

Decomposition: - “The ability to break down a task into minute details so that we can clearly explain a process to another person or to a computer, or even to just write notes for ourselves. Decomposing a problem frequently leads to pattern recognition and generalization, and thus the ability to design an algorithm.” ^[1]

Example:-When we see a dance choreography and try to learn each step, in order to learn that dance routine we are actually decomposing that dance routine into each step.

Pattern recognition: - “The ability to notice similarities or common differences that will help us make predictions or leads us to shortcuts. Pattern recognition is frequently the basis for solving problems and designing algorithms.” ^[1]

Example: - symptoms of a disease are recognized to predict the disease. Like when we sneeze or our nose is red we can say we have a cold, or if our body is warmer than it usually is we can say that we are having fever.

Example:-Being an international student and a first year, I could relate to the pattern recognition as Noticing pattern(similarities) in the nature, interest, liking or disliking of peers so that, able to make friends and interact further.

Pattern generalization, abstraction: -“ The ability to filter out information that is not necessary to solve a certain type of problem and generalize the information that is necessary. Pattern generalization and abstraction allows us to represent an idea or a process in general terms (e.g., variables) so that we can use it to solve other problems that are similar in nature.” ^[1]

Example: - Whenever we want to learn a new language, we learn general things such as the alphabets, grammar, how to ask and say your name, age etc. This method is the same for learning any language. It is a general pattern to follow.

Example:-A water filter uses abstractions by giving us pure water in terms of removing all the unnecessary impurities present in it helping us stay healthy and fit.

Algorithm design: - “The ability to develop a step-by-step strategy for solving a problem. Algorithm design is often based on the decomposition of a problem and the identification of patterns that help to solve the problem. In computer science as well as in mathematics, algorithms are often written abstractly, utilizing variables in place of specific numbers.” ^[1]

Example: - When you buy furniture, it comes with an assembly manual in which, there are step-by-step instructions for assembling furniture. A guide which gives step by step instructions, for assembling furniture, is creating an algorithm for people.

Example:-The way an art teacher gives instructions to beginner students so that those steps can be repeated to make tougher drawings in easy ways. When she gives those instructions she is creating an algorithm for the students to follow for the rest of the art work.

1. <http://www.google.com/edu/computational-thinking/what-is-ct.html>