BADA for Traffic Complexity

Traffic Complexity Score uses BADA coefficients for aircraft performance.

The scripts in this directory are used to extract the aircraft performance parameters in a CSV file that can then be imported in the relevant ORACLE schema.

Extract BADA dataset

Extract the BADA zip in a folder, i.e. bada_3131

This folder should now contains a set of files like:

```
$ ls -l bada_3131
total 6580
-rw-r--r-- 1 spi 1049089 2547 May 13
                                      2013 A124__.APF
-rw-r--r-- 1 spi 1049089 4453 May 13
                                      2013 A124__.OPF
-rw-r--r-- 1 spi 1049089 14376 May 22
                                      2013 A124 .PTD
-rw-r--r-- 1 spi 1049089 5401 May 22
                                      2013 A124__.PTF
-rw-r--r-- 1 spi 1049089 2547 May 15
                                      2013 A140 .APF
                                      2013 A140__.OPF
-rw-r--r-- 1 spi 1049089 4453 May 15
-rw-r--r-- 1 spi 1049089 10208 May 22
                                      2013 A140 .PTD
-rw-r--r-- 1 spi 1049089 4087 May 22
                                      2013 A140__.PTF
. . .
                         2547 May 7
-rw-r--r-- 1 spi 1049089
                                      2013 YK40__.APF
-rw-r--r-- 1 spi 1049089 4453 Aug 22
                                      2014 YK40__.OPF
-rw-r--r-- 1 spi 1049089 10729 Aug 25
                                      2014 YK40__.PTD
-rw-r--r-- 1 spi 1049089 4251 Aug 25
                                      2014 YK40__.PTF
-rw-r--r-- 1 spi 1049089 2547 May 7
                                      2013 YK42__.APF
-rw-r--r-- 1 spi 1049089 4453 May 7
                                      2013 YK42__.OPF
-rw-r--r-- 1 spi 1049089 12292 May 22
                                      2013 YK42__.PTD
-rw-r--r-- 1 spi 1049089 4743 May 22
                                      2013 YK42__.PTF
```

Sanity check

In order to make sure that there is no spurious data file or that the file format has not changed, you need to run the sanity_check_PTF.awk script

```
There is something fishy in the PTF files! $ echo $?
```

The erroneus rows will be printed on stderr and exit status would then be 1. Otherwise if all is ok exit status will be 0:

```
$ ./sanity_check_PTF.awk bada_3131/*.PTF
$ echo $?
0
```

Prepare the dataset for ORACLE

The following command will extract the relevant aircraft performance parameters in CSV format:

```
$ awk -f convertPTF.awk -v ver=3.13.1 bada_3131/*.PTF > bada_ptf_3131.csv
$ echo $?
```

The outcome is similar to the following:

```
$ head bada_ptf_3131.csv
AC_TYPE,FL,CRUISE_TAS,CRUISE_FUEL_LO,CRUISE_FUEL_NO,CRUISE_FUEL_HI,CLIMB_TAS,CLIMB_ROCD_LO,CA124__,O,,,,,171,2204,1385,975,476.2,156,869,116.1,3.13.1
A124__,5,,,,,173,2202,1380,968,473.6,157,878,115.5,3.13.1
A124__,10,,,,,174,2201,1375,961,470.9,163,861,114.6,3.13.1
A124__,15,,,,,180,2304,1440,1012,467.2,175,829,113.4,3.13.1
A124__,20,,,,,182,2301,1434,1004,464.5,207,1261,110.2,3.13.1
A124__,30,230,143.3,197.3,246.7,205,2666,1661,1183,454.6,230,1375,108.6,3.13.1
A124__,40,233,143.0,197.0,246.4,240,3067,1884,1343,442.4,233,1397,106.9,3.13.1
A124__,60,272,160.7,201.9,239.6,272,3319,1925,1313,425.6,272,1841,103.6,3.13.1
A124__,80,280,159.8,200.9,238.6,280,3259,1872,1259,413.6,280,1890,100.3,3.13.1
```

Import to ORACLE

You can use TOAD or SQL Developer to load the CSV files in the relevant tables.

Otherwise import scripts and support files for SQL Loader can be generated via SQL Developer as described in this post.

The files $bada_ptf_3131.sh$, $bada_ptf_3131.bat$ and $bada_ptf_3131.ctl$ are an example.

If you want to reuse them, Please change the relevant filepath in order to accommodate for the actual location of the CSV and log files and/or ORACLE table.

In order to run the $bada_3131.csv$ it then suffice to execute

\$./bada_3131.sh