SOFTWARE ENGINEERING

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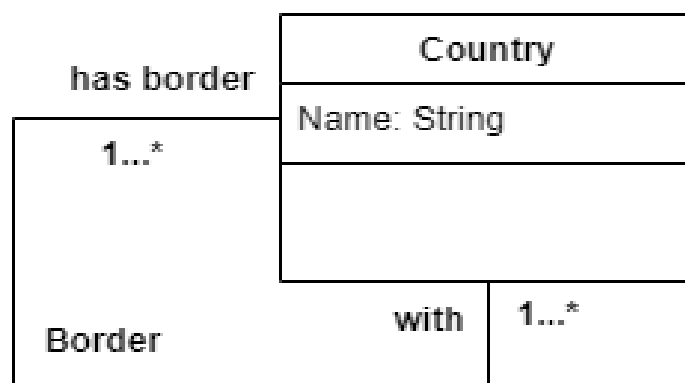LAB : 04

Question 1)

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

Figure-1

Answer:

Question 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.
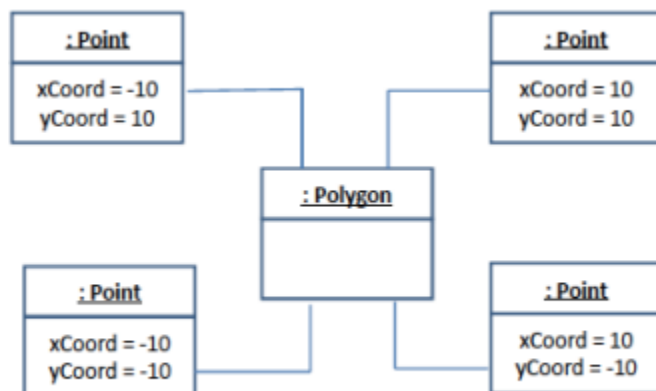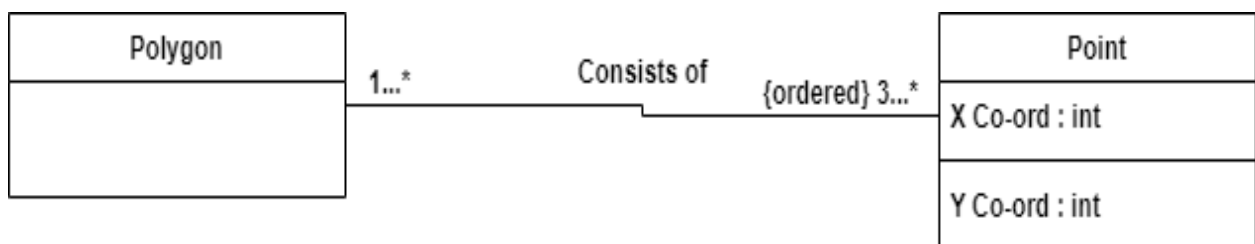

: Point		: Point
xCoord = -10		xCoord = 10
yCoord = 10		yCoord = 10

: Polygon

: Point		: Point
xCoord = -10		xCoord = 10
yCoord = -10		yCoord = -10

Figure - 2

Answer:

| Polygon | | | Point |
| | 1...* Consists of {ordered} 3...* | | X Co-ord : int |
| | | | Y Co-ord : int |

- Smallest Polygon is a triangle and it has three points so the polygon must have at least three points.
- A point can be shared by 1 or more polygons.
- The points must be in order of joining them so that the polygon can be specifically defined.

