

Program development methodology: English first, then Python

1. Define the problem

- A. Write an English description of the input and output **for the entire program**.
(Do not give details about *how you will compute* the output.)
- B. Create test cases **for the entire program**
 - Input *and* expected output
 - Think about simplified input and edge cases

2. Decide upon an algorithm

- A. Implement it in English
 - Write the recipe or step-by-step instructions
- B. Test it using paper and pencil
 - Use small but not trivial test cases
 - Play computer, animating the algorithm
 - Be introspective
 1. Notice what you really do
 2. May be more or less than what you wrote down
 3. Make the algorithm more precise

3. Translate it into code

- A. Implement it in Python
 - Decompose it into logical units (functions)
 - For each function:
 - Name it (important and difficult!)
 - Write its documentation string (its specification)
 - Write tests
 - Write its code
 - Test the function
- B. Test the whole program

Problem

You are given a csv file containing information about delay of all flights, at all major airports in the USA for one particular month.

For a given list of airports, for each airport, considering all flights that originate at that airport, calculate the average delay per day of the month. Print this information to a .txt file and also plot all airports on one graph.

We will plot things using a method that works like this: `plot(x_values, y_values)` where `x_values` and `y_values` are lists of numbers to plot.

Sample Input in a csv file for November 2012:

YEAR	MONTH	DAY_OF_MONTH	CARRIER	TAIL_NUM	FL_NUM	ORIGIN	DEST	DELAY
2012	11	21	DL	N705DL	14	SEA	LAX	2
2012	11	7	UA	N38654	1256	IAH	EWR	1
2012	11	3	AA	N323AA	100	JFK	SEA	5
2012	11	4	AA	N335AA	1	JFK	LAX	0
2012	11	5	AA	N335AA	1	JFK	LAX	2
2012	11	4	UA	N24454	1459	DEN	ORD	5
2012	11	6	DL	N908DL	201	SEA	EWR	7

Sample Output to a text file:

Average Delay in minutes:

Delay for SEA

Day Avg Delay

1 11.74

2 4.41

3 3.19

4 7.38

...

25 17.62

26 6.66

27 5.7

...

Sample Plot:

