Lesson 12. Blending Models, Revisited

Example 1. You are a portfolio manager in charge of a bank portfolio with at most $10 million to invest. You want to maximize the earnings of your portfolio. There are 5 different securities available:

Bond name	Bond type	Quality Rating	Years to maturity	Yield at maturity
1	Municipal	2	9	4.3%
2	Agency	2	15	2.7
3	Gov't	1	4	2.5
4	Gov't	1	3	2.2
5	Municipal	5	2	4.5

The bank has some policies that limit how you can construct your portfolio:

1. The average quality of the portfolio cannot exceed 1.4 (lower quality rating = better)
2. The average years to maturity of the portfolio must be between 4 and 6 years
3. Bonds cannot be "shorted" (cannot buy negative amounts of bonds)

Describe the input parameters of this problem using sets and for statements.

Write a linear program for this problem using the symbolic input parameters you described above.

Write a model and data file in MathProg for your linear program. Solve the linear program. What is the optimal value? What is the optimal solution?

Bonus. Can you make the linear program we wrote even more general? What sets and input parameters would you have to change, add, or delete?