SOFE 2720 Class Activity – Design Concepts

Learning Objective

This activity emphasizes some important SE design concepts.

Questions

1. Suppose we have an application that must track the contents of several bulk storage units, such as silos, tanks, or bins.

   We can create a *BulkStore* class to model such storage units. Instances of this class are responsible for knowing how much they can hold (*totalCapacity*), how much they currently hold (*currentQuantity*), and how much more they can hold (*remainingCapacity*). There is an invariant relationship between these three quantities captured by the equation *totalCapacity = currentQuantity + remainingCapacity*.

   - Create a class Diagram model of *BulkStore* showing attributes and operators with the proper visibility so that the Information hiding design principle is adhered to.

2. Suppose that a program has two classes that work together to display financial data.

   The *Holdings* class maintains a list of investments, and the *DataDisplay* class makes charts and graphs about investments.

   Interaction scenario #1

   The *Holdings* class responds to changes in its data and tells the *DataDisplay* class what to display. The *Holdings* class has to call *DataDisplay* operations such as *displayInvestment(), displayTotalInvestments(),* or *graphInvestments()*.

   Interaction scenario #2

   Holdings class notifies the *DataDisplay* class whenever its data changes. The *DataDisplay* class is then responsible for *querying* the *Holdings* class to obtain the new data and for displaying it in the right way.

   - Which scenario is more ***tightly coupled?*** Explain your reasoning.