Notes on the solutions of the exercises on Greedy and Simulated Annealing

General notes

It is strongly advised to use meld, or an equivalent program, to look at the differences between similar files (e.g. between different versions of the same code, like `"LatinSquare1.py"` and `"LatinSquare2.py"`).

Also, the code is heavily commented. Be sure to read the comments and understand what's going on in the code and why.

Associations between the files and the exercises

- The files `"Greedy.py"`, `"SimAnn.py"`, `"TSP.py"` and `"tsprun.py"` are the same files that had been uploaded at the end of the lectures.
- Most other files are referred to the Greedy exercises. When unspecified, "Exercise X" means "the Exercises X in greedy_exercises.pdf". However, the test scripts all use the Simulated Annealing solver.
- The file `"the_wrong_move.py"` is the solution to Exercise 2
- The files `"TSP_SC.py"` and `"tspscrun.py"` are the solution to Exercise 3. The files `"TSP_both.py"` and `"tspbothrun.py"` are the same solution, but to the more advanced version which uses inheritance and implements both move schemes (cross-links and swap-cities). Also, `"tspbothrun.py"` tests both schemes on the same problem instance, using the code in `"TSP_both.py"`.
- The files `"LatinSquare1.py"` and `"lsq1run.py"` are the solution to Exercise 4. The solutions to Exercises 5 and 6 are called the same, with "2" and "3" in the names instead of "1". Each version builds on the previous one. Version "3"

is basically a one-line modification of version “2”. The directory `"verymuchadvanced"` contains a solution to the puzzle in Exercise 4 (although it’s actually a modification of the solution of Exercise 6, it can be used in all exercises from 4 up to 9); it’s only intended for hardcore enthusiasts.

- The files `"Sudoku.py"` and `"sudokurun.py"` are the solutions to Exercise 7. The Sudoku class is derived from the one in `"LatinSquare3.py"`, as suggested in the exercise. Additionally, the `__repr__` method was rewritten to make it nicer, but this is largely unnecessary.
- The files `"Sudoku_Solver1.py"` and `"sudokusolver1run.py"` are the solution to Exercise 8. Same for Exercise 9, with the change “1” → “2” in the names.
- The files `"MaxCut.py"` and `"maxcutrun.py"` are the solutions to Exercise 10.
- The files `"MagicSquares.py"` and `"magicsquarerun.py"` are the solutions to Exercise 11.
- Exercises 3 and 4 of “simann_exercises.pdf” are not really exercises with a proper solution. Anyway, an example of what one could do is in the sub-directory `"enhanced"`, where there is an enhanced version of `"SimAnn.py"` with some additional comments. In that directory, there is a file `"Sudoku.py"` which is just a copy of the previous `"Sudoku_Solver2.py"`, and a file `"sudokurun.py"` which is basically the same as `"sudokusolver2run.py"` but using hooks to exit early in case a solution is found.