Aim of the presented work is to explore possibility of automatic morphological paradigms assignment for the Czech words. Theoretical part of our work consists of the problem analysis with emphasized issues we have to deal with. We present four different algorithms for morphological paradigm assignment, using both word form analysis and contextual information processing. Word forms are partitioned into equivalence classes according to their lemma, using another algorithm. We performed more than 250 tests on the various corpus data with the purpose of estimating best method parameters. Presented algorithms are thoroughly described and implemented.