CSC 345-01 Assignment #1

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Original Due:  2:00 PM, Thursday, September 23
    Extended:  2:00 PM, Thursday, September 30
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You must complete this assignment by yourself. You cannot work with anyone else in the class or with someone outside of the class. You may not copy solutions from the world wide web.

Submission

i. Choose either (a) handwriting or (b) typing:

a) Write out your answers "neatly" (credit cannot be given for illegible answers) on paper, take photo(s) of your handwritten work, copy and paste the photo(s) into a Microsoft Word document named **A1.docx**.
b) Type your answers in a Microsoft Word document named **A1.docx**

ii. Add a header (below) to your **A1.docx** file. You must replace ***<Your Full Name>*** with your full name

On my honor, ***<Your Full Name>***, this assignment is my own work. I, ***<Your Full Name>***, will follow the instructor's rules and processes related to academic integrity as directed in the course syllabus.

iii. Submit **A1.docx** through D2L.

(1) (5 points) For $\Sigma = \{\mathbf{a}, \mathbf{b}\}$, find a regular grammar that generates all strings of even length.

(2) (5 points) For $\Sigma = \{\mathbf{a}, \mathbf{b}\}$, find a regular grammar that generates all strings with at least two **a**.

(3) (5 points) Find a regular expression for language $L = \{w \in \{\mathbf{a}, \mathbf{b}, \mathbf{c}\}^* \mid w \text{ contains exactly one } \mathbf{a}\}$.
Examples: **a, ab, ba, ca, ac, bca, abb, cccabcb, …**

(4) (5 points) For $\Sigma = \{\mathbf{X}, \mathbf{Y}\}$, find a regular expression for language L that accepts all strings of **X**s and **Y**s such that the second or third position from the end has a **Y**.
Examples: **YX, YY, YXX, YYX, YXY, YYY, XYX, XYY, …**