Basic Database Management with IRIS

It is assumed that the reader is familiar with IRIS `tseries` at the level of `basic_tseries.pdf`.

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Clear workspace

```
close all;
clear all;
```

An IRIS Database

In IRIS a database is simply a Matlab structure which contains one or more IRIS `tseries`. These `tseries` can be of different frequencies, dimensions, etc. For simplicity we stick to the simple case when all are of the same frequency

```
d = struct();

d.a = tseries(qq(2000,1):qq(2004,4),@rand);
d.b = cumsum(d.a);
d.c = d.a*d.a;
d
```

```
d =

    a: [20x1 tseries]
    b: [20x1 tseries]
    c: [20x1 tseries]
```

Operate on batches of `tseries`

Keeping your `tseries` in a database makes carrying them around and manipulating them easy. The function `dbfun` allows you to apply custom functions to batches of `tseries` in one line of code.

```
d1 = dbfun(@(x) diff(x),d)  a
d2 = dbfun(@(x) convert(x,'y'),d)  b
d3 = dbfun(@(x) [x,diff(x)],d)  c
d4 = dbfun(@(x,y) [x,x-y],d1,d2)  d

```

```
dd.a = tseries(qq(2003,1):qq(2005,1),@rand);
dd.c = 100*log(1+dd.a/100);
dd.d = pct(dd.a);

D = dbextend(d,dd)  e
[d.a dd.a D.a]
```

a Takes first difference of each `tseries` in your databse.

b Converts each `tseries` in you database to annual frequency.

c Add an extra column to each `tseries`, displaying its first difference

d Add an extra column to each `tseries`, displaying the difference from a `tseries` by the same name from a different database - perfect for shock-minus-control type of exercises.

e This function merges two databases. If a `tseries` by the same name appears in both databases, then in the output database that `tseries` is constructed by overlaying the `tseries` from the second input database on the one from the first input database. Useful for forecasting exercises.

```
d1 =

    a: [19x1 tseries]
    b: [19x1 tseries]
    c: [19x1 tseries]


d2 =

    a: [5x1 tseries]
    b: [5x1 tseries]
    c: [5x1 tseries]


d3 =

    a: [20x2 tseries]
    b: [20x2 tseries]
    c: [20x2 tseries]


d4 =

    a: [19x2 tseries]
    b: [19x2 tseries]
    c: [19x2 tseries]


D =

    a: [21x1 tseries]
```

```
   b: [20x1 tseries]
   c: [21x1 tseries]
   d: [8x1 tseries]


ans =

       tseries object: 21-by-3

       2000Q1: 0.10024       NaN    0.10024
       2000Q2: 0.060182      NaN   0.060182
       2000Q3: 0.86172       NaN    0.86172
       2000Q4: 0.070872      NaN   0.070872
       2001Q1:  0.8828       NaN     0.8828
       2001Q2: 0.39384       NaN    0.39384
       2001Q3: 0.44005       NaN    0.44005
       2001Q4: 0.35073       NaN    0.35073
       2002Q1: 0.032351      NaN   0.032351
       2002Q2: 0.72557       NaN    0.72557
       2002Q3: 0.35349       NaN    0.35349
       2002Q4: 0.64106       NaN    0.64106
       2003Q1: 0.77159    0.80804    0.80804
       2003Q2: 0.67708  0.0017548  0.0017548
       2003Q3: 0.48587   0.096222   0.096222
       2003Q4: 0.81213    0.42168    0.42168
       2004Q1: 0.075997   0.23511    0.23511
       2004Q2: 0.028333    0.9563     0.9563
       2004Q3: 0.43351    0.37149    0.37149
       2004Q4: 0.14348    0.49132    0.49132
       2005Q1:     NaN    0.26751    0.26751
   ''    ''    ''

       user data: empty
```

Cherry-picking

You can cherry-pick small sets of variables from potentially huge databases

```
d5 = d * {'a','b'}
```

```
d5 =

   a: [20x1 tseries]
   b: [20x1 tseries]
```

Loading and saving

Databases are instrumental in loading and saving data in IRIS. The best way to load your data in IRIS is

to first save it in a CSV file.

```
dd = dbload('data.csv')

dd.GROWTH = 4*diff(dd.LGDP);
dd.GROWTH4 = diff(dd.LGDP,-4);
dd

dbsave(dd,'data2.csv');
```

```
dd =

        LGDP: [175x1 tseries]
        LCPI: [175x1 tseries]
    LCPICORE: [175x1 tseries]
         UNR: [175x1 tseries]
        CAPU: [175x1 tseries]
         PIE: [175x1 tseries]
        PIE4: [175x1 tseries]
       PIEHL: [175x1 tseries]
      PIEHL4: [175x1 tseries]
      PIELTE: [83x1 tseries]
   LGDPM_BAR: [175x1 tseries]
           P: [176x1 tseries]
          LF: [176x1 tseries]


dd =

        LGDP: [175x1 tseries]
        LCPI: [175x1 tseries]
    LCPICORE: [175x1 tseries]
         UNR: [175x1 tseries]
        CAPU: [175x1 tseries]
         PIE: [175x1 tseries]
        PIE4: [175x1 tseries]
       PIEHL: [175x1 tseries]
      PIEHL4: [175x1 tseries]
      PIELTE: [83x1 tseries]
   LGDPM_BAR: [175x1 tseries]
           P: [176x1 tseries]
          LF: [176x1 tseries]
      GROWTH: [174x1 tseries]
     GROWTH4: [171x1 tseries]
```