PlanetModel

5.3

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  Planet modeling class methods.
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6.3.1 Detailed Description

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Namespace Documentation

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Namespace jeod.

Data Structures

- class BasePlanet

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- class Planet

  Describes a planet with mass and shape.
- class Planet_default_data
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- class Planet_mars_default_data
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- class Planet_sun_default_data
- class PlanetMessages

  Specifies the message IDs used in the planet model.

7.1.1 Detailed Description

Namespace jeod.

Chapter 8

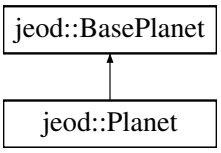
Data Structure Documentation

8.1 jeod::BasePlanet Class Reference

A BasePlanet contains the base data needed to model a planet in JEOD.

`#include <base_planet.hh>`

Inheritance diagram for jeod::BasePlanet:



Public Member Functions

- BasePlanet ()=default
- virtual ~BasePlanet ()=default
- BasePlanet (const BasePlanet &)=delete
- BasePlanet & operator= (const BasePlanet &)=delete
- void set_name (const std::string &name_in)

  Setter for the name.
- virtual void set_alt_inertial (const double trans[3][3])

  Set the fixed transformation from J2000 to alt_inertial.
- virtual void set_alt_inertial (const double cp[3], const double ep[3])

  Use the celestial and ecliptic poles to set the conventional fixed transformation from J2000 to alt_inertial.
- virtual void set_alt_pfix (const double trans[3][3])

  Set the fixed transformation from pfix to alt_pfix.
- virtual void calculate_alt_pfix ()

  Calculate the current transformation from J2000 to alt_pfix using the fixed transformation between pfix and alt_pfix.
- virtual void register_planet (BaseEphemeridesManager &ephem_manager)

  Register a BasePlanet object with the Ephemerides Manager.

Data Fields

- std::string name {""}

  Planet name.
- GravitySource * grav_source {}

  The GravitySource corresponding to the same planet represented by this.
- EphemerisRefFrame inertial

  The planet-centered J2000 pseudo-inertial frame associated with the planet represented by this.
- EphemerisRefFrame alt_inertial

  A secondary pseudo-inertial frame which can be defined by the user to be equatorial for this planet.
- EphemerisRefFrame pfix

  The planet-centered, planet-fixed Cartesian reference frame associated with the planet represented by this.
- EphemerisRefFrame alt_pfix

  A secondary planet-fixed frame which can be defined by the user.

Protected Attributes

- bool alt_inertial_set {}

  Flag to insure the alt_inertial frame is set only once.
- double alt_pfix_transform [3][3] {IDENTITY_3X3}

  The transform from pfix to alt_pfix.
- bool alt_pfix_set {}

  Flag to insure the alt_pfix transform never changed.

Friends

- class InputProcessor
- void init_attrjeod__BasePlanet ()

8.1.1 Detailed Description

A BasePlanet contains the base data needed to model a planet in JEOD.

A BasePlanet has a name, a planet-centered inertial reference frame, and a planet-centered planet-fixed reference frame. Details of the planet's shape and mass are in the Planet class, which derives from BasePlanet.

Definition at line 89 of file base_planet.hh.

8.1.2 Constructor & Destructor Documentation

8.1.2.1 BasePlanet() [1/2]

```
jeod::BasePlanet::BasePlanet ( )  [default]
```

8.1.2.2 ~BasePlanet()

```
virtual jeod::BasePlanet::~BasePlanet ( )  [virtual], [default]
```

8.1.2.3 BasePlanet() [2/2]

```
jeod::BasePlanet::BasePlanet (
            const BasePlanet &  )  [delete]
```

8.1.3 Member Function Documentation

8.1.3.1 calculate_alt_pfix()

```
void jeod::BasePlanet::calculate_alt_pfix ( )  [virtual]
```

Calculate the current transformation from J2000 to alt_pfix using the fixed transformation between pfix and alt_pfix.

Assumptions and Limitations

calculates J2000 to alt_pfix using a fixed transformation from pfix to alt_pfix

Definition at line 119 of file base_planet.cc.

