Report on summarization/explanation of the output

Comparison of constructive algorithms:

We use three constructive algorithms: simple randomized or randomized-1, simple greedy or greedy-1 and semi greedy-1. After analyzing the output, we find a relationship between these algorithms.

Greedy-1 > Semi-greedy-1 > Randomized-1.

According to this order given, greedy-1 is the closest among the three to the upper bound, followed by semi greedy-1, and randomized-1 is positioned last.

Relation of semi-greedy algorithm with alpha:

Semi-greedy-1 is dependent on alpha. The relationship between output of semi-greedy-1 and alpha is:

Semi-greedy-1 ↑ ⟺ alpha ↑

As the value of alpha is increased, the output of semi-greedy-1 approaches closer to the upper bound.

Also, as alpha approaches 1 the semi-greedy-1 algorithms take on the traits of greedy algorithms.

Comparison of local search algorithm with semi-greedy algorithm:

Local search consistently produces superior outputs compared to the semi-greedy-1 algorithm. This is because local search operates on the solution generated by the semi-greedy-1 algorithm and endeavors to discover improved results.

Comparison of GRASP algorithm with all other algorithm:

The output of GRASP surpasses the results of all the other algorithms and is very close to the upper bound.

Relation of GRASP algorithm with maximum iteration:

The output of GRASP also depends on the max iteration number.

GRASP ↑ ⟺ ↑ Max Iterations