EPFL
ENAC INTER TRANSP-OR
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Decision-aid Methodologies in Transportation
Spring 2014

Exercise Session 10

This week, you are the head of the planning department at an airline company. The demand division of your company has forecast the demand for the following flights:

Flight No.	Origin	Departure	Destination	Arrival	Demand
762	London	07:20	Oslo	09:30	150
763	Oslo	10:50	London	13:15	80
768	London	15:40	Oslo	17:45	100
769	Oslo	18:45	London	21:10	190
778	London	10:20	Stockholm	12:50	80
779	Stockholm	13:55	London	16:30	90
780	London	14:15	Stockholm	16:45	100
781	Stockholm	17:55	London	20:35	130
811	Copenhagen	07:20	London	09:25	144
812	London	07:10	Copenhagen	09:00	168
813	Copenhagen	09:50	London	11:40	80
820	London	18:40	Copenhagen	20:30	170
766	London	12:40	Oslo	14:50	100
767	Oslo	16:25	London	18:55	120
776	London	09:25	Stockholm	11:55	200
777	Stockholm	12:55	London	15:35	120
782	London	16:01	Stockholm	18:40	110
783	Stockholm	19:40	London	22:15	100
814	London	10:00	Copenhagen	12:00	64
815	Copenhagen	12:10	London	14:00	80
816	London	13:05	Copenhagen	15:00	70
817	Copenhagen	14:55	London	16:55	80
818	London	14:35	Copenhagen	16:25	80
819	Copenhagen	17:20	London	19:25	150
862	London	07:00	Helsinki	11:05	130
863	Helsinki	11:55	London	15:00	120
864	London	11:10	Helsinki	14:15	100
865	Helsinki	15:55	London	19:05	100
866	London	14:20	Helsinki	17:05	100
867	Helsinki	18:05	London	20:50	150
868	Copenhagen	08:30	London	10:30	116
869	London	08:50	Copenhagen	10:50	118

Table 1: Daily Itinerary

Your company operates only one type of aircraft, the Boeing 767 (B767), whose seating capacity is 250. The bases of the company are located in London and Copenhagen. The pullout cost of a B767 is 1,100,000 DKK (Danish Kroner, since you are in a Danish company), and its operating cost is 100,000 DKK. The price of the flight tickets is assumed to be the same for all flights, and is fixed at 4000 DKK. The turnaround time for every aircraft is set to 45 minutes whenever an aircraft arrives at the destinations of its assigned legs (except the destination of the final leg back to base). To simplify the problem, it is assumed that at the end of the day, all aircrafts are requested to return to the bases they have started from.

Task

- Solve the Aircraft Rotation Problem using CPLEX Optimization Studio

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