* Use a table or chart to analyze the number of nodes expanded against number of actions in the domain
* Use a table or chart to analyze the search time against the number of actions in the domain
* Use a table or chart to analyze the length of the plans returned by each algorithm on all search problems

Use your results to answer the following questions:

* 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?
* 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)
* Which algorithm or algorithms would be most appropriate for planning problems where it is important to find only optimal plans?

|  |  |
| --- | --- |
| Analyze the search complexity as a function of domain size, search algorithm, and heuristic. | Report includes a table or chart to analyze the number of nodes expanded against number of actions in the domain.   * The chart or table includes data for all search & heuristic combinations for air cargo problems 1 and 2 * The chart or table includes data **at least** one uninformed search, two heuristics with greedy best first search, and two heuristics with A\* on air cargo problems 3 and 4 * Report includes at least a one paragraph discussion of these results that analyzes the growth trends as the problem size increases |
| Analyze search time as a function of domain size, search algorithm, and heuristic. | Report includes a table or chart to analyze the search time against the number of actions in the domain.   * The chart or table includes data for all search & heuristic combinations for air cargo problems 1 and 2 * The chart or table includes data **at least** one uninformed search, two heuristics with greedy best first search, and two heuristics with A\* on air cargo problems 3 and 4 * Report includes at least a one paragraph discussion of these results that analyzes the growth trends as the problem size increases |
| Analyze the optimality of solution as a function of domain size, search algorithm, and heuristic. | Report includes a table or chart to analyze the length of the plans returned by each algorithm on all search problems.   * The chart or table includes data for all search & heuristic combinations for air cargo problems 1 and 2 * The chart or table includes data **at least** one uninformed search, two heuristics with greedy best first search, and two heuristics with A\* on air cargo problems 3 and 4 |
| Report answers all required questions | Submission includes a short answer to each of the following questions. (A short answer should be at least 1-2 sentences at most a small paragraph.)   * 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? * 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) * Which algorithm or algorithms would be most appropriate for planning problems where it is important to find only optimal plans? |

Problems

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1. Air Cargo Problem 1

2. Air Cargo Problem 2

3. Air Cargo Problem 3

4. Air Cargo Problem 4

Search Algorithms

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1. breadth\_first\_search

2. depth\_first\_graph\_search

3. uniform\_cost\_search

4. greedy\_best\_first\_graph\_search h\_unmet\_goals

5. greedy\_best\_first\_graph\_search h\_pg\_levelsum

6. greedy\_best\_first\_graph\_search h\_pg\_maxlevel

7. greedy\_best\_first\_graph\_search h\_pg\_setlevel

8. astar\_search h\_unmet\_goals

9. astar\_search h\_pg\_levelsum

10. astar\_search h\_pg\_maxlevel

11. astar\_search h\_pg\_setlevel