Digital Integration Teaching Initiative
Link to schedule a meeting with the DITI Team

Northeastern University
NULab for Texts, Maps, and Networks

Introduction to Algorithms
PHIL 3050: Information and Uncertainty
Don Fallis

An algorithm can be defined as "a set of instructions that is designed to accomplish a task." A recipe for baking cookies, a program to find a particular value in a list of values, and a program to write a poem about a cat are all examples of algorithms. The code covered in this module is primarily relevant to searching algorithms.

Searching Algorithms

Searching algorithms are "used to find an element or a value within a collection of data." For example, the below code uses a `for` loop and a conditional `if` statement to find the town that got 15 inches of snowfall.

```
# Initializing a dictionary of snowfall totals for various towns
snowfall_mass_jan = {"Boston": 24.5, "Brookline": 15,
"Cambridge": 14, "Framingham": 12.2, "Malden": 20, "Wakefield":
21.2, "Norwood": 19.5}

# Finding the town that got 15 inches of snowfall
for town in snowfall_mass_jan:
    if snowfall_mass_jan[town] == 15:
        print(town)
Output: Brookline
```

This is an example of a linear search algorithm because it checks each item in the dictionary sequentially. More advanced types of searching algorithms include binary search, interpolation search, and jump search.

Learn More

Algorithms are used in computer programming for a wide variety of purposes. See the below resources to learn more.

- Gupta, Antrixsh. "Introduction to Data Structures and Algorithms in Python." *Medium*, 4 Apr. 2023. Accessed 16 July 2024.
- "What is supervised learning?" *IBM*. Accessed 16 July 2024.
- "What is unsupervised learning?" *IBM*. Accessed 16 July 2024.
- Stahl, Alexander. "Understanding The Basics: Generative AI." *Medium*, 23 Jan. 2024. Accessed 16 July 2024.

Developed by: Avery Blankenship and Sara Morrell
Questions? Contact us! nulab.info@gmail.com