Format Description

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1 Single Picker Routing Problem and Single Picker Routing Problem with Scattered Storage

As an example, we explain the instance file `example_sprp.txt`. The warehouse layout is depicted in Figure 1 and a detailed instance description can be found in Table 1. The instance file `example_sprp.txt` is as follows:

```
NAME : example_sprp.txt
TYPE : Single_picker_routing
COMMENT : Weidinger (2018); Goeke and Schneider (2021); Heßler and Irnich (2022)
LAYOUT : single-block
NUM_AISLES : 4
NUM_CELLS : 10
DEPOT_AISLE : 2
DEPOT_LOCATION : bottom
DISTANCE_AISLE_TO_AISLE : 3
DISTANCE_CELL_TO_CELL : 1
DISTANCE_TOP_TO_CELL : 1
DISTANCE_BOTTOM_TO_CELL : 1
DISTANCE_TOP_OR_BOTTOM_TO_DEPOT : 1.5
ARTICLE_SECTION
NUM_ARTICLES : 13
ID 0
ID 1
ID 2
ID 3
ID 4
ID 5
ID 6
ID 7
ID 8
ID 9
ID 10
ID 11
ID 12
SKU_SECTION
NUM_SKUS : 13
ID 0 AISLE 0 CELL 2 QUANTITY 1 LEFT_RIGHT_HAND_SIDE left
ID 1 AISLE 0 CELL 4 QUANTITY 1 LEFT_RIGHT_HAND_SIDE left
ID 2 AISLE 0 CELL 8 QUANTITY 1 LEFT_RIGHT_HAND_SIDE left
ID 3 AISLE 1 CELL 0 QUANTITY 1 LEFT_RIGHT_HAND_SIDE left
ID 4 AISLE 1 CELL 2 QUANTITY 1 LEFT_RIGHT_HAND_SIDE right
ID 5 AISLE 1 CELL 8 QUANTITY 1 LEFT_RIGHT_HAND_SIDE left
ID 6 AISLE 2 CELL 0 QUANTITY 1 LEFT_RIGHT_HAND_SIDE left
ID 7 AISLE 2 CELL 9 QUANTITY 1 LEFT_RIGHT_HAND_SIDE left
ID 8 AISLE 3 CELL 1 QUANTITY 1 LEFT_RIGHT_HAND_SIDE left
ID 9 AISLE 3 CELL 3 QUANTITY 1 LEFT_RIGHT_HAND_SIDE left
```

```
ID 10 AISLE 3 CELL 5 QUANTITY 1 LEFT_RIGHT_HAND_SIDE right
ID 11 AISLE 3 CELL 7 QUANTITY 1 LEFT_RIGHT_HAND_SIDE left
ID 12 AISLE 3 CELL 9 QUANTITY 1 LEFT_RIGHT_HAND_SIDE left
ORDER_SECTION
NUM_ARTICLES : 13
ID 0 QUANTITY 1
ID 1 QUANTITY 1
ID 2 QUANTITY 1
ID 3 QUANTITY 1
ID 4 QUANTITY 1
ID 5 QUANTITY 1
ID 6 QUANTITY 1
ID 7 QUANTITY 1
ID 8 QUANTITY 1
ID 9 QUANTITY 1
ID 10 QUANTITY 1
ID 11 QUANTITY 1
ID 12 QUANTITY 1
EOF
```

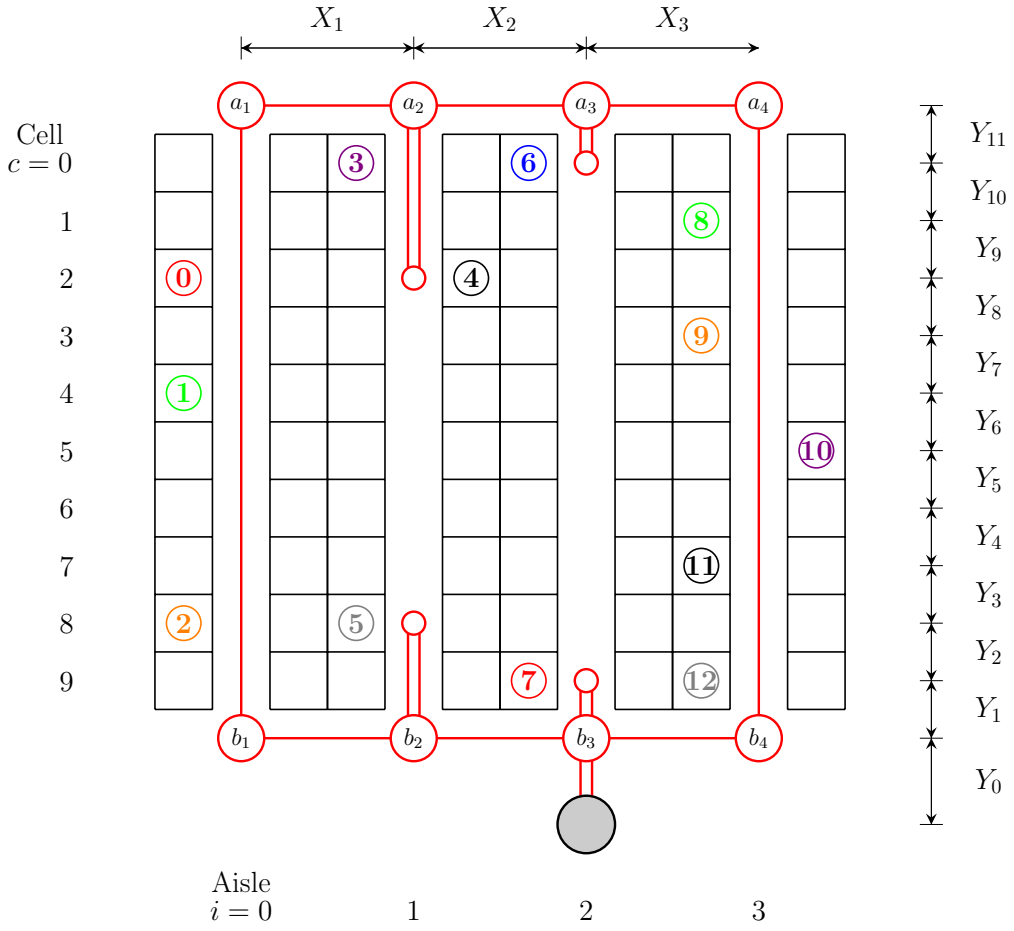

Figure 1: Warehouse layout and optimal solution of the instance `example_sprp.txt`.

Name	Description
NAME	instance name
TYPE	problem type
COMMENT	authors of the instance
LAYOUT	warehouse layout
NUM_AISLES	number of aisles
NUM_CELLS	number of cells
DEPOT_AISLE	depot aisle
DEPOT_LOCATION	depot location (top or bottom)
DISTANCE_AISLE_TO_AISLE	distance between neighboring aisles, the value corresponds to X_1, X_2, X_3 in Figure 1
DISTANCE_CELL_TO_CELL	distance between neighboring cells, the value corresponds to $Y_2, Y_3, \ldots, Y_{10}$ in Figure 1
DISTANCE_TOP_TO_CELL	distance between the top cross-aisle and the first cell, the value corresponds to Y_{11} in Figure 1
DISTANCE_BOTTOM_TO_CELL	distance between the bottom cross-aisle and the first cell, the value corresponds to Y_1 in Figure 1
DISTANCE_TOP_OR_BOTTOM_TO_DEPOT	distance between the depot and the top or bottom cross-aisle, the value corresponds to Y_0 in Figure 1
ARTICLE_SECTION	begin of the article section
NUM_ARTICLES	number of articles
ID	article id
SKU_SECTION	begin of the SKU section
NUM_SKUS	number of SKUs
AISLE	aisle number i (see Figure 1)
CELL	cell number c (see Figure 1)
QUANTITY	available or demanded quantity
LEFT_RIGHT_HAND_SIDE	left or right
ORDER_SECTION	begin of the order section
NUM_ARTICLES	number of articles
EOF	end of file

Table 1: Detailed description.