Chapter 14

Selecting and Combining Tools

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02/03/12

Your toolkit

- **Regular expressions** To search and replace

- **Shell commands** To interact with your computer at the command li

- **Shell scripts** To combine / automate command-line operations

- **Python programs** For more advanced processing

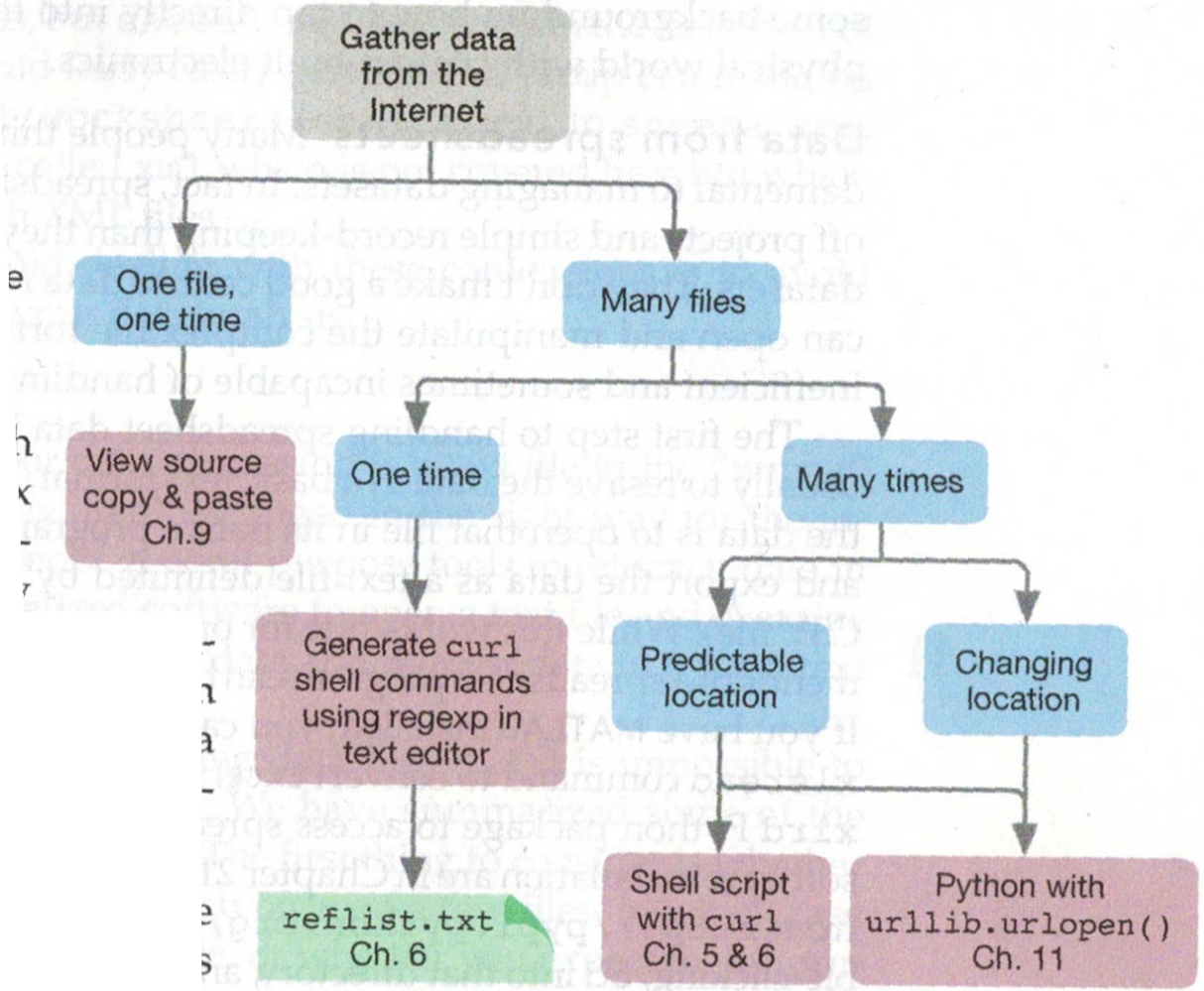
How to chose the convenient tools for a particular task?

