EECS 4302 Winter 2020
Project Milestone 3
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Once the input file is ready, the jar file, ProgramApp, will take two arguments to generate the output file. The first argument is the input file, and the second argument is the output file (you can specify the extension you'd like, either .txt for a text file or .als for an Alloy file). Note that .txt files can be loaded into Alloy, but will result in syntax errors. We gave the user the freedom to specify .txt in the case they would like to simply read the output file in text format.

Generating output file:
Example (assuming you are in the directory where *ProgramApp.jar* is)
```
java -jar ProgramApp.jar ./tests/input-1.txt ./tests/output-1.als
```
or
```
java -jar ProgramApp.jar ./tests/input-1.txt ./tests/output-1.txt
```

Once the output file is generated, there are two ways to load it to Alloy:

Loading using Command-Line:
Assuming you are in the directory where the Alloy jar file is, *org.alloytools.alloy.dist.jar*, and the CLASSPATH is properly set. You can load the file using this command:
```
java -cp org.alloytools.alloy.dist.jar
edu.mit.csail.sdg.alloy4whole.ExampleUsingTheCompiler <.als file>
```

Note that the command is all in one line, as in, there is a space after the alloy jar file and the second line follows.

In the output, for predicates, if the *OUTCOME* is unsatisfiable then that means the post-condition is valid, and vice-versa (satisfiable => invalid post-condition). For assertions, if the *OUTCOME* is valid, then the assertion is valid, and vice-versa. A GUI will appear showing the instances (counter-examples) of the assertions. Note, not all assertions/predicates will have an instance in the GUI.

Reading the command-line printed output, especially for assertions, is confusing. There is another way to load the .als file into Alloy, using the GUI.

Loading using Alloy Analyzer GUI:
Double-click the Alloy jar file to open the Alloy GUI. Then you can load the .als file by clicking the 'Open' button and clicking the appropriate file.

Now that the file is loaded, you can execute the predicates/assertions by clicking the 'Execute' tab. You can run them individually or run them all at once by clicking 'Execute All'. Alloy will then print the output in the GUI itself and load the instances in a new window.