Package 'VedicDateTime'

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Type Package

Title Vedic Calendar System

Version 0.1.1

Description Provides platform for Vedic calendar system having several functionalities to facilitate conversion between Gregorian and Vedic calendar systems, and helpful in examining its impact in the time series analysis domain. The background is described in Neeraj Dhanraj Bokde et al. (2021) <doi:10.48550/arXiv.2111.03441>, Karanam L. Ramakumar et al. (2011) <https:archive.org/details/PanchangamCalculations>, K. S. Charak et al. (2012, ISBN:8190100807), Satish BD et al. (2013) <https:github.com/webresh/drik-panchanga>.

URL https://www.neerajbokde.in/viggnette/2022-09-05-VedicDateTime

BugReports https://github.com/prajwalkpatil/VedicDateTime/issues

License GPL (>= 2)

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---

ahargana *ahargana*

Description

ahargana

Usage

```
ahargana(jd)
```

Arguments

jd	Julian day number

Value

Ahargana

Examples

```
ahargana(2459778)
ahargana(swephR::swe_julday(2022,7,14,0,swephR::SE$GREG_CAL))
```

---

day_duration *day_duration*

Description

Duration of the day for a given place and time

Usage

```
day_duration(jd, place)
```

Arguments

jd	Julian day number
place	Vector containing latitude, longitude and timezone

Value

Vector containing the length of the day & in dms

Examples

```
day_duration(2459778,c(15.34, 75.13, +5.5))
day_duration(swephR::swe_julday(2022,7,14,0,swephR::SE$GREG_CAL),c(15.34, 75.13, +5.5))
```

elapsed_year *elapsed_year*

Description

elapsed_year

Usage

```
elapsed_year(jd, maasa_num)
```

Arguments

jd	Julian Day number
maasa_num	Number indicating the Maasa

Value

A vector containing Kali, Saka, and Vikram Samvat

Examples

```
elapsed_year(2459778,2)
```

---

from_dms *from_dms*

Description

Convert degrees, minutes, and seconds to decimal degrees

Usage

```
from_dms(degs, mins, secs)
```

Arguments

degs	Degrees
mins	Minutes
secs	Seconds

Value

Degrees as a decimal number

Examples

```
from_dms(30,15,50)
```

get_karana_name *get_karana_name*

Description

Get name(s) of the Karana for given Julian day number and place.

Usage

```
get_karana_name(jd, place)
```

Arguments

jd	Julian day number
place	Vector containing latitude, longitude and timezone

Value

Name(s) of the Karana.

Examples

```
get_karana_name(2459778,c(15.34, 75.13, +5.5))
get_karana_name(swephR::swe_julday(2022,7,14,0,swephR::SE$GREG_CAL),c(15.34, 75.13, +5.5))
```

get_lagna_name *get_lagna_name*

Description

Get name of the Lagna for given Julian day number.

Usage

```
get_lagna_name(jd)
```

Arguments

jd	Julian day number

Value

Name of the lagna.

Examples

```
get_lagna_name(2459778)
get_lagna_name(gregorian_to_jd(30,8,2022))
```

get_masa_name *get_masa_name*

Description

Get name of the Masa for given Julian day number and place.

Usage

```
get_masa_name(jd, place)
```

Arguments

jd	Julian day number
place	Vector containing latitude, longitude and timezone

Value

Name of the Masa

Examples

```
get_masa_name(2459778,c(15.34, 75.13, +5.5))
get_masa_name(swephR::swe_julday(2022,7,14,0,swephR::SE$GREG_CAL),c(15.34, 75.13, +5.5))
```

get_nakshatra_name *get_nakshatra_name*

Description

Get name(s) of the Nakshatra for given Julian day number and place.

Usage

```
get_nakshatra_name(jd, place)
```

Arguments

jd	Julian day number
place	Vector containing latitude, longitude and timezone

Value

Name(s) of the Nakshatra and its ending time.