References alt_pfix, alt_pfix_transform, and pfix.

8.1.3.2 operator=()

```
BasePlanet& jeod::BasePlanet::operator= (
            const BasePlanet &  )  [delete]
```

8.1.3.3 register_planet()

```
void jeod::BasePlanet::register_planet (
            BaseEphemeridesManager & ephem_manager )  [virtual]
```

Register a BasePlanet object with the Ephemerides Manager.

Parameters

in,out	*ephem_manager*	Ephemerides Manager

Definition at line 130 of file base_planet.cc.

References alt_inertial, alt_pfix, inertial, name, jeod::PlanetMessages::name_error, and pfix.

Referenced by jeod::Planet::register_model().

8.1.3.4 set_alt_inertial() [1/2]

```
void jeod::BasePlanet::set_alt_inertial (
             const double trans[3][3] )  [virtual]
```

Set the fixed transformation from J2000 to alt_inertial.

Assumptions and Limitations

- Method only works once

Parameters

in	*trans*	trans J2000->alt_inertial

Definition at line 52 of file base_planet.cc.

References alt_inertial, and alt_inertial_set.

Referenced by jeod::Planet_mars_default_data::initialize(), and set_alt_inertial().

8.1.3.5 set_alt_inertial() [2/2]

```
void jeod::BasePlanet::set_alt_inertial (
             const double cp[3],
             const double ep[3] )  [virtual]
```

Use the celestial and ecliptic poles to set the conventional fixed transformation from J2000 to alt_inertial.

Assumptions and Limitations

- Method only works once
- Celestial and ecliptic poles are not the same

Parameters

in	*cp*	celestial pole unit vector
in	*ep*	Ecliptic pole unit vector

Definition at line 81 of file base_planet.cc.

References set_alt_inertial().

8.1.3.6 set_alt_pfix()

```
void jeod::BasePlanet::set_alt_pfix (
             const double trans[3][3] )  [virtual]
```

Set the fixed transformation from pfix to alt_pfix.

Assumptions and Limitations

- Method only works once

Parameters

in	*trans*	trans pfix->alt_pfix

Definition at line 100 of file base_planet.cc.

References alt_pfix_set, and alt_pfix_transform.

Referenced by jeod::Planet_moon_default_data::initialize().

8.1.3.7 set_name()

```
void jeod::BasePlanet::set_name (
             const std::string & name_in )  [inline]
```

Setter for the name.

Definition at line 136 of file base_planet.hh.

8.1.4 Friends And Related Function Documentation

8.1.4.1 init_attrjeod__BasePlanet

```
void init_attrjeod__BasePlanet ( )  [friend]
```

8.1.4.2 InputProcessor

```
friend class InputProcessor  [friend]
```

Definition at line 91 of file base_planet.hh.

8.1.5 Field Documentation

8.1.5.1 alt_inertial

```
EphemerisRefFrame jeod::BasePlanet::alt_inertial
```

A secondary pseudo-inertial frame which can be defined by the user to be equatorial for this planet.

trick_units(–)

Definition at line 113 of file base_planet.hh.

Referenced by register_planet(), and set_alt_inertial().

8.1.5.2 alt_inertial_set

```
bool jeod::BasePlanet::alt_inertial_set {}  [protected]
```

Flag to insure the alt_inertial frame is set only once.

trick_units(–)

Definition at line 162 of file base_planet.hh.

Referenced by set_alt_inertial().

8.1.5.3 alt_pfix

```
EphemerisRefFrame jeod::BasePlanet::alt_pfix
```

A secondary planet-fixed frame which can be defined by the user.

trick_units(–)

Definition at line 124 of file base_planet.hh.

Referenced by calculate_alt_pfix(), and register_planet().

8.1.5.4 alt_pfix_set

```
bool jeod::BasePlanet::alt_pfix_set {}  [protected]
```

Flag to insure the alt_pfix transform never changed.

trick_units(–)

Definition at line 172 of file base_planet.hh.

