IN2013, Week 8 – Implementation

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Assignment

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This week we will experiment with some of the features offered by Visual Paradigm to assist with the transition from design models to implementation (writing software code). Useful guidelines on all 3 questions in this tutorial are provided in a Visual Paradigm tutorial available at:

https://www.visual-paradigm.com/tutorials/modelinginnetbeans.jsp

I suggest that you read this tutorial before you attempt the questions.

Question 1. Reverse engineering with Visual Paradigm.

Take a Java project, e.g. one that you have developed in the past, e.g. in the Java module in your first year of study at City University.

- Reverse engineer the source code to produce a class diagram. Analyse the class diagram. Discuss with a colleague how you would change your classes, if at all, if you are to repeat the Java development now. Would the class diagram that you now see after reverse engineering affect the design of your code?
- Reverse engineer the same code to produce a sequence diagram, e.g. for the main method in your Java application. Repeat the exercise for some other methods of your choice. Discuss with a colleague whether the sequence diagram adds clarify.

Question 2. Code generation from UML class diagram

Take the BAPPERS design model (use the .vpp file released with the tutorial) and generate code from it. Compare the attributes generated for the Job class with the attributes of the Job.java class in the generated code. Reflect on how the association between the classes Job and Task has been captured in the generated code. You can experiment with the UML class model by adding/removing roles to some associations between classes and see the effect of the changes on the generated model.

Question 3. Round trip engineering with Netbeans and Visual Paradigm.

Create a "tool chain" by integrating Visual Paradigm with Netbeans IDE following the integration guidelines available at:

https://www.visual-paradigm.com/tutorials/modelinginnetbeans.jsp

Now create a Netbeans project from the BAPPERS code generated in Question 2.

- Discuss with a colleague the differences between the initial BAPERS design class diagram and the model created from the generated code. You will notice that some associations are missing. Why is that?
- Modify the code and then propagate the changes to the model.
- Introduce modifications in the model and propagate them to the generated Java code.

Reflect on the usefulness for a programmer and the potential additional overheads from using the "tool chain".

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