This thesis deals with text simplification in Czech, in particular with lexical simplification. Several strategies of complex word identification, substitution generation and substitution ranking are implemented and evaluated. Substitution generation is attempted both in a dictionary-based manner and in an embedding-based manner. Some experiments involving people are also presented, the experiments aim at gaining an insight into perceived simplicity/complexity and its factors. The experiments conducted and evaluated include sentence pair comparison and manual text simplification. Both the evaluation results of various strategies and the outcomes of experiments involving humans are described and some future work is suggested.