

Package ‘binpackr’

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Title Fast 1d Bin Packing

Version 0.2.0

Description Implements the First Fit Decreasing algorithm to achieve one dimensional heuristic bin packing. Runtime is of order $O(n \log(n))$ where n is the number of items to pack. See “The Art of Computer Programming Vol. 1” by Donald E. Knuth (1997, ISBN: 0201896834) for more details.

License GPL (≥ 3)

Encoding UTF-8

RoxygenNote 7.3.3

LinkingTo cpp11

Suggests testthat ($\geq 3.0.0$), hedgehog (≥ 0.1), BBmisc (≥ 1.13)

Config/testthat/edition 3

URL <https://github.com/lshneiderbauer/binpackr>,
<https://lshneiderbauer.github.io/binpackr/>

BugReports <https://github.com/lshneiderbauer/binpackr/issues>

NeedsCompilation yes

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Repository CRAN

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`bin_pack_ffd`*1D bin packing "First Fit (Decreasing)" algorithm*

Description

1D bin packing "First Fit (Decreasing)" algorithm

Usage

```
bin_pack_ffd(x, cap, sort = TRUE)
```

Arguments

<code>x</code>	<code>[numeric()]</code> A numeric vector of item sizes to be fit into bins. Each value represents the size of an atomic item. If a value is NA it is ignored and the corresponding result will also be NA.
<code>cap</code>	<code>[numeric(1)]</code> A scalar value representing the bin capacity in units of values in <code>x</code> . If an individual item size is above <code>cap</code> a single bin is reserved for this item.
<code>sort</code>	<code>[logical(1)]</code> Determines whether the input vector should be sorted in decreasing order before applying the "First Fit" algorithm ("First Fit Decreasing").

Details

See [Wikipedia](#) for a concise introduction or "The Art of Computer Programming Vol. 1" by Donald E. Knuth (1997, ISBN: 0201896834) for more details.

Value

`[integer()]` An integer vector of labels of the same length as `x`. The integer label at position `i` determines the assignment of the `i`th item with size `x[i]` to a bin. If the value `x[i]` is NA the result label at position `i` will also be NA.

Examples

```
# Generate a vector of item sizes
x <- sample(100, 1000, replace = TRUE)

# Pack those items into bins of capacity 130
bins <- bin_pack_ffd(x, cap = 130)

# Number of bins needed to pack the items
print(length(unique(bins)))
```

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