COMPUTERIZED DRIVER SCHEDULING SYSTEM

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Abstract

For every transport company, the need to generate a vehicle timetable and allocate drivers, that conforms the given schedule involves vast amount of time and efforts. Usually the process of schedule creation and updating is slow and cumbersome when it is done manually. To overcome such difficulties, computers can be used to assist such processes. This will help to save time and produce more efficient schedules than manual schedulers do. The duty allocation process for vehicle drivers is a very complex process, because it involves taking into consideration a set of constraints related to contractual labour and company rules. The ability to develop a model for driver allocation process with a given predefined vehicle timetable that can be applied in real-life situations is an important research area. So, the main objective of the research is to develop an algorithm based on greedy approach for driver duty allocation process. This algorithm can be incorporated with an information system that can be used as a tool to automatically generate a driver schedule, based on a given vehicle timetable. Alongside with this objective, the project also involves development of a unified system, which will contain different algorithms for driver scheduling.

This report closely investigates a driver scheduling problem formulated as to find minimum number of drivers required to cover predefined vehicle timetable under contractual rules. A background research presents related information about the problem and describes existing approaches and systems intended to deal with it. The steps of schedule production and the techniques built-in in the systems are discussed as well. Furthermore, report describes architecture of four different algorithms intended to solve the problem, which based on greedy, brute force, heuristics and mathematical programming models correspondently. The idea, architecture and implementation process of the unified system designed throughout the project, which contains set of algorithms mentioned above, is discussed as well. Finally, comparative analysis and evaluation of the algorithms is presented, showing the difference in amount of time required to generate a driver schedule depending on the chosen approach.