This work deals with the theory of integer programming. After defining the basic concepts, it presents two algorithms suitable for solving integer problems. Firstly, it talks about the branch and bound algorithm and secondly, it talks about the cutting plane algorithm. Next, it presents an assignment problem, which is a special case of integer programming. The work describes the hungarian method and explains its usage on exemplary examples. The last part of the work solves the real problem from the practice. The aim of this section is to find an optimal schedule for classes one to seven of the selected elementary school. It introduces input data processing, creating a model and the solution. Obtained results are accompanied by a brief discussion.