CSI 409 — Fall 2017: Homework #5

Due date: Nov 8

Answer all questions on your own. Turn in your answers at the beginning of class. Write your preferred e-mail address (e.g. zz6000@csc). If you are using more than one sheet of paper, make sure that you staple all the sheets together.

Remember that collaboration of any kind is not allowed.

1. Construct the CYK-table for the string $aabb$ using the following grammar:

$$
\begin{align*}
S & \rightarrow AY \mid a \\
X & \rightarrow AY \\
Y & \rightarrow XZ \mid XB \mid b \\
Z & \rightarrow XB \mid b \\
B & \rightarrow b \\
A & \rightarrow a
\end{align*}
$$

2. Design a pushdown automaton for the following language: (The alphabet is \{a, b\}.)

$$\{ a^n b^{2n} \mid n \geq 1 \}$$