
2ND MIDTERM EXAM, FALL 99
Solutions

Problem 1

Decision variables:

$$x_i = \begin{cases} 1 & \text{invest in company } i \\ 0 & \text{do not invest} \end{cases} \qquad i = 1, 2, 3, 4.$$

y_i - amount invested in company $i \quad i = 1, 2, 3, 4.$

Constraints:

$$\sum_{i=1}^{4} y_i \leq 1000000 \quad \text{budget}$$

$$100000x_i \leq y_i \leq 500000x_i, \quad i = 1, 2, 3, 4 \quad \text{logical bounds}$$

$$2y_1 + y_2 + y_3 + 3y_4 \leq 1.6(y_1 + y_2 + y_3 + y_4), \quad \text{risk rating}$$

$$x_3 + x_4 \geq 1, \quad \text{some small company chosen}$$

$$y_i \geq 0, \quad i = 1, \ldots, 4.$$

Objective function:

$$\max 17\%x_1 + 15\%x_2 + 13\%x_3 + 20$$

Problem 2

(a) sum(c11:e11)
(b) sum(c11:c14)
(c) sumproduct(b11:b14,b3:b6)
(d) g3*sumproduct(c3:e5,c11:e14)
(d) target cell b19 (minimize); changing cells b11:e14
(e) b11:e14 binary, c15:e15=1, f11:f14¡=b11:b14,
assume linear model