IT314 – SOFTWARE ENGINEERING
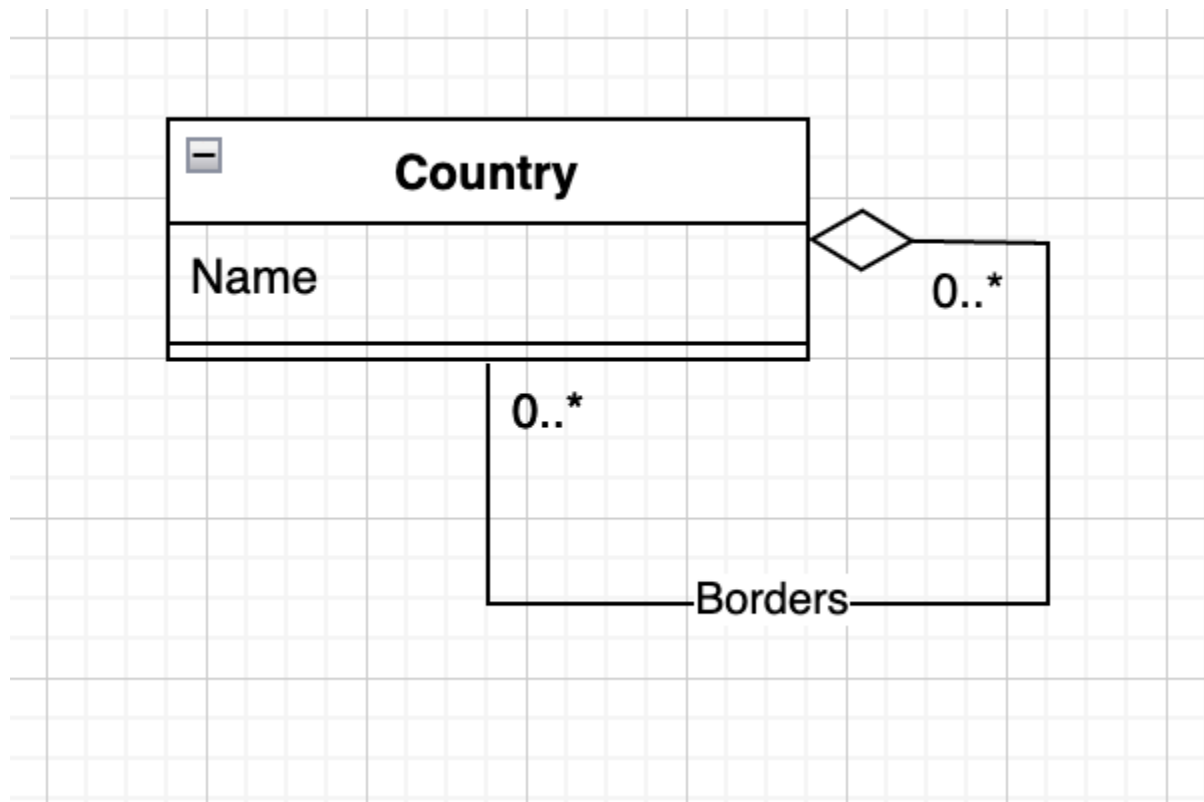
Lab -04

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Lab Group: 04

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

Q.2 Prepare a class diagram for the 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 points may be shared between polygons? Your answer should address the fact that points are ordered.
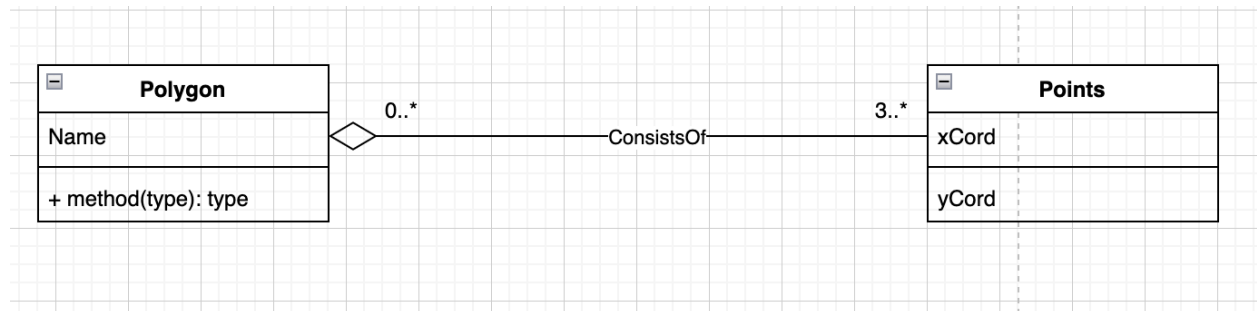
- Smallest number of points required to construct a polygon is 3.
- Sharing Points: If points can be shared between polygons, the minimum number of distinct points required to form a polygon still remains three. For example, if you have three points forming a triangle, you can use these same three points to form multiple triangles or other polygons (such as overlapping triangles or more complex shapes).
- Order Matters: The points must be ordered correctly to define the shape of the polygon. The sequence in which the points are connected determines the edges of the polygon and how it is drawn.

