Quiz 9

Due Oct 24 at 11:59pm   **Points** 6   **Questions** 6
Available Oct 20 at 11:59pm - Nov 21 at 11:59pm   **Time Limit** 30 Minutes

Instructions

Quiz 9

Attempt History

	Attempt	**Time**	**Score**
LATEST	**Attempt 1**	30 minutes	4.75 out of 6

Score for this quiz: **4.75** out of 6
Submitted Oct 23 at 7:34pm
This attempt took 30 minutes.

Question 1   0.75 / 1 pts

Suppose L is a language over alphabet Σ. Suppose L is accepted
by a finite automaton having m states. Then, every long string
w ∈ L satisfying |w| ≥ m can be split into three strings w = xyz, where y is
the string of the first loop.
Which of the following conditions are true by Pumping Lemma

```
(I) |xy| ≤  m
(II) |xy| <  m
(III) |y| ≥ 1
(IV) |y| > 0
(V) |y| ≥ 0
(VI) For every i ≥ 0, the string xyⁱz ∈ L
(VII) Except for i=0. For every other i > 0, the string xyⁱz∈ L
(VIII) x and z have to be non-empty
```

Correct!   ☑ VI

          ☐ V

☐ VIII

☐ VII

orrect Answer   ☐ IV

Correct!   ☑ I

Correct!   ☑ III

                     ☐ II

Question 2   1 / 1 pts

Given the following languages:

$L_1 = \{a^n \mid n \geq 0\}$ $L_2 = \{a^n b^n \mid n \geq 0\}$ $L_3 = \{a^n b^m \mid n,m \geq 0\}$

Which of the following languages are regular:

```
(I)    L₁
(II)   L₂
(III)  L₃
(IV)   L₁ ∪ L₂
(V)    L₁ ∪ L₃
(VI)   L₂ ∪ L₃
(VII)  L₁ ∩ L₂
(VIII) L₂ ∩ L₃
```

Correct!   ☑ VI

Correct!   ☑ III

                     ☐ II

                     ☐ VIII

Correct!   ☑ VII

Correct!

☑ V

Correct!

☑ I

☐ IV

Question 3   1 / 1 pts

Which of the statements are true:

(I) Pumping lemma for regular languages is used to show that a language is regular.

(II) According to the "Pigeonhole" Principle if a a string w (|w|>m) belongs to L (with m state DFA) , then the path from the initial state to the final state will have at least one state visited at least twice.

```
(A): Both statements are true
(B) Both statements are false
(C) (I)  is true and (II) is false
(D)  (II) is true and (I) is false.
```

○ B

○ A

○ C

Correct!

⦿ D

Question 4   1 / 1 pts

```
Given languages:
(I) {aⁿbⁿ|n>=0}
(II) {aⁿbaⁿ|n>=0}
(III) {w∈{a,b}*|number of a's =number of b'S}
```

```
(IV)  {w∈{a,b}*}
```
Which of them are **not** regular?

Correct!

- ☑ II

Correct!

- ☑ III

Correct!

- ☑ I

- ☐ IV

Question 5   1 / 1 pts

```
Which of the following language is regular?
I) {aⁱbⁱ|i>=0}
II) {aⁱbⁱ|0<i<5}
III) {aⁱbⁱ|i>=1}
IV) {aⁱbᴶ|i,J>1}
```

Correct!

- ☑ II

- ☐ I

Correct!

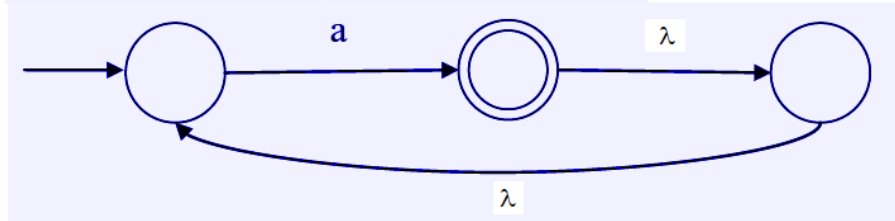- ☑ IV

- ☐ III

Question 6   0 / 1 pts

What is the complement of the language accepted by the NFA shown below?

A $\emptyset$

B $\{\lambda\}$

C a^*

D a^+

A

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orrect Answer

B

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ou Answered

D

C

Quiz Score: **4.75** out of 6