Assignment 4 - Prescriptive Analysis

Part 2: Greedy Approach to Hotel Selection Problem

2.a

Based on the greedy approach these are the hotels that we would purchase:

1. Hotel 9 in Los Angeles, California - $4,900,000
2. Hotel 7 in Los Angeles, California - $1,950,000
3. Hotel 8 in Los Angeles, California - $1,750,000
4. Hotel 11 in South Lake Tahoe, California - $1,125,000

I got these results by sorting the hotels according to their profiatbility and purchasing the hotel if it is under our available budget, until we run out of budget. Total cost of these hotels = $9,725,000, so we wer left with $275,000 after purchasing these, and it is not possible to buy any hotels with this amount.

2.b

The total predicted profitability would be:

$$61.68 + 56.67 + 56.33 + 36.61 = 211.29$$

2.c

Although the greedy approach might work in some cases, it is not a good approach if we are trying to maximize our total predicted profitability while working with a budget. A better approach could be looking to buy hotels according to our budget, as by buying multiple cheaper hotels with slightly less profitability in comparison to an expensive hotel, we might end up increasing our total profitability. It must be noted that if we don't have a budget constraint, the greedy approach would be best to maximize our total profitability.