

Description of Data Sets

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1 Note on the Data

All the data we present here comes from a major North-American airline. For confidentiality reasons, all airport names, flight numbers, pilot and copilot names, and the year of flights have been changed. The data in itself was not altered. The characteristics of each instance are given in Tables 1 and 2.

Table 1: Instance Characteristics

Instance	Number of			Number of preferred vacations	
	Flights	Airports	Bases	Pilots	Copilots
1	1013	26	3	66	66
2	1500	35	3	68	68
3	1854	41	3	94	94

Table 2: Number of Pilots and Copilots per Base

Instance	Base 1		Base 2		Base 3		Total	
	No. Pilots	No. Copilots	No. Pilots	No. Copilots	No. Pilots	No. Copilots	No. Pilots	No. Copilots
1	7	7	20	20	6	6	33	33
2	10	10	9	9	15	15	34	34
3	10	10	30	30	7	7	47	47

2 Airports and Bases (listOfBases.csv)

This file contains information about the airports used in the instances. Each line gives the name, status, and the number of pilots (and copilots) associated to each airport. If the status is set to one, it means that the airport is a base. If it is set to zero, the airport is not a base. A base is an airport where pilots and copilots are stationed. The number of pilots and copilots in each base are equal. Each instance involve 3 bases. The number of airports for each instance are given in Table 1 and the number of pilots and copilots per base for each instance are given in Table 2.

The file is structured as follows:

airport status nb(Co)Pilots

[Acronym_Of_Air_1] , [Status_Of_Air_1] , [Number_Of_(Co)Pilots_In_Air_1]

[Acronym_Of_Air_2] , [Status_Of_Air_2] , [Number_Of_(Co)Pilots_In_Air_2]

etc

Where :

- [Acronym_Of_Airport_x] : acronym representing the airport x.
- [Status_Of_Airport_x] : 0 if the airport is not a base and 1 if it is.
- [Number_Of_(Co)Pilots_In_Airport_x]: integer corresponding to the number of (Co)Pilots in base x.

3 Airlegs (day_x.csv)

There is one file for scheduled flights for each day of the horizon. The number of flights for each instance are given in Table 1.

The file is structured as follows:

```
LEG_[x]_[nb] , [dep_air] , [dep_date] , [dep_time] , [arr_air] , [arr_date] , [arr_time]
LEG_[x]_[nb] , [dep_air] , [dep_date] , [dep_time] , [arr_air] , [arr_date] , [arr_time]
LEG_[x]_[nb] , [dep_air] , [dep_date] , [dep_time] , [arr_air] , [arr_date] , [arr_time]
etc
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Where:

- [x] : day of the horizon.
- [nb] : flight number for current day (note that numbers are not necessarily successive).
- [dep_air] : acronym representing the departure airport.
- [dep_date] : departure date in YYYY-MM-DD format.
- [dep_time] : departure time in hh:mm format.
- [arr_air] : acronym representing the arrival airport.
- [arr_date] : arrival date in YYYY-MM-DD format.
- [arr_time] : arrival time in hh:mm format.

4 Preferred Vacations (PilotsPreferredVacations.csv and CopilotsPreferredVacations.csv)

These two files contain information about the preferred vacations for pilots and copilots, respectively. Each (co)pilot requests two vacations in each month. Each line provides information on the (co)pilot base, the start and the end date of his/her vacation. Each vacation starts at 00:00 and ends at 00:00. The total number of preferred vacations for each instance are given in Table 1.

The file is structured as follows:

name(Co)Pilot	baseName	vacationName	startDate	startHour	endDate	endHour
PIL001 ,	[BASE_NAME] ,	Vacation_1.1 ,	[Start_Date] ,	00:00 ,	[End_Date] ,	00:00
		Vacation_1.2 ,	[Start_Date] ,	00:00 ,	[End_Date] ,	00:00
PIL002 ,	[BASE_NAME] ,	Vacation_2.1 ,	[Start_Date] ,	00:00 ,	[End_Date] ,	00:00
		Vacation_2.2 ,	[Start_Date] ,	00:00 ,	[End_Date] ,	00:00
PIL003 ,	[BASE_NAME] ,	Vacation_3.1 ,	[Start_Date] ,	00:00 ,	[End_Date] ,	00:00
		Vacation_3.2 ,	[Start_Date] ,	00:00 ,	[End_Date] ,	00:00

etc

Where :

- name(Co)Pilot: acronym representing the name of each (co)pilot.
- [BASE_NAME] : acronym representing the (co)pilot's base.
- [Start_Date] : starting date of the vacation, in YYYY-MM-DD format.
- [End_Date] : end date of the vacation, in YYYY-MM-DD format.