

Canadian Medical Schools

General Problem Statement

There are a limited number of medical schools, and many applicants every year. Each school has a maximum number of students it can admit, and a different method for evaluating applicants. Each student applying has a different background and has a different list of preferences. Since the admissions process is time consuming for schools, and doesn't guarantee that each school winds up with applicants best suited to it, this year the medical schools have banded together and have employed an outside company to handle their admissions process. The outside company has boasted that they will not only handle the admissions process but that they will do it better than it has ever been done before, because they will take students' preferences into account when making the decisions. The task then, for the consultants at the company, is to determine the optimal assignment of students to schools.

Available Data

For each student, the following data is available

- GPA, on a four point scale
- Strength of extracurricular activities, on a ten point scale
- Interview strength, on a ten point scale
- MCAT score, reported as a percentile
- Strength of the student's letters of recommendation, on a ten point scale
- The schools to which the student applied
- Personal preference of schools, given as a ranking of the schools to which the student applied

For each school, the following data is available

- The school's system for rating applicants, given as a percentage breakdown of the data a student provides in their application (GPA, MCAT score, letters of recommendation, interview, and extracurriculars)
- Number of students the school may admit in a given year

Objective

- To determine an optimal matching of students to schools, accounting for schools' preferences and students' preferences.

Constraints

- Students cannot be matched to schools to which they did not apply
- There are a limited number of spots at each school