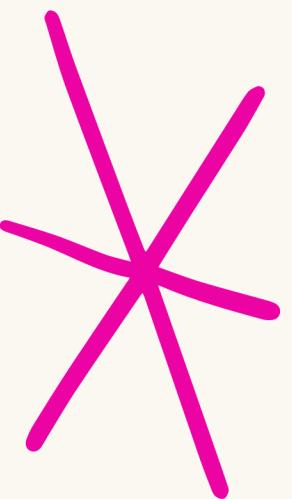
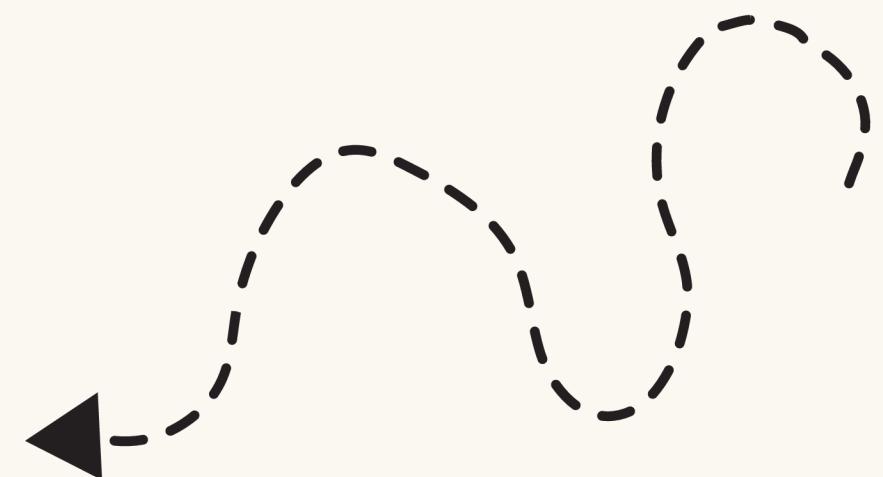
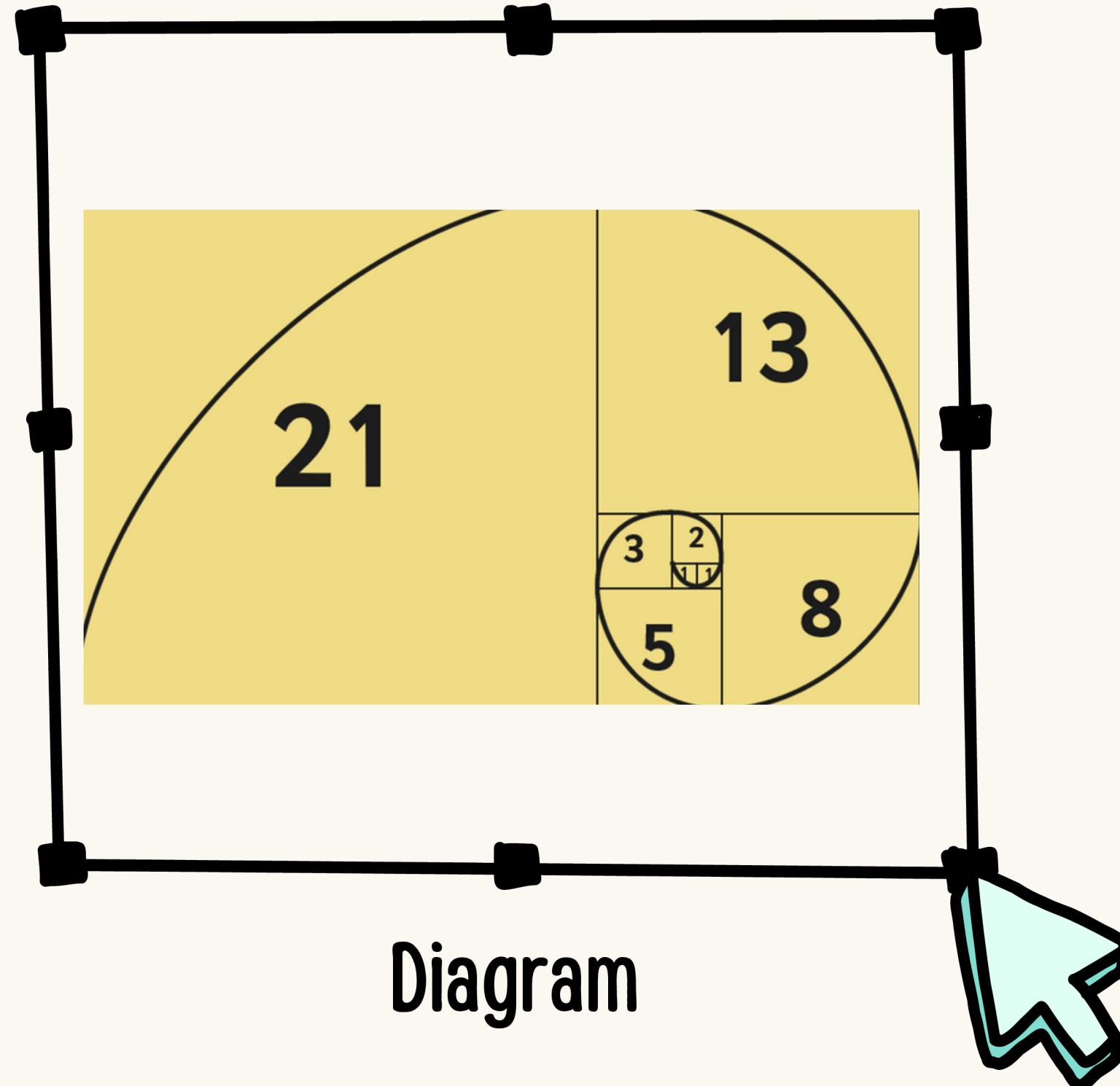
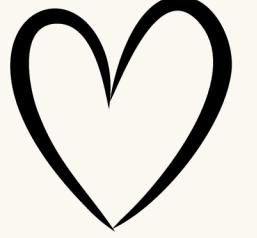