Referenced by set_alt_pfix().

8.1.5.5 alt_pfix_transform

```
double jeod::BasePlanet::alt_pfix_transform[3][3] {IDENTITY_3X3}  [protected]
```

The transform from pfix to alt_pfix.

trick_units(–)

Definition at line 167 of file base_planet.hh.

Referenced by calculate_alt_pfix(), and set_alt_pfix().

8.1.5.6 grav_source

```
GravitySource* jeod::BasePlanet::grav_source {}
```

The GravitySource corresponding to the same planet represented by this.

trick_units(–)

Definition at line 101 of file base_planet.hh.

Referenced by jeod::Planet::initialize(), and jeod::Planet::register_model().

8.1.5.7 inertial

```
EphemerisRefFrame jeod::BasePlanet::inertial
```

The planet-centered J2000 pseudo-inertial frame associated with the planet represented by this.

trick_units(–)

Definition at line 107 of file base_planet.hh.

Referenced by jeod::Planet::register_model(), and register_planet().

8.1.5.8 name

```
std::string jeod::BasePlanet::name {""}
```

Planet name.

trick_units(–)

Definition at line 96 of file base_planet.hh.

Referenced by jeod::Planet_earth_default_data::initialize(), jeod::Planet_mars_default_data::initialize(), jeod::Planet_sun_default_data::initialize(), jeod::Planet_moon_default_data::initialize(), jeod::Planet_jupiter_default_data::initialize(), jeod::Planet::initialize(), jeod::Planet::register_model(), and register_planet().

8.1.5.9 pfix

```
EphemerisRefFrame jeod::BasePlanet::pfix
```

The planet-centered, planet-fixed Cartesian reference frame associated with the planet represented by this.

trick_units(–)

Definition at line 119 of file base_planet.hh.

Referenced by calculate_alt_pfix(), jeod::Planet::register_model(), and register_planet().

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

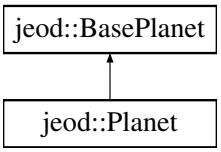
- base_planet.hh
- base_planet.cc

8.2 jeod::Planet Class Reference

Describes a planet with mass and shape.

`#include <planet.hh>`

Inheritance diagram for jeod::Planet:



Public Member Functions

- Planet ()=default
- ~Planet () override=default
- Planet (const Planet &frame)=delete
- Planet & operator= (const Planet &frame)=delete
- void register_model (GravitySource &grav_source, BaseDynManager &dyn_manager)

  Register a Planet object with the Dynamics Manager.
- void initialize ()

  Initialize a Planet object.

Data Fields

- double r_eq {}

  Mean planet equatorial radius.
- double r_pol {}

  Mean planet polar radius.
- double e_ellipsoid {}

  Planet ellipsoid eccentricity, a value between 0 and 1.
- double e_ellip_sq {}

  The square of the planet ellipsoid eccentricity.
- double flat_coeff {}

  Planet ellipsoid flattening coefficient, a value between 0 and 1.
- double flat_inv {}

  Inverse of the planet ellipsoid flattening constant above.

Friends

- class InputProcessor
- void init_attrjeod__Planet ()

Additional Inherited Members

8.2.1 Detailed Description

Describes a planet with mass and shape.

Definition at line 90 of file planet.hh.

8.2.2 Constructor & Destructor Documentation

8.2.2.1 Planet() [1/2]

```
jeod::Planet::Planet ( )  [default]
```

8.2.2.2 ~Planet()

```
jeod::Planet::~Planet ( )  [override], [default]
```

8.2.2.3 Planet() [2/2]

```
jeod::Planet::Planet (
            const Planet & frame )  [delete]
```

8.2.3 Member Function Documentation

8.2.3.1 initialize()

```
void jeod::Planet::initialize ( )
```

Initialize a Planet object.

Assumptions and Limitations

- Planet::register_model has already been invoked.

Definition at line 79 of file planet.cc.

