

Algorithmics	Student information	Date	Number of session
	UO:300809	29/04/2025	7
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Activity 1. Null Path

The complexity of the algorithm using branch and bound is the same as the one using Backtracking. The difference between these algorithms is that branch and bound provide (on average) better results and better times as it prioritizes the nodes whose weight make the total weight lower to 0 and ignores those which cannot be used in the solution (above the weight limit).

n	Backtracking
20	0,61
25	22,21
30	82,13
35	1005,44
40	5536,55
45	2649,94

n	Branch and Bound
20	0,69
25	0,91
30	1,25
35	1,92
40	2,46
45	10,37
50	3,79
55	4,35
60	5,42
65	6,24
70	7,35
75	8,18
80	8,2
85	10,61
90	14,42
95	13,63

As I said in the last practice, the times are not very representative but the increasing in the times for bigger sizes of the problem is lower (in branch and bound) so the algorithm works better on average.