Question 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.
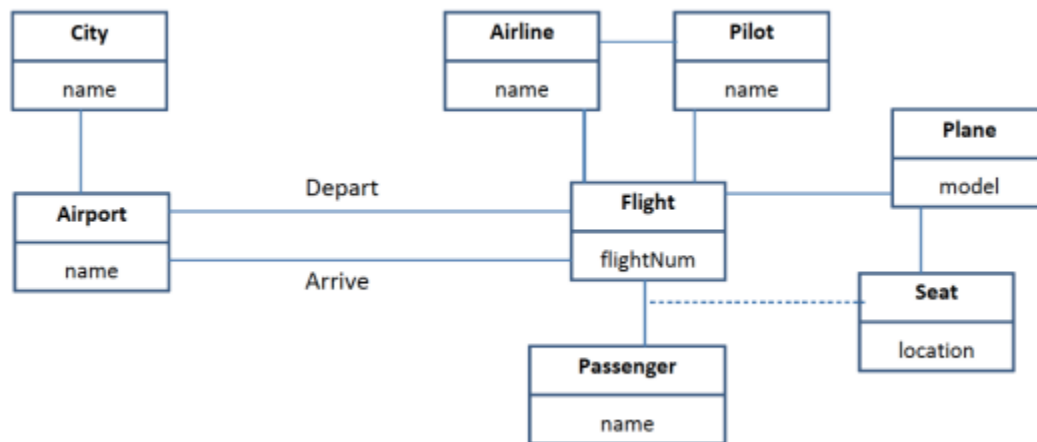
Answer:
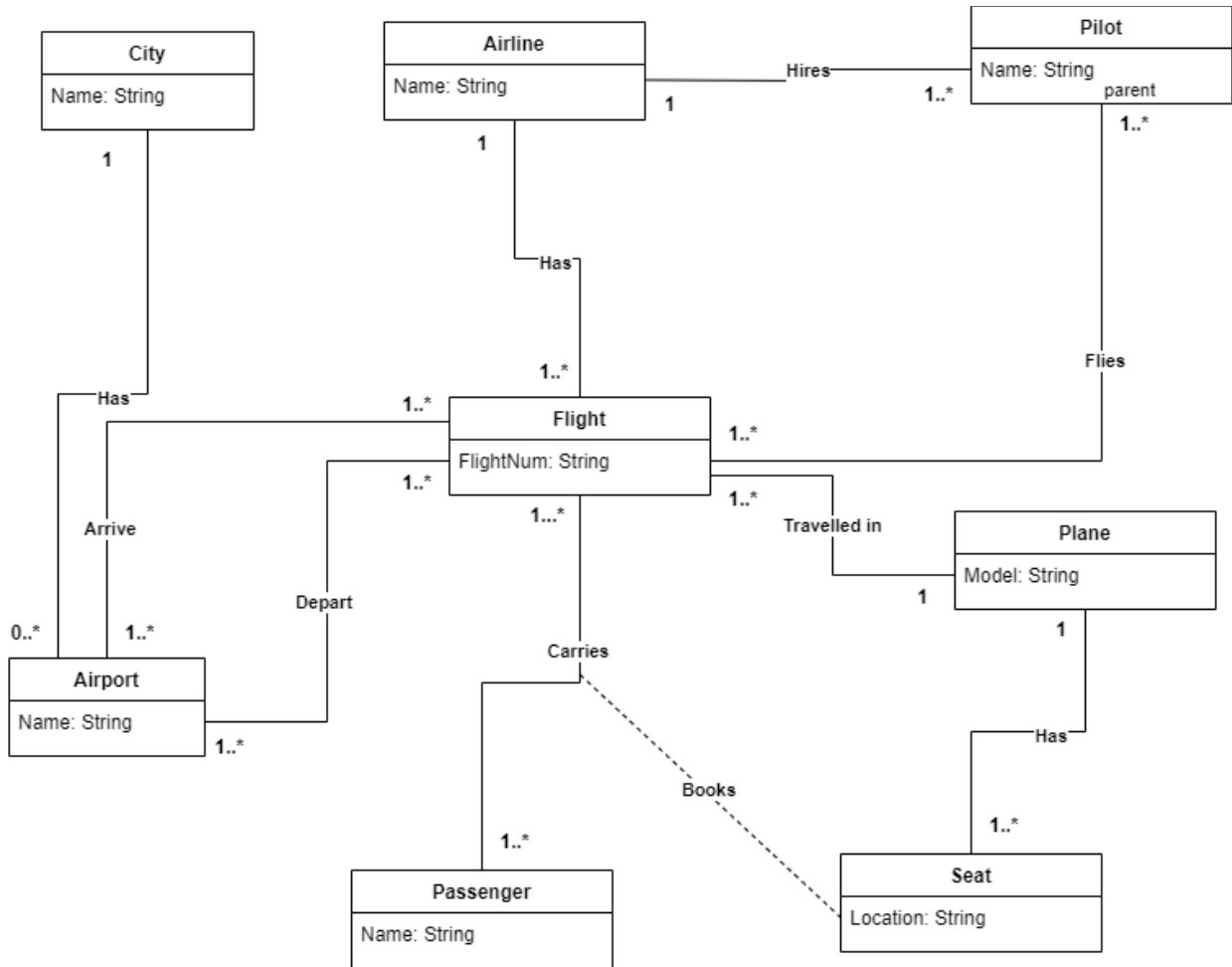
Question 4)

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.

Answer: