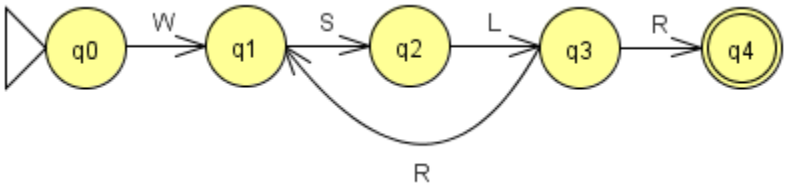
Convert NFA to DFA – Exercise

Problem:

Let us consider the following algorithm for washing hair.

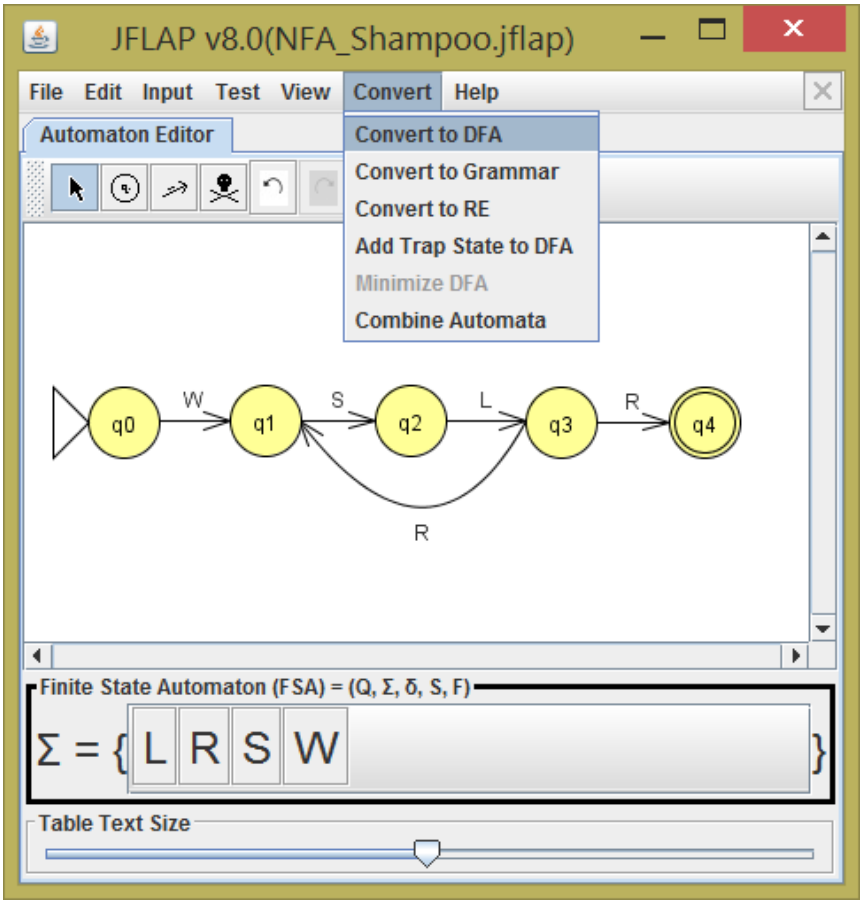
1. Wet hair. (W)
2. Add shampoo to hair. (S)
3. Lather hair. (L)
4. Rinse hair. (R)
5. Repeat at Step 2.



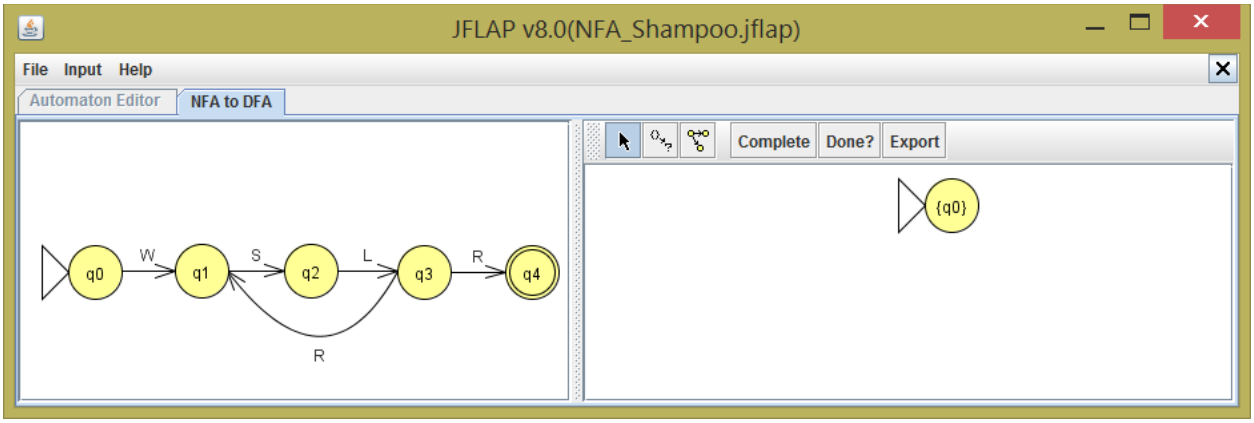
The NFA is given for the hair washing process. Convert this to a DFA.

Solution:

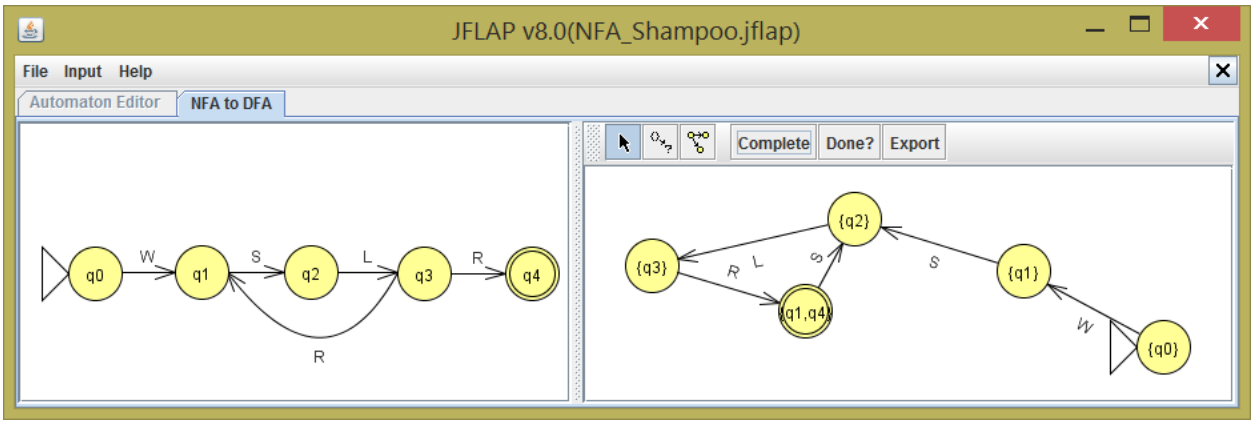
Create the NFA above in JFLAP. Click *Convert* > *Convert to DFA*.



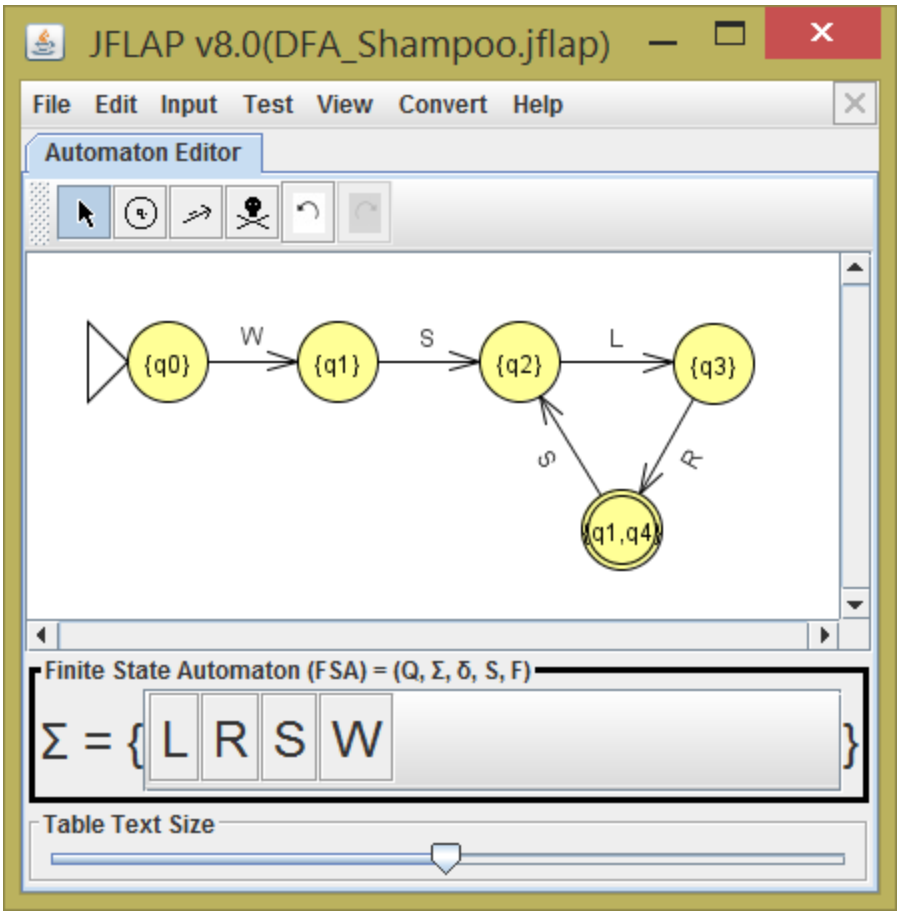
The unfinished DFA equivalent is started on the right-hand pane of the screen.



Click the *Complete* button and the DFA is completed.



Click *Export* to bring the DFA to its own work area. Click *OK* on the confirming message. Reposition the states so that the DFA is readable. Save this as its own JFLAP file for future reference.



Lastly, we may use JFLAP for the equivalence of two FAs. We now compare the original NFA and the converted DFA to see if they are equivalent. To do this, be sure that both FAs are open on JFLAP. On one of the two windows, choose *Test* > *Compare Equivalence*. Select the other FA when asked for *Compare Against FA*. JFLAP should verify that they are equivalent.