References jeod::PlanetMessages::domain_error, e_ellip_sq, e_ellipsoid, flat_coeff, flat_inv, jeod::BasePlanet::grav_source, jeod::BasePlanet::name, jeod::PlanetMessages::name_error, r_eq, r_pol, and jeod::PlanetMessages::registration_error.

8.2.3.2 operator=()

```
Planet& jeod::Planet::operator= (
             const Planet & frame )  [delete]
```

8.2.3.3 register_model()

```
void jeod::Planet::register_model (
             GravitySource & grav_source_in,
             BaseDynManager & dyn_manager )
```

Register a Planet object with the Dynamics Manager.

Parameters

in,out	*grav_source_in*	GravitySource object
in,out	*dyn_manager*	Dynamics manager

Definition at line 49 of file planet.cc.

References jeod::BasePlanet::grav_source, jeod::BasePlanet::inertial, jeod::BasePlanet::name, jeod::PlanetMessages::name_error, jeod::BasePlanet::pfix, and jeod::BasePlanet::register_planet().

8.2.4 Friends And Related Function Documentation

8.2.4.1 init_attrjeod__Planet

```
void init_attrjeod__Planet ( )  [friend]
```

8.2.4.2 InputProcessor

```
friend class InputProcessor  [friend]
```

Definition at line 92 of file planet.hh.

8.2.5 Field Documentation

8.2.5.1 e_ellip_sq

```
double jeod::Planet::e_ellip_sq {}
```

The square of the planet ellipsoid eccentricity.

trick_units(–)

Definition at line 113 of file planet.hh.

Referenced by initialize().

8.2.5.2 e_ellipsoid

```
double jeod::Planet::e_ellipsoid {}
```

Planet ellipsoid eccentricity, a value between 0 and 1.

NOTE: This parameter relates to the planet's shape, not its orbit.trick_units(–)

Definition at line 108 of file planet.hh.

Referenced by initialize().

8.2.5.3 flat_coeff

```
double jeod::Planet::flat_coeff {}
```

Planet ellipsoid flattening coefficient, a value between 0 and 1.

The Earth's flattening, for example, is about 1/298.3.trick_units(–)

Definition at line 119 of file planet.hh.

Referenced by jeod::Planet_jupiter_default_data::initialize(), jeod::Planet_sun_default_data::initialize(), jeod::↩
Planet_mars_default_data::initialize(), jeod::Planet_moon_default_data::initialize(), and initialize().

8.2.5.4 flat_inv

```
double jeod::Planet::flat_inv {}
```

Inverse of the planet ellipsoid flattening constant above.

trick_units(–)

Definition at line 124 of file planet.hh.

Referenced by jeod::Planet_earth_default_data::initialize(), and initialize().

8.2.5.5 r_eq

```
double jeod::Planet::r_eq {}
```

Mean planet equatorial radius.

trick_units(m)

Definition at line 97 of file planet.hh.

Referenced by jeod::Planet_earth_default_data::initialize(), jeod::Planet_sun_default_data::initialize(), jeod::Planet_jupiter_default_data::initialize(), jeod::Planet_moon_default_data::initialize(), jeod::Planet_mars_default_data::initialize(), and initialize().

8.2.5.6 r_pol

```
double jeod::Planet::r_pol {}
```

Mean planet polar radius.

trick_units(m)

Definition at line 102 of file planet.hh.

Referenced by initialize().

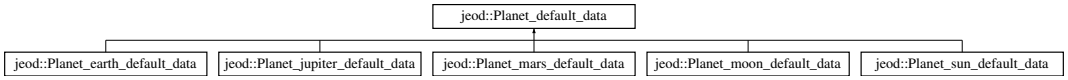
The documentation for this class was generated from the following files:

- planet.hh
- planet.cc

8.3 jeod::Planet_default_data Class Reference

```
#include <planet_default_data.hh>
```

Inheritance diagram for jeod::Planet_default_data:



Public Member Functions

- virtual void initialize (Planet *)=0
- virtual ~Planet_default_data ()=default

8.3.1 Detailed Description

Definition at line 51 of file planet_default_data.hh.

