

IE 522 – Optimization Methods:

Columbus bank scheduling

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Bank Scheduling Example

- A Columbus, MS bank requires different numbers of full-time employees on different days of the week. The number of full-time employees required on each day is given in Table 4. Union rules state that each full-time employee must work five consecutive days and then receive two days off. For example, an employee who works Monday to Friday must be off on Saturday and Sunday. Each full-time employee works 8 hours per day. Thus, Monday's requirement of 17 workers may be viewed as a requirement of $8(17) = 136$ hours. The bank may meet its daily labor requirements by using both full-time and part-time employees. During each week, a full-time employee works 8 hours a day for five consecutive days, and a part-time employee works 4 hours a day for five consecutive days. A full-time employee costs the post office \$15 per hour, whereas a part-time employee (with reduced fringe benefits) costs the bank only \$10 per hour. Union requirements limit part-time labor to 25% of weekly labor requirements. Do the following:
 - Formulate an LP to minimize the bank's weekly labor costs.
 - Solve your LP in AMPL

Day	Number of Employees Required
1 Monday	17
2 Tuesday	13
3 Wednesday	15
4 Thursday	19
5 Friday	14
6 Saturday	16
7 Sunday	11