According to the rules stated in the Basel II document banks are obliged to calculate risk capital on the basis of expected value of credit risk and in particular on the basis of some of its characteristics among which is Value at Risk (VaR) also ranked. It can be calculated for example by the method stated in Creditmetrics paper. In this thesis we will focus on this method of calculation of VaR which is considered to be a measure of credit risk. Determination of expected value of portfolio which credit risk we are concerned about is in this paper demonstrated by two methods. First one is the method of discounted cash °ow and the second one is the method of risk costs. Estimations of VaR are being performed through the use of simulation of distribution of the value of the portfolio. The work is amended by a particular calculation with real data.