

SOFTWARE ENGINEERING (IT-314)

LAB-4

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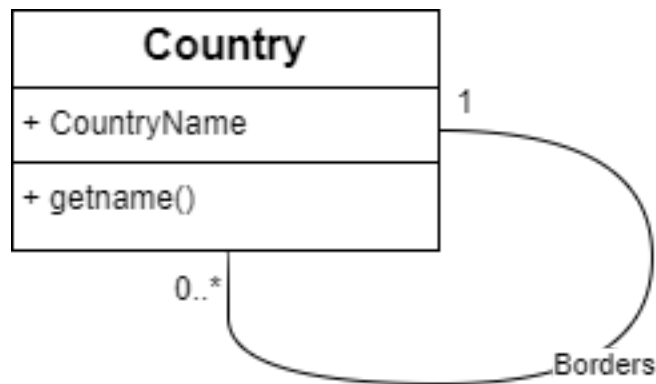
1.)

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



Figure-1

Ans)



2.)

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.

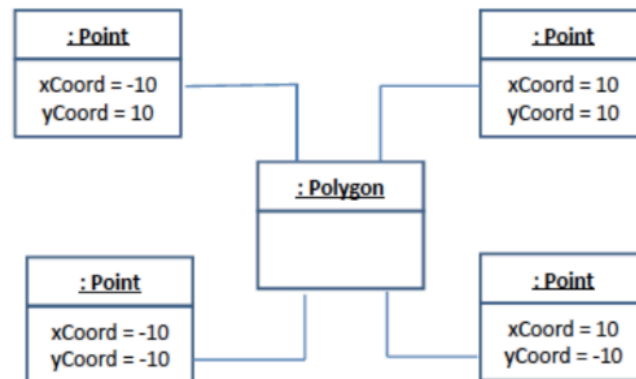
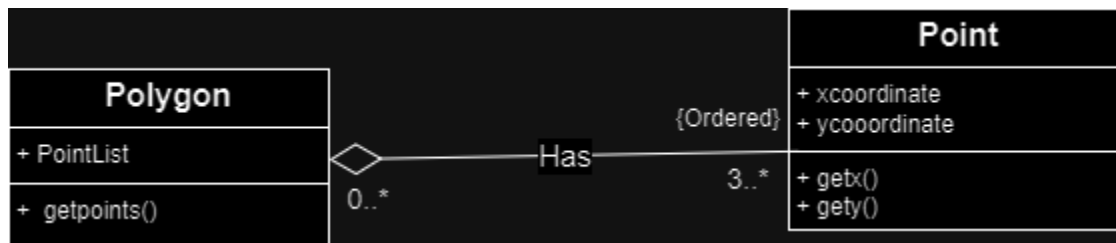


Figure - 2

Ans)

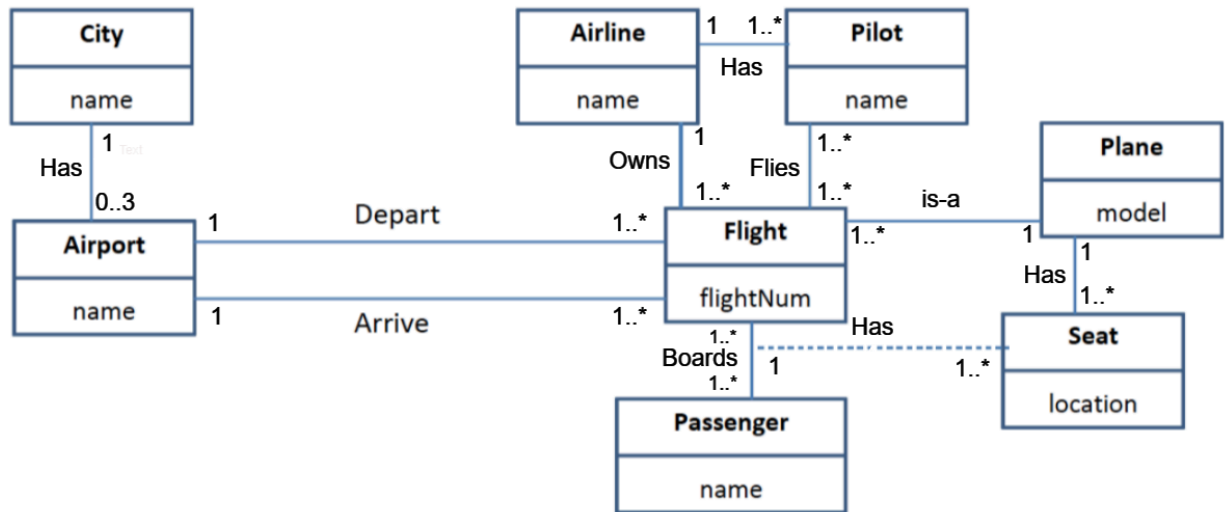
- Smallest number of points required to form a polygon=3
- Sharing points does not make a difference in the number of minimum points because each polygon requires at least 3 non collinear points to form a polygon (triangle)
- The points are ordered as here we do not want any duplicates.



-As we know that a polygon needs atleast 3 points, therefore that explains "3..*" multiplicity.

It may possible that a point does not belong to any polygon, to appreciate that case, we have set the multiplicity as "0..*"

3.)



-Assumptions for above multiplicity

- We assume that any city has 0-3 airports.
- We assume that the same flight is not operated by the same pilots everyday (therefore there are multiple pilots that operate a single flightno.).
- We also assume the possibility that each passenger can have multiple seats.

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 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)

