

Genetic Algorithm Encoding and Operators (Pen & Paper)

A scientist plans her visiting-journey to cooperating towns in her country. In order to minimize the travel costs and travel time a thorough plan is needed that tells her a near-optimal visiting order.

To solve this optimization problem, Genetic Algorithms can be used.

Design an encoding and a fitness function that is suitable to the domain problem. Furthermore, show the change to two individuals of your choice after (i) mutation and (ii) crossover was applied.

You can assume that a distance table (Fig. 1 right) is available for this task.

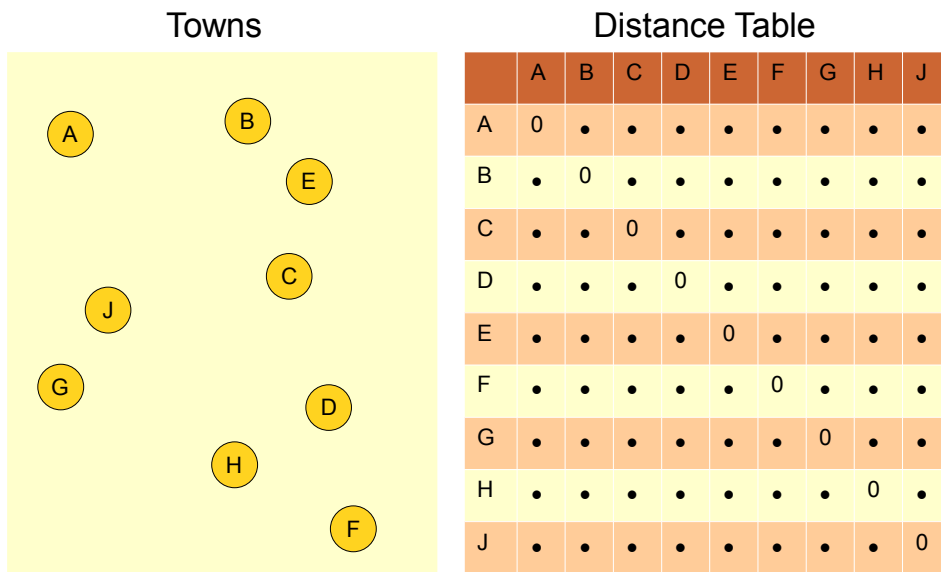


Fig. 1:

Cross Over

The materials section contains the Tangram-Demo as a Java-Application. This is a Genetic-Algorithm implementation of the Tangram-Problem where several geometrical objects must be placed on a desk. The program already contains a Tournament-Selection and a Mutation operation as well.

The class “World.java” contains the method “evolve”. Implement the one-point-Crossover Operation.

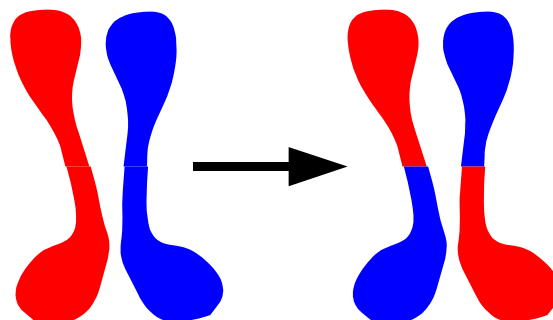


Fig. 2.: Illustration of one-Point crossover.