It depends on the kind and number of input data
and the amount and frequency of work to perform

Type of input data

- Data from user input	raw-input() sys.argv[]
- Data from the Internet	curl() or wget() commands, urllib2 module
- Data from other programs	Output of other programs can be captured using redirection (> or >>) or the pipe operator (|)
- Data from hardware	Chapter 22 gives background on ho to interact directly with the physical world
- Data from spreadsheets	Not suitable to manage large and complex datasets

Gathering data from the Internet



or >>), or else send the output to

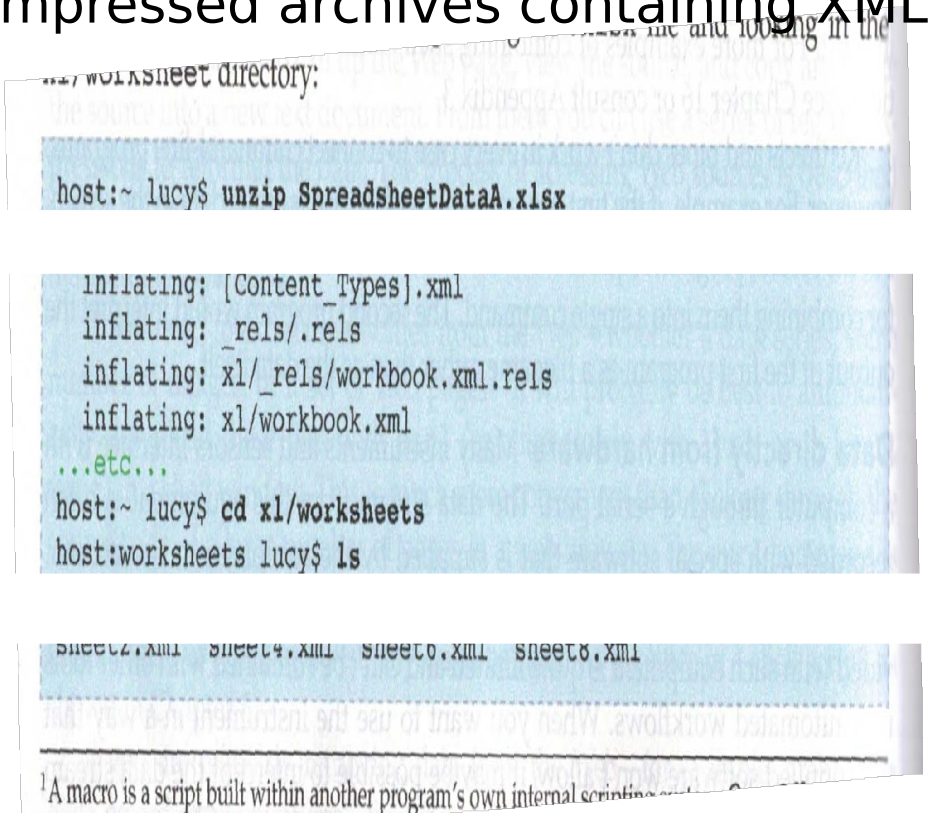
Data from spreadsheets

More suited to small one-off projects and simple record-keeping

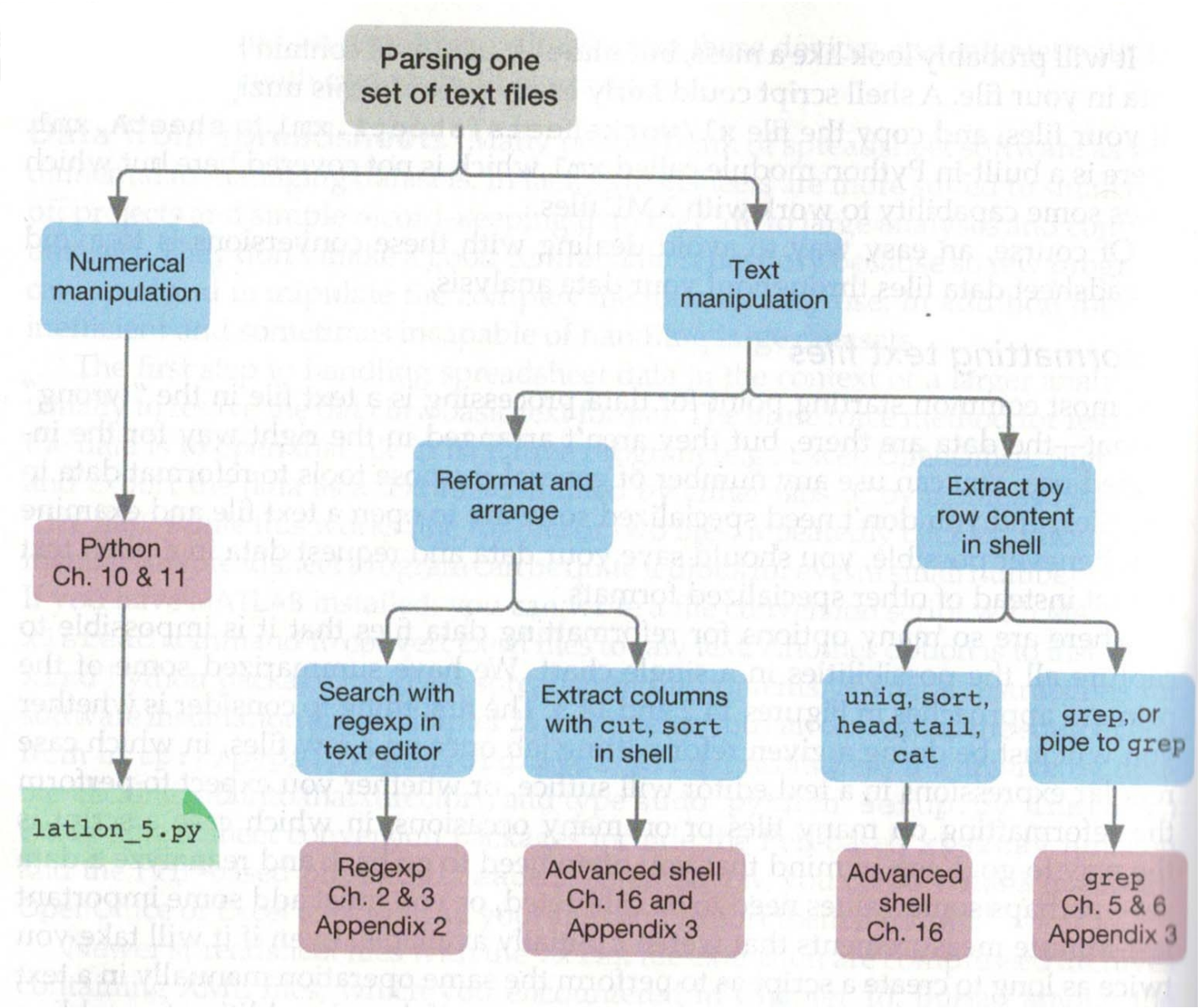
he first step is usually to resave the data in a basic text format (*eg* CSV)