Examples

```
get_nakshatra_name(2459778,c(15.34, 75.13, +5.5))
get_nakshatra_name(swephR::swe_julday(2022,7,14,0,swephR::SE$GREG_CAL),c(15.34, 75.13, +5.5))
```

`get_rashi_name` *get_rashi_name*

Description

Get name of the Rashi for given Julian day number.

Usage

```
get_rashi_name(jd)
```

Arguments

`jd`	Julian day number

Value

Name of the Rashi.

Examples

```
get_rashi_name(2459778)
get_rashi_name(gregorian_to_jd(30,8,2022))
```

`get_ritu_name` *get_ritu_name*

Description

get_ritu_name

Usage

```
get_ritu_name(masa_num)
```

Arguments

`masa_num`	Number associated with a Masa

Value

Ritu's name

Examples

```
ritu(2)
```

`get_samvatsara_name` *get_samvatsara_name*

Description

Name of the Shaka Samvatsar for a given Julian day number and maasa number.

Usage

```
get_samvatsara_name(jd, maasa_num)
```

Arguments

`jd`	Julian day number
`maasa_num`	Maasa number

Value

Shaka Samvatsar

Examples

```
get_samvatsara_name(2459778,2)
```

`get_tithi_name` *get_tithi_name*

Description

Get name(s) of the Tithi for given Julian day number and place.

Usage

```
get_tithi_name(jd, place)
```

Arguments

`jd`	Julian day number
`place`	Vector containing latitude, longitude and timezone

Value

Name(s) of the Tithi and its ending time.

Examples

```
get_tithi_name(2459778,c(15.34, 75.13, +5.5))
get_tithi_name(swephR::swe_julday(2022,7,14,0,swephR::SE$GREG_CAL),c(15.34, 75.13, +5.5))
```

---

get_vaara_name *get_vaara_name*

Description

Get name of the Vaara for given Julian day number.

Usage

```
get_vaara_name(jd)
```

Arguments

jd	Julian day number

Value

Name of the Vaara.

Examples

```
get_vaara_name(2459778)
get_vaara_name(swephR::swe_julday(2022,7,14,0,swephR::SE$GREG_CAL))
```

---

get_yoga_name *get_yoga_name*

Description

Get name(s) of the Yoga for given Julian day number and place.

Usage

```
get_yoga_name(jd, place)
```

Arguments

jd	Julian day number
place	Vector containing latitude, longitude and timezone

Value

Name(s) of the Yoga and its ending time.

Examples

```
get_yoga_name(2459778,c(15.34, 75.13, +5.5))
get_yoga_name(swephR::swe_julday(2022,7,14,0,swephR::SE$GREG_CAL),c(15.34, 75.13, +5.5))
```

---

gregorian_to_jd *gregorian_to_jd*

Description

Convert Gregorian date to Julian day number at 00:00 UTC

Usage

```
gregorian_to_jd(day, month, year)
```

Arguments

day	Day number
month	Month number
year	Year number

Value

Julian day number

Examples

```
gregorian_to_jd(18,7,2022)
```

---

inverse_lagrange *inverse_lagrange*

Description

Given two vectors x and y, find the value of x = xa when y = ya, i.e., f(xa) = ya

Usage

```
inverse_lagrange(x, y, ya)
```

Arguments

x	Vector x
y	Vector y
ya	Double ya

Value

Value of xa

`jd_to_gregorian` *jd_to_gregorian*

Description

Convert Julian day number to Gregorian date

Usage

```
jd_to_gregorian(jd)
```

Arguments

`jd`	Julian day number

Value

Gregorian date

Examples

```
jd_to_gregorian(2459778)
```

`karana` *karana*

Description

Karana for a given place and time

Usage

```
karana(jd, place)
```

Arguments

`jd`	Julian day number
`place`	Vector containing latitude, longitude and timezone

Value

Two karanas

Examples

```
karana(2459778,c(15.34, 75.13, +5.5))
karana(gregorian_to_jd(17,6,2022),c(15.34, 75.13, +5.5))
```

`karanas` *karanas*

Description

Name of 60 Karanas which is when moon traverses 6° in longitude relative to the sun

Usage

```
karanas
```

Format

An object of class `character` of length 60.

