

Your name: Joshua Hoshiko

Assignment name: Homework 5

Date submitted: 10/09/19

Time spent on assignment: ~5 Hours

“How’d it go?” The assignment went well. A lot of it is trial and error, but overall I’m pleased with the results.

Any remaining questions on the material? I don’t think I have any that I can think of.

Who you collaborated with or got help from (if anyone), and what references you consulted beyond the text and course notes. This assignment was completed alone.

If this is an incomplete assignment, what is missing, or not working? Be specific. This assignment is complete.

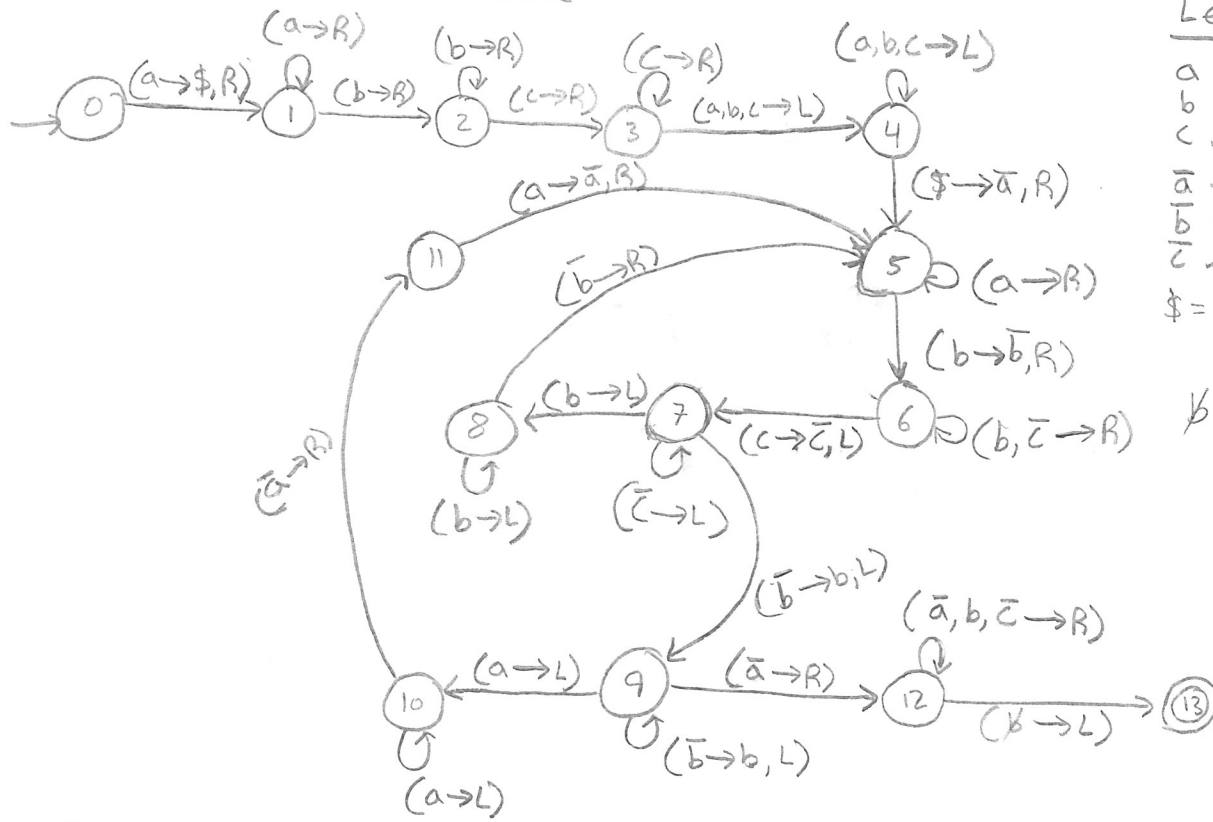
Additional discussions specified for an individual assignment. None.

Anything else? No, but thank you!!

Part 1

① $a^i b^j c^k, k \geq i \times j$

good strings
aabbcc aaaaabcccccccc
aabbccccc



Legend

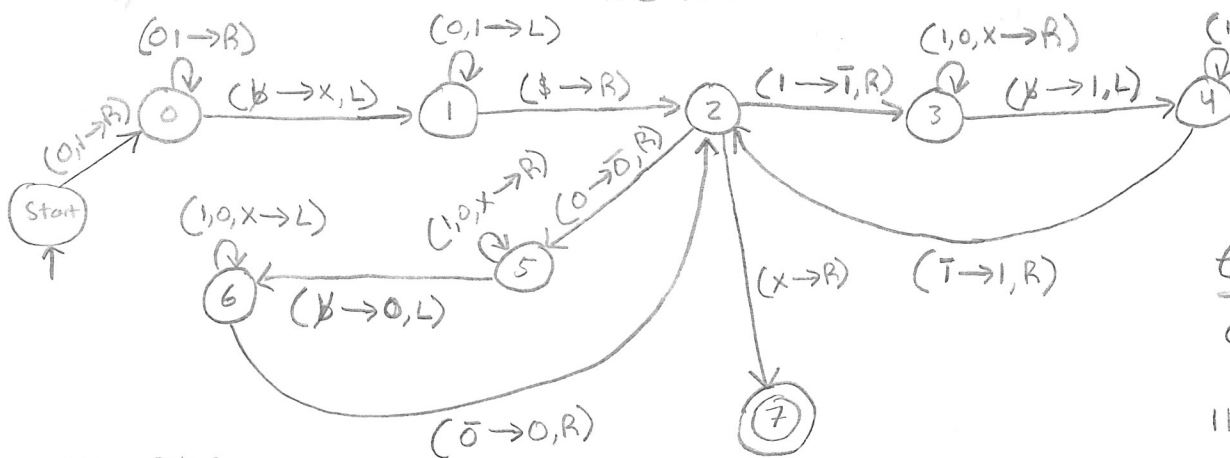
$\begin{matrix} a \\ b \\ c \end{matrix} \} \Sigma$
 $\begin{matrix} \bar{a} \\ \bar{b} \\ \bar{c} \end{matrix} \} \text{marked characters}$
 \$ = beginning of file
 that is also an 'a'
 b̄ = blank