By Olivia Wilson

# Fibonacci SEQUENCE

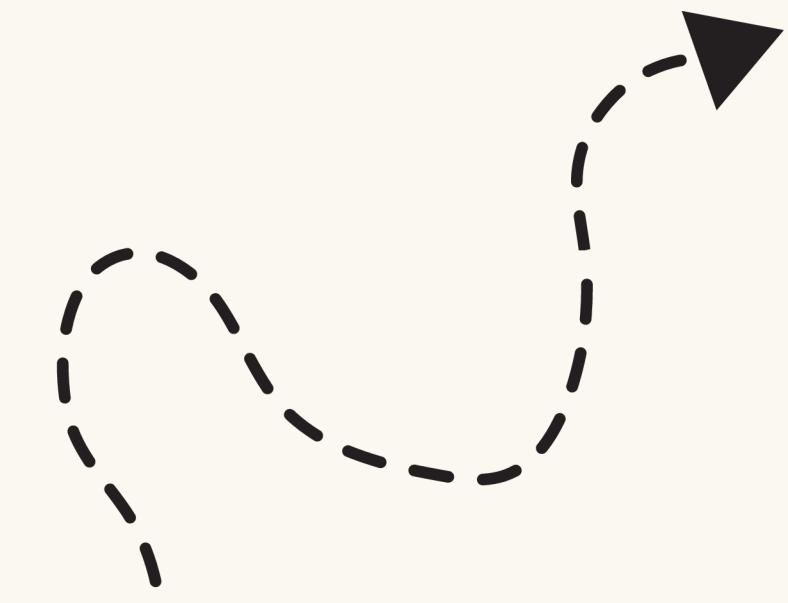




## Definition

It is a series of numbers in which each number is the sum of the two preceding numbers. The numbers in the Fibonacci series are called Fibonacci numbers.

Example: 0,1,1,2,3,5,8,13,21 and so on...



