

IT314 - Software Engineering
Lab-4

Name: vrund leuva

Id: 202201199

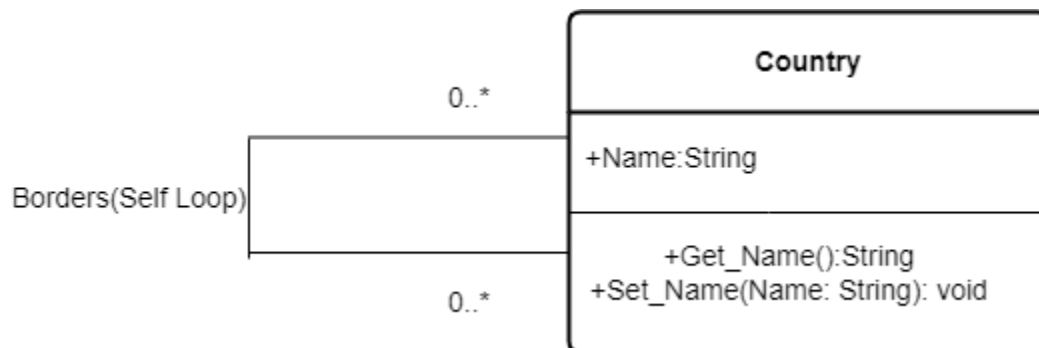
Q1. Prepare a class diagram for the following object diagram that shows a portion of Europe.



Figure-1

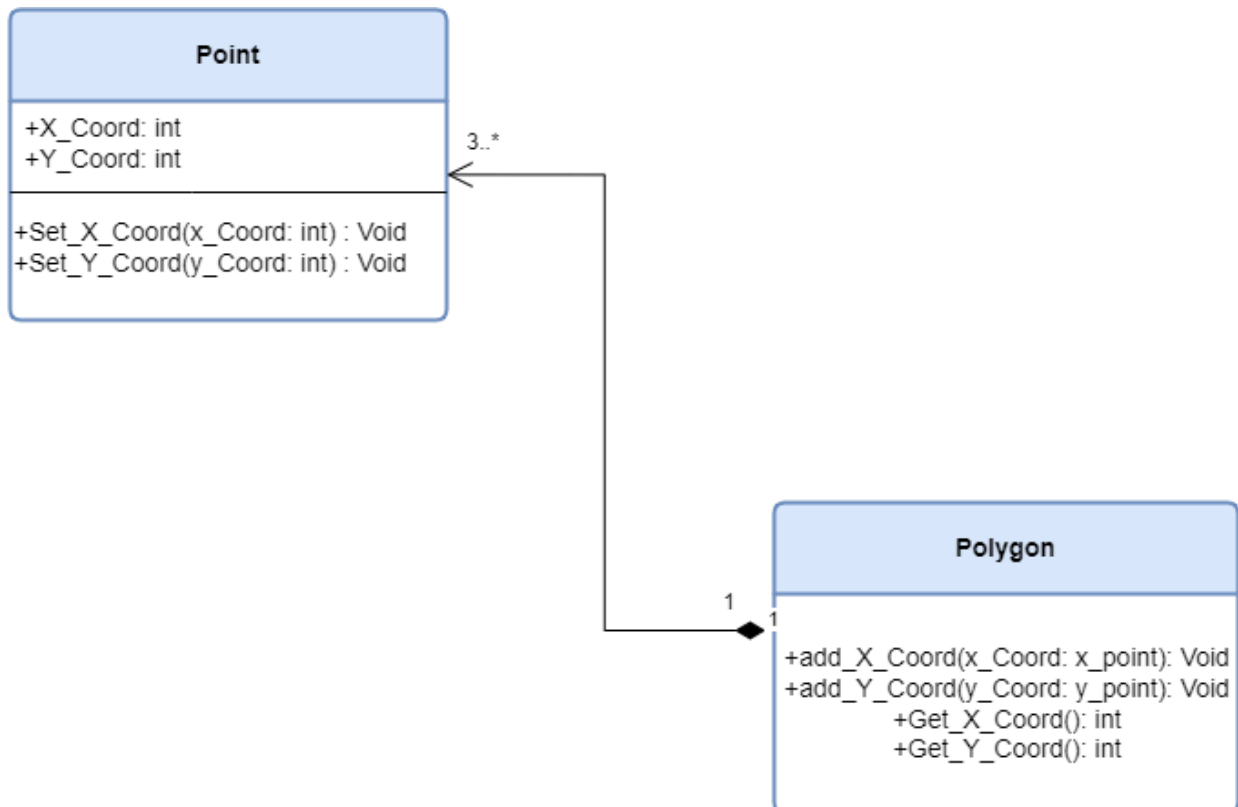
Ans:

- **Class Name:**
 - ❖ Country
- **Attributes:**
 - ❖ name: String
- **Methods:**
 - ❖ Get_Name()
 - ❖ Set_Name(Name: string)
- **Associations:**
 - ❖ Borders : A many-to-many association between the Country class.



Q2. 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.

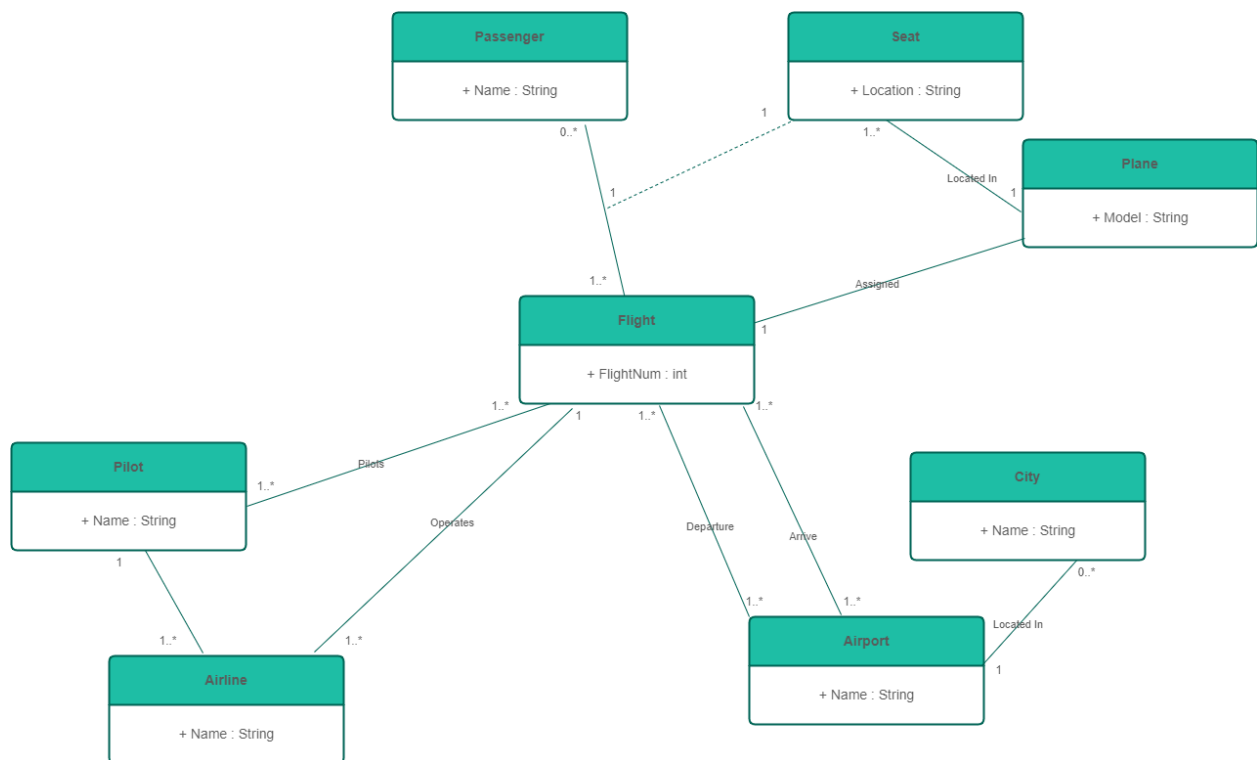
Ans:



- Minimum 3 points required to construct a polygon.
- If points are shared between polygons then multiplicity changes from 1 to 1..*

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.

Ans:



Q4. 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 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.

Ans:

