Report on Various Algorithms to find Max-cut

1. Randomized algorithm: This algorithm performed the worst in all the tested cases. I ran 10 iterations of randomized algorithm and found the average of the result. Despite so, the algorithm was found to be extremely poor performing.
2. Semi-greedy algorithm:

i. Alpha=0.2: 2nd worst performance is found for alpha=0.2.
ii. Alpha=0.5: The result gets better when alpha=0.5

3. Greedy algorithm: A better performance is seen for the greedy max-cut algorithm.
4. Local search: For local search, the result of the greedy algorithm is taken, and search is performed. The result is better than the one obtained from greedy algorithm. The number of times the iterations are performed for changing the vertex cut is also shown in the table.
5. GRASP algorithm: GRASP is the best performing algorithm for the max-cut problem. 10 iterations are run on smaller graphs and 5 iterations are run on large graphs. The result is found to be closer to the best-known solution in all cases.

All the algorithms except the randomized algorithm were implemented according to the book Optimization by GRASP: Greedy Randomized Adaptive Search Procedures by Mauricio G.C. Resende, Celso C. Ribeiro.