CS 205: Formal Languages, Automata Theory and Computation
Homework # 2, Winter 2020-21
Due Date: End of Tuesday 02-03-2021

Important

1. Typeset your answers using LaTeX or MS Word. Upload a pdf file to TurnItIn as your submission. Also submit a copy to Teams, so that we can assign marks.
2. Identical answers by two students on the same problem will incur zero marks for both students for the problem.
3. Copying answers from the Internet will also be penalized by awarding zero marks.
4. Turnitin will be used to detect all types of copying. You must submit your answers in Turnitin.
5. Include your name and roll number at the top of your answer script.
6. Late submissions will incur 10% deduction for each day of delay from the total marks obtained.

1. Let L be the following language over the alphabet $\Sigma = \{0, 1\}$.

$$L = \{x \in \Sigma^* \mid x \text{ can be written as } w1^n \text{ where } |w| = n\}.$$

Show that L is not regular by using the Myhill-Nerode theorem.

2. Let L be the following language over the alphabet $\Sigma = \{0, 1\}$.

$$L = \{w\bar{w} \mid w \in \Sigma^* \text{ and } \bar{w} \text{ is the bitwise complement of } w\}.$$

Show that L is not regular by using the Myhill-Nerode theorem.

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