Activity 1. Explanation on the heuristic used.

The heuristic is designed so no node will ever be pruned and, hence, every node will be processed. As it is the same idea than the first version of backtracking (the one with no heuristic), the result must be the same. It is very likely for the nodes to be processed in different order, but both methods must end up sharing the number of nodes, 3^n, where n is the number of pictures.

Activity 2. Measurements

The amount of nodes generated is, in fact, 3^n, so it works properly, which is the same as the amount of nodes processed. This means, the pruning is null.

n	Time_BT_Balancing	Time_BnB	Nodes_BT_balancing	Bodes_bnb	ZNNC_BT_balancing	ZNCC_BnB
2	21	44	3	3	0,0008	0
3	39	6	9	9	0,222	0,03
4	107	9	27	27	0,0347	0
5	232	3	81	81	0,0387	0,01
6	561	5	243	243	0,052	0,0195
7	1393	6	729	729	0,0555	0
8	3400	5	2187	2187	0,0471	0,0323
9	8070	6	6561	6561	0,6507	0,0269
10	19661	4	19683	19683	0,75792	0,0287
11	48571	8	59049	59049	0,85676	0,00377

Activity 3. Discussions

Discussion on efficiency of both techniques

Backtracking works better than Banch and Brounds but it works slower.