

Algorithms

Questions and tools to help us

Do you understand every word used within the problem statement?

Use your own words to describe the problem.

If needed, make a drawing depicting the situation.

Have you solved any similar problems?

What data or resources exist within the statement?

What data or results exist within the statement?

Is it possible to simplify the problem by dividing it into simpler cases?

Do you know any hand-written ways to solve the problem?

Restating the problem in your own, more detailed words

By rewriting the problem statement in your own words and increasing the difficulty, we start making connections.

Problems are frequently poorly written

"Go to the store to get a steak, and if they have eggs, get six"

Sends person to the store and they come back with six steaks.

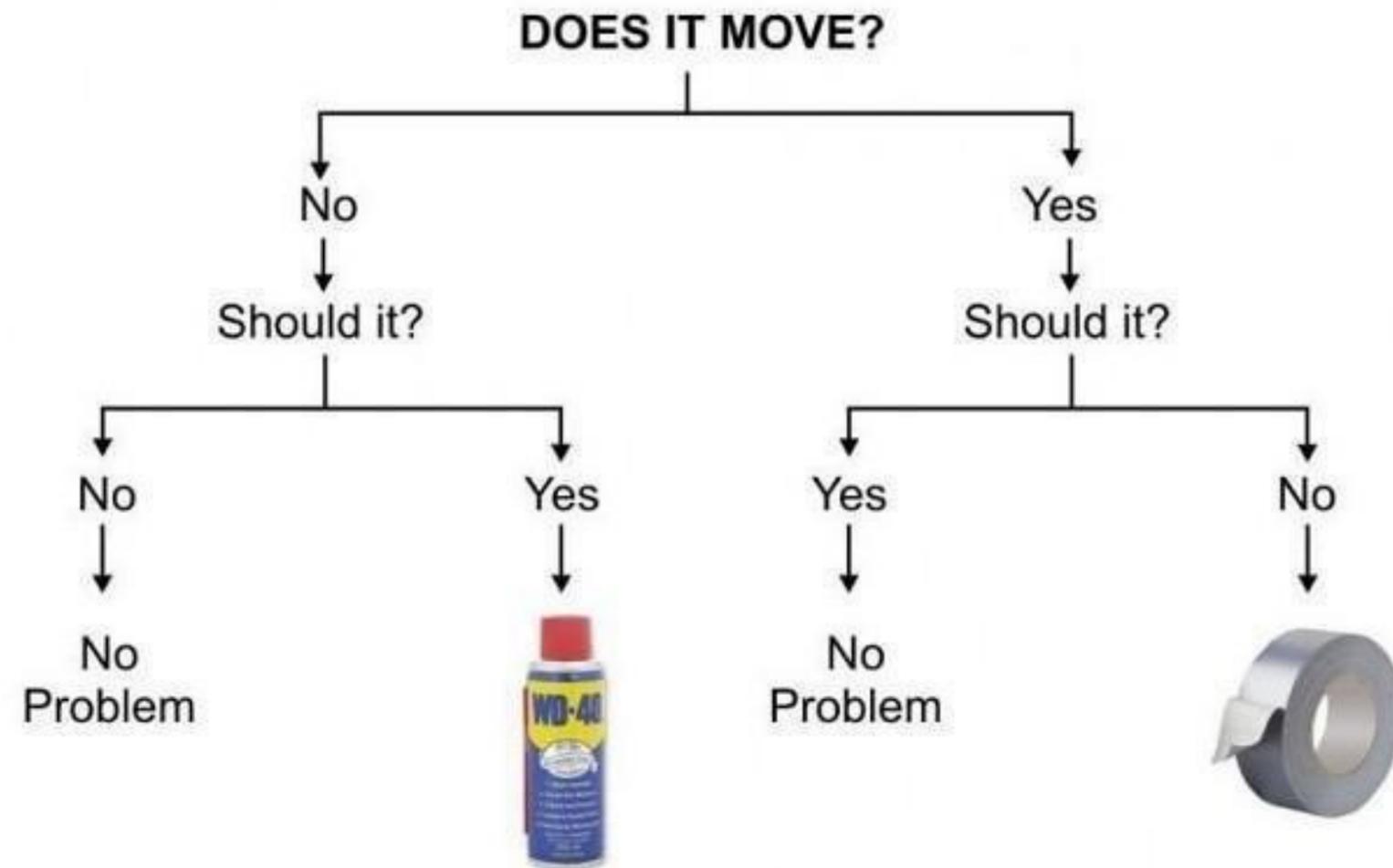
Why? Because they had eggs.

Drawing helps!

Often drawing diagrams helps understand the problem and the **flow** of information.

Flowcharts are awesome

Engineering Flowchart



Paper, whiteboard, a software tool

It does not matter; find what works best for **you**

Have you solved a similar problem?

The more problems you solve, the more similar they become.

We'll fill up our "bag of tricks" with techniques that we can apply.

∞

"In the beginner's mind, there are many possibilities, but in the expert's, there are few."

What data or resources exist?

When working on algorithms, examples are 📦 📦 📦!

Use the examples given.

Create your own.

In creating your examples, you begin working on the algorithm!

Can you break the problem into small parts?

Solving smaller parts is more manageable.

Putting the smaller solutions together may involve conditions or looping.

Can you find a manual way to solve the problem?

This is a "halfway" state to an algorithm.

Think of it as a "rough draft" of your algorithm.

The only way to improve our algorithm skills is ...

- Practice
- Practice
- Practice

We are all getting better at algorithms; even the most senior developers

Even your instructor...