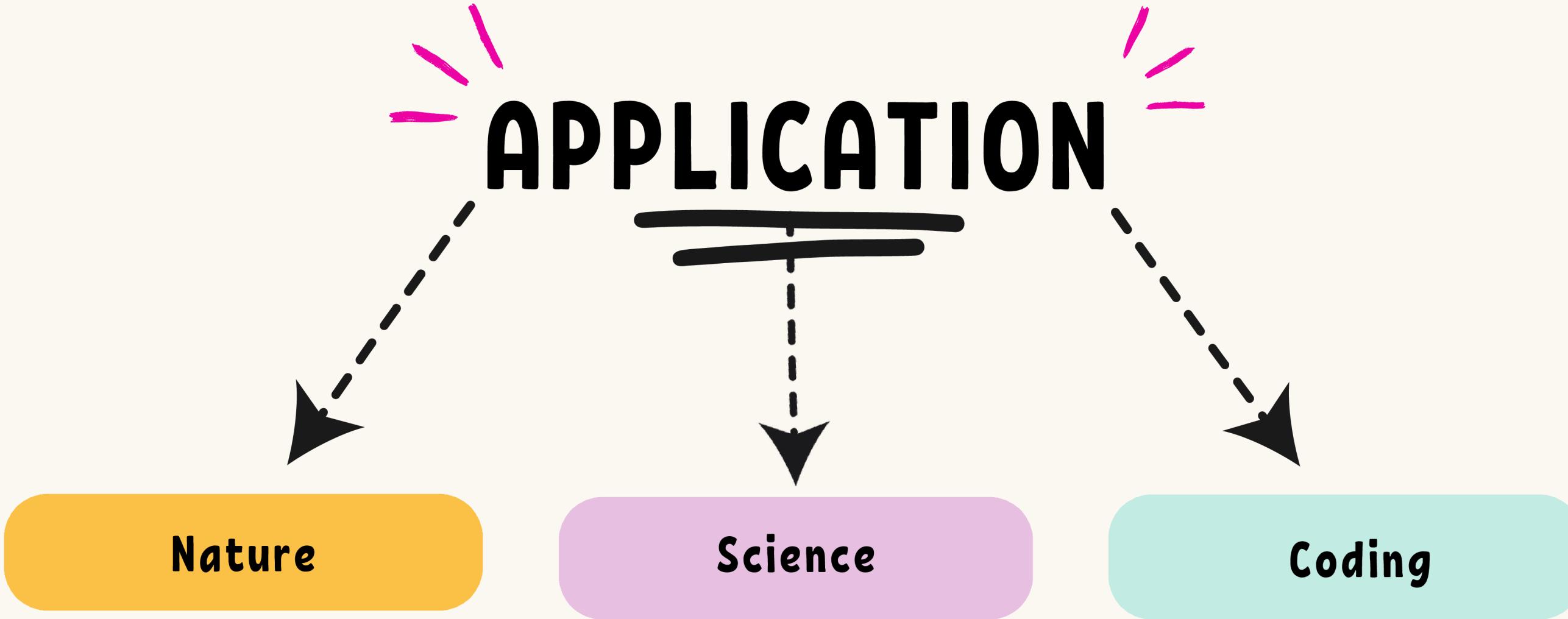
## DISCOVERY

This series was discovered by an Italian mathematician, initially known as Leonardo of Pisa. Later, he was given the name Fibonacci(meaning son of Bonacci) by historians. This series was named after him.

**FORMULA:  $F_N = F_{N-1} + F_{N-2}$ , WHERE  $N > 1$**

<b>N</b>	<b>TERMS</b>	<b><math>F(N-1)</math></b>	<b><math>F(N-2)</math></b>	<b><math>F_N = F_{N-1} + F_{N-2}</math>, WHERE <math>N &gt; 1</math></b>
0	1st	-	-	$F_0=0$
1	2nd	$F_0=0$	-	$F_1=1$
2	3rd	$F_1=1$	$F_0=0$	$F_2=0+1=1$
3	4th	$F_2=1$	$F_1=1$	$F_3=1+1=2$
4	5th	$F_3=2$	$F_2=1$	$F_4=2+1=3$
5	6th	$F_4=3$	$F_3=2$	$F_5=3+2=5$
6	7th	$F_5=5$	$F_4=3$	$F_6=5+3=8$

# APPLICATION



A central bold black text "APPLICATION" is positioned above three colored rounded rectangles. A dashed arrow points from the text down to the center rectangle, which contains the word "Science". Two other dashed arrows branch out from the top left and right corners of the "APPLICATION" text towards the left and right rectangles, which contain the words "Nature" and "Coding" respectively. Each branch ends in a black arrowhead. Above the "APPLICATION" text, there are four short pink lines radiating outwards from the top corners.

Nature

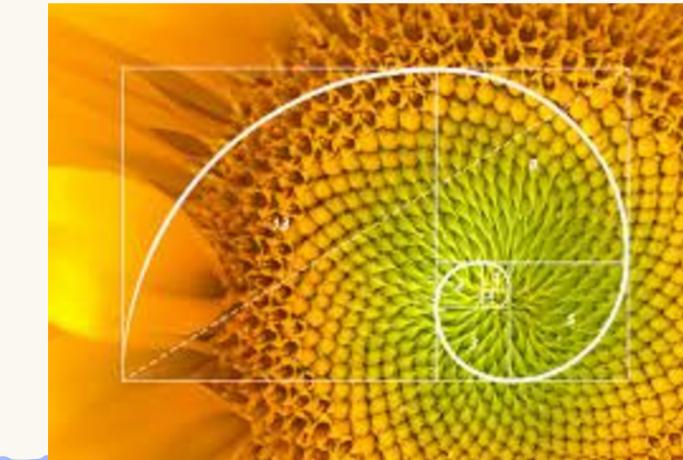
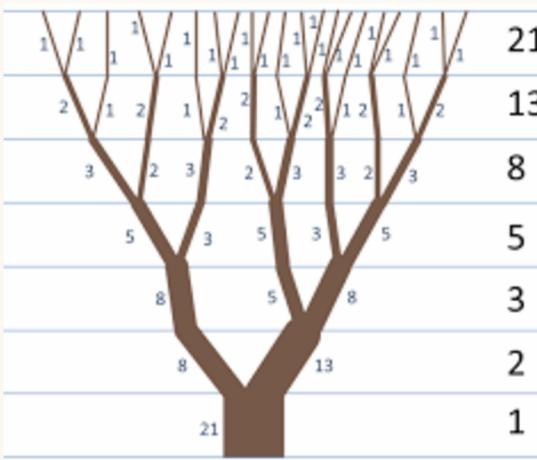
Science

