COSC 480/MATH 482
Assignment #3 (The Big One)
Fall 2012

For this project you will be solving a classic problem - hotel room assignment. Every week, hotels across the world deal with attempting to assign rooms to groups and individual guests all while including the myriad of preference requests, including room type, views, location, and more. In this project, Disney has asked you and your team to propose a solution approach (and actual solution) for a subset of their (very) large assignment task. You have been given data on 200 guest room requests, all to be assigned on two floors of Disney's Wilderness Lodge. These rooms are divided up in to three classifications - King, 2 Queens, and Suites. There are smoking and non-smoking designated rooms. Your goal is to assign rooms to each guest in such a way to minimize the number of complaints during their visit. For the purposes of simplifying the problem, we assume that all of the guests check-in on the same day (but note that they may not all leave the same day).

The data that you will be initially provided is already up as an Excel spreadsheet on the course website. This is incomplete information - there are some factors that are not on the spreadsheet that I'm using in the simulator. If you request some extra, relevant, data, I will provide said data as a revision of the Excel spreadsheet. In addition, a map of the portion of the resort that you will be focusing on will be provided.

Some notes on the data:

Room Preference column key: the cell will contain a pair of values, first is room preference (2Q - 2 Queens, K - King, SU - Suite) followed by smoking (S) or non-smoking (NS).

AP - Annual Pass
TiW - Tables in Wonderland
NR - no record (meaning the guest did not answer that question)
DDP - Disney dining plan
MMH - Morning Magic Hours
EMH - Evening Magic Hours

Favorite Park key: MK - Magic Kingdom, EP - Epcot, HS - Hollywood Studios, AK - Animal Kingdom

Weight: estimated weight of the heaviest guest in the party

Sleeping key: each entry is divided into two letters, E for early, L for late. The first letter is for wake-up, the second is for going to sleep.

Food Service Preference key: QS - Quick or Counter Service, TS - Table Service

To assist in your development of a solution there will be a number of links and pdfs that are available on the course website. The hotel room assignment problem is a variant of the generalized assignment problem talked about in many of these links. We will talk through this problem and general approaches in a future class, but note that basically you'll be crafting a binary integer programming solution (with some possible extra "bits").

Write-up: There are no page minimums for the write-up. Please thoroughly discuss your solution, including any assumptions and what data was relevant to your solution. Keep in mind that this should be written as if it was to be proposed to Disney Parks executives.

Simulator: The simulator I will use will be posted on November 16th. It will take in a plain text file that has two numbers per line, separated by a comma. The first number will be the guest number, the second will be the room assignment. White space in a line will be ignored.

Team Member Reviews: you are required to send by 5pm 12/7, a numeric grade (out of 100)

to me via email. If the grade is < 80, you must provide a reason for the grade in that email.

Presentations: During the last week of classes, each team will present their approach to the solution, plus their solution in a 15 minute presentation (with 5 minutes of question and answer after). Included in this presentation should be information on what pieces of data were integral to your solution, how you avoid complaints, and what improvements to the resort you would recommend in order to improve customer satisfaction. This is a formal presentation (again, as if you were presenting to Disney big-wigs) and is 10% of your total grade in the course. Your presentation should assume that the audience are executives that have some experience with Operations Research, but are very skeptical of this kind of approach.

DUE: All sources (what ever that may be) and a write up of the proposal and solution is due at 11:59pm on 11/30.