Lesson 4: Implement a simulated annealing using ParadisEO

1 Example

The archive `paradiseo_practices_0208.tgz` installed on your computer contains a simulated annealing implemented using ParadisEO-MO (see `simulated_annealing` in the **build/lesson4** directory).

To run it, please go in **build/lesson4** and start the program `simulated_annealing` by giving one of the TSP instances located in **tsp/benchs**.

When entering `./simulated_annealing ../../tsp/benchs/berlin52.tsp`, you should end up with the following outputs:

```
>> Loading [../tsp/benchs/berlin52.tsp]
[From] -29414 52 1 20 40 48 9 27 13 22 5 28 24 29 21 26 44 38 33 37 45 31 42 18 12 3 14
36 30 6 51 32 17 11 0 34 4 10 4350 16 2 23 35 19 46 49 39 25 15 41 8 7 47
[To] -8724 52 1 6 41 29 22 19 49 15 28 46 13 51 12 25 26 27 11 10 50 32 42 9 8 7 40 18
44 2 16 20 30 17 21 0 31 48 35 3438 39 37 36 33 43 45 24 3 5 4 14 23 47
```

The printed-out results show for the initial best solution and the final one :
-the length of the route
-the number of cities
-the route itself (notice that the city index starts from 0).

2 Study the simulated annealing dedicated components

Study the `simulated_annealing.cpp` file located in the **lesson4** directory using :

- the ParadisEO-MO API documentation available at :
  http://paradiseo.gforge.inria.fr/addon/paradiseo-mo/doc/index.html
- the source files located in the **tsp/src/** directory

3 Customize the simulated annealing

Make a backup (copy) of the cpp file `simulated_annealing.cpp`. You can now modify the original `simulated_annealing.cpp` and use the existing makefiles to compile it.

Edit and modify the `simulated_annealing.cpp` file :

- Change the cooling schedule components and parameters.
- Customize the temperature decrease process and try to obtain another good solution.

To compile `simulated_annealing.cpp`,you should use the command `make` from **build/lesson4**.

Finally, test your modifications on several TSP instances (`berlin52`, `eil101` ...) and compare the results you get.