8.3.2 Constructor & Destructor Documentation

8.3.2.1 ~Planet_default_data()

```
virtual jeod::Planet_default_data::~Planet_default_data ( )  [virtual], [default]
```

8.3.3 Member Function Documentation

8.3.3.1 initialize()

```
virtual void jeod::Planet_default_data::initialize (
            Planet *  )  [pure virtual]
```

Implemented in jeod::Planet_earth_default_data, jeod::Planet_jupiter_default_data, jeod::Planet_mars_default_data, jeod::Planet_moon_default_data, and jeod::Planet_sun_default_data.

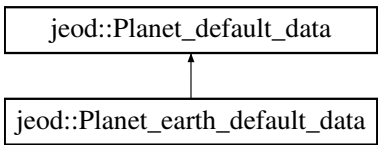
The documentation for this class was generated from the following file:

- planet_default_data.hh

8.4 jeod::Planet_earth_default_data Class Reference

```
#include <earth.hh>
```

Inheritance diagram for jeod::Planet_earth_default_data:



Public Member Functions

- void initialize (Planet *) override

8.4.1 Detailed Description

Definition at line 55 of file earth.hh.

8.4.2 Member Function Documentation

8.4.2.1 initialize()

```
void jeod::Planet_earth_default_data::initialize (
             Planet * Planet_ptr )  [override], [virtual]
```

Implements jeod::Planet_default_data.

Definition at line 31 of file earth.cc.

References jeod::Planet::flat_inv, jeod::BasePlanet::name, and jeod::Planet::r_eq.

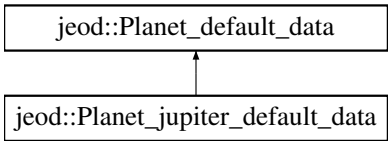
The documentation for this class was generated from the following files:

- earth.hh
- earth.cc

8.5 jeod::Planet_jupiter_default_data Class Reference

```
#include <jupiter.hh>
```

Inheritance diagram for jeod::Planet_jupiter_default_data:



Public Member Functions

- void initialize (Planet *) override

8.5.1 Detailed Description

Definition at line 55 of file jupiter.hh.

8.5.2 Member Function Documentation

8.5.2.1 initialize()

```
void jeod::Planet_jupiter_default_data::initialize (
            Planet * Planet_ptr )  [override], [virtual]
```

Implements jeod::Planet_default_data.

Definition at line 31 of file jupiter.cc.

References jeod::Planet::flat_coeff, jeod::BasePlanet::name, and jeod::Planet::r_eq.

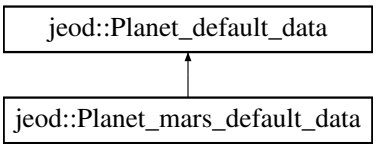
The documentation for this class was generated from the following files:

- jupiter.hh
- jupiter.cc

8.6 jeod::Planet_mars_default_data Class Reference

```
#include <mars.hh>
```

Inheritance diagram for jeod::Planet_mars_default_data:



Public Member Functions

- void initialize (Planet *) override

8.6.1 Detailed Description

Definition at line 55 of file mars.hh.

8.6.2 Member Function Documentation

8.6.2.1 initialize()

```
void jeod::Planet_mars_default_data::initialize (
            Planet * Planet_ptr )  [override], [virtual]
```

Implements jeod::Planet_default_data.

Definition at line 32 of file mars.cc.

References jeod::Planet::flat_coeff, jeod::BasePlanet::name, jeod::Planet::r_eq, and jeod::BasePlanet::set_alt_↩ inertial().

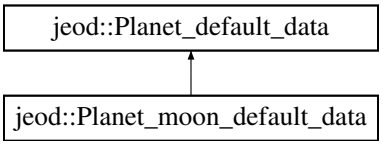
The documentation for this class was generated from the following files:

- mars.hh
- mars.cc

8.7 jeod::Planet_moon_default_data Class Reference

```
#include <moon.hh>
```

Inheritance diagram for jeod::Planet_moon_default_data:



Public Member Functions

- void initialize (Planet *) override

8.7.1 Detailed Description

Definition at line 55 of file moon.hh.

