Assignment 1

Generated by Doxygen 1.8.13

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2.1 File List

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Chapter 3

Class Documentation

3.1 date_adt.DateT Class Reference

An ADT for the class DateT.

Public Member Functions

- def __init__ (self, d, m, y)

  A constructor for the DateT class.
- def day (self)

  A getter method for the day number.
- def month (self)

  A getter method for the month number.
- def year (self)

  A getter method for the year number.
- def next (self)

  A method to provide the next day.
- def prev (self)

  A method to provide the previous day.
- def before (self, d)

  A method to provide whether the day provided is before the current day.
- def after (self, d)

  A method to provide whether the day provided is after the current day.
- def equal (self, d)

  A method to provide whether the day provided is equal to the current day.
- def add_days (self, n)

  Adds a specific number of days to a DateT objects.
- def days_between (self, d)

  Calculates the difference in days between two dates.

Public Attributes

- **d**
- **m**
- **y**

3.1.1 Detailed Description

An ADT for the class DateT.

Some assumptions made include that the user will be inputting correct dates in order for the module to return some correct dates.

3.1.2 Constructor & Destructor Documentation

3.1.2.1 __init__()

```
def date_adt.DateT.__init__ (
              self,
              d,
              m,
              y )
```

A constructor for the DateT class.

Initializes the attributes of the DateT objects

Parameters

d	represents the day number eg: 0-31
m	represents the month number eg: 1-12
y	represents the yea number eg: 2020

3.1.3 Member Function Documentation

3.1.3.1 add_days()

```
def date_adt.DateT.add_days (
              self,
              n )
```

Adds a specific number of days to a DateT objects.

Parameters

n	represents the number of days to be added

Returns

The date after n days have been added to the DateT object

3.1.3.2 after()

```
def date_adt.DateT.after (
              self,
              d )
```

A method to provide whether the day provided is after the current day.

Parameters

d	represents the day to be compared

Returns

True if the day is after the current day, false if the day is not after the current day

3.1.3.3 before()

```
def date_adt.DateT.before (
              self,
              d )
```

A method to provide whether the day provided is before the current day.

Parameters

d	represents the day to be compared

Returns

True if the day is before the current day, false if the day is not before the current day

3.1.3.4 day()

```
def date_adt.DateT.day (
              self )
```

A getter method for the day number.

Returns

The day number

3.1.3.5 days_between()

```
def date_adt.DateT.days_between (
              self,
              d )
```

Calculates the difference in days between two dates.

Parameters

d	represents a date

Returns

The difference betweent the date object and d in days

3.1.3.6 equal()

```
def date_adt.DateT.equal (
              self,
              d )
```

A method to provide whether the day provided is equal to the current day.

Parameters

d	represents the day to be compared

Returns

True if the day is equal to the current day, false if the day is not equal to the current day

3.1.3.7 month()

```
def date_adt.DateT.month (
              self )
```

A getter method for the month number.

Returns

The month number

3.1.3.8 next()

```
def date_adt.DateT.next (
              self )
```

A method to provide the next day.

Returns

The day after the current object

3.1.3.9 prev()

```
def date_adt.DateT.prev (
              self )
```

A method to provide the previous day.

Returns

The day before the current object

3.1.3.10 year()

```
def date_adt.DateT.year (
              self )
```

A getter method for the year number.

Returns

The year

The documentation for this class was generated from the following file:

- src/date_adt.py

3.2 pos_adt.GPosT Class Reference

An ADT for the class GPosT.

Public Member Functions

- def __init__ (self, phi, lam)

  A constructor for the GPosT class.
- def latitude (self)

  A getter method for the latitude.
- def longitude (self)

  A getter method for the longitude.
- def west_of (self, p)

  Compares if a position is west of the current position.
- def north_of (self, p)

  Compares if a position is north of the current position.
- def equal (self, p)

  Checks if two positions are equal.
- def move (self, b, d)

  Moves the current GPosT object to a new position.
- def distance (self, p)

  Calculates distance between the current object and point p.
- def arrival_date (self, p, d, s)

  Calculates the date of arrival for someone starting at the current position on date d and moving to position p at speed s.

Public Attributes

- **phi**
- **lam**

3.2.1 Detailed Description

An ADT for the class GPosT.

Some assumptions made include that the latitude or longitude is between -90 and 90 degrees.

3.2.2 Constructor & Destructor Documentation

3.2.2.1 __init__()

```
def pos_adt.GPosT.__init__ (
            self,
            phi,
            lam )
```

A constructor for the GPosT class.

Initializes the attributes of the GPosT objects.

Parameters

phi	represents the latitude
lam	represents the longitude

3.2.3 Member Function Documentation

3.2.3.1 arrival_date()

```
def pos_adt.GPosT.arrival_date (
              self,
              p,
              d,
              s )
```

Calculates the date of arrival for someone starting at the current position on date d and moving to position p at speed s.

Parameters

p	represents the end position
d	represents the date the travel starts
s	represents the speed of travel

Returns

The date of arrival (a DateT object)

3.2.3.2 distance()

```
def pos_adt.GPosT.distance (
              self,
              p )
```

Calculates distance between the current object and point p.

Parameters

p	represents the point to calculate the distance to

Returns

The distance between the two positions

3.2.3.3 equal()

```
def pos_adt.GPosT.equal (
              self,
              p )
```

Checks if two positions are equal.

Parameters

p	represents position to be compared to

Returns

True if they are equal (or within 1 km away from each other), False if they are not equal

3.2.3.4 latitude()

```
def pos_adt.GPosT.latitude (
              self )
```

A getter method for the latitude.

Returns

The latitude

3.2.3.5 longitude()

```
def pos_adt.GPosT.longitude (
              self )
```

A getter method for the longitude.

Returns

The longitude

3.2.3.6 move()

```
def pos_adt.GPosT.move (
              self,
              b,
              d )
```

Moves the current GPosT object to a new position.

Parameters

b	represents bearing to be moved towards
d	represents distance to be moved

3.2.3.7 north_of()

```
def pos_adt.GPosT.north_of (
              self,
              p )
```

Compares if a position is north of the current position.

Parameters

p	represents position to be compared to

Returns

True if it is north of, False is not north of

3.2.3.8 west_of()

```
def pos_adt.GPosT.west_of (
              self,
              p )
```

Compares if a position is west of the current position.

Parameters

p	represents position to be compared to

Returns

True if it is west of, False if not west of

The documentation for this class was generated from the following file:

- src/pos_adt.py

Chapter 4

File Documentation

4.1 src/date_adt.py File Reference

This module creates date related calculations using several methods. This includes getting the next and previous day and calculation differences between two given days.

Classes

- class date_adt.DateT

  An ADT for the class DateT.

4.1.1 Detailed Description

This module creates date related calculations using several methods. This includes getting the next and previous day and calculation differences between two given days.

Author

Yousam Asham

Date

09-01-2020

4.2 src/pos_adt.py File Reference

A Global position module that implements many functions.

Classes

- class pos_adt.GPosT

  An ADT for the class GPosT.

Variables

- int **pos_adt.earthRadius** = 6371

4.2.1 Detailed Description

A Global position module that implements many functions.

Author

Yousam Asham

Date

11-01-2020

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