`lagna` *Lagna*

Description

Lagna for a given Julian day number

Usage

```
lagna(jd)
```

Arguments

`jd`	Julian day number

Value

Lagna as an integer

Examples

```
lagna(2459778)
lagna(gregorian_to_jd(30,8,2022))
```

lunar_phase *lunar_phase*

Description

Lunar phase for a given Julian day number

Usage

```
lunar_phase(jd)
```

Arguments

jd	Julian day number

Value

Lunar phase

Examples

```
lunar_phase(2459778)
```

masa *masa*

Description

Masa for a given place and time

Usage

```
masa(jd, place)
```

Arguments

jd	Julian day number
place	Vector containing latitude, longitude and timezone

Value

Masa number and whether it is adhika masa or not

Examples

```
masa(2459778,c(15.34, 75.13, +5.5))
masa(swephR::swe_julday(2022,7,14,0,swephR::SE$GREG_CAL),c(15.34, 75.13, +5.5))
```

masas *masas*

Description

Lunar month in the Vedic calendar system

Usage

```
masas
```

Format

An object of class `character` of length 12.

moonrise *moonrise*

Description

Moonrise for a given date and place

Usage

```
moonrise(jd, place)
```

Arguments

`jd`	Julian day number
`place`	Vector containing latitude, longitude and timezone

Value

Moonrise as Julian day number

Examples

```
moonrise(2459778,c(15.34, 75.13, +5.5))
```

moonset *moonset*

Description

Moonset for a given date and place

Usage

```
moonset(jd, place)
```

Arguments

jd	Julian day number
place	Vector containing latitude, longitude and timezone

Value

Moonset as Julian day number

Examples

```
moonset(2459778,c(15.34, 75.13, +5.5))
```

moon_longitude *moon_longitude*

Description

Get Lunar longitude for a given Julian day number.

Usage

```
moon_longitude(jd)
```

Arguments

jd	Julian day

Value

Lunar longitude for jd

Examples

```
moon_longitude(2459778)
moon_longitude(2459500)
```

nakshatra *nakshatra*

Description

Nakshatra for a given place and time

Usage

```
nakshatra(jd, place)
```

Arguments

jd	Julian day number
place	Vector containing latitude, longitude and timezone

Value

Nakshatra and it's ending time

Examples

```
nakshatra(2459778,c(15.34, 75.13, +5.5))
nakshatra(gregorian_to_jd(17,6,2022),c(15.34, 75.13, +5.5))
```

nakshatras *nakshatras*

Description

Name of the 27 Nakshatras in Vedic calendar system

Usage

```
nakshatras
```

Format

An object of class `character` of length 27.

new_moon *new_moon*

Description

Julian day representing the new moon day for a given Julian day number and tithi

Usage

```
new_moon(jd, tithi_, opt = -1)
```

Arguments

jd	Julian day number
tithi_	Number associated with the tithi
opt	Option to select next new moon day(opt = 1) or previous new moon day (opt = -1), Default opt = -1 .

Value

New moon day as a Julian day number

Examples

```
new_moon(2459778,2)
new_moon(2459778,tithi(2459778,c(15.34, 75.13, +5.5)))
```

rashi *Rashi*

Description

Rashi for a given Julian day number

Usage

```
rashi(jd)
```

Arguments

jd	Julian day number

Value

Rashi as an integer

Examples

```
rashi(2459778)
rashi(gregorian_to_jd(30,8,2022))
```

`rashis` *rashis*

Description

The name of 12 Rashis which represents the position of the moon on the zodiac at a given time

Usage

```
rashis
```

Format

An object of class `character` of length 12.

