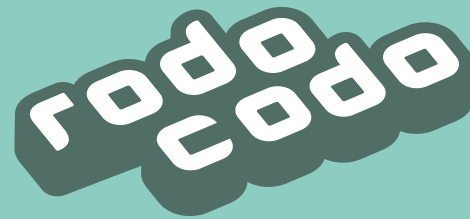
There are four key areas to computational thinking:



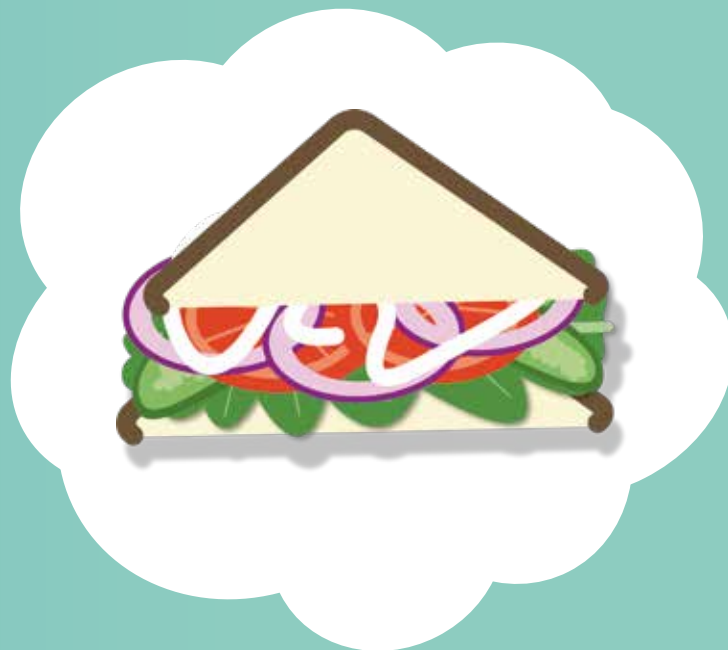
These simple steps help solve complex problems in computing.

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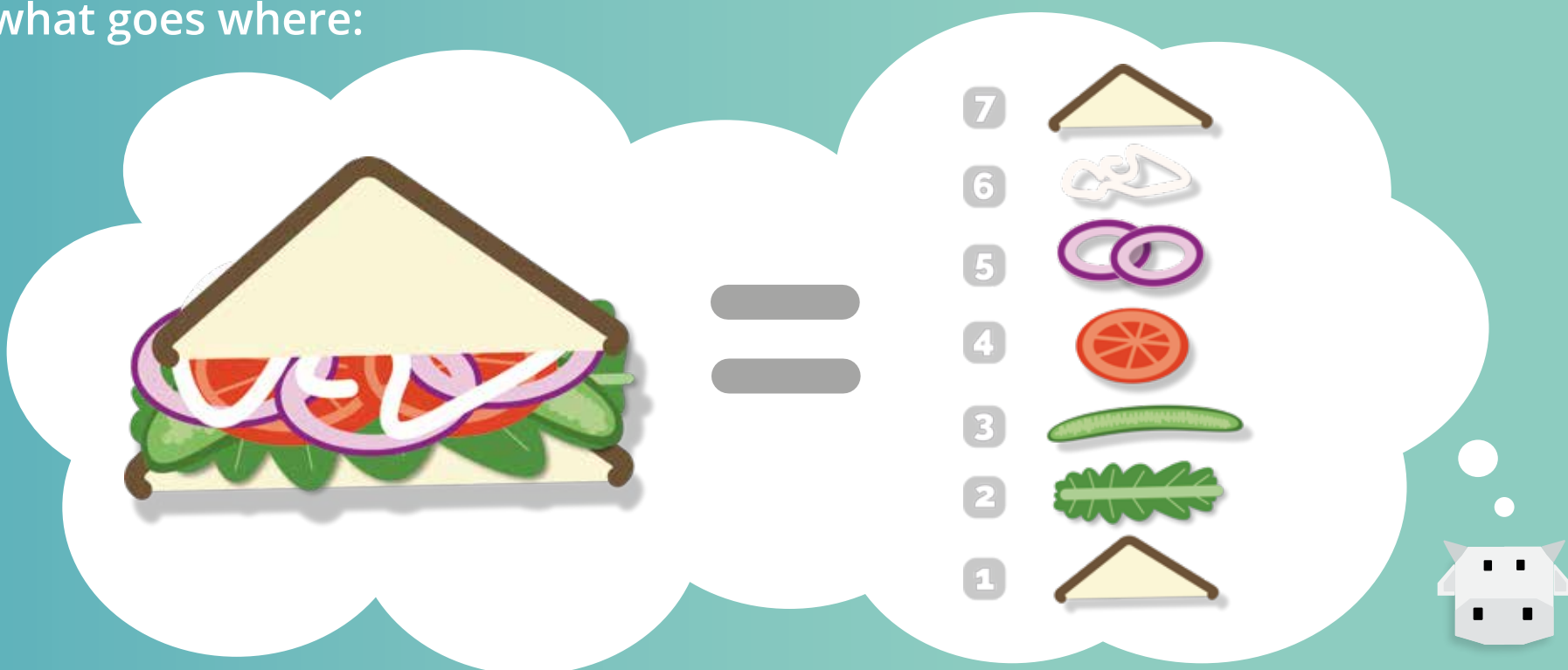
# Computational Thinking: Decomposition



