

## Exercise 02. Interactive Key Construction.

Today we build an interactive, Web-accessible key to conifer genera of MU's campus. This is preparation for the keys you will build to your tree species.

I have a matrix (Excel spreadsheet) of conifer genera along with their scorings for characters useful for their identification. Excel provides us with a convenient way to manage our scoring process and will also allow us to save some time as we format a text (.txt) data file that the program SLIKS can use.

SLIKS stands for "Stinger's Lightweight Interactive Key Software" and is available for free at <http://www.stingersplace.com/SLIKS/>. "Stinger" is a plant systematist who works at the USDA and one of his jobs is managing and programming for the USDA PLANTS Database. Although there are many interactive key programs available, SLIKS is novel in that it runs (via JavaScript) on any computer operating system and through most Web browsers.

### Procedure:

1. Conifer-data.xls contains our datamatrix and character plus character state definitions. Open it.
2. On the first sheet labeled "Datamatrix", execute FILE > SAVE AS > .CSV FILE". Name it "Conifer-data01.csv. A CSV (comma separated variable) file is simple a text version of your spreadsheet where the column divisions are denoted by commas.

Thus, the hypothetical spreadsheet entry:

Pinus (pine)	2	1
LEAF CLUSTERING	borne singly	on short, stubby side shoots

Becomes:

Pinus (pine), 2, 1

LEAF CLUSTERING, borne singly, "on short, stubby side shoots"

Note that in the second row, "on short, stubby side shoots" is enclosed by quotes because it contains a comma. In order for this comma NOT to be recognized as a column delimiter, the entire phrase is automatically enclosed by quotes by Excel when you save as a CSV file.

3. Now save the second sheet in Conifer-data.xls labeled "characters\_in\_rows" as a CSV file with the name Conifer-data02.csv.
4. Create a directory on the computer desktop for yourself (BIOL 471\lastname\) and place these files in this directory. Reassign (i.e., "rename") these CSV files to have a .TXT extension, rather than a .CSV extension.

5. Open from your SLIKS directory, open the file data.js by right clicking on the file and selecting a text editor called NotePad “OPEN WITH > NOTEPAD”. Notepad is a simple program included with all MS Windows operating systems.

The first major block of text lists the characters and their character state definitions for the maple key. Our version of this information is included in Conifer-data02.txt.

You will note that the SLIKS data file data.js that we used earlier is formatted for SLIKS. The formatting is basically an elaborated version of our CSV file. We saved our character definitions information in CSV format to speed up the process of constructing our own SLIKS file. However, we need to convert this conifer file into the same format as the first block of the sample data.js file by adding brackets (“[“ and “]”), adding and deleting some quotes in the right places, and then terminating each line but the last line with commas of their own.

FIRST, execute an “EDIT > REPLACE” command to change all lone commas to a comma enclosed by quotes (Fig. 1).

