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Result of practice:

I create a architecture that simulate a citi. They have some parameters that: position, distance to other cities and name of citi. Also realize a method of establishing the coordinates and calculating a distance between other citi.

Source code:

Language: python

```
__author__ = 'Orange-hanter'

import math
import random

class City:
    """
    This class realize a city abstraction
    """
    name = 'noname'
    y = 0 # x-position of city
    x = 0 # y-position of city
    distanceMatrix = [] # distance to all other cities, where 0=A,
    1=B, 2=C ....
    width = 1000 # width of country
    height = 1000 # height of country
    countOfCities = 4 # count of countries

    def __init__(self, name):
        self.name = name
        return

    def setCoordinate(self, position_x, position_y):
        self.x = position_x
        self.y = position_y
        return

    def calcSelfDistantion(self, pos_x, pos_y):
        if pos_x == self.x and pos_y == self.y:
            self.distanceMatrix.append(0)
        return
```

```

        distance = math.hypot(abs(pos_x - self.x), abs(pos_y -
self.y))
        self.distanceMatrix.append(distance)
        return distance

    def printInformation(self):
        print("Coordinate of city ", self.name, " is x:", self.x, "
y:", self.y)

cities = [City('A'), City('B'), City('C'), City('D')] #
initialization of cities

for index in range(0, 4):
    cities[index].setCoordinate(random.randrange(0, 1000),
random.randrange(0, 1000))
    cities[index].printInformation()

```

Result of executin:

```

C:\Python\Python34\python.exe D:/PythonProjects/MIIT/MIIT3/Task4.py
Coordinate of city A is x: 146 y: 643
Coordinate of city B is x: 953 y: 104
Coordinate of city C is x: 431 y: 148
Coordinate of city D is x: 396 y: 131

```