Part 2:

① Copy a non-empty input string $\Sigma = \{0, 1\}$

* Assume '\$' at beginning of tape*

Plan: First, add an x at the end of the string. Then, slowly copy each character into the next available blank space.



Legend

$\{1, 0\} = \Sigma$
 $\{1̄, 0̄\} = \text{marked char}$
 \$ = Start of tape
 b̄ = blank

test strings

0101	1
101	0
110010	E

assumptions

- String is at least one character in length
- '\$' marks the beginning of the tape

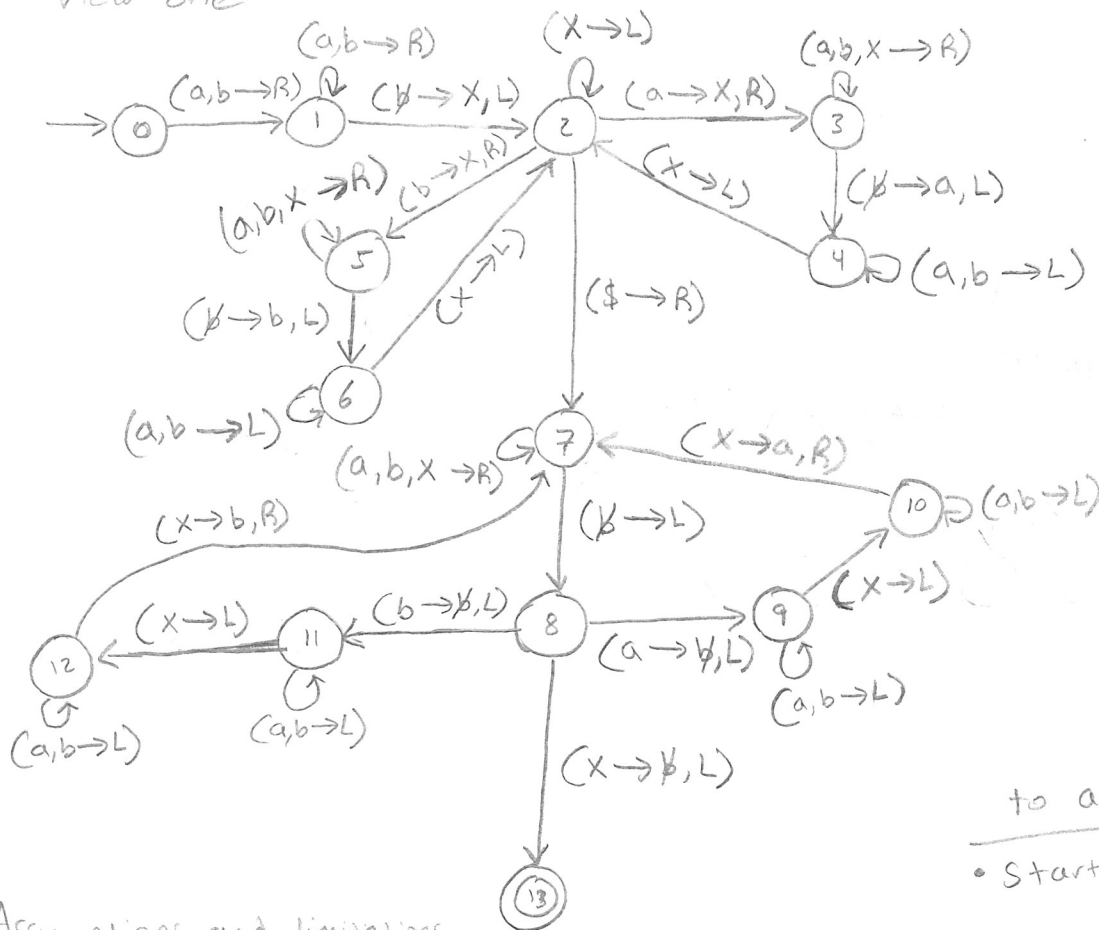
to accept 'E' as a string

- Start at state '0' instead of "Start" state

3. Reverse a string $\Sigma = \{a, b\}$

* assumes '\$' at Start of tape *

Plan: First, add an # at the end of the string. Then, Copy the string in reverse. Finally, Overwrite the old String with the new one



test strings

ab
abbab
a
b
ε

Legend

$\{a, b\} = \Sigma$
 X = marked char
 $\$$ = tape start
 ϕ = blank

to accept 'ε'

- Start at State 1

Assumptions and limitations

- Assumes '\$' marks the beginning of the tape