How to Write an Algorithm in Programming Language

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An algorithm is a set of steps designed to solve a problem or accomplish a task. Algorithms are usually written in pseudocode, or a combination of your speaking language and one or more programming languages, in advance of writing a program. This wikiHow teaches you how to piece together an algorithm that gets you started on your application.

Steps

1 **Determine the outcome of your code.** What is the specific problem you want to solve or the task you want it to accomplish? Once you have a solid idea of what you're aiming to accomplish, you can determine the steps it will take to get there.

2 **Decide on a starting point.** Finding your starting and ending point are crucial to listing the steps of the process. To determine a starting point, determine the answers to these questions:[1]

- What data/inputs are available?
- Where is that data located?
- What formulas are applicable to the issue at hand?
- What are the rules to working with the available data?
- How do the data values relate to each other?

3 **Find the ending point of the algorithm.** As with the starting point, you can find the end point of your algorithm by focusing on these questions:

- What facts will we learn from the process?
- What changes from the start to the end?
- What will be added or no longer exist?

4 **List the steps from start to finish.** Start with broad steps. To use a real-world example, let's say your goal is to have lasagna for dinner. You've determined that the starting point is to find a recipe, and that the end result is that you'll have a lasagna fully cooked and ready to eat by 7 PM. Your steps may look something like this:

- Search for a recipe online.
- Look for the ingredients you already have in the kitchen.
- Make a list of ingredients you'll need from the store.
- Buy the missing ingredients.
- Return home.
- Prepare the lasagna.
- Remove the lasagna from the oven.

5 **Determine how you will accomplish each step.** Now that you have a step-by-step outline, it's time to think about how you might code each step. Which language will you use? What resources are available? What's the most efficient way to accomplish each step in that language? Incorporate some of that code into your algorithm. Expand each step until you've detailed the entire process.

- For example, the first step in our lasagna algorithm is **Search for a recipe online.** But what is involved in this search? Be specific. For example:
  - Turn on your computer.
    - Check to make sure you're connected to the internet. Connect to the internet if you aren't already.
  - Open a web browser.
  - Enter your search terms.

- Click a recipe link.
- Determine whether the recipe meets your needs.

  - Filter out recipes that aren't vegetarian.
  - Make sure the recipe makes at least 5 servings.
- Repeat some of these steps until you find the right recipe.
- Consider the resources at your disposal, such as the capabilities of the system you're developing a program for. In the case of lasagna, we assume the person making the lasagna knows how to search the internet, operate an oven, etc.

6   **Review the algorithm.** Now that you've written your algorithm, it's time to evaluate the process. Your algorithm is designed to accomplish something specific, and you'll need it to start writing your program. Ask yourself the following questions, and address each as necessary:[2]

- Does the algorithm solve the problem/accomplish the task?
- Does it have clearly defined inputs and outputs?
- Should the end goal be redefined to be more general? More specific?
- Can any of the steps be simplified?
- Is the algorithm guaranteed to end with the correct result?

Community Q&A

Question

How do I write an algorithm that 7 is greater than 5?

nicholasz2510 Gaming, Travel, and Music
Community Answer

The syntax can vary over different languages, but to write the conditional 7 is greater than 5 would most likely by simply be this: 7 > 5.

Question

How do I make an algorithm of the sum of two numbers?

Adam Blalock
Community Answer

To add two numbers in a programming language, you just use a "+" between them. In Python (a programming language), it would look like: x = 10, y = 13; print x + y.

Question

Is there any way to understand this easier? I'm 15 and still trying to understand the concepts.

Community Answer

I just started programming and my college professors are very vague and make understanding the concepts pretty hard. Your best bet is to keep looking up the terms on Google, that's what I've been doing, and it works to a degree.

Question

What's the difference between algorithm and pseudocode?

Chukwu Chinaza Esther
Community Answer

An algorithm is a step-by-step procedure to solve a given problem, while a pseudocode is a method of writing an algorithm.

Question

How do I create an algorithm to add two fractions?

Incognito sam
Community Answer

Consider two fractions, a/b and c/d. To add them, their denominators must be the same. To ensure a common denominator, we can multiply the denominators together to create a new denominator, in this case b*d. But, whatever we multiply the bottom of a fraction by, we must also multiply the top by. So, after completing these two operations, the fractions we are adding are now: (a*d)/(b*d) and (c*b)/(d*b). The result of adding these fractions is (a*d + c*b)/(d*b).

Question

What would I do to make a computer program give me the sum of two numbers automatically?

Community Answer

It depends if it the numbers are determined or the user inputs them. You create two variables, numberOne and numberTwo and simply just add them together numberOne+numberTwo.

Question

What do I do to make a code that creates the phrase, "Hi, how are you?" on it's own?

Community Answer

Python is an easy code to use to make text. An example is: print: Hi,how are you? And then save the file and when opened, it will display that text.

Question

What is an algorithm to find the average age of a group of 10 people?

Community Answer

Example code, hand written algorithm in Python print("please enter the age of ten people one by one, enter okay to continue") p1 = int(input(() print("next") p2 = int(input(() print("next") p3 = int(input(() print("next") p4 = int(input(() print("next") p5 = int(input(() print("next") p6 = int(input(() print("next") p7 = int(input(() print("next") p8 = int(input(() print("next") p9 = int(input(() print("next") p10 = int(input(() print("Ten people entered, group age is as follows " + (p1 + p2 + p3 + p4 + p5 + p6 + p7 + p8 + p9 + p10)/10) #you should probably manually enter this into idle, idle doesn't like copy pasting code.

Question

How do I develop an algorithm to input any number and print the first five multiples of it?

Community Answer

This isn't exactly an algorithm requiring question but, I will write you some example code that could achieve your goal. (example code is in python): print("Please enter a number!") int(input()) = num print(num*1 + " " + num*2 + " " + num*3 + " " + num*4 + " " + num*5)

Question

Which types of things should I do to create an algorithm that finds lost loved ones in refugee camps?

> **Community Answer**
>
> A database and function would suffice much easier. I wrote some basic example code in Python as an example it is as follows: print("Enter your name") str(input()) = name print("Enter your camp location") str(input()) = camp_location #the previous section creates variables that I can now store in a list name_and_camp_location = [name, camp_location] #this line stores the name and camp location in a list this is the end of my data base example def reunite(name) if name == 'example name' return 'example camp_location' #this is my basic example of a function that would be allowed to bring camp_location of loved ones in a large facility or other area if name and location is stored.

Tips

- Check out existing algorithms for ideas on writing your own.

- Use fast calculating iterations.

- Focus on efficiency when coding.

- Don't forget to terminate or else the code will fail.

Submit a Tip

All tip submissions are carefully reviewed before being published

Your tip here

Submit

References

1. http://sofia.cs.vt.edu/cs1114-ebooklet/chapter4.html
2. https://fiftyexamples.readthedocs.io/en/latest/algorithms.html