Combinatorial Optimization

Written by HADIOUCHE Azouaou.

Disclaimer

That typed course follows the course Pr.YAGOUNI.

To separate the contents of the course to actual additions or out of context information, a black band will be added by its side like the globing this comment.

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Chapter 1

Introduction

> **Definition 1.1 (Information):** *An* information *is the set of data, formulas, rules, results... etc., which results in knowledge and should be interesting, logical, complete, premise... etc.*

An information goes through the a treatment, for example if we take a rectangle with width $W = 50m$ and height $H = 20m$, to calculate the surface with the formula $S = W \cdot H$ and using it we get $S = 1000m^2$, and each step is information of different types

$W = 50m$ $H = 20m$	$S = W \cdot H$	$S = 1000m^2$
info. to treat	treating info.	treated info.

> **Definition 1.2 (Algorithm):** *An* algorithm *is a finite sequence of steps that are: elementary, complementary, logical, chronological and non-ambiguous, that transforms a string representing the data to a string representing a solution, a set of solutions or the non-existence of solutions.*

Each algorithm has one or many stop condition, taking for example a search algorithm on a list to find the minimum value, the stop condition would be that we passed through all the items of the list, or if we look for some value val, its either passing through all the items of the list or finding the value val.