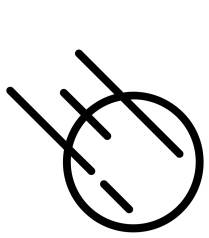




Object-Oriented Programming with Asteroid

- Structures with behavior
 - No inheritance
 - No member protection, everything is public
- Member function specification
 - Uses standard function syntax within structures
 - Internal **object identity** is given via the '**this**' keyword.
 - Special member functions:
 - `__init__`
 - `__str__`



Object-Oriented Programming with Asteroid

```
structure Rectangle with
  data xdim.
  data ydim.
  function area with () do
    return this@xdim * this@ydim.
  end
end

load system type.
let r = Rectangle(3,2).
assert (r @area () == 6).
assert (type @tostring r == "Rectangle(3,2)").
```

- Data and function members
- Notice the use of 'this'
- We are using the default constructor that fills out the data members according to the order they appear.
- Taking advantage of default behavior when mapping object to a string.

In009/rect1.ast



Object-Oriented Programming with Asteroid

```
structure Rectangle with
  data xdim.
  data ydim.
  function __init__ with (xdim:%real,ydim:%real) do
    let this@xdim = xdim.
    let this@ydim = ydim.
  end
  function area with () do
    return this@xdim * this@ydim.
  end
  function __str__ with () do
    return "Rectangle with dimension "+this@xdim+"x"+this@ydim.
  end
end

load system type.
let r = Rectangle(3.0,2.0).
assert (r @area () == 6.0).
assert (type @tostring r == "Rectangle with dimension 3.0x2.0").
```

In009/rect2.ast

- Taking advantage of the special functions `__init__` and `__str__`
- We use the constructor `__init__` to enforce that we only want real values for dimensions
- The `__str__` functions allows us to create a custom string representation for Rectangle objects