CSE 390z: Mathematics for Computation Workshop

QuickCheck: DFAs, RegExs, and CFGs Solutions

Please submit a response to the following questions on Gradescope. We do not grade on accuracy, so please submit your best attempt. You may either typeset your responses or hand-write them. Note that hand-written solutions must be legible to be graded.

We have created **this template** if you choose to typeset with Latex. **This guide** has specific information about scanning and uploading pdf files to Gradescope.

0. Constructing Languages

Let L be the set of all binary strings that start with 0 and contain 1010 as a substring.

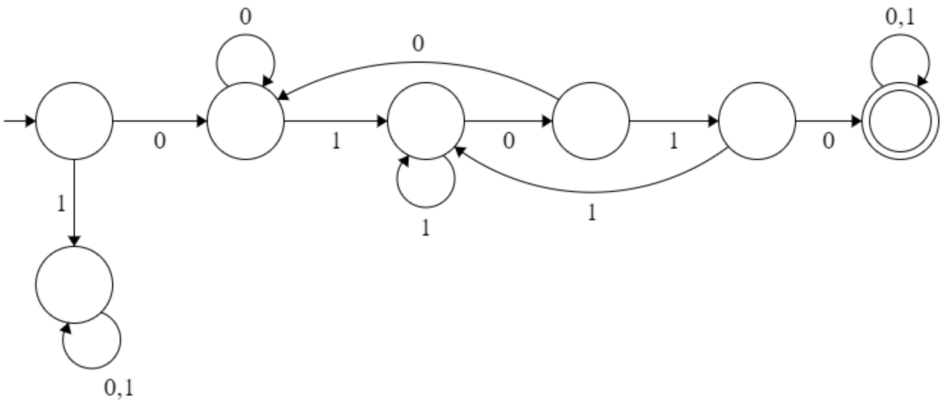
(a) Construct a regular expression that matches L.

Solution:

$0(0 \cup 1)^*1010(0 \cup 1)^*$

(b) Construct a DFA that accepts L.

Solution:



(c) Construct a CFG that generates L.

Solution:

$\mathbf{S} \rightarrow 0\mathbf{B}1010\mathbf{B}$
$\mathbf{B} \rightarrow \mathbf{B}0|\mathbf{B}1|\epsilon$

1. Video Solution

Watch **this** solution video **after** making an initial attempt. Then, answer the following questions.

(a) What is one thing you took away from the video solution?

(b) What topic from the quick check or lecture would you most like to review in workshop?