



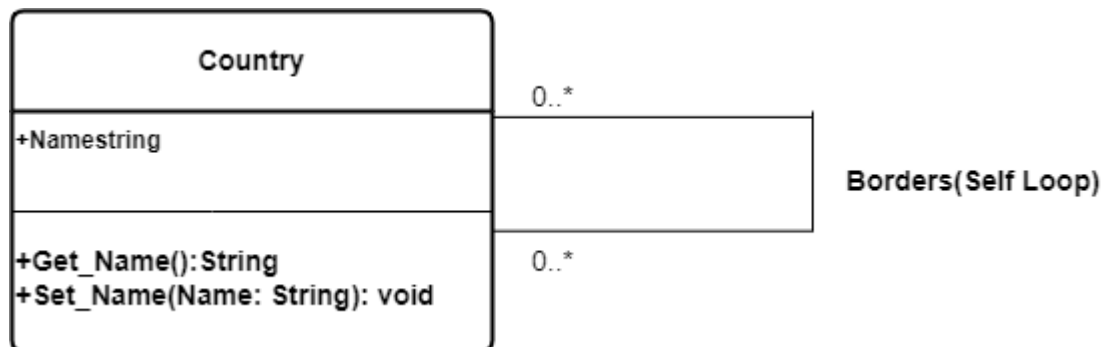
# **SOFTWARE ENGINEERING**

## **LAB 4 - Class Diagram**

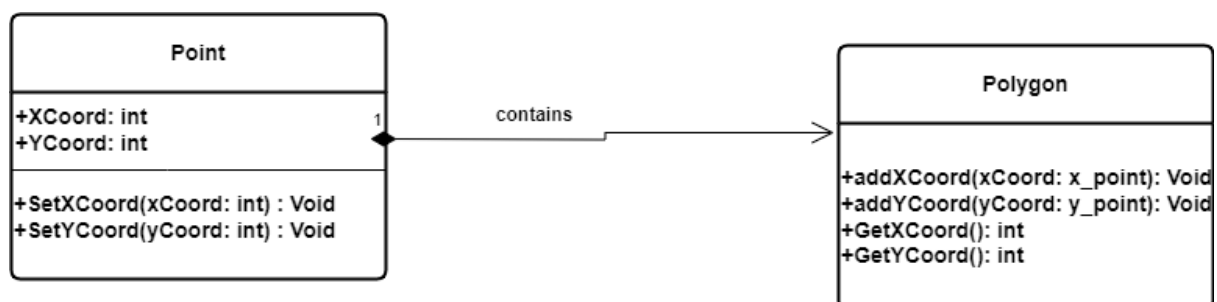
**202201191**

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**Q1 : Prepare a class diagram for the following object diagram that shows a portion of Europe.**



**Q2 : 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 point may be shared between polygons? Your answer should address the fact that points are ordered.**

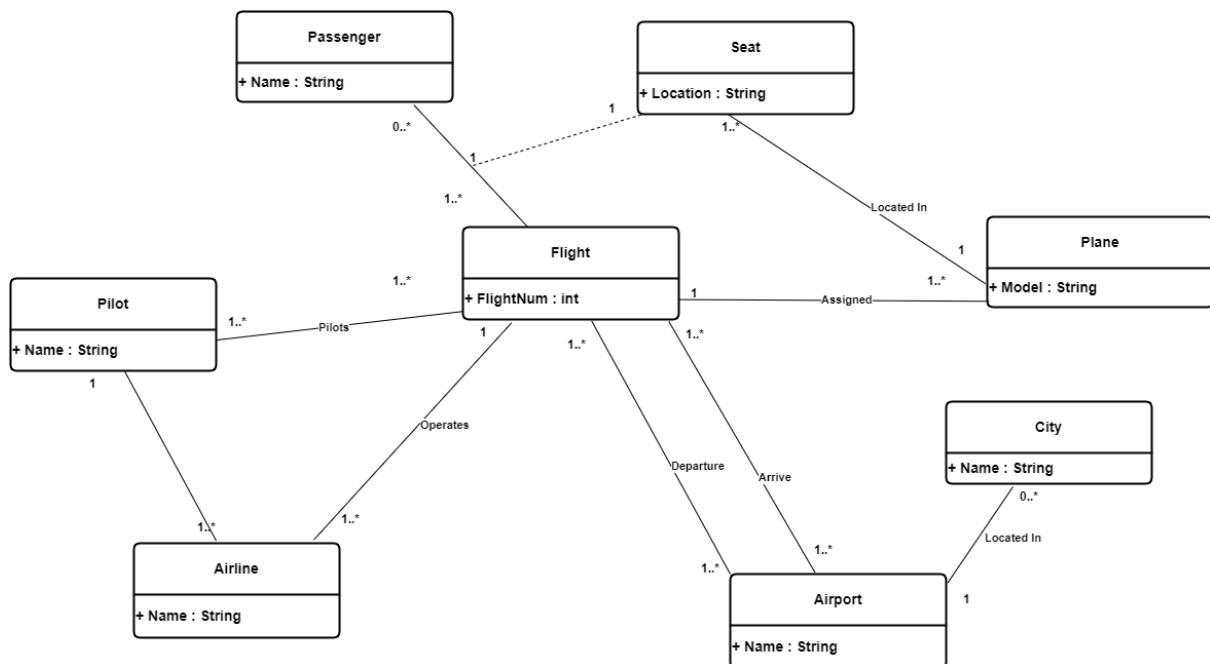


### ❖ Sharing Points Between Polygons:

- Points can indeed be shared between polygons, such as in the case of neighbouring polygons on a mesh or grid that utilise common vertices. This shared connectivity does not compromise the validity of the polygons; however, it may influence the resulting shape depending on the configuration and sequence of the shared points.

**Q3 : 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.**



**Q4: We want to model a system for management of flights and pilots. An airline operates flights. Each the 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 has also 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 aeroplane 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.**

