Name:

CS 421 — Objects Activity

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Implementing Objects

Problem 1) Try implementing the `point` class in Python using Hash maps (associative array) to store the methods and the local variables. Include `getx`, `gety`, `move`, and `report`.

Problem 2) Now try writing `fastPoint`, where moves go twice as quickly. But this time take advantage of the fact that you have a hash table!

Implementing Mixins

Problem 3) Suppose we had a python function that emitted a `Counter` class using the hashmap technique. Can you think of a way to implement a mixin, so that your `point` class has access to `Counter` methods?

You could do this by modifying your `mkPoint` function, but you can also do this by extending your individual class!

Covariance and Contravariance

Problem 4) Suppose you have a function `f :: a -> b`, and you would like to use function composition to modify it so that you have a function `f' :: a -> c`. What would this modifying function look like? Give a realistic example of when you might want this.

Problem 5) Suppose you have a function `f : a -> Bool`, and you would like to use function composition to modify it so that you have a function `f' : c -> Bool`. What would this modifying function look like? Give a realistic example of when you might want this.