The study of algorithms

The aspects included in the study of algorithms:

- *Development of algorithms*

  elaboration techniques (rules) + creativity (intuition) = solution

- *Algorithm manifestation*
- *Algorithm validation*
- *Algorithm analyze*
- *Testing software*

Definition of algorithm

An algorithm is a well specified sequence of instructions that are applied as the input of a problem and allow obtaining of an output solution in finite time.

Properties of algorithms

- *Generality*
- *Strictness*
- *Efficiency*

Data

From informational point of view, data can be:

- *Simple*
- *Structured:*

1. Homogeneous structure*;*
2. Heterogeneous structure*.*

Types of processing

Simple processings are:

- *Assigning*
- *Transfer*
- *Control*

Types of processing

Structures of processing are:

- *Sequential*
- *Decision (alternative)*
- *Loop (repetitive, iterative)*

Algorithm description

- Logical scheme
- Conventional language
- Algorithmic language *(pseudocode)*
- Decision table

Instructions of algorithmic language

- Reading/writing instructions
- Assigning instruction:

variable ← expression

- Embranchment instruction:

if condition

then sequence 1 ***else*** sequence 2

Instructions of algorithmic language

- Instruction of multiple embranchment

case expression ***of***

C1 : sequence1 1

.....

C*n* : sequence *n* ***else*** sequence *n*+1

Instructions of algorithmic language

- Conditional iterative instruction with pre condition

  while condition ***do*** sequence

- Conditional iterative instruction with post condition:

  repeat

  sequence

  until

  condition

Instructions of algorithmic language

- Iterative instruction with a set number of steps:

for counter ← init. value, fin. value, step
do sequence

- Comment is of form:
/*string of characters*/

X	Y
7	131
3	262
1	524
131+262+524=917	
2	2
1	4