

Introduction to Algorithms

This lesson will explain algorithms briefly with the help of an easy example.

We'll cover the following



- The Role of the Programmer

Except in very simple cases, you don't create programs by writing source code directly. You'll first need to think about the instructions you'll want to convey. Take a concrete example from everyday life: I want to make a burrito. What are the steps that will enable me to achieve my goal?

```
Begin
Get out the rice cooker
Fill it with rice
Fill it with water
Cook the rice
Chop the vegetables
Stir-fry the vegetables
Taste-test the vegetables
    If the veggies are good
        Remove them from the stove
    If the veggies aren't good
        Add more pepper and spices
    If the veggies aren't cooked enough
        Keep stir-frying the veggies
Heat the tortilla
Add rice to tortilla
Add vegetables to tortilla
Roll tortilla
End
```



You reach your goal by combining a set of actions in a specific order. There are different types of actions:

- Simple actions (“get out the rice cooker”)
- Conditional actions (“if the veggies are good”)
- Actions that are repeated (“keep stir-frying the veggies”)

We used a simple writing style, not a specific programming language. In fact, we just wrote what is called an algorithm. We can define an algorithm as an ordered sequence of operations for solving a given problem. An algorithm breaks down a complex problem into a series of simple operations.

The Role of the Programmer

Writing programs that can reliably perform expected tasks is a programmer’s goal. A beginner can learn to quickly create simple programs. Things get more complicated when the program evolves and becomes more complex. It takes experience and a lot of practice before you feel like you’ll control this complexity! Once you have the foundation, the only limit is your imagination!

“The computer programmer is a creator of universes for which he alone is the lawgiver. No playwright, no stage director, no emperor, however powerful, has ever exercised such absolute authority to arrange a stage or field of battle and to command such unswervingly dutiful actors or troops.”

– *Joseph Weizenbaum*