

Characteristics of an Algorithm:

There are some characteristics which every algorithm should follow. There are six different characteristics which deal with various aspects of algorithm. They are as follows:

1. Input specified
2. Output specified
3. Definiteness
4. Effectiveness
5. Finiteness
6. Independent

Let us see these characteristics one by one.

1) Input specified

The **input** is the data to be transformed during the computation to produce the output. An algorithm should have One or more well-defined inputs. Input precision requires that you know what kind of data, how much and what form the data should be

2) Output specified

The output is the data resulting from the computation (your intended result). An algorithm should have 1 or more well-defined outputs, and should match the desired output. Output precision also requires that you know what kind of data, how much and what form the output should be (or even if there will **be** any output at all!).

3) Definiteness

Algorithms must specify every step and the order the steps must be taken in the process. Definiteness means specifying the sequence of operations for turning input into output. Algorithm should be clear and unambiguous. Details of each step must be also be spelled out (including how to handle errors). It should contain everything quantitative and not qualitative.

You could not expect a computer to understand something if you yourself are ambiguous about it. Right!

4) Effectiveness

For an algorithm to be effective, it means that all those steps that are required to get to output must be feasible with the available resources. It should not contain any unnecessary and redundant steps which could make an algorithm ineffective.

For example, suppose you are cooking a recipe and you chop vegetables which are not be used in the recipe then it is a waste of time.

5) Finiteness

The algorithm must stop, eventually. Stopping may mean that you get the expected output OR you get a response that no solution is possible. Algorithms must terminate after a finite number of steps. An algorithm should not be infinite and always terminate after definite number of steps.

There is no point in developing an algorithm which is infinite as it will be useless for us.

6) Independent

An algorithm should have step-by-step directions, which should be independent of any programming code. It should be such that it could be run on any of the programming languages.

Thus, these are the characteristics that an algorithm should have for its fruitfulness.