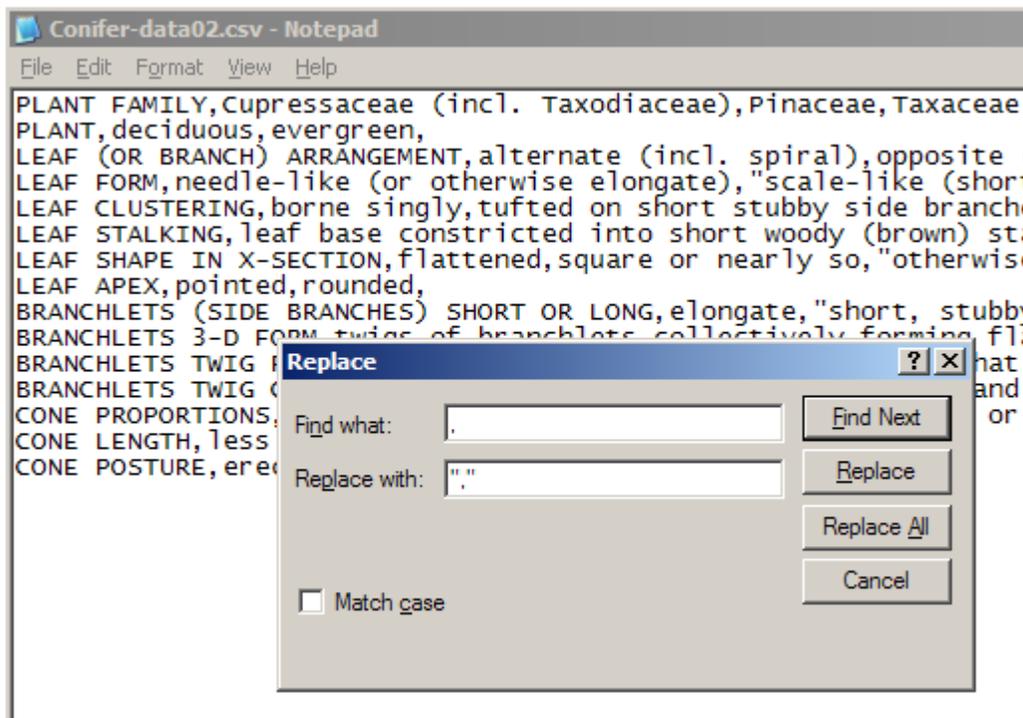


Fig. 1. Converting all lone commas to a comma enclosed by quotes.

SECOND, add the brackets to the beginning and end of each line as in data.js

THIRD, add and delete quotes such that each original column entry is enclosed by just a pair of quotes and separated by a comma.

Save your file as Conifer-key-file.txt, and keep it open.

6. Next, open Conifer-data01.txt in NOTEPAD. It should look like Fig. 2.

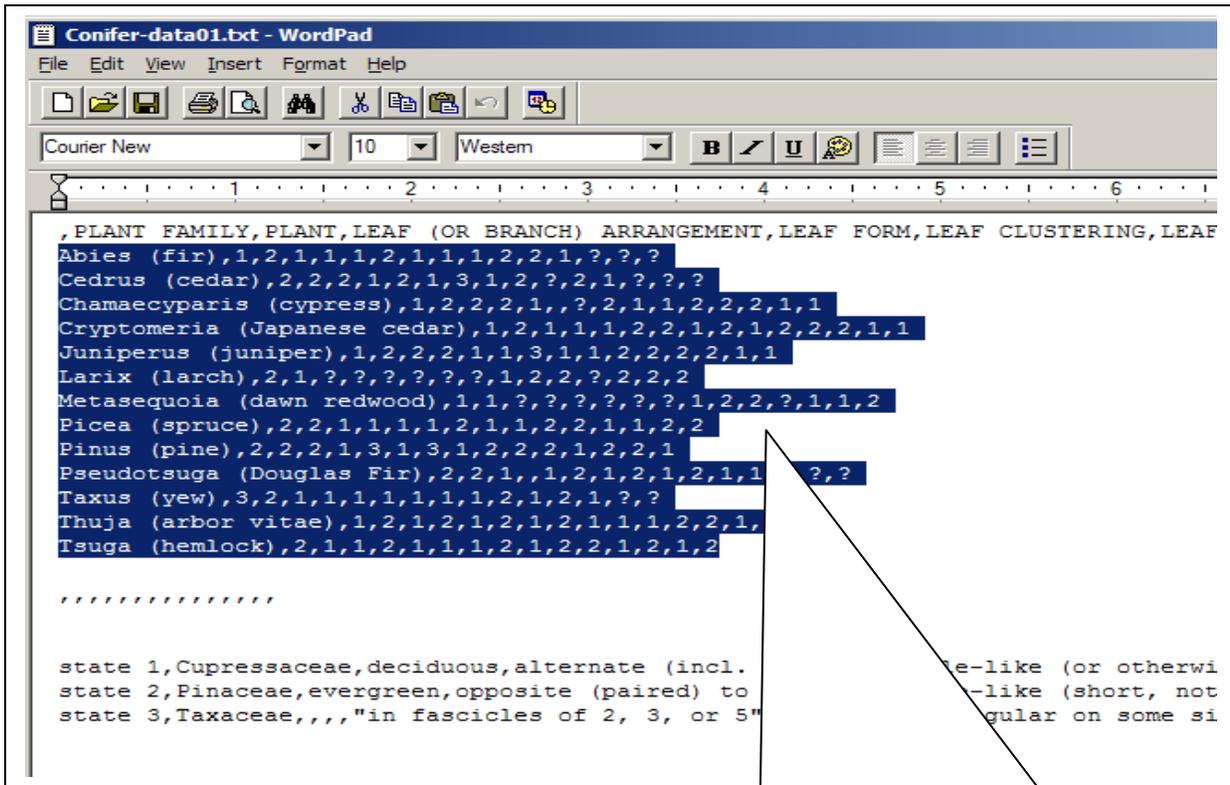


Fig. 2. Conifer-data01.txt as seen in a simple text editor.