`ritu` *ritu*

Description

ritu

Usage

```
ritu(masa_num)
```

Arguments

`masa_num`	Number associated with a Masa

Value

Number associated with the Ritu

Examples

```
ritu(2)
```

ritus *ritus*

Description

Name of the 6 seasons in Vedic calendar system

Usage

```
ritus
```

Format

An object of class `character` of length 6.

samvatsara *samvatsara*

Description

Shaka Samvatsar for a given Julian day number and maasa number.

Usage

```
samvatsara(jd, maasa_num)
```

Arguments

`jd`	Julian day number
`maasa_num`	Maasa number

Value

Number associated with the Shaka Samvatsar

Examples

```
samvatsara(2459778,2)
```

samvatsars *samvatsars*

Description

Name of the Year in Hindu Panchang

Usage

```
samvatsars
```

Format

An object of class `character` of length 60.

sunrise *sunrise*

Description

Sunrise for a given date and place

Usage

```
sunrise(jd, place)
```

Arguments

`jd`	Julian day number
`place`	Vector containing latitude, longitude and timezone

Value

Sunrise as Julian day number

Examples

```
sunrise(2459778,c(15.34, 75.13, +5.5))
```

sunset *sunset*

Description

Sunset for a given date and place

Usage

```
sunset(jd, place)
```

Arguments

jd	Julian day number
place	Vector containing latitude, longitude and timezone

Value

Sunset as Julian day number

Examples

```
sunset(2459778,c(15.34, 75.13, +5.5))
```

sun_longitude *sun_longitude*

Description

Get Solar longitude for a given Julian day number.

Usage

```
sun_longitude(jd)
```

Arguments

jd	Julian day

Value

Solar longitude for jd

Examples

```
sun_longitude(2459778)
sun_longitude(2459500)
```

tithi *tithi*

Description

Tithi for a given place and time

Usage

```
tithi(jd, place)
```

Arguments

jd	Julian day number
place	Vector containing latitude, longitude and timezone

Value

Tithi and it's ending time

Examples

```
tithi(2459778,c(15.34, 75.13, +5.5))
tithi(gregorian_to_jd(17,6,2022),c(15.34, 75.13, +5.5))
```

tithis *tithis*

Description

lunar day in the Vedic calendar system

Usage

```
tithis
```

Format

An object of class character of length 30.

`to_dms` *to_dms*

Description

Convert decimal degrees to degrees, minutes, and seconds

Usage

```
to_dms(deg)
```

Arguments

`deg`	Degrees as a decimal number

Value

A vector containing degrees, minutes and seconds

Examples

```
to_dms(30.263888889)
```

`unwrap_angles` *unwrap_angles*

Description

Add 360 degs an element in the input vector if elements are not sorted in ascending order.

Usage

```
unwrap_angles(angles)
```

Arguments

`angles`	Vector containing angles

Value

angles in ascending order

vaara *vaara*

Description

Vaara for a given Julian day number

Usage

```
vaara(jd)
```

Arguments

jd	Julian day number

Value

Vaara as an integer

Examples

```
vaara(2459778)
```

vaaras *vaaras*

Description

Name of the day of the week

Usage

```
vaaras
```

Format

An object of class `character` of length 7.

yoga *yoga*

Description

Yoga for a given place and time

Usage

```
yoga(jd, place)
```

Arguments

jd	Julian day number
place	Vector containing latitude, longitude and timezone

Value

Yoga and it's ending time

Examples

```
yoga(2459778,c(15.34, 75.13, +5.5))
yoga(gregorian_to_jd(17,6,2022),c(15.34, 75.13, +5.5))
```

yogas *yogas*

Description

Name of the 27 yogas which is sum of sidereal longitudes of sun and moon in the multiples of 13 degrees 20 minutes

Usage

```
yogas
```

Format

An object of class `character` of length 27.

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