Automated Planning - Lab 2

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2.1

Assignment: Run the problems you have created through the same (modern) planners as before, and possibly a few additional planners. What plans are generated? Do they use the carriers? Does this differ among different planners? Discuss your findings briefly in your report for lab 2.

Answer: No the planners do not use the carriers. The reason for this is that it would require more actions of a solution that uses the carriers than a solution that ignores the carriers. Since we have not defined costs for executing actions the planners will calculate the costs of the plans as the number of actions executed to reach a goal state.

2.2

Assignment: Run the problems you have created through the same planners as before. What plans are generated? Do they seem better than before? Do helicopters use carriers in those cases where this is better according to the distances (which may not always be the case, if destinations are widely dispersed)? Discuss this briefly in your report.

Answer: Yes, the planners makes use of the carrier when it is beneficial such as when there is only one uav in the problem. However, the carrier are seldom used in an optimal way unless the problems are small. Instead, they often load the carrier with a crate and then onload the same crate at the same location in the next move.

2.3

Test the performance of these planners on your domain and problems, in terms of speed and quality. Are the plans better, and if so, how much better? Does it take more time? Do you think it is worth it for this domain? Discuss this briefly in your report.

As seen in table 1 the optimal planners can only solve rather small problems.

Table 1: Results for task 2.3

Planner	UAV	Carriers	Locations	Persons	Crates	Goals	Time	Cost
Symba-1	1	1	5	7	10	3	38	220
Symba-2	1	1	5	7	10	3	43	220
All-paca	1	1	5	7	10	3	DNF	-
Spmas	1	1	5	7	10	3	DNF	-

Yes the plans are better in terms of cost when using carriers as seen in table 2. However, generating an optimal solution takes longer time when using carriers due to an increase in complexity.

Table 2: Carrier vs no carrier

Planner	UAV	Carriers	Locations	Persons	Crates	Goals	Time	Cost
Symba-1	1	0	2	2	3	5	0.04	600
Symba-1	1	1	2	2	3	4	0.06	210