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.
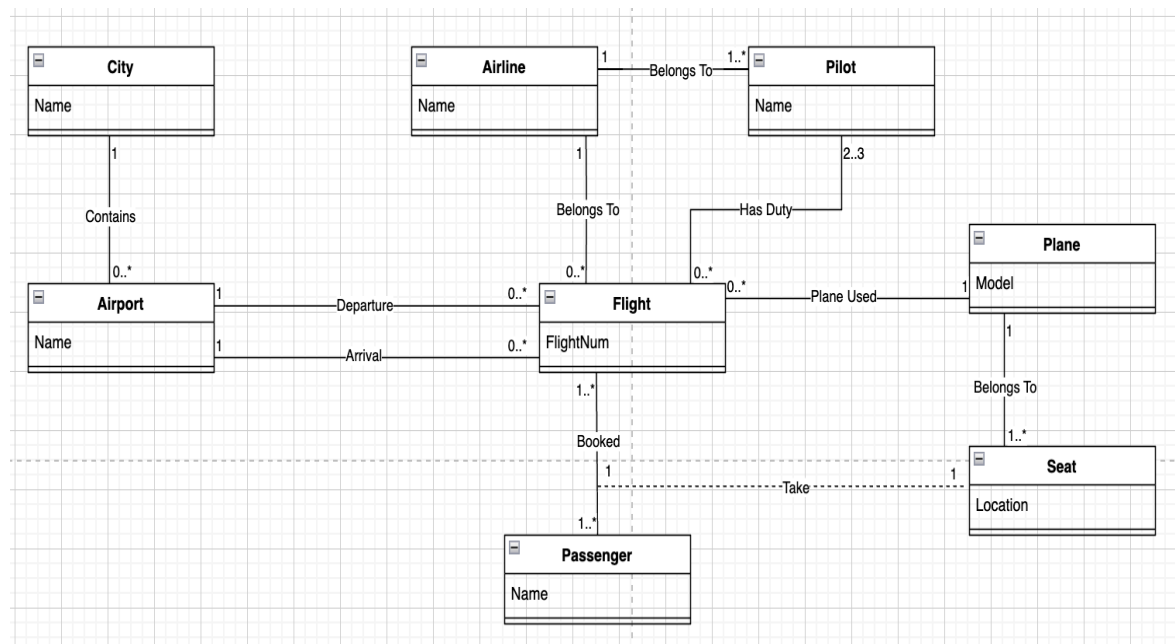
Q.4 We want to model a system for management of flights and pilots. An airline operates flights. Each airline has an ID. Each flight has an ID, a departure airport and an arrival airport: an airport as a unique identifier. Each flight has a pilot and a co-pilot, and it uses an aircraft of a certain type; a flight also has a departure time and an arrival time. An airline owns a set of aircrafts of different types. An aircraft can be in a working state or it can be under repair. In a particular moment an aircraft can be landed or airborne. A company has a set of pilots: each pilot has an experience level: 1 is minimum, 3 is maximum. A type of airplane may need a particular number of pilots, with a different role (e.g.: captain, co-pilot, navigator): there must be at least one captain and one co-pilot, and a captain must have a level 3.