4_Example_WriteFAMEdatabase

August 18, 2018

1 Writing a FAME database from Python

This example demonstrates writing a FAME database.

```
In [1]: import os
        import sys
        from __future__ import print_function


        import pandas as pd
        import qoma_smuggler as qm
        import pyhli
```

The Qoma utility function `open_hli()` opens the FAME environment and prints diagnostic information.

```
In [2]: if qm.open_hli()!=0:
            raise
```

```
Linux 4.9.0-4-amd64 (#1 SMP Debian 4.9.65-3+deb9u1 (2017-12-23)) x86_64
Python 3.6.5 | packaged by conda-forge | (default, Apr  6 2018, 13:39:56)
[GCC 4.8.2 20140120 (Red Hat 4.8.2-15)]
NumPy 1.13.3 Pandas 0.23.4 FAME HLI 11.63000 pyhli 0.0.11
```

```
In [3]: dbname = os.path.join(os.environ['FAME'],'util','driecon')

        famedata = qm.read_fame(dbname)
        print("read_fame() returned {0} FAME objects from {1}.\n".format(len(famedata),dbname))
```

```
read_fame() returned 55 FAME objects from /opt/pkg/fame116linux/util/driecon.
```

```
In [4]: qm.write_fame("mycopy",famedata)
```

```
In [5]: x = qm.get(famedata,'DESC')
        x
```

```
Out[5]: 1     US INTERNATIONAL TRANSACTIONS - BALANCE ON GOO...
        2            NEW CONSTRUCTION PUT IN PLACE - TOTAL PUBLIC
        3                   NEW CONSTRUCTION PUT IN PLACE - TOTAL
        4             LAGGING INDICATORS COMPOSITE INDEX (BCI)
        5             LEADING INDICATORS COMPOSITE INDEX (BCI)
        6         RATIO, COINCIDENT INDEX TO LAGGING INDEX (BCI)
        7                       DOW JONES: 65 COMPOSITE AVERAGE
        8                       DOW JONES: 30 INDUSTRIAL AVERAGE
        9       GOVT ISSUE: CONSTANT MATURITY, 30-YR (H15) - US
        10    TREASURY BILL: SECONDARY, 3-MONTH BOND-EQUIVAL...
        11                      CD: SECONDARY MKT, 1-MO YIELD - US
        12    EXCHANGE RATE IN NEW YORK - FRENCH FRANC PER U...
        13    EXCHANGE RATE IN NEW YORK - GERMAN MARK PER US...
        14    EXCHANGE RATE IN NEW YORK - JAPANESE YEN PER U...
        15    COMMERCIAL PAPER: NON-FINAN, 1-MO QUOTED YIELD...
        16    COMMERCIAL PAPER: NON-FINAN, 1-DAY QUOTED YIEL...
        17    EXCHANGE RATE IN NEW YORK - US CENTS PER BRITI...
        18                FEDERAL DEBT OUTSTANDING - TOTAL (TB)
        19    MONEY SUPPLY - CURRENCY, DEMAND DEPOSITS, OTHE...
        20                         MONEY SUPPLY (M2) - M2 (H6)
        21             CORPORATE PROFITS AFTER TAX - TOTAL
        22                      CORPORATE PROFITS BEFORE TAX
        23    IMPLICIT PRICE DEFLATOR -  GROSS NATIONAL PRODUCT
        24                            GROSS DOMESTIC PRODUCT
        25                   GROSS DOMESTIC PRODUCT (CHAINED)
        26                            GROSS NATIONAL PRODUCT
        27                   GROSS NATIONAL PRODUCT (CHAINED)
        28                  GROSS PRIVATE DOMESTIC INVESTMENT
        29        GROSS PRIVATE DOMESTIC INVESTMENT (CHAINED)
        30                                    PERSONAL INCOME
        31    HOUSING STARTS, PRIVATE INCLUDING FARM - ONE U...
        32    HOUSING STARTS, PRIVATE INCLUDING FARM - TOTAL...
        33    HOUSING STARTS, PRIVATE INCLUDING FARM - ONE U...
        34       HOUSING COMPLETIONS, PRIVATE - NORTHEAST (NRC)
        35            HOUSING COMPLETIONS, PRIVATE - WEST (NRC)
        36           HOUSING COMPLETIONS, PRIVATE - SOUTH (NRC)
        37    HOUSING COMPLETIONS, PRIVATE - NORTH CENTRAL (...
        38             INDUSTRIAL PRODUCTION INDEX -  TOTAL INDEX
        39    INDUSTRIAL PRODUCTION INDEX -  BUSINESS EQUIPMENT
        40        INDUSTRIAL PRODUCTION INDEX -  PAPER PRODUCTS
        41    INDUSTRIAL PRODUCTION INDEX -  MISCELLANEOUS  ...
        42    INDUSTRIAL PRODUCTION INDEX -  TOBACCO  NAICS=...
        43    INDUSTRIAL PRODUCTION INDEX -  BEVERAGE  NAICS...
        44    INDUSTRIAL PRODUCTION  INDEX -  OTHER INORGANI...
        45    INDUSTRIAL PRODUCTION INDEX -  TRANSPORTATION ...
        46      INDUSTRIAL PRODUCTION INDEX -  FOOD  NAICS=311
        47                  UNEMPLOYMENT RATE - CIVILIAN (ESIT)
        48    POPULATION INCLUDING ARMED FORCES OVERSEAS (P25E)
```

```
            49                              CPI (ALL URBAN) - ALL ITEMS
            50                                       CPIU - All items
            51                                          All commodities
            52                      RETAIL SALES, TOTAL - (NAICS)
        Name: DESC, dtype: object

In [6]: x.index.dtype

Out[6]: dtype('int64')

In [7]: gdp = qm.get(famedata,'GDP')
        gdp.index.dtype == 'datetime64[ns]'

Out[7]: True

In [8]: cmd = ['\
          open mycopy; \
          output<acc over>mycopy.txt; \
          cata mycopy; \
          show vert; length full; width 132;\
          justify colu contents left; \
          justify colu head left; \
          case *; \
          repo NAMES, DESC; \
          width 80; \
          date 1998a to *; \
          disp GDP, !STRING_ATTRIBUTE_NAMES; \
          whats !STRING_ATTRIBUTE_NAMES; \
          output terminal; \
          close mycopy ; \
          exit \
          ']
        pyhli.cfmfame ([-1], cmd)
        qm.print_file('mycopy.txt')



                          MYCOPY

           /home/jovyan/python-smuggler/notebooks/mycopy.db

Created:  18-Aug-18                        Updated:  18-Aug-18



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                          Contents


$N -- SERIES (PRECISION by DATE:ANNUAL)
```

POPULATION INCLUDING ARMED FORCES OVERSEAS (P25E)

BOPMERCH -- SERIES (PRECISION by DATE:ANNUAL)
 US INTERNATIONAL TRANSACTIONS - BALANCE ON GOODS (BOP)

CUSA0 -- SERIES (PRECISION by DATE:MONTHLY)
 CPI (ALL URBAN) - ALL ITEMS

CUSA0NS -- SERIES (PRECISION by DATE:SEMIANNUAL)
 CPIU - All items

DBTGFNS -- SERIES (PRECISION by DATE:MONTHLY)
 FEDERAL DEBT OUTSTANDING - TOTAL (TB)

DESC -- SERIES (STRING by CASE)
 Object Descriptions

DJ30C -- SERIES (PRECISION by DATE:BUSINESS)
 DOW JONES: 30 INDUSTRIAL AVERAGE

DJ65CMC -- SERIES (PRECISION by DATE:BUSINESS)
 DOW JONES: 65 COMPOSITE AVERAGE

FBL3Y -- SERIES (PRECISION by DATE:BUSINESS)
 TREASURY BILL: SECONDARY, 3-MONTH BOND-EQUIVALENT YIELD (H15) - US

FCN30YY -- SERIES (PRECISION by DATE:BUSINESS)
 GOVT ISSUE: CONSTANT MATURITY, 30-YR (H15) - US

FIP1Q -- SERIES (PRECISION by DATE:BUSINESS)
 COMMERCIAL PAPER: NON-FINAN, 1-DAY QUOTED YIELD - US

FIP30Q -- SERIES (PRECISION by DATE:BUSINESS)
 COMMERCIAL PAPER: NON-FINAN, 1-MO QUOTED YIELD - US

FSCD30Y -- SERIES (PRECISION by DATE:BUSINESS)
 CD: SECONDARY MKT, 1-MO YIELD - US

GDP -- SERIES (PRECISION by DATE:ANNUAL)
 GROSS DOMESTIC PRODUCT

GDP96C -- SERIES (PRECISION by DATE:ANNUAL)
 GROSS DOMESTIC PRODUCT (CHAINED)

GICV96 -- SERIES (PRECISION by DATE:ANNUAL)
 NEW CONSTRUCTION PUT IN PLACE - TOTAL PUBLIC

GNP -- SERIES (PRECISION by DATE:ANNUAL)

GROSS NATIONAL PRODUCT

GNP96C -- SERIES (PRECISION by DATE:ANNUAL)
 GROSS NATIONAL PRODUCT (CHAINED)

HUCMPNC -- SERIES (PRECISION by DATE:MONTHLY)
 HOUSING COMPLETIONS, PRIVATE - NORTH CENTRAL (NRC)

HUCMPNE -- SERIES (PRECISION by DATE:MONTHLY)
 HOUSING COMPLETIONS, PRIVATE - NORTHEAST (NRC)

HUCMPSO -- SERIES (PRECISION by DATE:MONTHLY)
 HOUSING COMPLETIONS, PRIVATE - SOUTH (NRC)

HUCMPWT -- SERIES (PRECISION by DATE:MONTHLY)
 HOUSING COMPLETIONS, PRIVATE - WEST (NRC)

HUSTS -- SERIES (PRECISION by DATE:ANNUAL)
 HOUSING STARTS, PRIVATE INCLUDING FARM - TOTAL (C20)

HUSTS1 -- SERIES (PRECISION by DATE:ANNUAL)
 HOUSING STARTS, PRIVATE INCLUDING FARM - ONE UNIT (C20)

HUSTS1NS -- SERIES (PRECISION by DATE:MONTHLY)
 HOUSING STARTS, PRIVATE INCLUDING FARM - ONE UNIT (C20)

I -- SERIES (PRECISION by DATE:ANNUAL)
 GROSS PRIVATE DOMESTIC INVESTMENT

I96C -- SERIES (PRECISION by DATE:ANNUAL)
 GROSS PRIVATE DOMESTIC INVESTMENT (CHAINED)

