20875 Software Engineering

Tutorial 3

1. A file contains a table. Each line of the file corresponds to a row of the table. Column entries are separated by one or more spaces (there are no empty entries). Using regular expressions, transform this file into a "comma-separated-values" (`.csv`) file: each column is separated from the next by a single comma and no spaces.

2. Take the output of the question above, and transform it into the body of an HTML table. One row should look like follows:
   `<tr><td>entry 1</td><td>entry 2</td> ... <td>last entry</td></tr>`

3. A directory contains Python (`.py`) source code files that use two spaces for indentation. Write a command (using regular expressions) that will modify all the files so that the indentation uses four spaces.

4. Opposite exercise: go from four-space indentation to two-space indentation.

5. We changed the order of the arguments to a function `func(a, b)`. Modify a source code so that every call to `func(a, b)` becomes `func(b, a)`. We assume that `a` and `b` do not contain commas or parentheses.

6. Same question, but `a` may contain one level of parentheses (inside which commas can appear).

7. ComfyUI is a popular user interface for image generation tools. By default, it stores the prompts used (and more generally, the whole generation workflow) in some metadata field of the output images. Write a script that recovers the prompt from a generated image. A generated image `img0.png` is given for reference. For this image, the prompt was the string `PROMPT_GOES_HERE`.