Programming Task Ant Coloncy Optimization

TSP Programming Task

- solve TSP using Basic ACO
- as usual, decompose your ACO implementation
  - Initialization
  - Solution Generation (parameter for number of ants)
  - Evaporation (parameter for evaporation)
  - Intensification (parameter for intensification)
- implement solution generation with
  1. distance heuristic (parameters α, β)
  2. distance heuristic with fixed parameters $\alpha = 1, \beta = 0$
  3. distance heuristic with fixed parameters $\alpha = 1, \beta = 1$

  (note that you do not have to compute powers for 2 and 3)
- divide work among group members

TSP Programming Task

- make a few experiments with different modules and different parameter settings for three benchmark problems
- document your findings and prepare a small presentation (5-10 minutes)
- send me a compressed archive containing
  1. slides (structure findings in table or other visualization)
  2. source files/ notebook
  3. assignment of tasks to group members

Benchmark Problems

You find three benchmark problems with 150 cities each in stud.ip

- Problem 1.tsp
  - Best HC solution found: 6,376 (FCHC, Transposition)
  - Best ACO solution found: 3,632
  - Strict (probably not tight) Lower Bound: 2,502
- Problem 2.tsp
  - Best HC solution found: 4,315 (FCHC, Transposition)
  - Best ACO solution found: 2,878
  - Strict (probably not tight) Lower Bound: 1,971
- Problem 3.tsp
  - Best HC solution found: 4,508 (FCHC, Transposition)
  - Best ACO solution found: 2,617
  - Strict (probably not tight) Lower Bound: 1,728