

Operations Research, Spring 2014

Case assignment 1

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Submission

The deadline of this homework is *1pm, March 17, 2014*. Please put a hard copy of the work into the instructor's mailbox on the first floor of the Management Building II by the due time. Submissions within 1pm to 2pm will get one letter grade lower as a penalty. Submissions after 2pm will not be accepted. Each team should submit just one report. The report should contain at most six A4 pages (including everything). Double-sided printing is certainly encouraged.

The case and tasks

Please go to CEIBA and find Case 4.3 (in "Related Files" under the section "Assignments") of the textbook. Read it thoroughly and then answer Problems (a) to (f). You do not need to answer Problems (g) and (h). When formulating models, explicitly write down any assumption you make before you start formulating your model. For Problems that ask you to solve a model, you may use MS Excel solver or any other software. You do not need to print out one whole Excel spreadsheet to show how you solve a model. What really matter are the definitions, formulations, and suggestions.

For Problem (d), please note that it is impossible to formulate an LP to satisfy the requirement of "keeping each neighborhood together". As you do not have enough knowledge to solve a nonlinear or integer program, you are expect to completely enumerate all the possible assignments (i.e., all the feasible solutions) and then find the best one. You may write a program, use MS Excel, or adopt other systematic way for doing so. In any case, you need to make a suggestion to the board and answer how much the total busing cost will be increased. Try to feel how impractical a complete enumeration is for large problems. We will introduce an algorithm for solving linear integer programs in this semester.

Grading

Case assignments, including this one, are graded with letter grades. The correctness and completeness of your answers decides whether you get A, B, C, or D. The organization and format of your report then decides whether you get $X+$, X , or $X-$, where $X \in \{A, B, C, D\}$ is the grade you obtain from the correctness and completeness.

Format

For case assignments, we put a higher standard on the how formal your report is. Some general guidelines are also posted online. Please do not forget that you have a team to work on one problem: Discuss together for the whole problem instead of work individually! Then try your best to write a formal and complete report.