

“Tail Mapping” – Aircraft Route Allocation

Tail Mapping or Tail Assignment is the problem of assigning specific aircraft to flights, producing a fully operational, robust schedule which fulfills operational constraints, while minimizing a cost function.

Objectives

- Optimization of route for each aircraft
- Satisfy the maintenance needs of aircrafts
- Maintain the stipulated gap between two consecutive legs
- Consideration of crew pairing while optimizing the routes
- Perform legs without any delay
- Better utilization of aircrafts
- Allocation of aircrafts to routes based on performance factor
- Reduce variable cost



TAIL MAPPING TOOL

OPTIMIZATION MODEL

- Integer Programming Model
- Carried out in Python 3.7.7 64-bit, Spyder 4.1.4
- Total Solution time ~ 2 minutes

INPUT DATA FILES REQUIRED FOR OPTIMIZATION MODEL

- Legs data file (for the concerned day and the next day)
- Aircraft data file (for the concerned day and the next day)
- Fix Routes data file
- Restriction data file (for Restricted routes for each aircraft)
- Cost data file (for fuel cost data)

OUTPUT DATA FILES GENERATED FROM OPTIMIZATION MODEL

- Routing file with Minimum cost
- Routing file with More Ground Time
- Aircraft data generated (with Minimum cost)
- Aircraft data generated (with More Ground Time)
- Optimization Solution file
- Merged Legs file

