



El futuro digital
es de todos

MinTIC

«Misión TIC 2022»



Universidad de Caldas



Worksheet 1.4.1

Write down the meanings of the next words, their translations or synonyms.

- ◆ Steps : **pasos, avance previo**
- ◆ Perform : **carry out, llevar a cabo**
- ◆ Recipe : **receta, set of instructions**
- ◆ Unambiguous : **inequivoca, exact**
- ◆ Input : **entrada, entry**
- ◆ Output : **salida, result**
- ◆ Useful : **util, things**
- ◆ Return : **devolver, give back**



Worksheet 1.4.2

Read carefully every word and then write them down in front of their definition.

**Recipe / Steps / Perform / Output / Unambiguous / Useful
/ Input**

1. _____ An act or movement of putting one leg in front of the other in walking or running.
2. _____ To carry out an action or pattern of behavior. Fulfil (an action, task, or function).
3. _____ A set of instructions for preparing a particular dish.



4. _____ Not open to more than one interpretation. Clear, precise.

5. _____ The signals or data received by the system (data entry).

6. _____ The signals or data that a computer sends.

7. _____ Able to be used for a practical purpose or in several ways.

8. _____ provide or give back a solution.



Worksheet 1.4.3

Select the correct option to complete the sentences with the new words.

1. Today, a cellphone can **perform/return** many functions of a computer.
2. English is a very **unambiguous/useful** language because there is a lot of information in English.
3. A set of **inputs/outputs** is the result of an algorithm.
4. I don't know how to cook Ajiaco, so I need to look for a **recipe/output**.



5. This program returns/performs an error message. I
need to find the error and correct it.

Worksheet 1.4.4

Reading text: Example of an algorithm

Previewing and predicting

What makes a good algorithm?

Algorithm VS Recipe

An algorithm specifies a series of steps that perform a particular computation. Algorithms are similar to recipes. Recipes tell you how to cook food by completing a number of steps. For example, to make a cake the steps are:

1. Preheat the oven;
2. Mix flour, sugar, and eggs;
3. Pour into a baking pan;
4. etc.



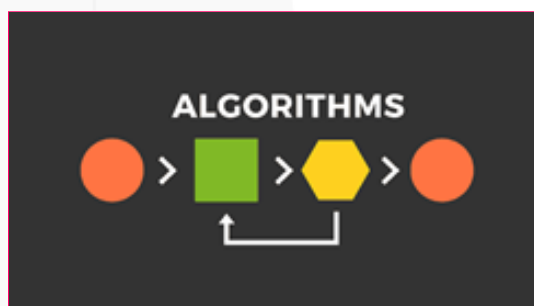


But “algorithm” is a technical term and it is more specific than “recipe”.

Characteristics of an algorithm

If you call something “an algorithm”, it means that these characteristics are all true:

1. An algorithm is an unambiguous description that makes clear what to implement. In a computational algorithm, a step such as “Select a large number” is not clear: what is “large”? 1 million, 1 billion, or 100?
2. An algorithm expects a defined set of inputs.
3. An algorithm produces a defined set of outputs.
5. An algorithm is guaranteed to terminate and produce a result. If an algorithm could potentially be eternal and run forever, it wouldn’t be very useful because you might never get a result.
6. The majority of algorithms are guaranteed to produce the correct result.



An Example Algorithm `find_max()`

Problem: From a list of positive numbers, return the largest number on the list.

Inputs: A list `L` of positive numbers. This list must contain at least one number.

Outputs: A number `n`, which will be the largest number of the list.

Algorithm:

- Set `max` to 0.
- For each number `x` in the list `L`, compare it to `max`. If `x` is larger, set `max` to `x`.
- `max` is now set to the largest number in the list.

An implementation in Python:



```
def find_max (L):  
    max = 0  
    for x in L:  
        if x > max:  
            max = x  
    return max
```

Does this meet the criteria for being an algorithm?

1. Is it unambiguous? Yes, it is. Each step of the algorithm consists of primitive operations, and translating each step into Python code is very easy.
2. Does it have defined inputs and outputs? Yes, it does.
3. Is it guaranteed to terminate? Yes, it is. The list L is not infinite, so after looking at every element of the list the algorithm will stop
4. Does it produce the correct result? Yes, it does.



Worksheet 1.4.5

WRAP-UP

EVALUATION

1. The objective of an algorithm is to:
 - a. Perform a computation.
 - b. Perform a recipe.
2. What is more specific?
 - a. Recipe.
 - b. Algorithm.
3. The instruction “Select a large number” is:
 - a. Ambiguous.
 - b. Unambiguous.
4. An eternal algorithm is:



- a. Useful.
 - b. Useless.
5. The objective of “find_max” is:
- a. To find many numbers.
 - b. To find the largest number.

Worksheet 1.4.6

SELF-EVALUATION

1. Entiendo cómo utilizar la estrategia de previsualizar y predecir con un texto.

Yes 😊

Maybe 😐

No 😞

2. La estrategia de previsualizar y predecir me ayuda a tener una idea general de qué se va a tratar el texto.

Yes 😊

Maybe 😐

No 😞

3. La estrategia de previsualizar y predecir me ayuda a concentrarme más mientras leo.

Yes 😊

Maybe 😐

No 😞



4. Cuando previsualicé y predije el texto de esta clase, pude adivinar unos detalles correctamente.

Yes 😊

Maybe 😐

No 😞