Abstract: In the present thesis, we deal with the principal components analysis. In the first of this text, we study different aspects of principals components, for instance, their derivation for a multidimensional random vector from general distribution or their calculation based on a covariance or correlation matrix. It is also important to choose the proper number of principal components for reducing the dimensionality of data in order to preserve most of information. Theoretical knowledge are illustrated with several examples. In the second part of the thesis, we focus on the value at risk. This term is defined in the text also with several usual formulas to calculate it. Then, we deal with a practical application of this concept and the principal component analysis. Concretely, we analyse the portfolio of some different interest rates to obtain the value at risk in some cases.