Seminar 6

Exercise 1. Give pushdown-automata recognizing the following languages.

1. $\{a^n b^n \mid n \geq 0\}$
2. the language over $\{"[", "]"\}$ made of all well-paranthesized strings
3. $\{w \in \{a,b\}^* \mid w = w^R\}$, where w^R is the reversal of w
4. $\{ww^R \mid w \in \{a,b\}^*\}$, where w^R is the reversal of w
5. $\{w \in \{a,b\}^* \mid |w| \text{ is even}\}$
6. $\{w \in \{a,b\}^* \mid |w|_a = |w|_b\}$, where $|w|_x$ is the number of occurrences of the character x in the word w.
7. $\{w \in \{a,b\}^* \mid |w|_a = |w|_b\}$, where $|w|_x$ is the number of occurrences of the character x in the word w.

Exercise 2. Could all the languages above have been recognized by a *deterministic* pushdown-automaton?