Bird Strike Database Structure Design

By: Mohsen Nabian

Design Objectives:

- A table of almost 90000 records with many attributes regarding AirCrafts Bird strike is given as a excel file.

- The goal of this project is to design a relational database model for the **current data** and its future.

- The model design is intended to minimize redundancies in the data.

- The database structure should be normalized at least 3NF.

Normalization Review:

- 1st Normal Form: Each field MUST have **one and only** one value.We can avoid it by adding columns.

- 2nd Normal Form: Any non-key field should be dependent on the entire primary key.

- 3rd Normal Form: No non-Key filed is dependent on another non-key field.

Empty cells in the data

- The current given data contains many empty and unknowns. The reason could be lack of information, missing data or not reporting data.

- The database model designed is considering the existence of NULL and unknown data. As a result, for some tables, an automated id attributes are chosen as Primary Key.

- In the current design, we impose some attributes not to be NULL and must be filled with appropriate data. These attributes are: 1) Record ID   2)AirCraft Make/Model

- If we were designing the database from the beginning without any data, we were imposing much more fields to be field and not to be NULL. As a result instead of having artificial keys (like Flight_id) we would have natural primary keys(like Flight_number).

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AirCraft_info

AirCraft Make/Model (PK) [Not Null]

Type

Alltiude

Number of engines

Bird Strike

Record ID (PK) [Not NULL]

Flight ID (FK)

AirCraft Make/Model (FK) [Not NULL]

Airport ID (FK)

Wildlife ID (FK)

When:Time (HH:MM)

Reported:Date

When: Phase of flight

Condition: Sky

Pilot warned of birds or wildlife?

Wildlife Number Strike

Feet above ground

Speed (IAS) in knots

Condition: Percipitation

Cost: Repair (inflation adj)

Cost: Aircraft time out of service (hours)

Effect:Impact to flight

Effect:Indicated Image

Effect:Other

Remains of wildlife collected?

Location: Nearby if en route

Remarks

Flight_info

Flight ID (PK)

Flight_number

Flight_date

Airline/Operator

Airport

Wildlife_info

Wildlife ID (PK)
Wildlife Species
Wildlife Size

Airport_info

Airport ID (PK)
Airport name
Location (State)