Coding

# APPLICATION

Nature :

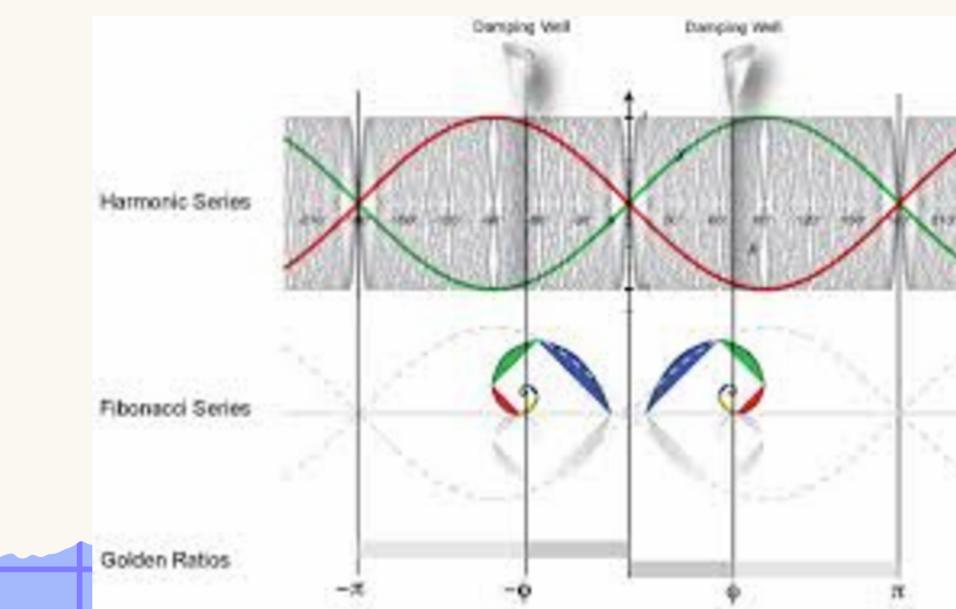
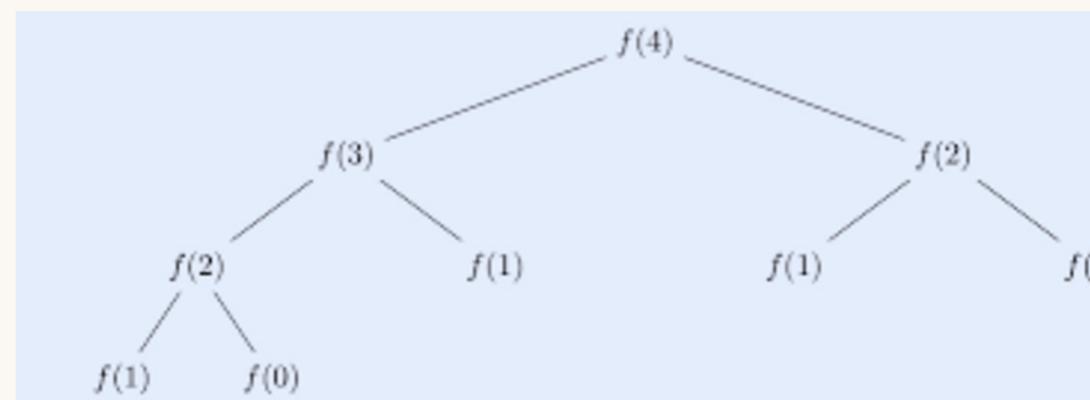
Use to determine the branching of trees, the arrangement of leaves on a stem, the flowering of artichokes, the pattern of snail's shell and the spiral arrangement of seeds in a sunflower.



# APPLICATION

**Science :**

In science, It is used in data structures like Fibonacci heaps in computer science to improve algorithm efficiency. In physics, Fibonacci patterns are observed in wave propagation and quantum models, aiding in understanding natural patterns and particle behavior.



# APPLICATION

Coding :

In coding, the Fibonacci sequence is often used to teach recursion and dynamic programming due to its simple recursive definition. It helps optimize algorithms for problems like the knapsack or matrix chain multiplication. Additionally, Fibonacci heaps, a type of priority queue, improve efficiency in graph algorithms like Dijkstra's shortest path.

