Abstract: The goal of this thesis is to summarize three basic principles of solving multi-objective programming problems. We focus on three approaches: a linear combination of objective functions, $\varepsilon$-constrained approach and a goal programming. All these methods are subsequently applied to US data. We consider monthly excess returns of ten US representative portfolios based on individual stock market capitalization of equity that serve as basic assets. Our aim is to find the efficient portfolios. Next we investigate a structure of these portfolios and their mutual relationships. Graphic representation of efficient frontiers is also included in the thesis. All calculations were performed using Mathematica software version 8.