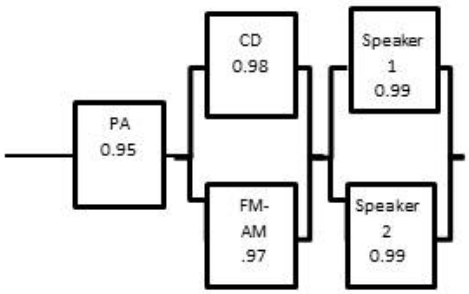
Homework 13
Due: 5/3/2018

- Assignments are due at the beginning of class on the due date.
- Any Matlab/R files are to be submitted as .m or .R files via Moodle (with a corresponding run/driver file if necessary).
- Each file must be uploaded individually. Zipped files will not be graded.
- Show all work and provide discussion where needed in order to receive full credit.

1. Consider a stereo with a CD player, FM-AM radio tuner, speakers (dual), and power amplifier (PA) components. Determine the system's reliability.



2. A local company restores cars and trucks for resale. Each vehicle must be processed in the refinishing/paints shop and the machine/body shop. Each car (on average) contributes $3000 to profit, and each truck contributes (on average) $2000 to profit. The refinishing/paint shop has 2400 work-hours available and the machine/body shop has 2500 work-hours available. A car requires 50 work-hours in the machine/body shop and 40 work-hours in the refinishing/paint shop, whereas a truck requires 50 work-hours in the machine/body shop and 60 work-hours in the refinishing/paint shop. Let x_1 determine the number of cars per week and x_2 denote the number of trucks per week.

   a. List the cost and constraint functions.

   b. Use linear programming to determine a daily production schedule that will maximize the company's profits.

   c. Perform sensitivity analysis on the problem and discuss your results.