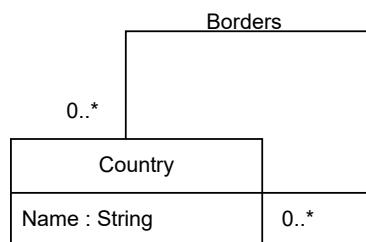
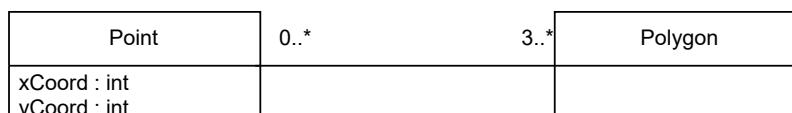


Q.1 Prepare a class diagram for the following object diagram that shows a portion of Europe.



Q.2 Prepare a class diagram for object diagram given in Figure -2. Explain your multiplicity decisions. What is the smallest number of points required to construct a polygon? Does it make a difference whether or not point may be shared between polygons? Your answer should address the fact that points are ordered.



Reasoning and answers to question asked in Q2

Multiplicity

- For the Polygon side:
 - A Polygon must have at least three Point instances to be valid, so the multiplicity is 3..*.
- For the Point side:
 - A Point can be part of zero or more Polygon instances, so the multiplicity is 0..*.

Minimum Points of Polygon

The smallest number of points required to construct a polygon is **3**. This is because the simplest polygon is a triangle, which has three sides and three vertices (points).

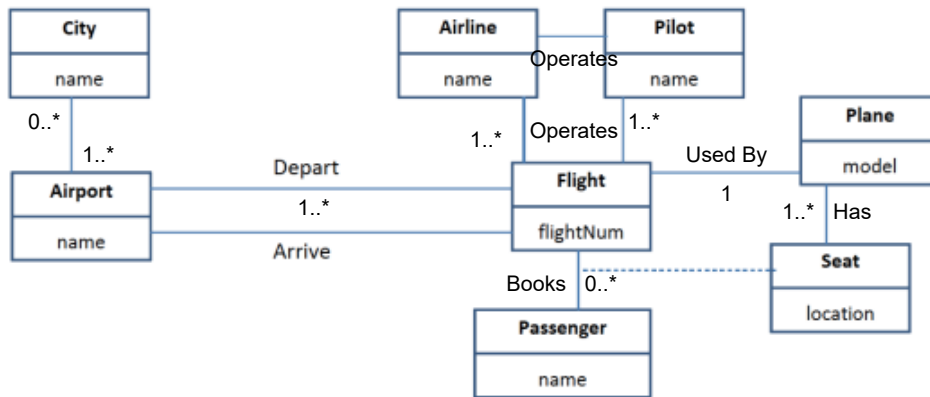
Point Sharing

Points can be shared between polygons, allowing for more complex and connected shapes. Not sharing points leads to independent polygons.

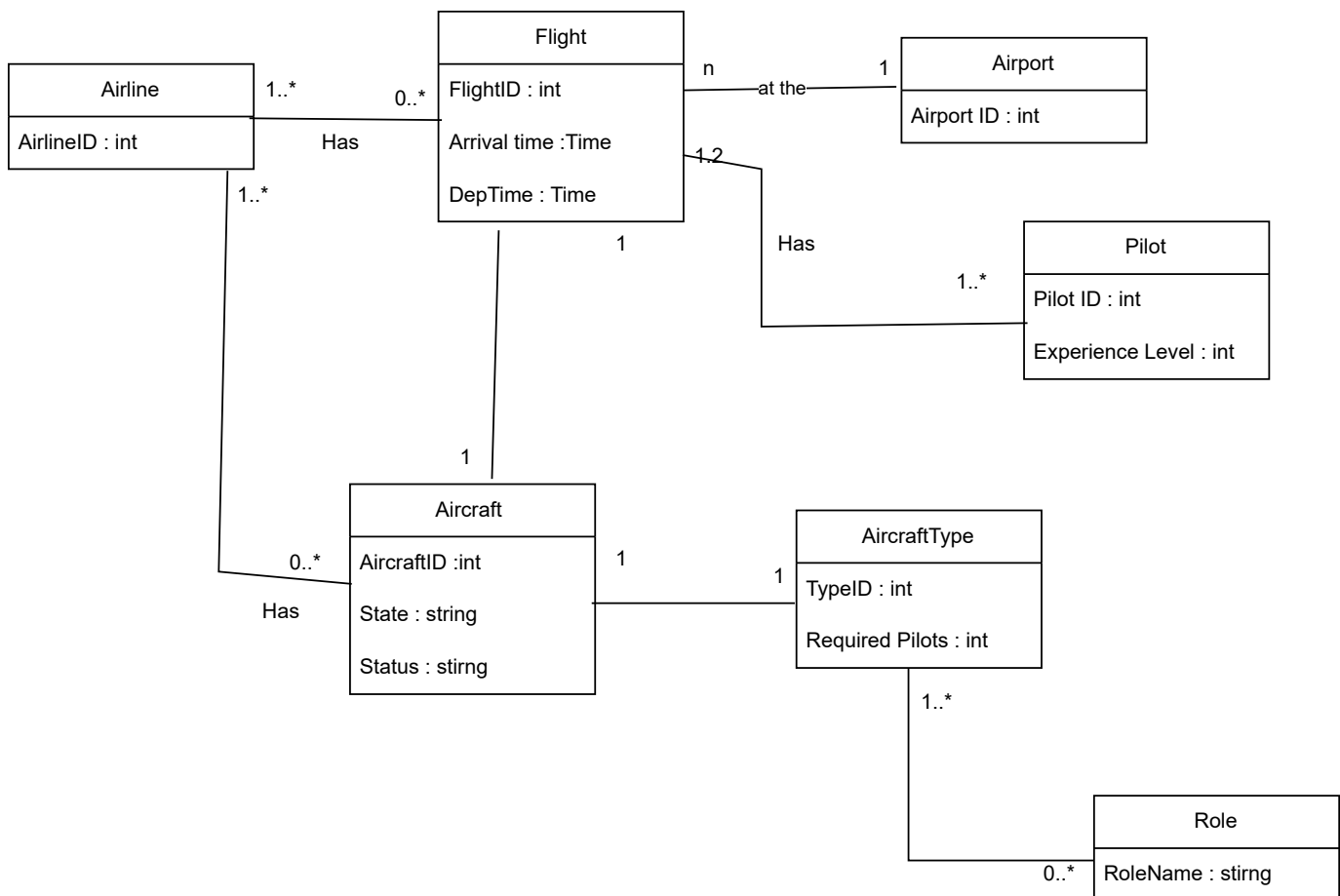
Ordered Points

The order of points is essential for defining the shape and properties of the polygon accurately.

Q.3 Figure 3 is a partially completed class diagram of an air transportation system. Add multiplicities in the diagram. Also add association names to unlevelled associations.



Question 4



Constraints

- Each **Flight** must have a pilot and a co-pilot.
- A **Pilot** with the role of captain must have an experience level of 3.
- An **Aircraft** can be in a working state or under repair and can be landed or airborne.