Assignment Project Exam Help

Application of Matlab for Finance

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September 13, 201

Today's Class

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- |
- https://eduassistpro.github.i
- CW Q1 Hints: `datenum(.)`

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Input/Output

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save(.) load(.)

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xlsread(.)

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- `num = xlsread(filename)` reads numeric data from the first sheet of Excel file named `filename`, and store the data into a matrix called `num`
- heet
- ified
- `filename sheet range`
  `data = xlsread('Stock.xls','P`
- `xlsread(.)` ignores any outer rows or colu that contain no numeric data. Also any nonnum assigned as NaN (Not-a-Number element).
- `[num,txt,raw] = xlsread(.)` store the entire worksheet in `raw`, all numeric data in `num` and text data in `txt`

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xlswrite(.)

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- `xlswrite(filename, M)` writes matrix `M` to the first worksheet in the
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- d
- to a
- rectangular region specified by `range`
- `filename`, `sheet` and `range` are strings en
- Eg. `xlswrite ('Myoutput.xls',R)`

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Exercises 1

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- Use the `xlsread()` function to read information from the excel file `Stock.xls` sheet `Price` into MATLAB with a matrix called `data`.
- `rice_1`
- `rice_2`

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- each stock, naming `stock_return_` respectively

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- Write the returns into a news excel file called h two new sheets named `returns_1` a `returns_2` .

Exercises 1

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```
1  data = xlsread('Stock.xls', 'Price');
2
3  s
4  s
5
6  %
7  stock_return_1 = tick2ret(stock_price_1);
8  stock_return_2 = tick2ret(stock_price
9
10 xlswrite('Returns.xls', stock_retur
11 xlswrite('Returns.xls', stock_retur
```

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csvread(.)

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- `M = csvread(filename)` reads a comma-separated value formatted file from `filename` and stored the data in M.

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that R1=0 and C1=0 specify the first value in the file (Cell 'A1').

- Hint: row (col) = actu lumn) number -1
- `M = csvread(filename, R1, C1, [R1 C1 R2 C2])` y the range specified.

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- Eg. `M = csvread('data.csv',0,0,[0,0,6,1])` reads data in range of 'A1' to 'B7' from file data.csv

csvwrite(.)

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- `csvwrite(filename,M)` writes matrix M into .csv file `filename`, which is a string enclosed in single quotes.
- 0 specify

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- Note1: `xlsread` and `xlswrite` may not work with the Mac/Linux system. Suggestion: save .xls file as .csv → Use `cs`
- Note2: `csvread()` and `csvwrit()` onl won't not work for csv files with a mix of text and numeric values. Mac use please use the `readtable()` with a 'Fo o specify the data types for each columns.

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readtable and writetable

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- `T = readtable(filename, 'Format', format_specs)` create a table T from column-oriented data such .csv, .txt or .dat.
- `T = readtable('Price.xls','Format', '%D%s%f%d')`
-
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-
  - `'%'` stands a column indicator: 4`'` our data file.
  - 1st column has datetime object (`'`
  - 2nd column is string (`'%s'`).
  - 3rd column is floating number (`'%`
  - 4th column is integer format (`'%d'`)
- `writetable(your_table, filename)` saves the Matlab table to an external data file.

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save and load

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- `save('my_dataset.mat', var1, var2, ...)` saves selected variables (var1, var2, ...) in the current workspace to the matfile

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- matfile is Matlab's proprietary data structure a work with Matlab only. Other programming la difficulties to read data from matfile, so the porta quite limited.

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Exercises 2.a

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- Observe the data format of file `AAPL.csv`, read the data using
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  - still use `csvread()`
  - use `xlsread()` to read both numeric da
  - textual data into `aapl_txt`

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Exercises 2.a

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```
aapl_csv = csvread('AAPL.csv');
%                                                    string,
%                                                a       format
%
%
aapl_csv = csvread('AAPL.csv',1,1
%
% Read with xlsread store num in
[aapl_num, aapl_txt] = xlsread('A
```

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Exercises 2.b

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- Read `AAPL.csv` using `readtable()` function into table name `aapl`
- The format of data in `AAPL.csv` is Datetime, float, float, float, float, integer, float (specification is `'%D%f%f%f%f%d%f'`)
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- `close`
- `turn`

(Ensure the size of returns matches with length of t

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- Save the updated table to a new csv file named `csv`.
- Save the table as `AAPL.mat` matfile. Clear the current workspace, and then load the dataset back to our workspace using `load()`.

Exercises 2b

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```
aapl = readtable('AAPL.csv','Format', '%D%f%f%f%f%d%f');
aapl_ret = tick2ret(aapl.AdjClose);

%                                          rst    ...

r
a
writetable(aapl, 'output_AAPL.csv
```

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```
% save and load
save('AAPL.mat', 'aapl')
clear all
load('AAPL.mat')
```

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Summary

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- https://eduassistpro.github.i
- string, `xlsread` and `readtable` allo

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Simple Time Series Plot

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- Create a simple time-series plot of the adjusted close price of AAPL
-

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```
1 f
2 plot(aapl.Date, aapl.AdjClose)
3 legend('Adjusted Close Price', 'L
4 ylabel('Price')
5 xlabel('Year')
```

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Simple Time Series Plot

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SubPlot

- Now create a figure with 2 sub-plot on AAPL
  - The top panel plots the time-series of the adjusted close price
  - The lower panel is a area plot of the stock volume.

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```
1  subplot(2,1,1)
2  p
3  l                                                    ');
4  y
5  x
6
7  subplot(2,1,2)
8  area(aapl.Date, aapl.Volume);
9  legend('Stock Volume' 'Location'
10 ylabel('Volume')
11 xlabel('Year');
```

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- `subplot(m,n,p)` create a figure with various plots
  - The actual plot codes of plotting comes after `subplot(m,n,p)`
  - `m,n` define the plots layout structure: `m` rows `n` column panels.
  - `p` defines which sub-plot is defined in the following codes.

SubPlot

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Hint: CW Q1-How to separate the data

- Option 1: find the index of the target cut-off date manually and use it for the coding
- Option 2: with `readtable(.)`

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```
                                    t
                                    e      ...
        cut-off date
5  data_is = aapl(1:cut,:); % re
6  data_oos = aapl(cut+1:end,:);
```

- `cut` is the index number for the target cut-off dat
- `aapl(1:cut,:)` reads row 1 up to row `cut` as in-sample data;
- `aapl(cut+1:end,:)` reads row `cut+1` up to the `end` row as out-of-sample data.

Hint: CW Q1-How to separate the data

- Option 3: with `xlsread(.)`, `datenum(.)` and `datestr(.)`

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```
% if [data, txt] = xlsread(.). e.g., exercise 1
t_string = aapl_txt(2:end,1); % read date string
```

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```
data_oos = aapl_num(cut+1:end,:);
```

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- `datenum(.)` converts date strings into numbers necessary for time series analysis and figure plot.
- The second input `'dd/mm/yyyy'` defines the date format in the data.
- `target_date` is the numerical date format for the cut-off date.

TakeAway

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