Lunar Lander Design

Class Diagrams

Angle

Everything we need to know about an angle.

Angle
- radian : Double
+ Angle() + Angle(degrees : Double) + Angle(rhs : Angle) + getDegrees() : Double + GetRadians() : Double + setDegrees(degrees : Double) + setRadians(radians : Double) + setUp() + setDown() + setLeft() + setRight() + reverse() + addOnto(delta : Double) - convertToDegrees(radians : Double) : Double - convertToRadians(degrees : Double) : Double - normalize(radians : Double

Acceleration

Everything we need to know about acceleration.

Acceleration
- ddx : Double - ddy : Double
+ Acceleration() + Acceleration(ddx : Double, ddy : Double) + getDDX() : Double + getDDY() : Double + setDDX(ddx : Double) + setDDY(ddy : Double) + set(a : angle, magnitude : Double) + addDDX(ddx : Double) + addDDY(ddy : Double) + add(rhs : Acceleration)

Velocity

Everything we need to know about speed.

Velocity
- dx : Double - dy : Double
+ Velocity() + Velocity(dx : Double, dy : Double) + getDX() : Double + getDY() : Double + setDX(ddx : Double) + setDY(ddy : Double) + set(a : angle, magnitude : Double) + addDX(ddx : Double) + addDY(ddy : Double) + add(rhs : Acceleration, t : Double)

Position

Everything we need to know about the position.

Position
- x : Double - y : Double
+ Position() + Position(x : Double, y : Double) + Position(rhs : Position) + assign(rhs : Position) : Position + getX() : Double + getY() : Double + equals(rhs : Position) : Boolean + notEquals(rhs : Position) : Boolean + setX(ddx : Double) + setY(ddy : Double) + addX(ddx : Double) + addY(ddy : Double) + add(rhs : Acceleration, v : Velocity, t : Double)

Lander

The Module, its status, velocity, angle, position, and fuel.

Lander
- status : {PLAYING, SAFE, DEAD} - pos : Position - v : Velocity - angle : Angle - fuel : Double
+ Lander(ptUpperRight : Postion) + reset(ptUpperRight : Position) + isDead() : Boolean + isLanded() : Boolean + isFlying() : Boolean + getPosition() : Position + getSpeed() : Double + getFuel() : Int + getWidth() : Int + getMaxSpeed() : Double + draw(thrust : Thrust, gout : ogstream) + input(thrust : Thrust, gravity : Double) : Acceleration + coast(a : Acceleration, time : Double) + land() + crash()

Thrust

The mainEngine, the rotation, and user input of the module.

Thrust
- mainEngine : Boolean - clockwise : Boolean - counterClockwise : Boolean
+ Thrust() + rotation() : Double + mainEngineThrust() : Double + isMain() : Boolean + isClock() : Boolean + isCounter() : Boolean + set(pUI : Interface)