Cow is thinking about making a sandwich, filled with lots of different fillings.



The sandwich seems difficult to make - she doesn't know where to begin! Cow breaks down the sandwich into the individual fillings so she can see what goes where:



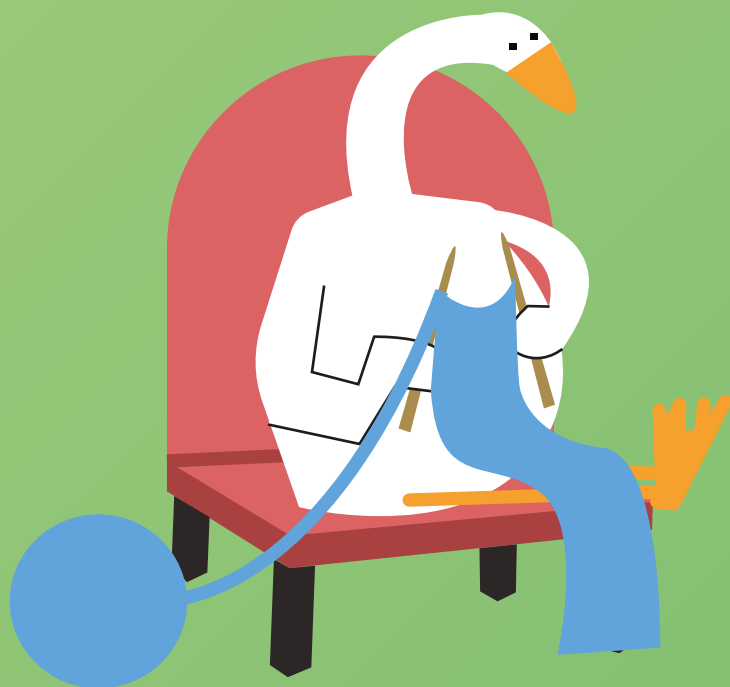
In Computer Science, **Decomposition** is when we take a complex problem and break it down into smaller, more manageable tasks.

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# Computational thinking: Pattern Recognition



Goose is knitting a scarf for her friend. As she's knitting, she notices a problem - her scarf looks different from the original.



The original  
pattern



Goose's  
pattern



When faced with a problem, looking for similarities or patterns can help us recognise errors and fix them. Goose realises that in the original pattern, the colours alternate. She shouldn't have done two red lines next to each other - the pattern should go Red, Blue, Red, Blue.



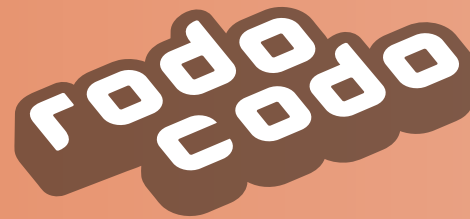
Mistake's in the  
pattern



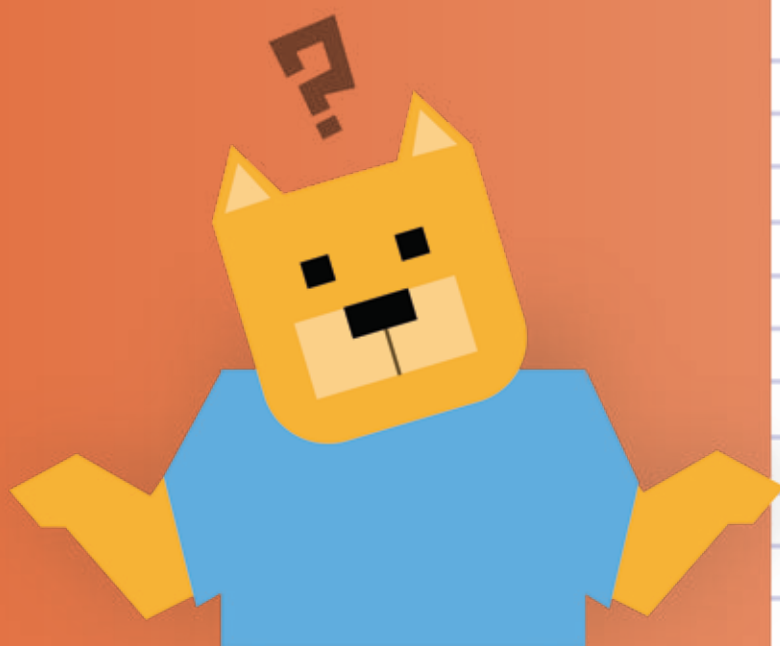
In Computer Science, we call this **Pattern Recognition**.

