PROBLEM SOLVING OPERATIONS

CONCEPT Problem solving is the human ability to identify the root cause of a problem and apply a planned solution to resolve it.

BACKGROUND

Problem solving goes back to the beginning of human existence. In fact, humans weren't and still aren't the only species to apply problem solving techniques to gain a desirable outcome. Animals, insects, and even plants have problem-solving mechanisms that they use in their daily activities – it's just a matter of complexity in terms of problem-solving operations.

In the 1970's, humans were problem solving economic growth limitations alongside an oil crisis. Then in the early 1980's, computer scientists developed computer simulations to examine decision making for real world problems. Researchers today have a problem-solving operation specifically focused on ending global warming.

REAL WORLD CONNECTIONS

Imagine a banking system full of "error bugs" switching customer deposits with withdrawals, and debits with credits, posing major threats to you and your livelihood. Who would be held responsible? The bank? Or the software developer whose code ignored the rules of order and operations, an important piece of the problem-solving puzzle? There is no room for such mistakes, and an algorithm should either bring a solution to a problem, or not be viewed as algorithm all together.

EXAMPLES

In programming, an algorithm is used as a methodology to execute a problem. The order of the steps is crucial. If the sequence of an algorithm is tampered with it may cause it to output incorrect information, or to not output information at all. Much like in mathematics, an equation cannot be solved unless we abide by the order of operation rules and formulas.