Mathematics, Statistics and Computer Sciences

Optimizing an Unconventional Schedule: A Linear Programming Model [MAS]

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Scheduling tutors for the Developmental Mathematics Laboratory as well as laboratory assistants for the computer laboratories of Computing and Information Services and Mathematics Department creates an immense scheduling problem each semester. The individuals who schedule these laboratories, no matter the methods used, waste hours composing semester schedules. All the schedules consist of one-hour shifts; however, restrictions are put on these schedules: students' available hours, placement preference of work study versus non-work study students, possible symmetry or blocking of weekly hours for each student's schedule, and more than one students working the same shift. The complexity of these schedules is directly derived from the scheduler's goal to remain within their budget and to work around their employee's class schedules. Composing these unconventional schedules, by hand, poses different methods of solution and the possibility for reaching a financial or efficient "best" schedule is limited. The method of solution is combining these three sets of scheduling difficulties, with their peculiar requirements, into a linear programming assignment model using LINGO. The model will be implemented by an interface written in Visual Basic.