In the master thesis the issue of bayesian approach to stochastic reserving is solved. Reserving problem is very discussed in insurance industry. The text introduces the basic actuarial notation and terminology and explains the bayesian inference in statistics and estimation. The main part of the thesis is framed by the description of the particular bayesian models. It is focused on the derivation of estimators for the reserves and ultimate claims. The aim of the thesis is to show the practical uses of the models and the relations between them. For this purpose the methods are applied on a real data set. Obtained results are summarized in tables and the comparison of the methods is provided. Finally the impact of a prior distribution on the resulting reserves is showed.