M435 Project 1

MCM 2007 PROBLEM B
The Airplane Seating Problem

Airlines are free to seat passengers waiting to board an aircraft in any order whatsoever. It has become customary to seat passengers with special needs first, followed by first-class passengers (who sit at the front of the plane). Then coach and business-class passengers are seated by groups of rows, beginning with the row at the back of the plane and proceeding forward.

Apart from consideration of the passengers wait time, from the airlines point of view, time is money, and boarding time is best minimized. The plane makes money for the airline only when it is in motion, and long boarding times limit the number of trips that a plane can make in a day.

The development of larger planes, such as the Airbus A380 (800 passengers), accentuate the problem of minimizing boarding (and deboarding) time.

- Devise and compare procedures for boarding and deboarding planes with varying numbers of passengers: small (85 to 210), midsize (210 to 330), and large (450 to 800).

- Write a latex[1] report describing your solution. This will be graded according to the rubric detailed on the syllabus.

- In additioon to the detailed report, prepare an executive summary, not to exceed two single-spaced pages, in which you set out your conclusions to an audience of airline executives, gate agents, and flight crews.

An article appeared in the NY Times Nov 14, 2006 addressing procedures currently being followed and the importance to the airline of finding better solutions. The article can be seen at:
http://travel2.nytimes.com/2006/11/14/business/14boarding.html

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[1]Go to miktex.org and download the small version onto your computer. (Lab computers already have latex). To begin, type-set the sample file.