

Lecture 13: Classes

A Point class

```
1 import math
2
3 class Point:
4
5     origin = Point(0,0)
6
7     def __init__(self, x, y):
8         self.x = x
9         self.y = y
10
11    def add(self, pt):
12        return Point(self.x + pt.x, self.y + pt.y)
13
14    def __add__(self, pt):
15        return self.add(pt)
16
17    def __repr__(self):
18        return "Point({},{})".format(self.x, self.y)
19
20    def distance(self, pt):
21        return math.sqrt((self.x - pt.x)**2 + (self.y - pt.y)**2)
22
23    def __str__(self):
24        return "{ } . { }".format(self.x, self.y)
```

A Rect class

```
1 from point import Point
2
3 class Rect:
4
5     def __init__(self, x1, y1, x2, y2):
6         self.x1 = x1
7         self.y1 = y1
8         self.x2 = x2
9         self.y2 = y2
10
11     def width(self):
12         return Point(self.x1, self.y1).distance(Point(self.x2, self.y1))
13
14     def height(self):
15         return Point(self.x1, self.y1).distance(Point(self.x1, self.y2))
16
17     def area(self):
18         return self.width() * self.height()
```