

Quiz: Pushdown Automaton / Conversions to and from CFL and CFG

- Due Apr 27 at 11:59pm
- Points 55
- Questions 6
- Available Apr 21 at 12am - May 4 at 11:59pm
- Time Limit None
- Allowed Attempts 2

This quiz was locked May 4 at 11:59pm.

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	48 minutes	55 out of 55

❗ Correct answers are no longer available.

Score for this attempt: 55 out of 55

Submitted Apr 27 at 11:18pm

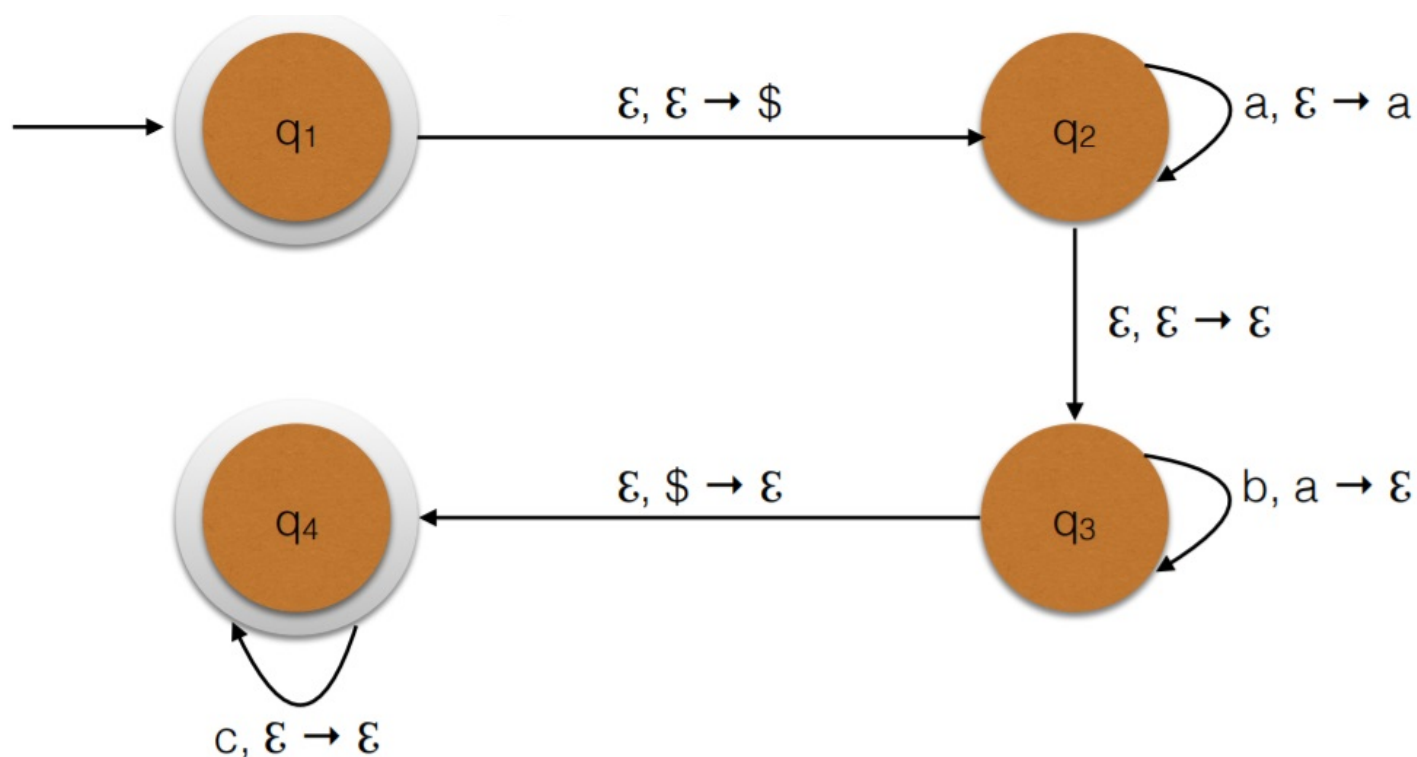
This attempt took 48 minutes.



Question 1

10 / 10 pts

Assume that the following string "aaabb" is entered into the following PDA:



At the end of the string, what is the topmost element of the stack? ,

what about the second topmost element of the stack?

Answer 1:

a

Answer 2:

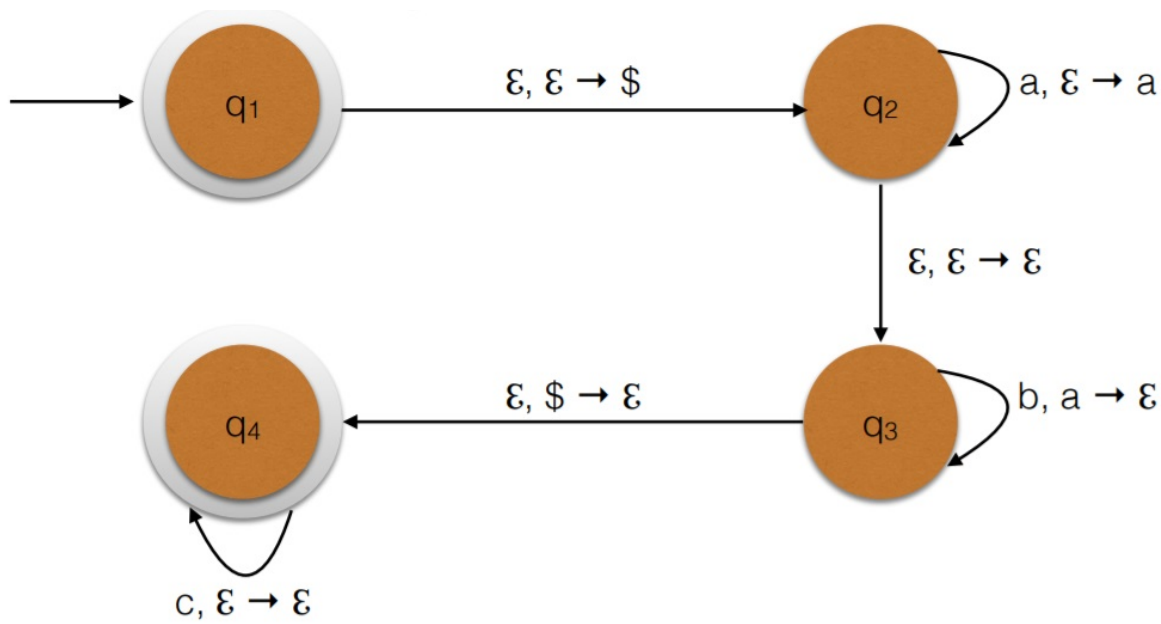
\$

⋮

Question 2

10 / 10 pts

Select all the example strings that are accepted by the following pushdown automaton:



q1 and q4 are the final states.

- ☐ aaaaaabbbbbccc
- ☐ aaaaaabbbbb
- ☒ ccccccc
- ☒ ϵ
- ☐ cccbbbbbbaaaaa
- ☒ aabbcc
- ☐ aaabbcccccccccccaabb
- ☒ aaaaabbbbbccc



Question 3

5 / 5 pts

Any problem that can be solved using a finite state machine, it can also be solved using pushdown automaton.

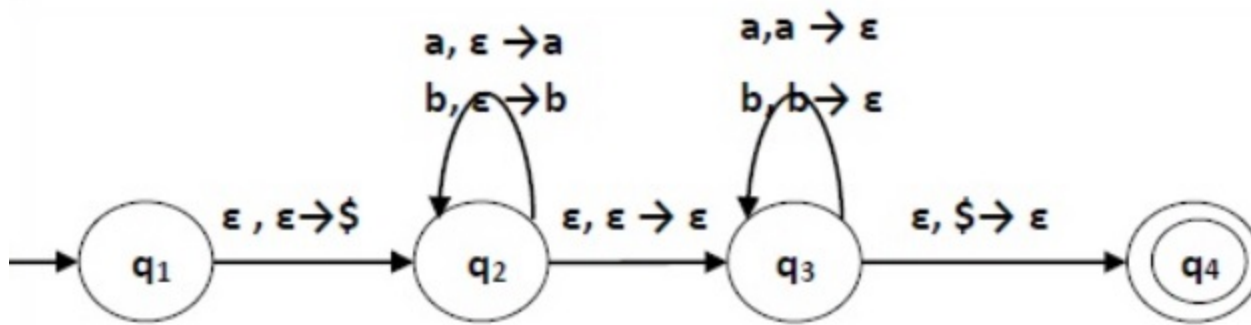
- ☒ True
- ☐ False



Question 4

10 / 10 pts

Assume that the following diagram for the Pushdown Automaton (PDA) is given:



Now assume that we scan (read) input string of "ababbaba".

At the end of the green string (i.e. ababba), the PDA is in which state?

At the end of the green string (i.e. ababba), What is the top element of stack

, what about the second topmost element of stack?

what about the third topmost element of the stack?

What is the top element of the stack before arriving to the state q4?

Answer 1:

q3

Answer 2:

b

Answer 3:

a

Answer 4:

\$

Answer 5:

\$

⋮

Question 5

10 / 10 pts

Transition function of a Pushdown Automaton maps a 3-tuple (q, A, B) to a 2-tuple (p, C) , where 'q' is the state before the transition, and 'p' is the state after the transition. A belongs to the input alphabet of the automaton. After we reach to the state 'p', what is the element that is located on the top of the stack? , How about when we were in state 'q', what was the element on the top of the stack?

What operation are you doing on the stack: First , then

Answer 1:

C

Answer 2:

B

Answer 3:

pop

Answer 4:

push



Question 6

10 / 10 pts

Pushdown Automaton is like having a Finite State Machine along with [ans1], therefore it can have memory.

Quiz Score: 55 out of 55