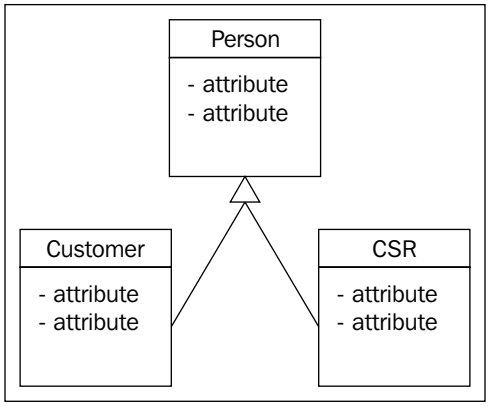
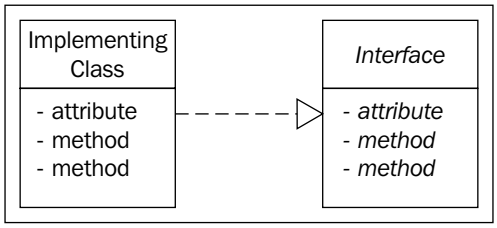


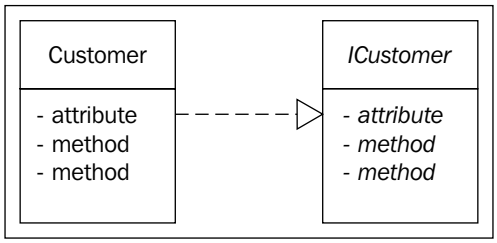
Realization Relationship

Realization is similar to generalization but depicts the relationship between an interface and a class implementing that interface. In UML, realization is depicted with a dashed arrow with a hollow arrowhead (triangle) at one end. A realization relationship exists between the two classes when one of them must realize, or implement, the behavior specified by the other.

For example, a realization relationship connects an interface to an implementing class. The interface specifies the behaviors, and the implementing class implements the behaviors. Here is a diagram illustrating this:



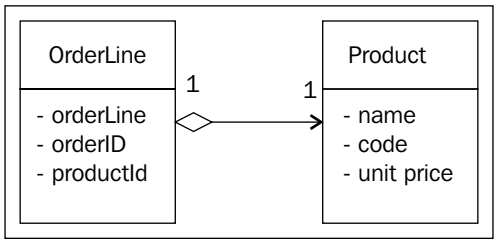
Here, we can see that the arrow points in the direction of the interface. Note that the italicized text in entities that are interfaces. It is UML convention to italicize interfaces.



Multiplicity

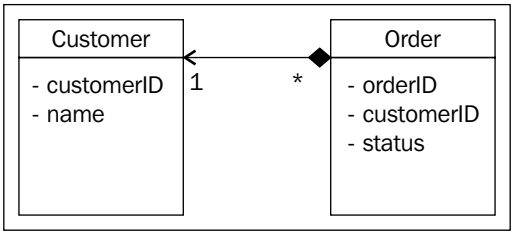
Multiplicity quantifies the relationship between two entities. Multiplicity is closely related to the cardinality of a relationship, which we learned about earlier when discussing ER diagram. Multiplicity indicates how many instances of classes (objects) are related to each other in a UML relationship. The following is a list of different multiplicities we can have between two entities in a class diagram:

- **One-to-one**: For example, one OrderLine object can have only one product. This is depicted as follows:



  Note how we show a 1:1 multiplicity using the number "1" at the end points of the aggregation relationship.

- **One-to-many**: For example, a customer can have many orders. This is depicted as follows:



  Note the text "1" and "*" near the entities; these are multiplicity indicators. In the above example, the multiplicity indicates that one (1) customer can have multiple orders (*). We depict "many" using a "*" (asterisk) symbol.