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## Solving a Demonstration Timetabling Problem

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**Abstract** Many educational institutions regularly deal with the problem of generating timetables for the demonstration of student projects, which often need to be finished within a relatively short period of time. As usual, there is a mix of hard and soft constraints. Hard constraints can arise if at least two members of staff need to attend a demonstration for marking and multiple demonstrations take place simultaneously. Therefore, no member of staff can be timetabled for marking multiple demonstrations at any given time, creating an NP-hard graph colouring problem. Consequently, the relatively small number of available time slots potentially leads to the need for near-optimal colouring. As an example of a soft constraint, to ensure the smooth running of the whole process, the demonstration assignments of the markers should be timetabled close together while still allowing for some short breaks between demonstrations. In this study, we discuss a real-world demonstration timetabling problem which is encountered at the School of Computer Science at the University of Nottingham every year and present the performance of various search approaches. Specifically, we investigated tabu search, simulated annealing, graph colouring and variants of iterative forward search as methods to solve this particular problem. We will present the initial experimental results indicating the success of iterative forward search.

**Keywords** Iterative forward search · Graph colouring · Tabu Search · Simulated Annealing

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