Business Rules

In the following, you can find the business rules that are supposed to be true in the data. Nevertheless, neither the processes nor the DBMS enforced them. Thus, they may have been violated giving rise to quality problems. In the ETL process, you are expected to enforce them, that is, check if they are violated and act upon them.

AMOS database

Identifiers

BR-1 `WorkPackageID` is an identifier of `WorkPackage`.

BR-2 `workOrderID` is an identifier of `WorkOrders/ForecastedOrders/TechnicalLogBookOrders`.

BR-3 `maintenanceID` is an identifier of `MaintenanceEvents/OperationInterruption`.

Datatypes/Domains

BR-4 `subsystem` of `MaintenanceEvents` should be a 4 digits ATA code[1]

BR-5 `delayCode` in `OperationInterruption` should be a 2 digits IATA code[2]

BR-6 `WorkPackageID/workOrderID/maintenanceID` should be simply SERIAL numbers generated by an autoincrement[3] mechanism.

BR-7 `ReportKind` values "PIREP" and "MAREP" refer to pilot and maintenance personnel as reporters, respectively.

BR-8 `MELCathegory` values `A,B,C,D` refer to `3,10,30,120` days of allowed delay in the repairing of the problem in the aircraft, respectively.

BR-9 `airport` in `MaintenanceEvents` must have a value.

Other business rules

BR-10 In `OperationInterruption`, departure must coincide with the date of the `FlightID` (see below how it is composed).

BR-11 The `Flight` registered in `OperationInterruption`, must exist in the `Flights` of `AIMS` database, and be marked as "delayed" (i.e., `delayCode` is not null) with the same IATA delay code.

BR-12 In `MaintenanceEvents`, maintenance duration must have the expected length according to the kind of maintenance (Delay – minutes, Safety – undetermined/unlimited, `AircraftOnGround` - hours, `Maintenance` – hours to max 1 day, `Revision` – days to 1 month).

[1] ATA codes for commercial aircrafts: https://en.wikipedia.org/wiki/ATA_100
[2] IATA delay codes: https://en.wikipedia.org/wiki/IATA_delay_codes
[3] https://www.postgresql.org/docs/9.1/datatype-numeric.htmlDATATYPE-NUMERIC-TABLE

AIMS database

Identifiers

BR-13 `FlightID` is an identifier of `Flights`.

Datatypes/Domains

BR-14 `FlightID` is derived by concatenating the following values:
`Date-Origin-Destination-FlightNumber-AircraftRegistration`
(lengths: 6+1+3+1+3+1+4+1+6=26).

Other business rules

BR-15 In a `Slot`, `scheduledArrival` must be posterior to the `scheduledDeparture`.

BR-16 A `Flight` is not longer than 24 hours.

BR-17 All the hours of a `Flight` are imputed to the date of its `scheduledDeparture`.

BR-18 In `Flights`, departure and arrival airports must be those in the `FlightID` (unless this `Flight` has been diverted).

BR-19 In a `Flight`, `actualArrival` is posterior to `actualDeparture`.