`xlrd` Python package to access spreadsheet file contents

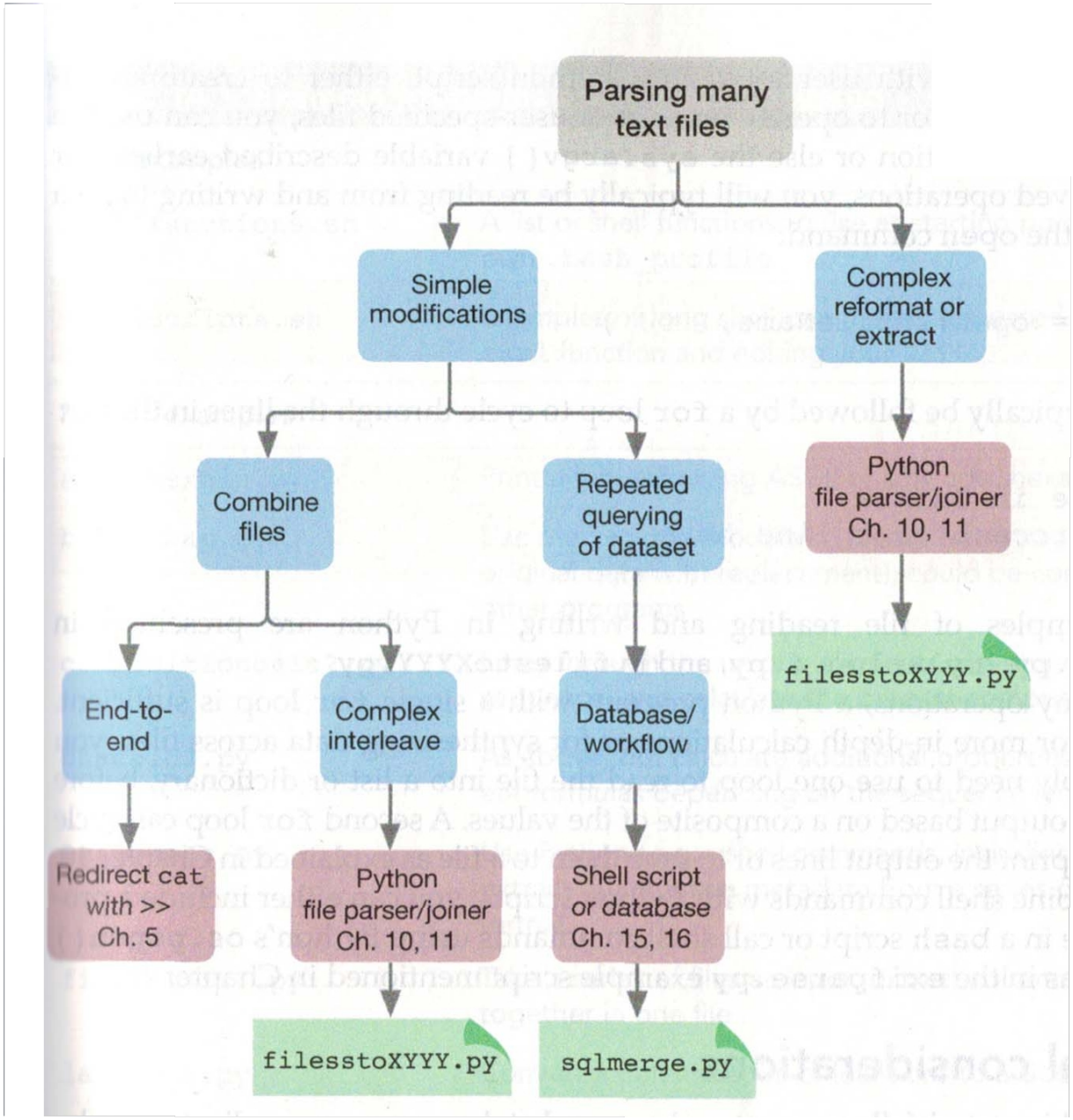
`.xlsx` files are compressed archives containing XML files



Parsing one set of text files



Parsing many text files



Correction of the exercise

- Input data: *html* files obtained from the MWG website

- Output: *csv* file containing names, sequences and order numbers

STEP 1: Create a list of primer sequences and names from 1 file

STEP 2: Extend this list to multiple files (fixed number of files)

STEP 3: Retrieve the filenames from the order numbers in *manage-order.html*

Automatically loop over all orders

STEP 4: Create the list of order numbers

STEP 5: Write the output file

Collecting data from the Internet

The idea is to adapt the script to find the information directly from webpages instead of manually downloading html files

Problem: The website is secured with HTTPS protocol.

https://ecom.mwgdna.com/services/track/manage-orders.tcl

Strategy to solve this problem (to be implemented in your Python script)**:**

1) Change the default User Agent of Python to simulate a classical web browser
2) Use a Python module (*eg.* httplib) that can send HTTP orders to the server
3) Send the username and password to the authentication HTTPS address
4) The server should send a response allowing your program to access your primer data