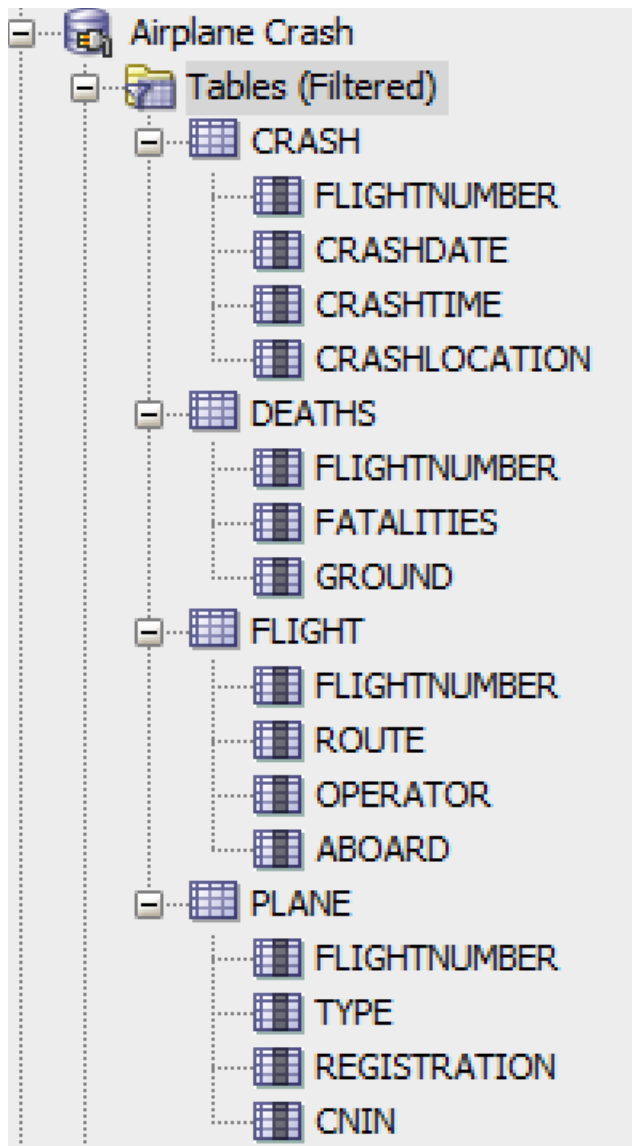


Daniel Tilley – C1437041 – Design Document

The dataset for this assignment is based on Airplane crashes. In oracle, the tables are laid out as follows:



Designs

There are 2 design options I am going to implement. The first is just a straight data dump with no formatting and the second will make use of embedding.

Simple Design:

```
db.createCollection(simpleFormat, {  
  FlightNumber: <number>,  
  FlightRoute: <string>,  
  FlightOperator: <string>,  
  NumAboardFlight: <number>,  
  CrashDate: <string>,  
  CrashTime: <string>,  
  CrashLocation: <string>,  
  DeathsInAir: <number>,  
  DeathsOnGround: <number>,  
  PlaneType: <string>,  
  PlaneReg: <string>,  
  PlaneCNIN: <string>} )
```

Embedded Design: (Uses flight as a first reference)

```
db.createCollection(embeddedFormat, {  
  Number: <number>,  
  Route: <string>,  
  Operator: <string>,  
  NumAboard: <number>,  
  Plane: [{  
    Type: <string>,  
    PlaneReg: <string>,  
    PlaneCNIN: <string>  
  }],  
  Crash: [{  
    Date: <string>,  
    Time: <string>,  
    Location: <string>,  
    Deaths: [{  
      InAir: <number>,  
      OnGround: <number>  
    }],  
  }]  
} )
```

Creates

I have attached two files which have been generated using PL/Sql. One is for the simple layout (simpleLayoutOutput.txt) and the other is for the embedded layout (embeddedLayoutOutput.txt). In both files, you will find the PL/Sql used to generate the file and the creates for mongoDB.

Queries on simple collection

Find all

```
db.simpleFormat.find()
```

Find certain airline

```
db.simpleFormat.find({ FlightOperator: "Air France" })
```

Sort by amount of deaths in air

```
db.simpleFormat.find().sort( { DeathsInAir: -1 } )
```

Aggregate function. Sum number of deaths in air and filter by airline

```
db.simpleFormat.aggregate([  
    { $match: { FlightOperator: "Air France" } },  
    { $group: { _id: "$ObjectId", DeathsInAir: { $sum: "$DeathsInAir" } } },  
])
```

Update function

```
db.simpleFormat.update({ "FlightNumber": 1 }, { $set: { "DeathsInAir": 2 } } )
```

Queries on embedded collection

Find all

```
db.embeddedFormat.find()
```

Find certain airline

```
db.embeddedFormat.find({ Operator: "Military - U.S. Air Force" })
```

Sort by amount of deaths on ground

```
db.embeddedFormat.find().sort( { "Crash.Deaths.OnGround": -1 } )
```

Aggregate function. Sum number crashes by airline

```
db.embeddedFormat.aggregate([
  { $match: { Operator: "Military - U.S. Air Force" }},
  { $unwind: '$Crash'},
  { $group: { _id: "$ObjectId", count: { $sum: 1 } } },
])
```