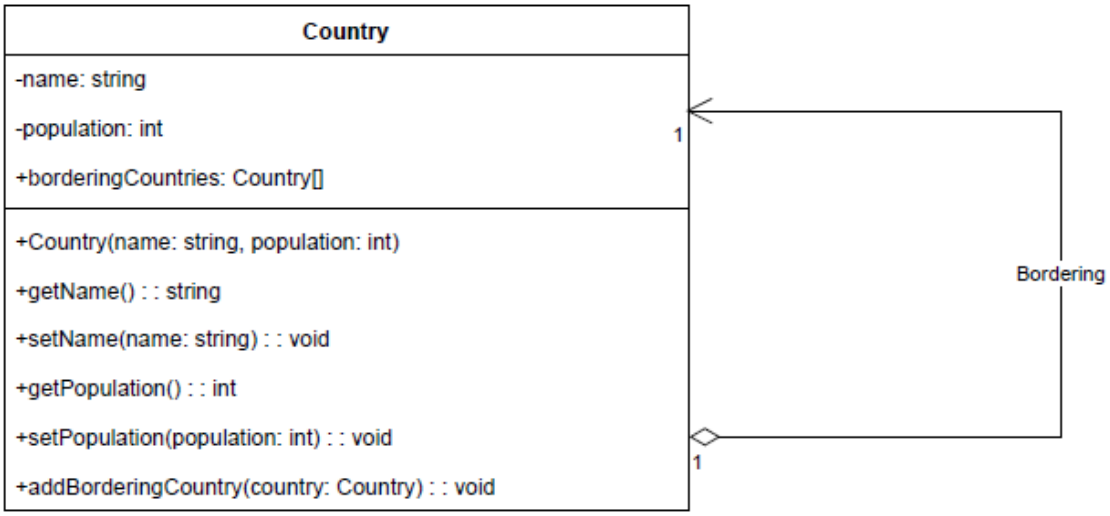
Lab 4 Software Engineering

By Dev Vyas, 202201453

Topic : Use Case Modelling

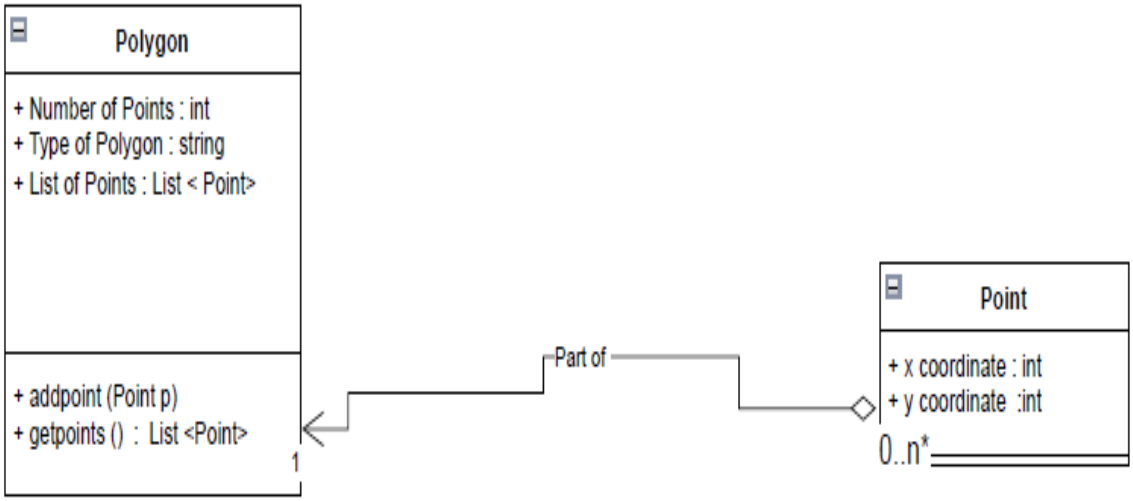
Q.1 Prepare a class diagram for the following object diagram that shows a portion of Europe.



Note

The Multiplicity constraint is 1 : n and not 1 : 1

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.



There is only one multiplicity constraint and that is simply stating the fact that multiple points will participate in order to make a single polygon. The smallest polygon possible is with three points and it would be a triangle. Ordering of the points is very important so the points are stored in ordered lists. Multiple Polygons can share a point.

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.

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.