

Lab-04 Class Diagram

Name : Variya Hitanshu J.

StudentID : 202201510

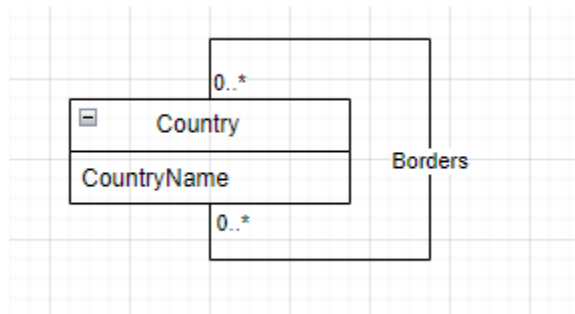
Lab-Group : 6

Question-01)

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



Solution:



Question-02)

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.

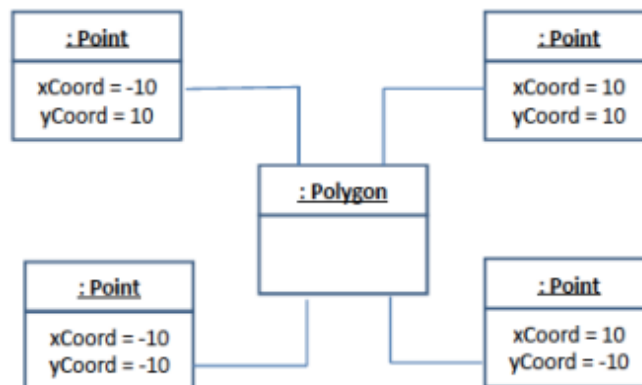
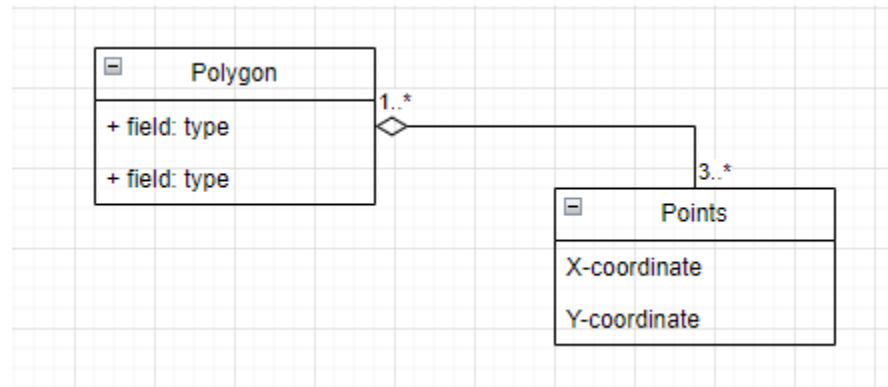


Figure - 2

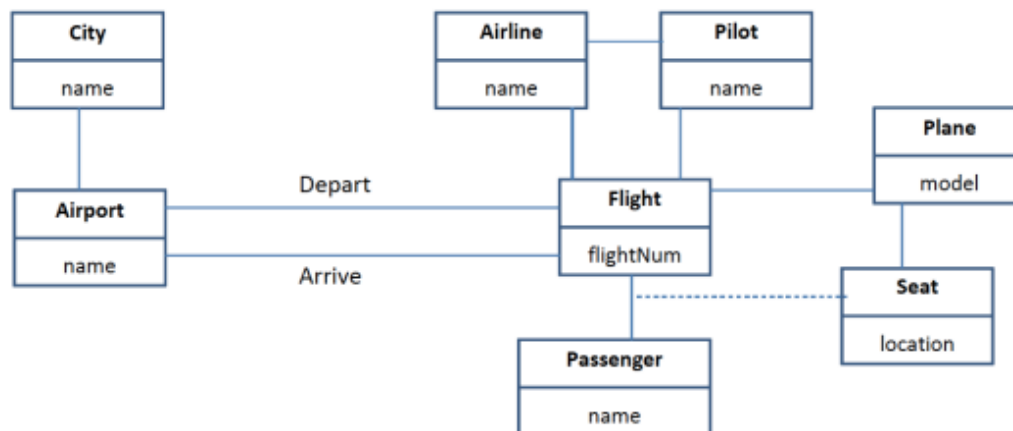
Solution:



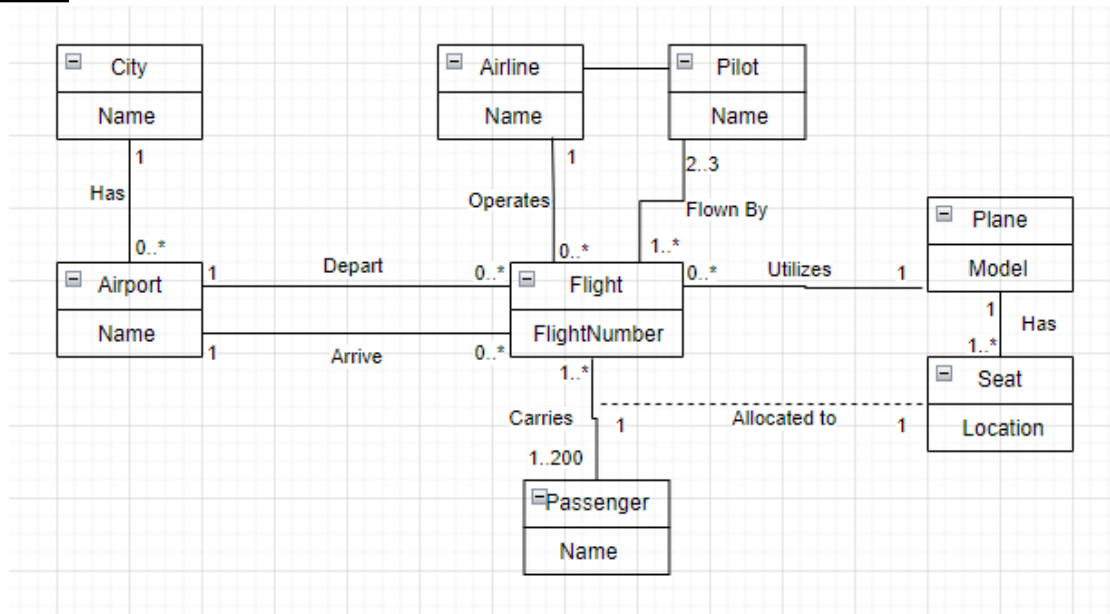
- To Construct the Polygon, at least three points are required. (Triangle)
- Points may be shared between polygons. In geometric configurations, we can have the shared points.
- Points in polygons are typically ordered. This order is essential to define boundaries of the polygon.
- Here one polygon require at least three points and points must belong to one polygon.

Question-03)

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.



Solution:



Question-04)

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.

Solution:

