



CATHOLIC UNIVERSITY OF LOUVAIN

PROJECT 3 : SEARCH

LINGI2365 - Constraint Programming

Auteurs :

Vanwelde Romain (3143-10-00)

Crochelet Martin (2236-10-00)

Groupe 7

Superviseurs :

Pr. Yves Deville

François Aubry

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1 The Brussels airport problem

- 1.1 Explain the given model
- 1.2 Design 2 different variable and/or value ordering heuristics for this problem.
- 1.3 Which criteria are meaningful for comparing different search strategies ?
- 1.4 Based on your criteria, compare your heuristics with the labelFF heuristic by testing them on the instance on iCampus.
- 1.5 Consider the following strategy. ... Give an example with three planes where this strategy is wrong

2 The Knapsack Problem

2.1 A Branch & Bound approach

- 2.1.1 Model the knapsack problem as Constraint Optimization
- 2.1.2 Describe your model in the report.
- 2.1.3 Design 3 different heuristics for variable selection.
- 2.1.4 Test your heuristics and the labelFF heuristic on the knapsack-A instances.
- 2.1.5 Present and discuss the results in your report

2.2 Optimization over iterations

- 2.2.1 Model the knapsack problem as a Constraint Satisfaction Problem.
- 2.2.2 In order to implement the optimization over iterations ...
- 2.2.3 Which of these points (i., ii., iii.) do you need to execute on which events ?
- 2.2.4 How do you modify the value of ub to be sure to find the optimal solution ?
- 2.2.5 Can you explain why we initialize ub with an upper bound instead of any other value ?
- 2.2.6 Experiment this program on the instances knapsack-A, -B.
- 2.2.7 Present and discuss the results in your report.

2.3 Optimization via divide and conquer

- 2.3.1 In order to implement the optimization via divide and conquer you will have to ...
- 2.3.2 Which of these points (i., ii., iii., iv.) do you need to execute on which events ?
- 2.3.3 Experiment this version on the instances knapsack-A,-B,-C