7. Delete everything above and below the highlighted datamatrix portion. These character and character state titles were used only during the Excel phase to facilitate our scoring the genera for their numerical character states.

8. Then do a EDIT > REPLACE to replace all commas by commas in quotes (Fig. 3).

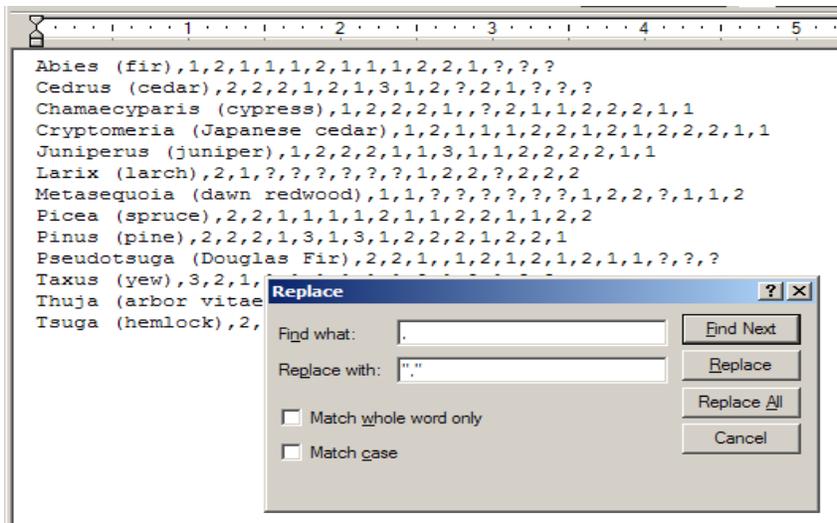


Fig. 3.

Doing so makes your datamatrix look like this (Fig. 4).

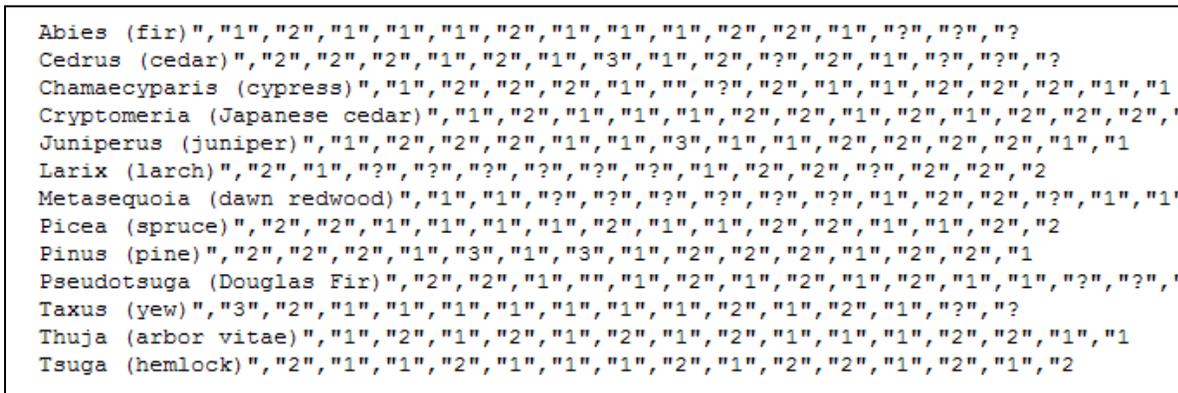


Fig. 4. The transformed data matrix file.

9. Now, copy this data matrix text block into your existing Conifer-key-file.txt, and paste it below the existing characters block, just as in the data.js sample file.

Add formatting (brackets, quotes, commas) to this matrix block in the same manner as before with the characters block.

10. In place of the mashup page reference in the demo file data.js, add at the end of each matrix block line a link that will transform the genus' name when viewed on the Web into a link to a GOOGLE IMAGE search for that genus.

Using our demo example, the line for the red maple would read (all in one line):