8.7.2 Member Function Documentation

8.7.2.1 initialize()

```
void jeod::Planet_moon_default_data::initialize (
            Planet * Planet_ptr )  [override], [virtual]
```

Implements jeod::Planet_default_data.

Definition at line 31 of file moon.cc.

References jeod::Planet::flat_coeff, jeod::BasePlanet::name, jeod::Planet::r_eq, and jeod::BasePlanet::set_alt_↩pfix().

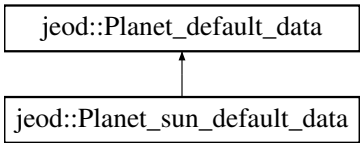
The documentation for this class was generated from the following files:

- moon.hh
- moon.cc

8.8 jeod::Planet_sun_default_data Class Reference

```
#include <sun.hh>
```

Inheritance diagram for jeod::Planet_sun_default_data:



Public Member Functions

- void initialize (Planet *) override

8.8.1 Detailed Description

Definition at line 55 of file sun.hh.

8.8.2 Member Function Documentation

8.8.2.1 initialize()

```
void jeod::Planet_sun_default_data::initialize (
            Planet * Planet_ptr )  [override], [virtual]
```

Implements jeod::Planet_default_data.

Definition at line 33 of file sun.cc.

References jeod::Planet::flat_coeff, jeod::BasePlanet::name, and jeod::Planet::r_eq.

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

- sun.hh
- sun.cc

8.9 jeod::PlanetMessages Class Reference

Specifies the message IDs used in the planet model.

```
#include <planet_messages.hh>
```

Public Member Functions

- PlanetMessages ()=delete
- PlanetMessages (const PlanetMessages &)=delete
- PlanetMessages & operator= (const PlanetMessages &)=delete

Static Public Attributes

- static const char * name_error = "environment/planet/" "name_error"
  Issued when the name is invalid.
- static const char * registration_error = "environment/planet/" "registration_error"
  Issued when the model has not been properly registered/initialized.
- static const char * domain_error = "environment/planet/" "domain_error"
  Issued when some value is invalid.

Friends

- class InputProcessor
- void init_attrjeod__PlanetMessages ()

8.9.1 Detailed Description

Specifies the message IDs used in the planet model.

Definition at line 81 of file planet_messages.hh.

8.9.2 Constructor & Destructor Documentation

8.9.2.1 PlanetMessages() [1/2]

```
jeod::PlanetMessages::PlanetMessages ( )  [delete]
```

8.9.2.2 PlanetMessages() [2/2]

```
jeod::PlanetMessages::PlanetMessages (
            const PlanetMessages &  )  [delete]
```

8.9.3 Member Function Documentation

8.9.3.1 operator=()

```
PlanetMessages& jeod::PlanetMessages::operator= (
            const PlanetMessages &  )  [delete]
```

8.9.4 Friends And Related Function Documentation

8.9.4.1 init_attrjeod__PlanetMessages

```
void init_attrjeod__PlanetMessages ( )  [friend]
```

8.9.4.2 InputProcessor

```
friend class InputProcessor  [friend]
```

Definition at line 83 of file planet_messages.hh.

8.9.5 Field Documentation

8.9.5.1 domain_error

```
char const * jeod::PlanetMessages::domain_error = "environment/planet/" "domain_error"  [static]
```

Issued when some value is invalid.

trick_units(–)

Definition at line 98 of file planet_messages.hh.

Referenced by jeod::Planet::initialize().

8.9.5.2 name_error

```
char const * jeod::PlanetMessages::name_error = "environment/planet/" "name_error"  [static]
```

Issued when the name is invalid.

trick_units(–)

Definition at line 88 of file planet_messages.hh.

Referenced by jeod::Planet::initialize(), jeod::Planet::register_model(), and jeod::BasePlanet::register_planet().

