

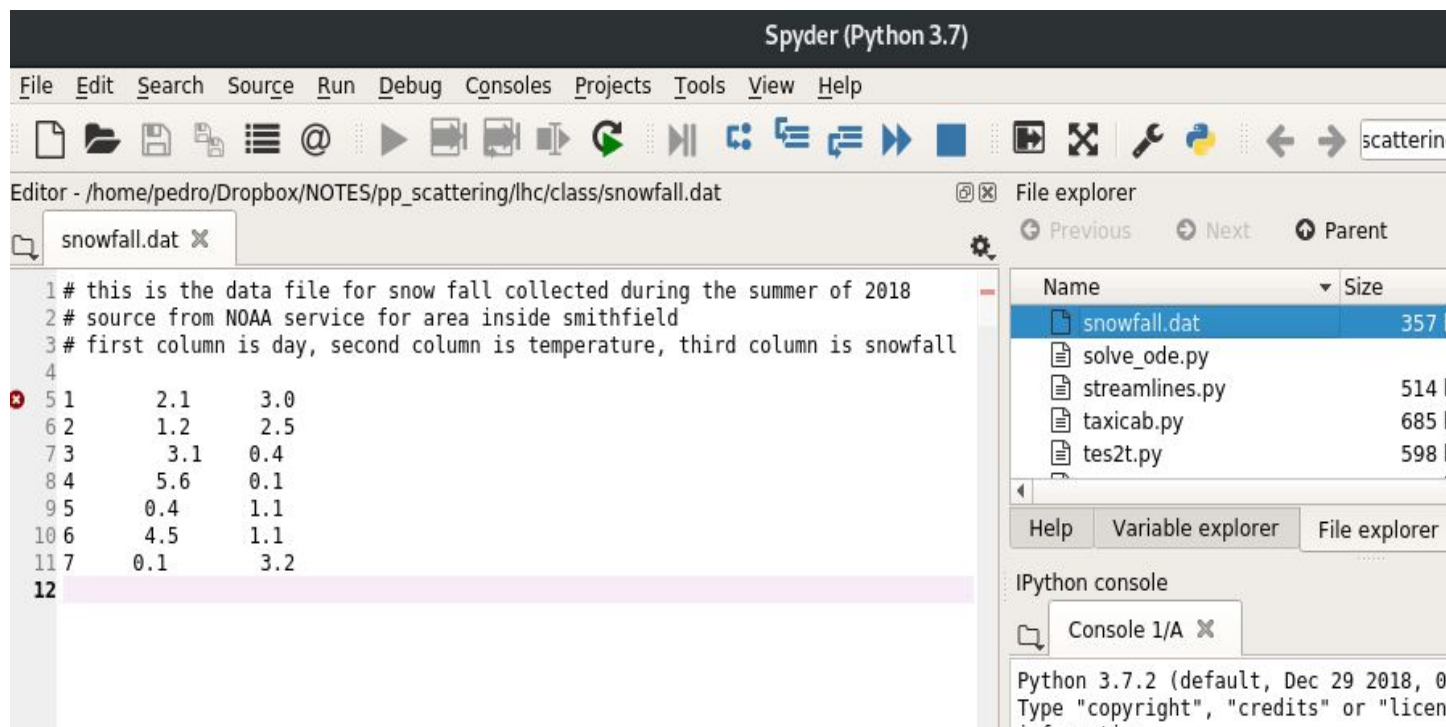
Exam 2

Closed book. 1 cheat sheet allowed. No electronics of any kind permitted.

MUST DOWN YOUR OWN WORK.

100 POINTS - 12:30PM - 1:45PM.

1) (8 points) Given a data file named `snowfall.dat` , shown below on your Spyder program:



```
1 # this is the data file for snow fall collected during the summer of 2018
2 # source from NOAA service for area inside smithfield
3 # first column is day, second column is temperature, third column is snowfall
4
5 1      2.1      3.0
6 2      1.2      2.5
7 3      3.1      0.4
8 4      5.6      0.1
9 5      0.4      1.1
10 6      4.5      1.1
11 7      0.1      3.2
12
```

Name	Size
snowfall.dat	357
solve_ode.py	
streamlines.py	514
taxicab.py	685
tes2t.py	598

Write down what you need to plot snowfall vs day. That is, make a plot from this data file with snowfall on the y-axis and day on the x-axis.

2) (6 points) Without loading the data again, how do i plot only the first 4 days of snow fall?

3) (8 points) CERN's data.csv file resides on URL:
<http://opendata.cern.ch/record/higgsdata.csv> as follows:



depth_m	CO_ppb	CO_ppb_err
0.00	88.3	3.6
4.90	106.3	1.7
10.10	134.3	1.7
14.80	133.7	1.7
19.75	135.9	3.0
27.54	136.8	1.7
34.72	134.8	1.7
50.00	132.8	1.7
57.40	134.3	1.7
59.90	135.9	1.7
61.95	135.2	1.7
63.85	140.4	1.7
65.75	146.1	1.7
68.05	154.5	3.3
70.05	157.0	1.7
72.00	152.4	1.7
74.08	146.7	1.7
75.90	141.7	3.1
77.75	135.9	1.7

By loading the file directly from the web, write down what you need to make a plot of CO_ppb (y-axis) vs depth_m (x-axis).

4) (6 points) How would you label x and y axis from above and include the title and legend?

5) (6 points) How do you do a histogram plot in python? What are the arguments needed to get the basic histogram?

6) (6 points) How do you do get a random number from python?

7) (6 points) How do you do a contour plot in python?

8) (6 points) How do you do a surface plot?

9) (6 points) How do you write a function in python with five arguments?

10) (6 points) How did we solve $x^2 = 1$ with python?

11) (6 points) Using `scipy.integrate import quad`, how would we integrate $\sin(x)$ from 0 to `x_max`?

12) (6 points) How did we load an image into python as an array?

13) (6 points) To make animation, we did : `from matplotlib import animation`
What is needed to get `animation.FuncAnimation()` going?

14) (6 points) How did we integrate $\sin(x)$ using `sympygamma`?

15) (6 points) How did we plot $\sin(x)$ using `sympygamma`?

16) (6 points) Why is Python called Python?

Extra credit (things we've mentioned in class)

17) (2 points) What does URL stand for?

18) (2 points) What does HTTP stand for?

19) (2 points) Where was the web invented and/or who invented the web?