Report

- Which algorithm or algorithms would be most appropriate for planning in a very restricted domain (i.e., one that has only a few actions) and needs to operate in real time?
    - ⇒ Bredth first search and uniform cost search work well. They reach to the optimum answer and the speed is very fast.
- Which algorithm or algorithms would be most appropriate for planning in very large domains (e.g., planning delivery routes for all UPS drivers in the U.S. on a given day)
    - ⇒ Greedy algorihm with unmet goals heuristics works very good. This does not reach to the best goal, but still close to the best. Also, the speed is quite fast. (ex. In the problem 4, the speed is more than x300 times faster then second fastest algorithm.
- Which algorithm or algorithms would be most appropriate for planning problems where it is important to find only optimal plans?
    - ⇒ I would use A star with unmet goals heuristic. This reaches to the optimal goal and the speed is the fastest

Problem	Solution	# actions	# new nodes	Plan length	time to complete
1	breadth first search	20	178	6	0.0028
1	depth first graph search	20	84	20	0.0015
1	uniform cost search	20	240	6	0.0047
1	greedy_best_first_graph_search with h_unmet_goals	20	29	6	0.0009
1	greedy_best_first_graph_search with h_pg_levelsum	20	28	6	0.1528
1	greedy_best_first_graph_search with h_pg_maxlevel	20	24	6	0.1206
1	greedy_best_first_graph_search with h_pg_setlevel	20	28	6	0.4894
1	A* with h_unmet _goals	20	206	6	0.0061
1	A* with h_pg_levelsum	20	122	6	0.3777
1	A* with h_pg_maxlevel	20	180	6	0.3837
1	A* with h_pg_setlevel	20	138	6	1.2342
2	breadth first search	72	30503	9	0.8077
2	depth first graph search	72	5602	619	1.0915
2	uniform cost search	72	46618	9	1.3732
2	greedy_best_first_graph_search with h_unmet_goals	72	170	9	0.0082
2	greedy_best_first_graph_search with h_pg_levelsum	72	86	9	3.1114
2	greedy_best_first_graph_search with h_pg_maxlevel	72	249	9	6.1251
2	greedy_best_first_graph_search with h_pg_setlevel	72	84	9	9.8374
2	A* with h_unmet _goals	72	22522	9	0.9410
2	A* with h_pg_levelsum	72	3426	9	85.2224
2	A* with h_pg_maxlevel	72	26594	9	578.6491

2	A* with h_pg_setlevel	72	9605	9	1077.8452
3	breadth first search	88	129625	12	4.9375
3	depth first graph search	88	3364	392	0.5262
3	uniform cost search	88	161936	12	7.7866
3	greedy_best_first_graph_search with h_unmet_goals	88	230	15	0.0295
3	greedy_best_first_graph_search with h_pg_levelsum	88	126	14	7.8660
3	greedy_best_first_graph_search with h_pg_maxlevel	88	195	13	9.9918
3	greedy_best_first_graph_search with h_pg_setlevel	88	345	17	66.9942
3	A* with h_unmet _goals	88	65711	12	5.1060
3	A* with h_pg_levelsum	88	3403	12	177.5826
3	A* with h_pg_maxlevel	88	86312	12	3232.6215
3	A* with h_pg_setlevel	88	31596	12	5054.0335
4	breadth first search	104	944130	14	40.5652
4	depth first graph search	104	12324	520	613.4322
4	uniform cost search	104	1066413	14	78.0727
4	greedy_best_first_graph_search with h_unmet_goals	104	280	18	0.0490
4	greedy_best_first_graph_search with h_pg_levelsum	104	165	17	20.4240
4	greedy_best_first_graph_search with h_pg_maxlevel	104	580	17	49.3513
4	greedy_best_first_graph_search with h_pg_setlevel	104	1164	23	356.9117
4	A* with h_unmet _goals	104	328509	14	37.3701
4	A* with h_pg_levelsum	104	12210	15	1152.5841
4	A* with h_pg_maxlevel	104	599376	14	37959.3978
4	A* with h_pg_setlevel	104	224229	14	91970.1140