

Midterm



FRIDAY, 3 MARCH 2017
1:25–2:15 PM

There are five problems, each worth five points for a total of 25 points. Show all your work. Answers will be awarded. Space is provided on the test for your work. You may use a book for additional workspace, sign it and return it with the test. No notes, no collaboration.

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Problem	Credit
1	
2	
3	
4	
5	
Total	

1. Give an NFA string in $\{0, 1\}^*$ that contains the substring 101101



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2. Give a DFA string in $\{0,1\}^*$ that contains the substring 101101



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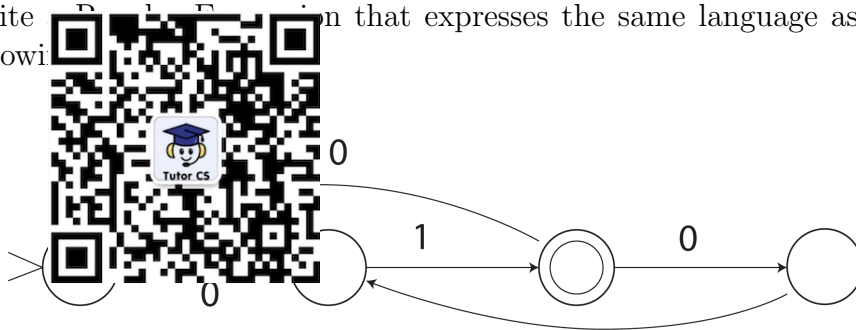
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3. Write a regular expression that expresses the same language as the following



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4. The language $\{ (0^i 1^j) \mid i \geq j \}$ subset of $\{0, 1\}^*$ is accused of being non-regular. The Prosecutor proceeds in the Court of Logic under the rules of the Advocate to get a guilty verdict (i.e. show that the language is not regular).



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5. The language $\{ (0^i 1^j) \mid i \geq 0 \}$ subset of $\{0, 1\}^*$ is accused of being not regular. The Advocate proceeds in the Court of Logic under the burden of proof to show that the language is regular. The Prosecutor to get an acquittal (i.e. show that the language is not regular).



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