Lab. 11 - Graph Problems (2)

Read the graphs given in the attached files (already given in the previous lab class) into their adjacency matrix, namely

- graph_10_10.txt → G_10_10
- graph_10_50.txt → G_10_50
- graph_10_90.txt → G_10_90
- graph_15_10.txt → G_15_10
- graph_15_50.txt → G_15_50
- graph_15_90.txt → G_15_90
- graph_20_10.txt → G_20_10
- graph_20_50.txt → G_20_50
- graph_20_90.txt → G_20_90
- graph_50_90.txt → G_50_90

11.1 TSP – combinatorial search

Solve the TSP problem with function discussed in the lecture 11 (provided in file lect_11.py)

tsp(G, heur, satCost)

for the graphs G, given above, and different values of parameters heur and satCost. Remind that

- (bool) heur: specifies whether heuristic search is used; and
- (int) satCost: interrupts search when a solution with cost less or equal to satCost is obtained.

11.2 TSP – local search

Compare the solutions obtained in the previous problem with those obtained by local search. To do so, examine function (also provided in file lect_11.py)

```
tsp_rnd(G, n_iterations)
```

where the best solution obtained in n_iterations. Compare the efficiency and quality of results obtained with bot functions, for graphs with 10, 15 and 20 nodes (or more).

Note: Find below the best cost solutions for the graphs above:

- G_10_10 → inf
- G_10_50 → 454
- G_10_90 → 201
- G_15_10 → inf
- G_15_50 → 294
- G_15_90 → 173
- G_20_10 → inf
- G_20_50 → 521
- G_20_90 → 354
- G_50_90 → 236