

Challenge 8 – Pushdown Automata (PDAs)

Suppose the language $L = \{x \in \{a, b\}^* \mid n_a(x) = n_b(x)\}$, where $n_a(x)$ and $n_b(x)$ identify the number of a and b symbols in x, respectively.

- (a) Draw a Pushdown Automaton (PDA) for the language;
- (b) Convert it to a PDA accepting by empty state or by accept state if your PDA accepts by accept state or by empty state, respectively;
- (c) Give a CFG for L by converting the PDA into a CFG;