

OOP

by Deborah R. Fowler

KEY CONCEPTS

- ✓ • variables
- ✓ • truth statements
- ✓ • looping
- ✓ • functions
- ✓ • I/O
- ✓ • lists
- classes/objects
- OOP

From the textbook Chapter 16:

```
1 class Point:
2     """ Point class for representing and manipulating x,y coordinates.
3
4     def __init__(self, initX, initY):
5         """ Create a new point at the given coordinates. """
6         self.x = initX
7         self.y = initY
8
9     def getX(self):
10        return self.x
11
12    def getY(self):
13        return self.y
14
15
16 p = Point(7, 6)
17 print(p.getX())
18 print(p.getY())
19
```

Run

Show CodeLens

```
1 class Point:
2     """ Point class for representing and manipulating x,y coordinates.
3
4     def __init__(self, initX, initY):
5         """ Create a new point at the given coordinates. """
6         self.x = initX
7         self.y = initY
8
9     def getX(self):
10        return self.x
11
12    def getY(self):
13        return self.y
14
15    def distanceFromOrigin(self):
16        return ((self.x ** 2) + (self.y ** 2)) ** 0.5
17
18
19 p = Point(7, 6)
20 print(p.distanceFromOrigin())
21
```

9.21954445729

```
6 def __init__(self, initX, initY):
7     """ Create a new point at the given coordinates. """
8     self.x = initX
9     self.y = initY
10
11 def getX(self):
12     return self.x
13
14 def getY(self):
15     return self.y
16
17 def distanceFromOrigin(self):
18     return ((self.x ** 2) + (self.y ** 2)) ** 0.5
19
20 def distance(point1, point2):
21     xdiff = point2.getX() - point1.getX()
22     ydiff = point2.getY() - point1.getY()
23
24     dist = math.sqrt(xdiff**2 + ydiff**2)
25     return dist
26
27 p = Point(4, 3)
28 q = Point(0, 0)
29 print(distance(p, q))
30
```

Formerly

<http://interactivepython.org/runestone/static/thinkcspy/Labs/astronomylab.html>

<https://runestone.academy/ns/books/published//thinkcspy/Labs/astronomylab.html>