

Assignment # 2 – Object Oriented Languages

(may be done by a team of two students)

Assigned: September 30

Due: October 13, 2015 (11:59 pm)

1. An important technique in the study of Object-Oriented Languages is the use of 'delegation' to replace 'class inheritance'. A systematic way for doing this transformation was given in Lecture 8. Apply this technique to the program in `Delegation.java` located at Piazza → Resources → Homeworks. This program defines four classes, A, B, C, and D where the classes C and D extend class B which in turn extends class A. The result of your transformation should be four classes called A2, B2, C2, and D2 which correspond to A, B, C, and D respectively, but do not make use of class inheritance.

As outlined in Lecture 8, in order to develop the transformation, you need to define interfaces IA, IB, IC, and ID, where the interfaces IC and ID extend IB which in turn extends IA. The classes A2, B2, C2, and D2 implement interfaces IA, IB, IC, and ID respectively.

The file `Delegation.java` contains the definitions of classes A, B, C, and D and also a driver class called `Delegation`. Place the interfaces IA, IB, IC, and ID and the classes A2, B2, C2, and D2 in the same file. Run the program through JIVE and save the sequence diagram in `Delegation.png`.

Important: Full credit will be given only if the transformation is done in a systematic way.

2. Refer to program `TreeGUIBasic.java` located at Resources → Homeworks on Piazza. This program embodies a number of design patterns that we have studied in class.

- (a) Mention all the design patterns present in the program.
- (b) For each design pattern that is present in program, cite the specific code fragment that illustrates the pattern.

Prepare a PDF file, called `DesignPatterns.pdf`, containing your answer and submit it along with the files for problem 1.

What to Submit: Prepare a top-level directory named `A2_UBITId1_UBITId2` if the assignment is done by two students; otherwise, name it as `A2_UBITId` if the assignment is done solo. (Order the `UBITId`'s in alphabetic order, in the former case.) In this directory, place `Delegation.java`, `Delegation.png` and `DesignPatterns.pdf`.

Compress the directory and submit the resulting compressed file using the `submit_cse505` command. For more details regarding online submission, see Resources → Homeworks → `Online_Submission_2015.pdf`.

End of Assignment 2