

Package ‘fracture’

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Title Convert Decimals to Fractions

Version 0.2.1

Description Provides functions for converting decimals to a matrix of numerators and denominators or a character vector of fractions. Supports mixed or improper fractions, finding common denominators for vectors of fractions, limiting denominators to powers of ten, and limiting denominators to a maximum value. Also includes helper functions for finding the least common multiple and greatest common divisor for a vector of integers. Implemented using C++ for maximum speed.

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URL <https://fracture.rossellhayes.com/>,
<https://github.com/rossellhayes/fracture>

BugReports <https://github.com/rossellhayes/fracture/issues>

Depends R (>= 2.10)

Imports Rcpp

Suggests covr, testthat (>= 3.0.0), withr

LinkingTo Rcpp

Encoding UTF-8

RoxygenNote 7.2.0

SystemRequirements C++11

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fracture	<i>Convert decimals to a character vector of fractions</i>
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Description

Convert decimals to a character vector of fractions

Usage

```
fracture(
  x,
  ...,
  denom = NULL,
  base_10 = FALSE,
  common_denom = FALSE,
  mixed = FALSE,
  max_denom = 1e+07
)
```

as.fracture(x)

is.fracture(x)

Arguments

x	A vector of decimals or, for as.fracture(), a matrix created by frac_mat()
...	These dots are for future extensions and must be empty.
denom	If denom is not <code>NULL</code> , all fractions will have a denominator of denom. This will ignore all other arguments that affect the denominator.
base_10	If <code>TRUE</code> , all denominators will be a power of 10.
common_denom	If <code>TRUE</code> , all fractions will have the same denominator. If the least common denominator is greater than max_denom, max_denom is used.
mixed	If <code>TRUE</code> , integer components will be displayed separately from fractional components for x values greater than 1. If <code>FALSE</code> , improper fractions will be used for x values greater than 1.

`max_denom` All denominators will be less than or equal to `max_denom`.
 If `base_10` is TRUE, the maximum denominator will be the largest power of 10 less than `max_denom`.
 A `max_denom` greater than the inverse square root of [machine double epsilon](#) will produce a warning because floating point rounding errors can occur when denominators grow too large.

Value

A character vector.

See Also

[frac_mat\(\)](#) to return a matrix of numerators and denominators.

Examples

```
x <- (6:1) / (1:6)

fracture(x)
fracture(x, common_denom = TRUE)

fracture(x, base_10 = TRUE)
fracture(x, base_10 = TRUE, max_denom = 100)
fracture(x, base_10 = TRUE, common_denom = TRUE)
fracture(x, base_10 = TRUE, common_denom = TRUE, max_denom = 100)

fracture(x, mixed = TRUE)
fracture(x, mixed = TRUE, common_denom = TRUE)
fracture(x, mixed = TRUE, base_10 = TRUE)
fracture(x, mixed = TRUE, base_10 = TRUE, max_denom = 100)
fracture(x, mixed = TRUE, base_10 = TRUE, common_denom = TRUE)
fracture(x, mixed = TRUE, base_10 = TRUE, common_denom = TRUE, max_denom = 100)
```

frac_lcm

Least common multiple and greatest common divisor

Description

Least common multiple and greatest common divisor

Usage

```
frac_lcm(..., max = 1e+07)

frac_gcd(...)
```

Arguments

... Integer vectors or vectors that can be coerced to integer.
max If the least common multiple is greater than max, max is returned instead.

Value

An integer.

Examples

```
frac_lcm(1, 2, 3, 4, 5, 6)
x <- 1:6
frac_lcm(x)
frac_lcm(x, 7)

frac_gcd(12, 42, 60)
y <- c(12, 42, 60)
frac_gcd(y)
frac_gcd(y, 39)
```

frac_mat

Convert decimals to a matrix of numerators and denominators

Description

Convert decimals to a matrix of numerators and denominators

Usage

```
frac_mat(
  x,
  ...,
  denom = NULL,
  base_10 = FALSE,
  common_denom = FALSE,
  mixed = FALSE,
  max_denom = 1e+07
)

as.frac_mat(x)

is.frac_mat(x)
```

Arguments

x	A vector of decimals or, for <code>as.frac_mat()</code> , a character vector created by <code>fracture()</code>
...	These dots are for future extensions and must be empty.
denom	If <code>denom</code> is not <code>NULL</code> , all fractions will have a denominator of <code>denom</code> . This will ignore all other arguments that affect the denominator.
base_10	If <code>TRUE</code> , all denominators will be a power of 10.
common_denom	If <code>TRUE</code> , all fractions will have the same denominator. If the least common denominator is greater than <code>max_denom</code> , <code>max_denom</code> is used.
mixed	If <code>TRUE</code> , integer components will be displayed separately from fractional components for <code>x</code> values greater than 1. If <code>FALSE</code> , improper fractions will be used for <code>x</code> values greater than 1.
max_denom	All denominators will be less than or equal to <code>max_denom</code> . If <code>base_10</code> is <code>TRUE</code> , the maximum denominator will be the largest power of 10 less than <code>max_denom</code> . A <code>max_denom</code> greater than the inverse square root of <code>machine double epsilon</code> will produce a warning because floating point rounding errors can occur when denominators grow too large.

Value

A matrix with the same number of columns as the length of `x` and rows for integers (if `mixed` is `TRUE`), numerators, and denominators.

See Also

`fracture()` to return a character vector of fractions.

Examples

```
x <- (6:1) / (1:6)

frac_mat(x)
frac_mat(x, common_denom = TRUE)

frac_mat(x, base_10 = TRUE)
frac_mat(x, base_10 = TRUE, max_denom = 100)
frac_mat(x, base_10 = TRUE, common_denom = TRUE)
frac_mat(x, base_10 = TRUE, common_denom = TRUE, max_denom = 100)

frac_mat(x, mixed = TRUE)
frac_mat(x, mixed = TRUE, common_denom = TRUE)
frac_mat(x, mixed = TRUE, base_10 = TRUE)
frac_mat(x, mixed = TRUE, base_10 = TRUE, max_denom = 100)
frac_mat(x, mixed = TRUE, base_10 = TRUE, common_denom = TRUE)
frac_mat(x, mixed = TRUE, base_10 = TRUE, common_denom = TRUE, max_denom = 100)
```

frac_style	<i>Style a fracture with superscripts and subscripts</i>
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Description

Uses Unicode superscripts and subscripts to format a fracture.

Usage

```
frac_style(fracture, ...)
```

Arguments

fracture	A fracture or a vector to be passed to fracture() .
...	Additional arguments passed to fracture() .

Value

fracture with numerators formatted with Unicode superscripts and denominators formatted with Unicode subscripts.

Examples

```
frac_style(fracture(0.5))  
frac_style(fracture(c(0.5, 1.5), mixed = TRUE))
```

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