8.9.5.3 registration_error

```
char const * jeod::PlanetMessages::registration_error = "environment/planet/" "registration_↩
error"  [static]
```

Issued when the model has not been properly registered/initialized.

trick_units(–)

Definition at line 93 of file planet_messages.hh.

Referenced by jeod::Planet::initialize().

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

- planet_messages.hh
- planet_messages.cc

Chapter 9

File Documentation

9.1 base_planet.cc File Reference

Planet modeling class methods.

```
#include <cstddef>
#include <cstring>
#include "environment/ephemerides/ephem_manager/include/base_ephem_manager.↩
hh"
#include "utils/math/include/vector3.hh"
#include "utils/memory/include/jeod_alloc.hh"
#include "utils/message/include/message_handler.hh"
#include "../include/base_planet.hh"
#include "../include/planet_messages.hh"
```

Namespaces

- jeod

  Namespace jeod.

9.1.1 Detailed Description

Planet modeling class methods.

9.2 base_planet.hh File Reference

Define the class BasePlanet.

```
#include "environment/ephemerides/ephem_interface/include/ephem_ref_frame.↩
hh"
#include "environment/gravity/include/gravity_source.hh"
#include "utils/sim_interface/include/jeod_class.hh"
#include <string>
#include <utility>
#include "utils/math/include/macro_def.hh"
#include "utils/math/include/macro_undef.hh"
```

Data Structures

- class jeod::BasePlanet

  A BasePlanet contains the base data needed to model a planet in JEOD.

Namespaces

- jeod

  Namespace jeod.

9.2.1 Detailed Description

Define the class BasePlanet.

9.3 class_declarations.hh File Reference

Forward declaration of classes defined in the planet model.

Namespaces

- jeod

  Namespace jeod.

9.3.1 Detailed Description

Forward declaration of classes defined in the planet model.

9.4 earth.cc File Reference

```
#include "environment/planet/include/base_planet.hh"
#include "environment/planet/include/planet.hh"
#include "utils/named_item/include/named_item.hh"
#include "../include/earth.hh"
```

Namespaces

- jeod

  Namespace jeod.

Macros

- #define JEOD_FRIEND_CLASS Planet_earth_default_data

9.4.1 Macro Definition Documentation

9.4.1.1 JEOD_FRIEND_CLASS

```
#define JEOD_FRIEND_CLASS Planet_earth_default_data
```

Definition at line 17 of file earth.cc.

9.5 earth.hh File Reference

```
#include "planet_default_data.hh"
```

Data Structures

- class jeod::Planet_earth_default_data

Namespaces

- jeod

  Namespace jeod.

9.6 jupiter.cc File Reference

```
#include "environment/planet/include/base_planet.hh"
#include "environment/planet/include/planet.hh"
#include "utils/named_item/include/named_item.hh"
#include "../include/jupiter.hh"
```

Namespaces

- jeod

  Namespace jeod.

Macros

- #define JEOD_FRIEND_CLASS Planet_jupiter_default_data

9.6.1 Macro Definition Documentation

9.6.1.1 JEOD_FRIEND_CLASS

```
#define JEOD_FRIEND_CLASS Planet_jupiter_default_data
```

Definition at line 17 of file jupiter.cc.

9.7 jupiter.hh File Reference

```
#include "planet_default_data.hh"
```

Data Structures

- class jeod::Planet_jupiter_default_data

Namespaces

- jeod

  Namespace jeod.

9.8 mars.cc File Reference

```
#include "environment/planet/include/base_planet.hh"
#include "environment/planet/include/planet.hh"
#include "utils/named_item/include/named_item.hh"
#include "../include/mars.hh"
```

Namespaces

- jeod

  Namespace jeod.

Macros

- #define JEOD_FRIEND_CLASS Planet_mars_default_data

9.8.1 Macro Definition Documentation

9.8.1.1 JEOD_FRIEND_CLASS

```
#define JEOD_FRIEND_CLASS Planet_mars_default_data
```

Definition at line 18 of file mars.cc.

