Problem description

We are given three columns of integers with a row for each node. The first two columns contain *x* and *y* coordinates of the node positions in a plane. The third column contains node values. We are also given the minimum required total value of selected nodes in the first row. The goal is to select a subset of nodes with at least the minimum total value and form a Hamiltonian cycle (closed path) through this subset of nodes such that the total length of the path is minimized.

The distances between nodes are calculated as Euclidean distances rounded **mathematically** to integer values. The distance matrix should be calculated just after reading an instance and then only the distance matrix (no nodes coordinates) should be accessed by optimization methods to allow instances defined only by distance matrices.