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BLG 354E Signals and Systems for Computer Engineering - 2020 Spring

Homework-2 Report

1- The code simply takes first 5 numbers of the given input. Fills the remaining unentered numbers with zero according to the largest array (x or h). Using *scipy.signal.convolve*, the output is printed to the console.

a)

```
C:\Users\Burak\Desktop\Signal-Systems\HW2>python HW2-1.py
x =
0 1 2 3
h =
1 1 1 1
y =
[0 1 3 6 6 5 3]
```

b)

```
C:\Users\Burak\Desktop\Signal-Systems\HW2>python HW2-1.py
x =
0 1 2 3
h =
1
y =
[0 1 2 3 0 0 0]
```

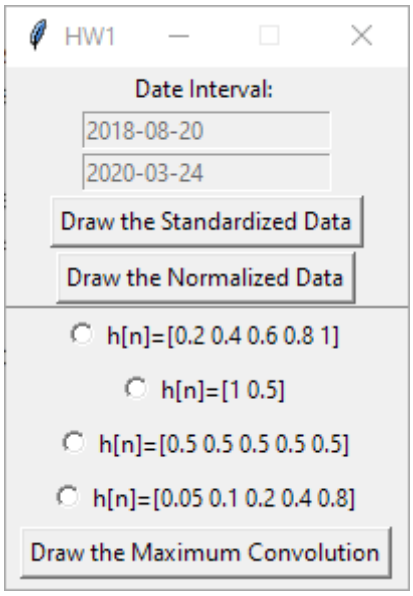
c)

```
C:\Users\Burak\Desktop\Signal-Systems\HW2>python HW2-1.py
x =
0 1 2 3
h =
0 1 2 3
y =
[ 0  0  1  4 10 12  9]
```

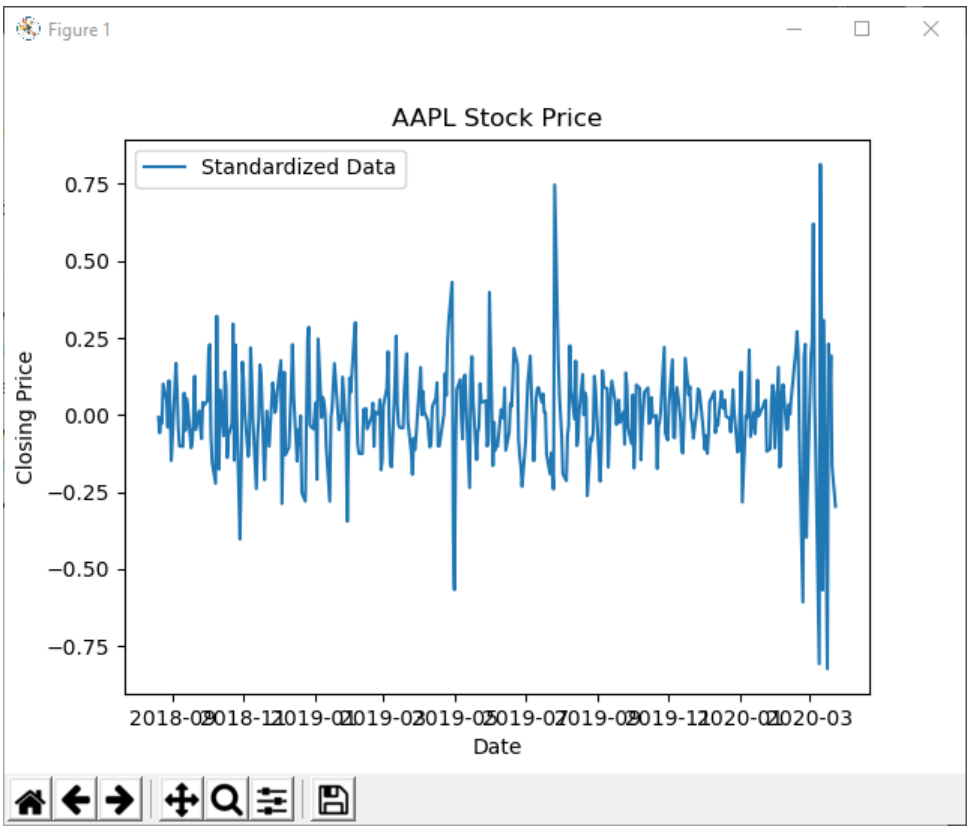
d)

```
C:\Users\Burak\Desktop\Signal-Systems\HW2>python HW2-1.py
x =
1 0 1 2 3
h =
 1 2
y =
[1 2 1 4 7 6 0 0 0]
```

2- Date interval is locked to the last 400 data points. Using buttons given in the GUI, you can draw a graph using specific data types.



a)



b)