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# Computational Thinking: Abstraction



Cat has added her food shopping to her to-do list. She's getting confused finding the items she needs to buy, because there's lots of mixed information.



To-Do List	
-	Tidy bedroom
-	Milk
-	Math homework
-	Play Rodocodo
-	Broccoli
-	Ring Granny
-	Make a cake
-	Fish
-	
-	

With complex problems, it can be hard to find the answers in large amounts of information.

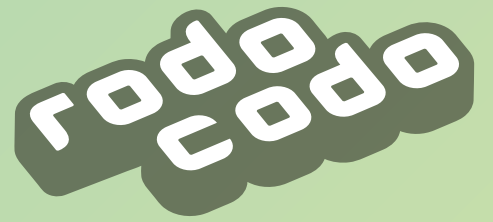
To-Do List	
-	Tidy bedroom
-	Milk
-	Math homework
-	Play Rodocodo
-	Broccoli
-	Ring Granny
-	Make a cake
-	Fish
-	
-	

Shopping List	
-	
-	
-	Milk
-	Broccoli
-	Fish
-	
-	
-	

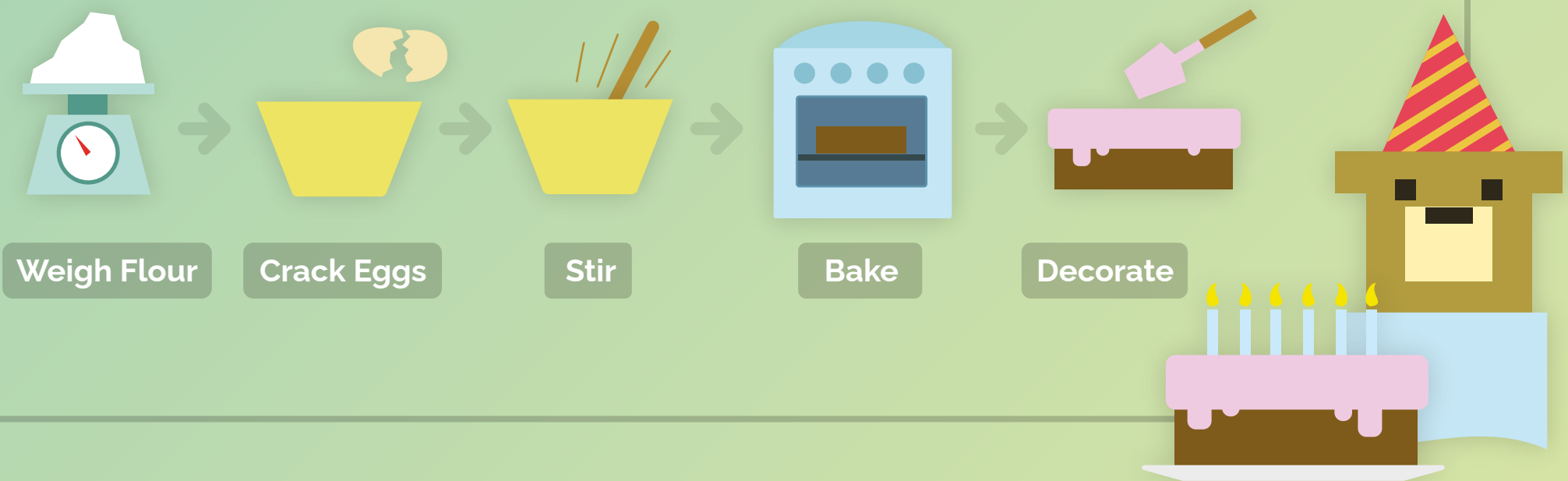
**Abstraction** is the process of filtering out all the unnecessary information, leaving you with the information you really need.

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# Computational Thinking: Algorithms



A recipe is a set of steps you follow in order to bake a birthday cake:



An algorithm is like a recipe: A set of steps followed by a computer to complete a specific task. It can be a simple step by step process:

Do This → Then This → Then This = ✓ Success!

A more interesting algorithm can make decisions based on conditions and can do something different based on the result:



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