ICV_G96 -- SERIES (PRECISION by DATE:ANNUAL)
 NEW CONSTRUCTION PUT IN PLACE - TOTAL

IPSB50001 -- SERIES (PRECISION by DATE:MONTHLY)
 INDUSTRIAL PRODUCTION INDEX - TOTAL INDEX

IPSB51214 -- SERIES (PRECISION by DATE:MONTHLY)
 INDUSTRIAL PRODUCTION INDEX - PAPER PRODUCTS

IPSB52100 -- SERIES (PRECISION by DATE:MONTHLY)
 INDUSTRIAL PRODUCTION INDEX - BUSINESS EQUIPMENT

IPSG311 -- SERIES (PRECISION by DATE:MONTHLY)
 INDUSTRIAL PRODUCTION INDEX - FOOD NAICS=311

IPSG3121 -- SERIES (PRECISION by DATE:MONTHLY)

```
     INDUSTRIAL PRODUCTION INDEX -  BEVERAGE  NAICS=3121


IPSG3122 -- SERIES (PRECISION by DATE:MONTHLY)
 INDUSTRIAL PRODUCTION INDEX -  TOBACCO  NAICS=3122


IPSG325188Z -- SERIES (PRECISION by DATE:MONTHLY)
 INDUSTRIAL PRODUCTION  INDEX -  OTHER INORGANIC CHEMICALS
 NAICS=325188P


IPSG336 -- SERIES (PRECISION by DATE:MONTHLY)
 INDUSTRIAL PRODUCTION INDEX -  TRANSPORTATION EQUIPMENT  NAICS=336


IPSG339 -- SERIES (PRECISION by DATE:MONTHLY)
 INDUSTRIAL PRODUCTION INDEX -  MISCELLANEOUS  NAICS=339


JCOIN%LAG -- SERIES (PRECISION by DATE:MONTHLY)
 RATIO, COINCIDENT INDEX TO LAGGING INDEX (BCI)


JLAG -- SERIES (PRECISION by DATE:MONTHLY)
 LAGGING INDICATORS COMPOSITE INDEX (BCI)


JLEAD -- SERIES (PRECISION by DATE:MONTHLY)
 LEADING INDICATORS COMPOSITE INDEX (BCI)


MNY1 -- SERIES (PRECISION by DATE:WEEKLY(MONDAY))
 MONEY SUPPLY - CURRENCY, DEMAND DEPOSITS, OTHER CHECKABLE DEPOSITS (H6)


MNY2 -- SERIES (PRECISION by DATE:WEEKLY(MONDAY))
 MONEY SUPPLY (M2) - M2 (H6)


NAMES -- SERIES (STRING by CASE)
 Object Names


PIDGNP -- SERIES (PRECISION by DATE:ANNUAL)
 IMPLICIT PRICE DEFLATOR -  GROSS NATIONAL PRODUCT


RUC -- SERIES (PRECISION by DATE:MONTHLY)
 UNEMPLOYMENT RATE - CIVILIAN (ESIT)


RXC132%USNS -- SERIES (PRECISION by DATE:MONTHLY)
 EXCHANGE RATE IN NEW YORK - FRENCH FRANC PER US DOLLAR (G5)


RXC134%USNS -- SERIES (PRECISION by DATE:MONTHLY)
 EXCHANGE RATE IN NEW YORK - GERMAN MARK PER US DOLLAR (G5)


RXC158%USNS -- SERIES (PRECISION by DATE:MONTHLY)
 EXCHANGE RATE IN NEW YORK - JAPANESE YEN PER US DOLLAR (G5)
```

```
RXUS%C112NS -- SERIES (PRECISION by DATE:MONTHLY)
 EXCHANGE RATE IN NEW YORK - US CENTS PER BRITISH POUND (G5)

STR -- SERIES (PRECISION by DATE:MONTHLY)
 RETAIL SALES, TOTAL - (NAICS)

STRING_ATTRIBUTE_NAMES -- SCALAR (NAMELIST)

WPINS -- SERIES (PRECISION by DATE:MONTHLY)
 All commodities

YP -- SERIES (PRECISION by DATE:ANNUAL)
 PERSONAL INCOME

ZA -- SERIES (PRECISION by DATE:ANNUAL)
 CORPORATE PROFITS AFTER TAX - TOTAL

ZB -- SERIES (PRECISION by DATE:ANNUAL)
 CORPORATE PROFITS BEFORE TAX


                              ----------
                              Statistics



Total number of series:    54

Total number of scalars:   1



        NAMES        DESC
        ----------   --------------------------------------------------------------------

     1  BOPMERCH     US INTERNATIONAL TRANSACTIONS - BALANCE ON GOODS (BOP)
     2  GICV96       NEW CONSTRUCTION PUT IN PLACE - TOTAL PUBLIC
     3  ICV_G96      NEW CONSTRUCTION PUT IN PLACE - TOTAL
     4  JLAG         LAGGING INDICATORS COMPOSITE INDEX (BCI)
     5  JLEAD        LEADING INDICATORS COMPOSITE INDEX (BCI)
     6  JCOIN%LAG    RATIO, COINCIDENT INDEX TO LAGGING INDEX (BCI)
     7  DJ65CMC      DOW JONES: 65 COMPOSITE AVERAGE
     8  DJ30C        DOW JONES: 30 INDUSTRIAL AVERAGE
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    10  FBL3Y        TREASURY BILL: SECONDARY, 3-MONTH BOND-EQUIVALENT YIELD (H15) - US
    11  FSCD30Y      CD: SECONDARY MKT, 1-MO YIELD - US
    12  RXC132%USNS  EXCHANGE RATE IN NEW YORK - FRENCH FRANC PER US DOLLAR (G5)
```

```
13  RXC134%USNS    EXCHANGE RATE IN NEW YORK - GERMAN MARK PER US DOLLAR (G5)
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15  FIP30Q         COMMERCIAL PAPER: NON-FINAN, 1-MO QUOTED YIELD - US
16  FIP1Q          COMMERCIAL PAPER: NON-FINAN, 1-DAY QUOTED YIELD - US
17  RXUS%C112NS    EXCHANGE RATE IN NEW YORK - US CENTS PER BRITISH POUND (G5)
18  DBTGFNS        FEDERAL DEBT OUTSTANDING - TOTAL (TB)
19  MNY1           MONEY SUPPLY - CURRENCY, DEMAND DEPOSITS, OTHER CHECKABLE DEPOSITS (H6)
20  MNY2           MONEY SUPPLY (M2) - M2 (H6)
21  ZA             CORPORATE PROFITS AFTER TAX - TOTAL
22  ZB             CORPORATE PROFITS BEFORE TAX
23  PIDGNP         IMPLICIT PRICE DEFLATOR -  GROSS NATIONAL PRODUCT
24  GDP            GROSS DOMESTIC PRODUCT
25  GDP96C         GROSS DOMESTIC PRODUCT (CHAINED)
26  GNP            GROSS NATIONAL PRODUCT
27  GNP96C         GROSS NATIONAL PRODUCT (CHAINED)
28  I              GROSS PRIVATE DOMESTIC INVESTMENT
29  I96C           GROSS PRIVATE DOMESTIC INVESTMENT (CHAINED)
30  YP             PERSONAL INCOME
31  HUSTS1NS       HOUSING STARTS, PRIVATE INCLUDING FARM - ONE UNIT (C20)
32  HUSTS          HOUSING STARTS, PRIVATE INCLUDING FARM - TOTAL (C20)
33  HUSTS1         HOUSING STARTS, PRIVATE INCLUDING FARM - ONE UNIT (C20)
34  HUCMPNE        HOUSING COMPLETIONS, PRIVATE - NORTHEAST (NRC)
35  HUCMPWT        HOUSING COMPLETIONS, PRIVATE - WEST (NRC)
36  HUCMPSO        HOUSING COMPLETIONS, PRIVATE - SOUTH (NRC)
37  HUCMPNC        HOUSING COMPLETIONS, PRIVATE - NORTH CENTRAL (NRC)
38  IPSB50001      INDUSTRIAL PRODUCTION INDEX -  TOTAL INDEX
39  IPSB52100      INDUSTRIAL PRODUCTION INDEX -  BUSINESS EQUIPMENT
40  IPSB51214      INDUSTRIAL PRODUCTION INDEX -  PAPER PRODUCTS
41  IPSG339        INDUSTRIAL PRODUCTION INDEX -  MISCELLANEOUS  NAICS=339
42  IPSG3122       INDUSTRIAL PRODUCTION INDEX -  TOBACCO  NAICS=3122
43  IPSG3121       INDUSTRIAL PRODUCTION INDEX -  BEVERAGE  NAICS=3121
44  IPSG325188Z    INDUSTRIAL PRODUCTION  INDEX -  OTHER INORGANIC CHEMICALS  NAICS=325188P
45  IPSG336        INDUSTRIAL PRODUCTION INDEX -  TRANSPORTATION EQUIPMENT  NAICS=336
46  IPSG311        INDUSTRIAL PRODUCTION INDEX -  FOOD  NAICS=311
47  RUC            UNEMPLOYMENT RATE - CIVILIAN (ESIT)
48  $N             POPULATION INCLUDING ARMED FORCES OVERSEAS (P25E)
49  CUSA0          CPI (ALL URBAN) - ALL ITEMS
50  CUSA0NS        CPIU - All items
51  WPINS          All commodities
52  STR            RETAIL SALES, TOTAL - (NAICS)
```

```
GDP   GROSS DOMESTIC PRODUCT

1998      8781.50
1999      9274.30
```

```
2000      9824.60
2001     10082.20
2002     10446.20


STRING_ATTRIBUTE_NAMES

DRISOURCE, STATUS, DRIUPDATED, DRIATTRIBUTES, DRILONGNAME
```

```
                       STRING_ATTRIBUTE_NAMES

Class:  SCALAR                                    DB name:  MYCOPY
Type:   NAMELIST                                  Created:  18-Aug-18
                                                  Updated:  18-Aug-18
```

The Qoma utility function `close_hli()` closes the FAME environment.

```
In [9]: if qm.close_hli() != 0:
            raise

In [10]: os.remove("mycopy.txt")
         os.remove("mycopy.db")
```