Abstract

This thesis tackles the problem of platform allocation to trains at a busy railway station where arrival of the trains can be late or as per schedule. The platform allocation problem considered here involves the arrival of all trains to the station through all entry tracks available to that station. The trains may have to wait at their entry tracks if their designated platforms are not vacant and hence with the arrival of subsequent trains a queue of trains may develop at the respective tracks. In addition preference of platforms for each train is also taken into account while allocating the platforms. Two separate mixed-integer formulations are developed; one for the scheduled arrival of all trains and the other for expected arrival of all trains (where trains can arrive late). In all 29 test problems have been attempted to validate the MP formulations and the results are as expected. In order to make the optimal platform allocation, in situations where trains can arrive late, more user friendly heuristics have been attempted. 228 synthesized test problems have been tried on all the heuristics as well as on the relevant MP formulation in order to evaluate the performance of heuristics with respect to the optimum solution. Based on these comparisons one of the heuristics has been recommended for use.