CMPE 202 – Personal Project Extra Credit

UML Parser – Sequence Diagram

ReadME

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This solution takes a java source files folder path and output file name to generate a class diagram from the source folder files with the provided file name.

Three tools are used in this solution:

1. AspectJ – for tracing the method calls
   https://eclipse.org/aspectj/

2. PlantUML – for generating the sequence diagram
   http://plantuml.com/

3. Graphviz – for creating diagram.
   http://www.graphviz.org/

Why PlantUML?

There are options for creating diagrams online. But the drawback of using online tools is that we need an internet connection to get the diagram generated. The diagram will not get created if there is no internet connection.

Also, I had two create solutions for generating two diagrams – class and sequence diagrams. PlantUML generates both class and sequence diagrams. Less time is required to study a tool that can be used for both the solutions.
Therefore, I have used PlantUML tool in this solution.

Why AspectJ?

Generating sequence diagram from dynamic analysis requires trace of method calls when we run the source code. AspectJ is easy to understand and use. Documentation is easily available for all the methods available for AspectJ.

Dependencies

The solution has dependency on the jar files of these tools:
aspectjrt.jar
plantuml.jar

Code flow in the solution

1. Accept input source folder path and output file name from user. The output file name will be "`OutputSequenceDiagram.png`" if no name is provided.
2. Get all the java files in the folder path.
3. Inject TraceAspectSource.aj and aspectjrt.jar in source folder path.
4. Run the source code:
   i. Compile the source code with injected aspectj file using injected aspectjrt jar file.
   ii. Run the Main.java file in source folder.
   When the source code is run, the injected aspectj trace file traces all the methods, its parameters, return type and participants and output grammar for trace as console output.
5. Create grammar from the console output.
6. Create sequence diagram from the generated grammar using PlantUML.

References

1. http://www.eclipse.org/aspectj/doc/released/runtime-api/org/aspectj/lang/JoinPoint.html
2. http://docs.oracle.com/javase/6/docs/api/java/lang/reflect/Method.html
3. http://docs.oracle.com/javase/6/docs/api/java/lang/Class.html
4. https://eclipse.org/aspectj/
5. http://plantuml.com/starting
6. http://plantuml.com/sequence-diagram
7. https://www.safaribooksonline.com/library/view/aspectj-cookbook/0596006543/