

School Nova Computer Science 201 Homework 6

Save your code as lastname_homework6.py and submit on Google Classroom

Task 1

Using the classwork code, make the following code a function:

```
try:
    for i in planes:
        i.display()

    for i in airports:
        i.display()
except:
    print("Not all planes were assigned!")
```

We are going to use this function before and after assignment of the planes to the airports.

Task 2

Add a method to your PLANES class that randomly assigns the plane to an airport. Make sure to update the corresponding attribute of the airport (the list of planes current assigned to the airport). Hint: you need just *two* lines of code for this method. First, randomly choose an airport object and assign to the plane attribute. Second, update the list of planes at the chosen airport (once again, you should be using the airport object, the reference to which you have in your plane object).

Task 3

Verify that your code works as expected by using the function from Task 1. Your date should look something like this:

```
Plane 151 at 22 Located at (6, 0)
Plane 343 at 22 Located at (6, 0)
Plane 257 at 36 Located at (4, 6)
Plane 251 at 51 Located at (0, 9)
Plane 653 at 51 Located at (0, 9)
Airport 22, (6, 0). Planes [151, 343]
Airport 51, (0, 9). Planes [251, 653]
Airport 36, (4, 6). Planes [257]
```

Task 5

Add a method to the airport class that calculates distance between any two locations on the map. Remember that locations are based on (x, y) tuple and x and y are integers. The distance can be calculated using the Euclidian distance formula:

<https://www.cuemath.com/euclidean-distance-formula/>

Task 6

Add a method to the airport class which uses the method from Task 5 and identifies another airport which is closest geographically. Display this information for all airports. Your output should look something like this:

```
Airport 44 at (1, 3):  
Closest airport 90 at (3, 0) Distance: 3.61.  
Airport 90 at (3, 0):  
Closest airport 44 at (1, 3) Distance: 3.61.  
Airport 45 at (8, 5):  
Closest airport 90 at (3, 0) Distance: 7.07.
```