In our assignment we applied 3 heuristics for max-cur problem.

1. Simple Randomized
2. Simple Greedy
3. Semi-Greedy

GRASP is also applied in this assignment. For each of the heuristics I iterated 20 times and took averages of the generated results. My key observations are stated below:

1. **Simple Randomized:** The estimated result is pretty bad if we compare it to other heuristics. It is obvious as we just randomly chose vertices for each set with equal probability. This heuristic is not reliable at all.
2. **Simple Greedy:** In this heuristic we take edges with maximum weight. Then randomly choose one edge from them and partition it's vertices to two sets. When assigning a vertex to a particular set, we consider the assignment with greater 'cut value' and greedily choose the set for that vertex. Because of these greedy steps we see a lot of improvement over randomized assignment.
3. **Semi-Greedy:** In this heuristic each iteration is run with a randomized value of alpha. Then the average value is taken. Comparing it with greedy we can see that most of the answer obtained from greedy is better than semi-greedy. This happens larger value of alpha tends to generate better answer in the construction phase. Since in greedy alpha = 1 the largest possible value it tends to give better answer than semi-greedy most of the times in the construction phase. This is because with greater value of alpha it is more likely to include the vertices which may contribute more. But lower value of alpha includes vertices more diversely which may lead to a better approximation. That's why sometimes semi-greedy may perform better than greedy.
4. **Grasp:** Here again semi-greedy is used like before but this time with multiple initial solution an additional local search is applied to improve the quality of the solution. Due to this step the solution is improved much more than semi-greedy and this method gives most convenient result among all the heuristics.