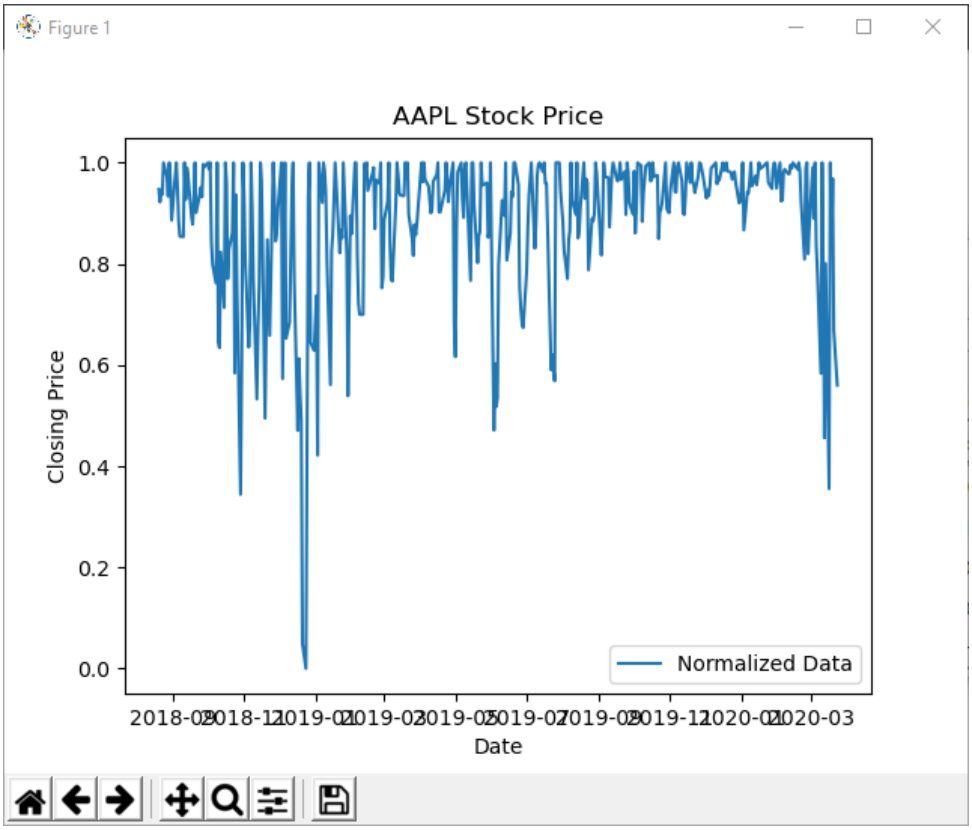


Figure 1
AAPL Stock Price
Closing Price
1.0
0.8
0.6
0.4
0.2
0.0
Normalized Data
2018-03
2018-11
2019-01
2019-03
2019-05
2019-07
2019-09
2019-11
2020-01
2020-03
Date

c)

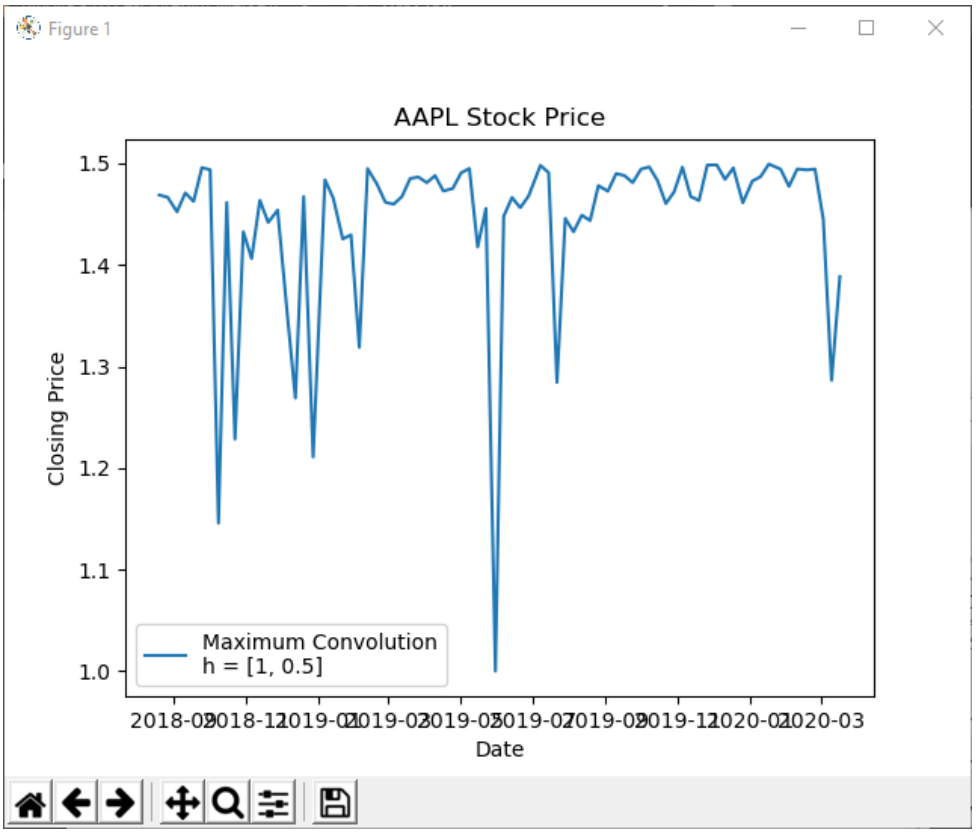


Figure 1
AAPL Stock Price
Closing Price
1.5
1.4
1.3
1.2
1.1
1.0
Maximum Convolution
h = [1, 0.5]
2018-03
2018-11
2019-01
2019-03
2019-05
2019-07
2019-09
2019-11
2020-01
2020-03
Date

Note that you can choose any h arrays from the GUI using radio buttons.

Note: All Python codes are tested in Python 3.8.2, backwards compatibility is not guaranteed.

Used packages:

- *Matplotlib.pyplot*
- *Numpy*
- *Scipy*
- *Tkinter*