IT314 - LAB
Class Diagram

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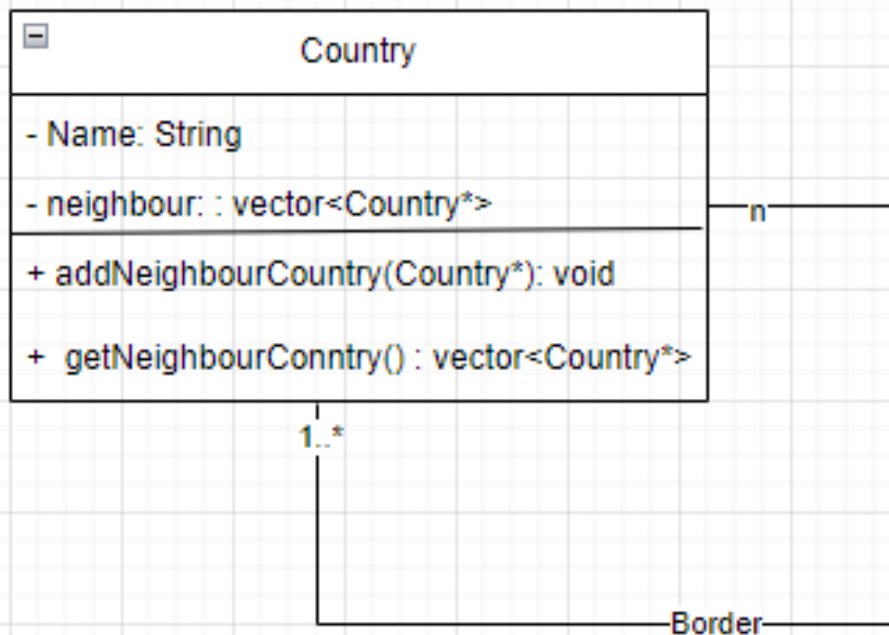
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Q.1 Prepare a class diagram for the following object diagram that shows a portion of Europe.

Spain: Country	Borders	France: Country	Borders	Belgium: Country
Name = Spain		Name = France		Name = Belgium

Figure-1

ANS: Following is the Class diagram for the above given object diagram

Country
- Name: String
- neighbour: : vector<Country*>
+ addNeighbourCountry(Country*): void
+ getNeighbourConntry() : vector<Country*>

1..*

n

-Border-

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.
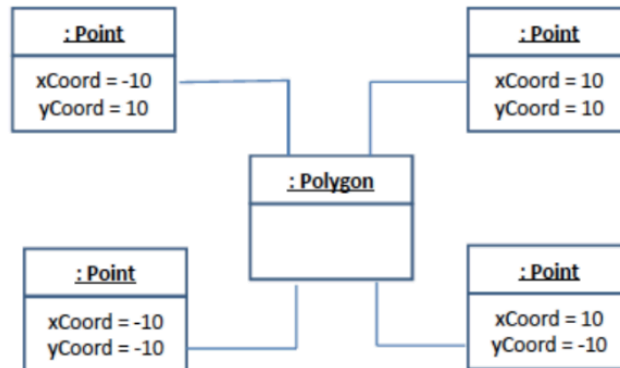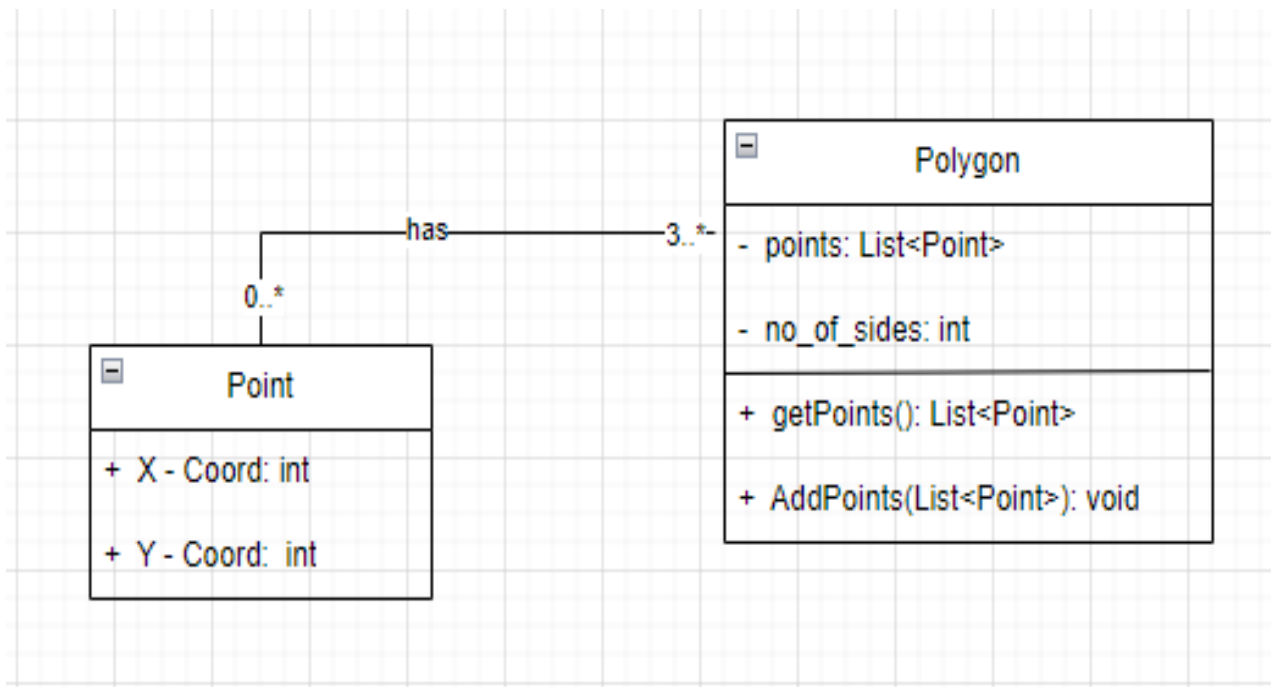

