Lab 4

Python Programming: Files and Lists

Assignment 1

Assuming that we built two different numerical models to simulate certain physical event and then did a scientific experiment to validate the model. The experiment measurements and corresponding model simulation results are stored in file, convert_infile1.dat, which look like:

some comment line
1.5

measurements	model1	model2
0.0	0.1	1.0
0.1	0.1	0.188
0.2	0.2	0.25

where the first line is a comment, the second line is value of time step, and the third line contains variable names. The three columns of data are the experiment measurements and simulation results at three time steps.

Write a Python script to separate this file into three different output files which are named ***measurements.dat, model1.dat and model2.dat***. Each one should contain the data with format:

0	0.1
1.5	0.1
3	0.2

where the first column is the time (time step x step size, e.g., 1 x 1.5), the second column is the measured or simulated data. This two-column data file format is standard for most plotting and visualization programs.

Assignment 2

Write an advanced version of ***myjoin*** function. Recall that the ***myjoin*** function of lab exercise 2 only can join strings in a single list object. Try to write a function which can handle an arbitrary number of arguments, but the arguments can only be string, list of string, or tuple of string. The first argument still should represent the delimiter. Below is an example of the model run:

```
my_list = [‘s1’, ‘s2’, ‘s3’]
my_tuple = (‘s4’,’s5’)
ex = myjoin (‘ ’, ‘t1’, ‘t2’, my_list, my_tuple, ‘t3’, ‘t4’)
```

ex = ‘t1 t2 s1 s2 s3 s4 s5 t3 t4’

Hint: you need to know how to define a function with variable arguments and the type of a variable.