Homework 6
Com S 331, Spring 2017
Due date: **Wednesday, March 8, 2017**
Please submit the homework via BlackBoard **before the class that day**.

Note: All submissions should be **typed** and in .pdf or .doc(x) format. However, state diagrams can be drawn with hand and presented in the final manuscript as images. We recommend to use Latex for typing homeworks. You **do not** need to formally prove the correctness of your constructions unless a question specifically asks to do so. However, in most cases you need to present a reasonable justification of correctness.

Total points available: 100

0. Read pages 111–125 up to the end of Section 2.2 in the class-book (Sipser, **3rd** edition).

1. **(30 points)** Convert the following CFG into an equivalent CFG in Chomsky normal form, using the procedure given in Theorem 2.9 (in the class-book). Show the grammar after performing each of the four steps (i.e., show the step-by-step conversion).

   $$\begin{aligned} &A \to BAB \mid AB \mid \varepsilon \\ &B \to 00 \mid A \mid \varepsilon \end{aligned}$$

2. **(35 points)** Solve Problem **2.20** from the class-book.

3. **(35 points)** Solve Problem **2.26** from the class-book.