9.9 mars.hh File Reference

```
#include "planet_default_data.hh"
```

Data Structures

- class jeod::Planet_mars_default_data

Namespaces

- jeod

  Namespace jeod.

9.10 moon.cc File Reference

```
#include "environment/planet/include/base_planet.hh"
#include "environment/planet/include/planet.hh"
#include "utils/named_item/include/named_item.hh"
#include "../include/moon.hh"
```

Namespaces

- jeod

  Namespace jeod.

Macros

- #define JEOD_FRIEND_CLASS Planet_moon_default_data

9.10.1 Macro Definition Documentation

9.10.1.1 JEOD_FRIEND_CLASS

```
#define JEOD_FRIEND_CLASS Planet_moon_default_data
```

Definition at line 17 of file moon.cc.

9.11 moon.hh File Reference

```
#include "planet_default_data.hh"
```

Data Structures

- class jeod::Planet_moon_default_data

Namespaces

- jeod

  Namespace jeod.

9.12 planet.cc File Reference

Planet modeling class methods.

```
#include <cmath>
#include <cstddef>
#include <cstring>
#include "dynamics/dyn_manager/include/base_dyn_manager.hh"
#include "utils/message/include/message_handler.hh"
#include "../include/planet.hh"
#include "../include/planet_messages.hh"
```

Namespaces

- jeod

  Namespace jeod.

9.12.1 Detailed Description

Planet modeling class methods.

9.13 planet.hh File Reference

Planetary modeling constant parameter definitions.

```
#include "utils/sim_interface/include/jeod_class.hh"
#include "base_planet.hh"
#include "environment/gravity/include/gravity_source.hh"
```

Data Structures

- class jeod::Planet

  Describes a planet with mass and shape.

Namespaces

- jeod

  Namespace jeod.

9.13.1 Detailed Description

Planetary modeling constant parameter definitions.

9.14 planet_default_data.hh File Reference

Data Structures

- class jeod::Planet_default_data

Namespaces

- jeod

  Namespace jeod.

9.15 planet_messages.cc File Reference

Implement the class PlanetMessages.

```
#include "utils/message/include/make_message_code.hh"
#include "../include/planet_messages.hh"
```

Namespaces

- jeod

  Namespace jeod.

Macros

- #define MAKE_PLANET_MESSAGE_CODE(id) JEOD_MAKE_MESSAGE_CODE(PlanetMessages, "environment/planet/", id)

9.15.1 Detailed Description

Implement the class PlanetMessages.

9.15.2 Macro Definition Documentation

9.15.2.1 MAKE_PLANET_MESSAGE_CODE

```
#define MAKE_PLANET_MESSAGE_CODE(
              id ) JEOD_MAKE_MESSAGE_CODE(PlanetMessages, "environment/planet/", id)
```

Definition at line 43 of file planet_messages.cc.

9.16 planet_messages.hh File Reference

Define the class PlanetMessages, the class that specifies the message IDs used in the planet model.

```
#include "utils/sim_interface/include/jeod_class.hh"
```

Data Structures

- class jeod::PlanetMessages

  Specifies the message IDs used in the planet model.

Namespaces

- jeod

  Namespace jeod.

9.16.1 Detailed Description

Define the class PlanetMessages, the class that specifies the message IDs used in the planet model.

9.17 sun.cc File Reference

```
#include "environment/planet/include/base_planet.hh"
#include "environment/planet/include/planet.hh"
#include "utils/named_item/include/named_item.hh"
#include "../include/sun.hh"
```

Namespaces

- jeod

  Namespace jeod.

Macros

- #define JEOD_FRIEND_CLASS Planet_sun_default_data

9.17.1 Macro Definition Documentation

9.17.1.1 JEOD_FRIEND_CLASS

```
#define JEOD_FRIEND_CLASS Planet_sun_default_data
```

Definition at line 19 of file sun.cc.

9.18 sun.hh File Reference

```
#include "planet_default_data.hh"
```

Data Structures

- class jeod::Planet_sun_default_data

Namespaces

- jeod

  Namespace jeod.

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