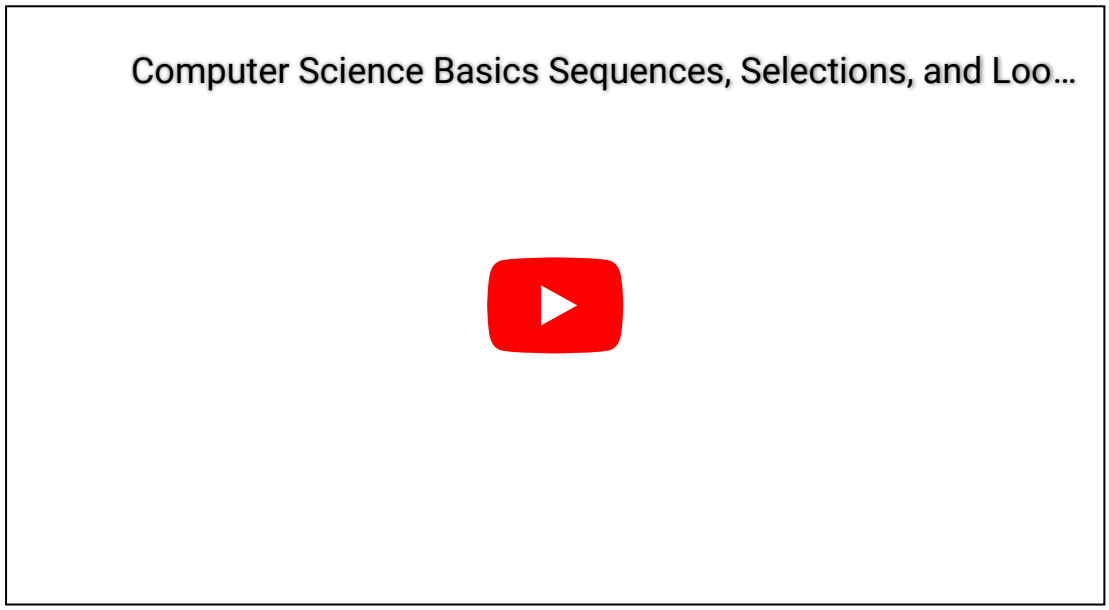
3 Simples Programming Structures

Below are the types of Processing:

- Sequential Processing
- Selection Processing
- Iterative Processing



Executing a sequence of instructions

By now, we have learned how an algorithm is structured. The next step is to learn how to build an algorithm and what are its categories processing. As mentioned before, an algorithm is a plan or step-by-step instructions to solve a problem. There are three basic building blocks (constructs) to use when designing an algorithm: sequencing, selection, iteration

For now, we'll be interested in the sequencing pattern. Like its name describe the sequencing pattern is based on giving the computer the right sequence of instruction to follow.

Let's take an example of an algorithm designed to draw a square in 07 steps :

draw a 3 cm line

turn left 90 degrees

draw a 3 cm line

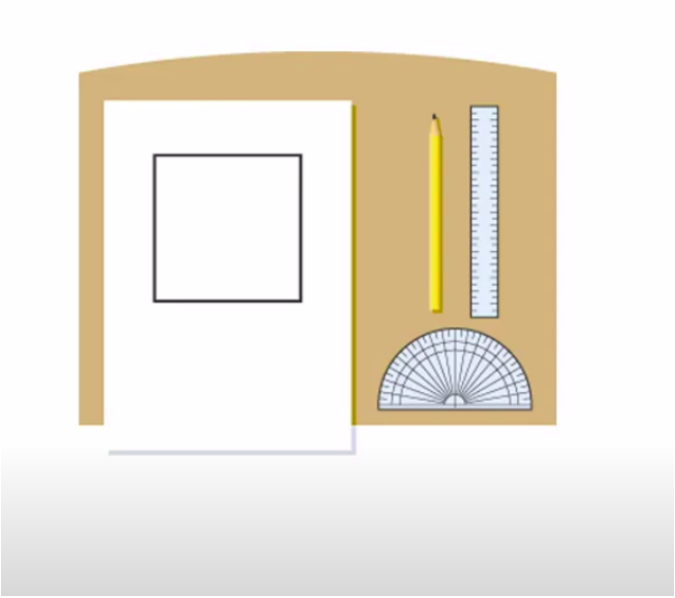
turn left 90 degrees

draw a 3 cm line

turn left 90 degrees

draw a 3 cm line

Following this algorithm, the result will be:



Now let's reverse the last two instructions, the algorithm will look like this:

draw a 3 cm line

turn left 90 degrees

draw a 3 cm line

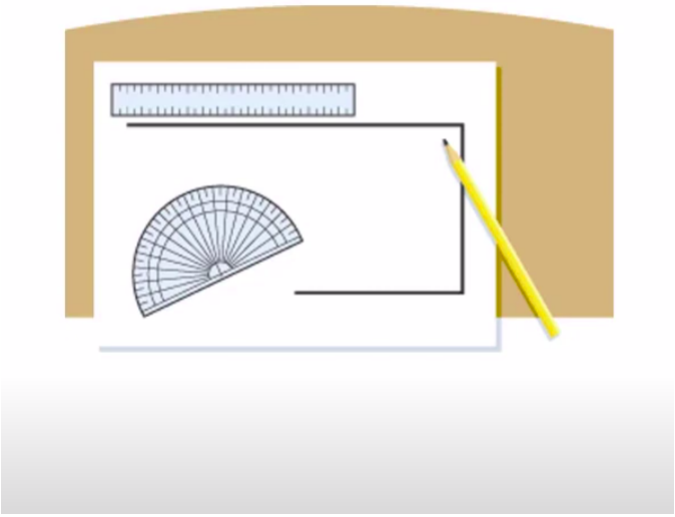
turn left 90 degrees

draw a 3 cm line

draw a 3 cm line

turn left 90 degrees

Well then this would be the result of the execution:



In reality, the algorithm will propose a set of instructions for the computer to do, in sequence (with a specific order) to solve the problem. However, a computer can execute only two categories of instructions:

Arithmetic operations: addition, multiplication, etc ...

Logical operations: in this type of instructions the computer can execute another two sub-categories which are:

Boolean: AND, OR, NOT, etc ...

Relational: =,>,<=, etc...

Arithmetic instructions

Arithmetic instruction or operation is like in mathematics, it is a manipulation of constants or variables.

The basic arithmetic operations for real numbers are addition, subtraction, multiplication, and division.

Arithmetic operation	Example
Addition	outcome := a + b
Subtraction	outcome := a - b
Multiplication	outcome := a * b
Division	outcome := a / b
Modulo (division remainder)	outcome := a % b

Algorithms and its elements: Sequential processing

Logical instructions

These instructions perform logical operations on data, such as comparing, complement, and, or...

Logical Operation	Example	
Not	outcome := not a	
Or	outcome := a or b	
And	outcome := a and b	
Equals	outcome := a = b	
Not Equal	outcome := a <> b	
Greater than / Greater than or equals	outcome := a > b /outcome := a >= b	
Less than	Less than or equals	outcome := a < b /outcome := a <= b

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