Assignment 2

(may be done by a team of at most two students)
Assigned: Thursday, September 20
Due: Monday, October 1 (11:59 pm)

Part 1: Inheritance to Delegation.

An important technique in the study of Object-Oriented Programming is the use of *delegation* to replace *class inheritance*. A systematic approach for this transformation was given in Lecture 5. Apply this approach to the program `Delegation.java` located at `Piazza → Resources → Assignments`. This program defines classes `A, B, C, D, E,` and `F`. The result of your transformation should be classes called `A2, B2, C2, D2, E2,` and `F2` which correspond to classes `A, B, C, D, E,` and `F` respectively, but do not make use of class inheritance.

In order to develop the transformation, you need to define one interface for each class. Name these interfaces `IA, IB, IC, ID, IE,` and `IF`. Classes `A2, B2, C2, D2, E2`, and `F2` must implement interfaces `IA, IB, IC, ID, IE,` and `IF` respectively. As noted in Lecture 5, you may use optimize the interfaces to remove redundancies.

The file `Delegation.java` contains the definitions of classes `A … F` and also a driver class called `Delegation`. It also contains the outline of the classes `A2 … F2`. Define the interfaces `IA ... IF` and the classes `A2 ... F2` in the same file. Run the program through JIVE and save the object and sequence diagrams as files named `A2_obj1.png` and `A2_seq1.png` respectively. For the object diagram, choose the 'Objects with Tables' option.

***Important**: Full credit will be given only if the transformation is done in a systematic way: In addition to the definition of the interfaces, the delegation hierarchy should be defined; new variables this2 and super2 should be introduced to model this and super respectively; and, delegation and protected abstract methods should be implemented as required.*

***What to Submit*.** Prepare a top-level directory named *A2_Part1_UBITId1_UBITId2* if the assignment is done by a team of two students; otherwise, name it as *A2_Part1_UBITId* if the assignment is done solo. (Order the *UBITId*s in alphabetic order, in the former case.) In this directory, place `Delegation.java, obj.png` and `seq.png`. Compress the directory and submit the resulting compressed file using the `submit_cse522` command. Only one submission per team is required.

Part 2: Generic External Iterator Design Pattern.

Will be assigned on Friday, September 21.

End of Assignment 2