Figure - 2

ANS: A Polygan should have atleast 3 points , also a point can be a part of any Polygon , So the multiplicity will be 3..* at the side of Polygon and 1..* in the side of Point

The Polygon class has attributes Points which is a list of Points and a variable of type int for storing the number of sides and methods as getpoints and addpoints

Q.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.
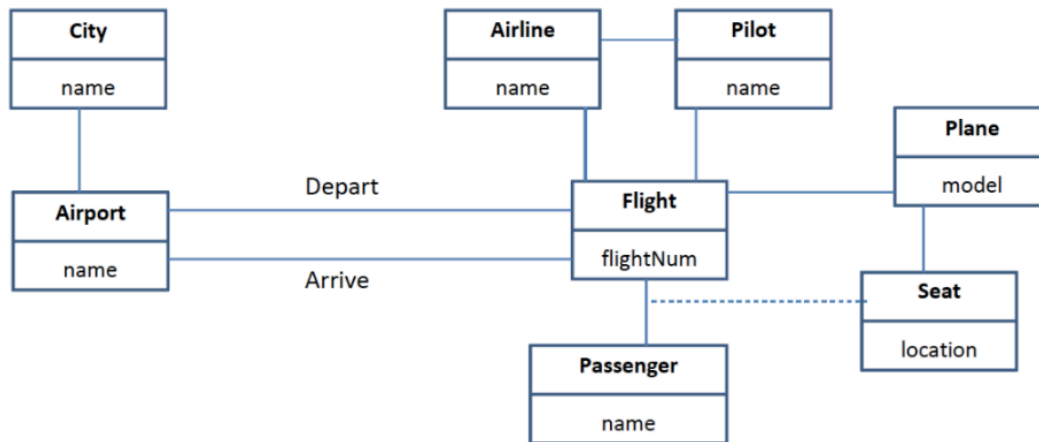
ANS: Here is the edited diagram after adding the multiplicities
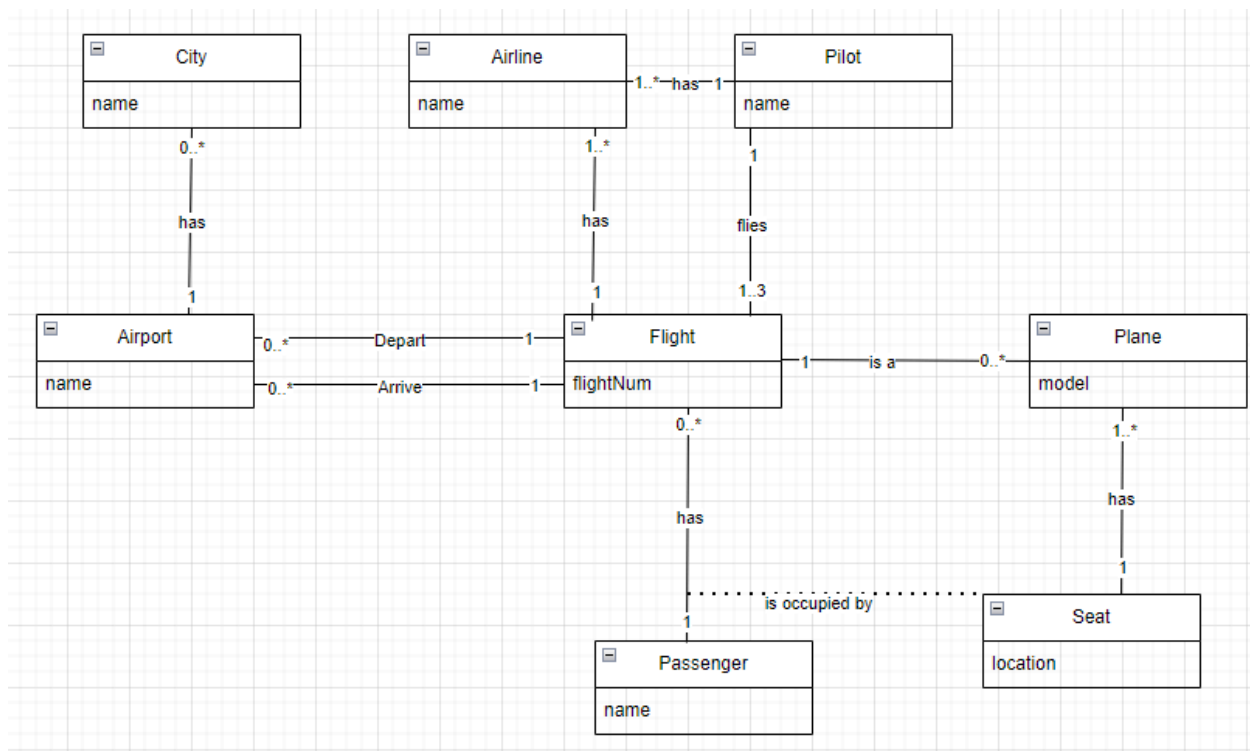
Q.4 We want to model a system for management of flights and pilots. An airline operates flights. Each airline has an ID. Each flight has an ID a departure airport and an arrival airport: an airport as a unique identifier. Each flight has a pilot and a co-pilot, and it uses an aircraft of a certain type; 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: