DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
ODENSE UNIVERSITY

COMPUTER SCIENCE COLLOQUIUM

The Seat Reservation Problem

Joan Boyar
Department of Mathematics and Computer Science
Odense University

Tuesday, September 9, 1997, at 2:15 PM
The Seminar Room

Abstract: We investigate the problem of giving seat reservations on-line. We assume that a train travels from a start station to an end station, stopping at a fixed number of stations. Passengers may attempt to make reservations at any point before they get on the train. The train has a fixed number of seats, and the seat reservation system attempts to maximize income. Since passengers must be assigned to seats when they buy their seat reservations, rather than after the system knows about all future requests for seat reservations, this is what is known as an on-line problem. (An off-line algorithm would know about all requests before making any seat assignments.) The standard performance measure used for analyzing on-line algorithms is the competitive ratio, which is the worst case ratio of what an on-line algorithm does to what the optimal off-line algorithm does on the same sequence of requests. In addition to considering the competitive ratio, we also define the accommodating ratio which is similar except that the only sequences of requests allowed are sequences which could all have been accommodated by the optimal off-line algorithm. We prove upper and lower bound results for two different pricing policies.

This is joint work with Kim S. Larsen.

Kim Skak Larsen