Regular Expressions

Back to Week 5

2/2 points earned (100%)

Quiz passed!

1 / 1 points

1.

(seed = 50548)
Consider the NFA for the regular expression

(A ((C * B) | A) *)

with match transitions

0	1	2	3	4	5	6	7	8	9	10	11	12	13
(()	(A)----->	(()	(()	(C)----->	(*)	(B)----->	())	(|)	(A)----->	())	(*)	())	( )

and epsilon transitions

0->1
2->11
2->9
2->3
3->4
4->5
5->6
5->4
7->8
8->10
10->11
11->12
11->2
12->13

Give the set of states (in ascending order) that the NFA could be in after reading the following sequence of 6 characters:

A A B B B C

4 5 6

Correct Response

```
The correct answer is: 4 5 6

Here are the sets of reachable states after reading in the first i characters
(and following epsilon-transitions):

 i   substring     set of reachable states
---------------------------------------------------
 0                 0 1
 1   A             2 3 4 5 6 9 11 12 13
 2   A A           2 3 4 5 6 9 10 11 12 13
 3   A A B         2 3 4 5 6 7 8 9 10 11 12 13
 4   A A B B       2 3 4 5 6 7 8 9 10 11 12 13
 5   A A B B B     2 3 4 5 6 7 8 9 10 11 12 13
 6   A A B B B C   4 5 6
```

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1 / 1 points

2.

```
(seed = 50828)
Compute the NFA that corresponds to the following regular expression using
the NFA construction algorithm described in lecture and in the textbook:

     ( ( ( D A * ) | C ) * B )

Here are the match transitions:

    0       1       2       3       4       5       6       7       8       9       10      11      12      13
   (()     (()     (()     (D)----->(A)----->(*)     ())     (|)     (C)----->())     (*)     (B)----->())     ( )


Which of the following are edges in the epsilon-transition digraph?
```

☐ 5->5

Un-selected is correct

☐ 2->3

Correct

```
Here are all of the edges in the epsilon-transition digraph:
 0-> 1
 1-> 2
 1-> 8
 1->10
 2-> 3
 4-> 5
 5-> 4
 5-> 6
 6-> 7
 7-> 9
 9->10
10-> 1
10->11
12->13
```

- [x] 5->4

Correct

```
Here are all of the edges in the epsilon-transition digraph:
 0-> 1
 1-> 2
 1-> 8
 1->10
 2-> 3
 4-> 5
 5-> 4
 5-> 6
 6-> 7
 7-> 9
 9->10
10-> 1
10->11
12->13
```

- [x] 7->9

Correct

```
Here are all of the edges in the epsilon-transition digraph:
 0-> 1
 1-> 2
 1-> 8
 1->10
 2-> 3
 4-> 5
 5-> 4
 5-> 6
 6-> 7
 7-> 9
 9->10
10-> 1
10->11
12->13
```

☐ 7->10

Un-selected is correct

■ 4->5

Correct


```
Here are all of the edges in the epsilon-transition digraph:
 0-> 1
 1-> 2
 1-> 8
 1->10
 2-> 3
 4-> 5
 5-> 4
 5-> 6
 6-> 7
 7-> 9
 9->10
10-> 1
10->11
12->13
```


☐ 6->5

Un-selected is correct