Abstract

In this thesis, we study some types of matching problems. Matching problems involve a set of participants, where each participant has a capacity and ranking a subset of the others in order of preference (strictly or with ties). Matching problems are presented in practice by large-scale applications, such as automated matching schemes, which assign participants together based on their preferences over one another. In our work we focus on the two-sided matching problems. Two-sided matching problems consist of a two disjoint sets of participants, where each participant has a capacity and also ranks a subset of the other set of participants in order of preference (strictly or with ties). In the thesis we present a new model for one problem of two-sided matching problems which is the student project allocation problem.

To help in understanding our work we use visualization. Visualization is the process of transforming information into a visual form, enabling users to observe the information or we can say visualization is any technique for creating images, diagrams, or animations to communicate a message. We understand a message much faster when seeing a picture instead of reading, or hearing, an equivalent textual description, in our daily life. So by using visualization to explain a new algorithm will help to understanding it.

In chapter 1, we give a brief review on visualization. In that chapter we describe some different methods to visualize an algorithm and also we give some example on the visualization.