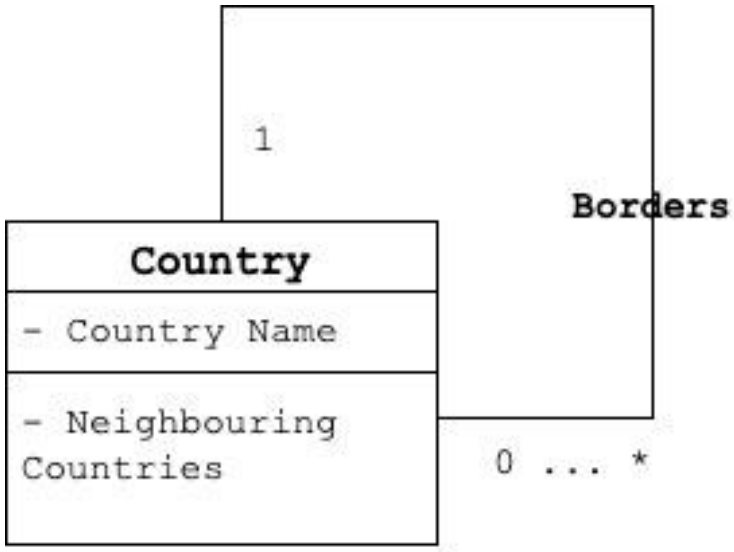
Name: Denil Antala

ID: 202201090

LAB: SWE(04)

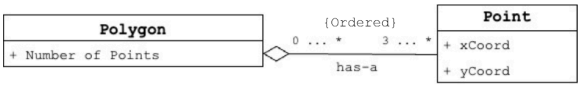
Q1) Prepare a class diagram for the following object diagram that shows portion of Europe.

A1)



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.

A2)

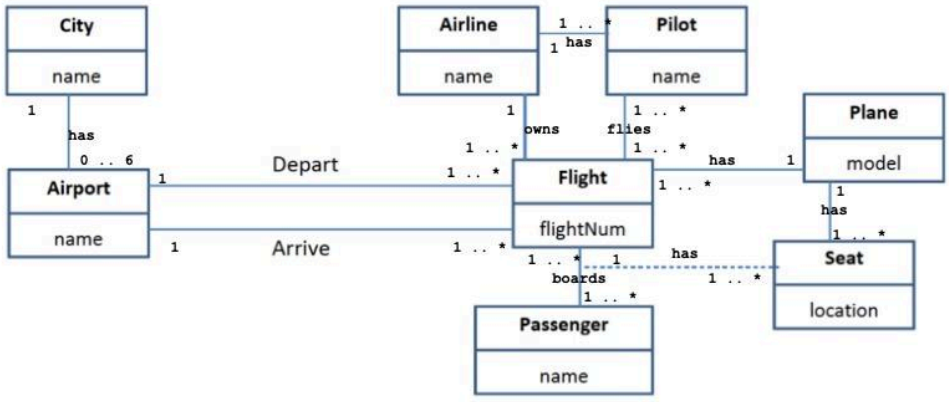


Assumption:

- At Least 3 points are required for making a polygon
- Because at least 3 points are required due to this **“Points”** class has a multiplicity of **“ 3 .. * ”**
- Even though 3 points are a must, it may be that they are collinear and because of this the multiplicity of **“Polygon”** is **“ 0 .. * “**
- There is an association between Polygon and Points because there cannot be a polygon without any point but points may exist independently.

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.

A3)



Assumption:

- We consider a city to have no airport or have at most 6 airports.
- We've assumed that an airline allows booking more than 1 seat to a single passanger.
- We assume that a single pilot might fly a different plane everyday.

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.

A4)