

Solution Files Documentation

A Goal-Driven Ruin and Recreate Heuristic for the 2D Variable-Sized
Bin Packing Problem with Guillotine Constraints

Introduction

Results for both 2BP|O|G and 2BP|R|G for all four datasets are included. The JSON files are classified and formatted as <https://github.com/Oscar-Oliveira/OR-Datasets> with some minor extensions in order to represent solutions.

Extensions

- For each item and object (bin) a "Reference" field has been added. This field is used for referencing an item or bin in a cutting pattern.
- A field "CuttingPatterns" has been added. This contains the solution in the form of an array of cutting patterns.

Cutting pattern example

To illustrate how a cutting pattern is represented, a simple example is shown below. The patterns are structured in the same hierarchical way as described in the paper (structure, item and leftover nodes). Figure 1 shows a visual representation of the pattern, while Listing 1 lists the JSON code for the same pattern.

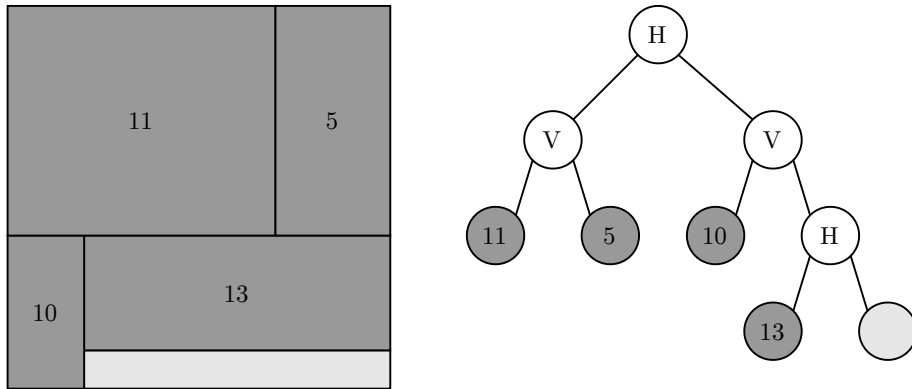


Figure 1: Visual representation of example cutting pattern

Listing 1: JSON representation of example cutting pattern

```
{
  "Object": 1,
  "Root": {
    "Height": 10,
    "Length": 10,
    "Orientation": "H",
    "Type": "Structure",
    "Children": [
      {
        "Height": 6,
        "Length": 10,
        "Orientation": "V",
        "Type": "Structure",
        "Children": [
          {
            "Height": 6,
            "Length": 7,
            "Item": 11,
            "Type": "Item"
          },
          {
            "Height": 6,
            "Length": 3,
            "Item": 5,
            "Type": "Item"
          }
        ]
      }
    ],
  },
  {
    "Height": 4,
    "Length": 10,
    "Orientation": "V",
    "Type": "Structure",
    "Children": [
      {
        "Height": 4,
        "Length": 2,
        "Item": 10,
        "Type": "Item"
      }
    ],
  },
}
```

```

{
  "Height": 4,
  "Length": 8,
  "Orientation": "H",
  "Type": "Structure",
  "Children": [
    {
      "Height": 3,
      "Length": 8,
      "Item": 13,
      "Type": "Item"
    },
    {
      "Height": 1,
      "Length": 8,
      "Type": "Leftover"
    }
  ]
}

```