

Universiti Teknologi MARA

**Customs Officers' Cyclical Scheduling
Using Goal Programming**

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STUDENT'S DECLARATION

I certify that this report and the research to which it refers are the product of my own work and that any ideas or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

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ABSTRACT

Scheduling is an important process for every workplace. Currently, the customs officers' schedule-maker at the Royal Malaysian Customs Department (RMCD) in Bayan Lepas, Penang constructs the schedule manually, which is a very inefficient way. Thus, this study will help them arrange schedules in an easier way with less effort and more efficient. The major objective of this study is to build a cyclical work schedule model for customs officers using goal programming. The minor objectives are to develop a new schedule that is fair and considers the working policies and preferences of customs officers, and to ease schedule-makers' task of distributing schedules. This goal programming method considers working policies as hard constraints and the customs officers' preferences as soft constraints. The LINGO 17.0 software was used to run the model. A 12-day 12 customs officers' schedule was built to ease the process of developing the cyclical schedule. The built schedule will then be extended to cover the required total number of 24 customs officers in the department. The result obtained is in the form of an optimal solution where all the study's goals were achieved. The model has generated a balanced work schedule for the workers which satisfy their preferences while also fulfilling the working regulations of the customs department. The customs officers will be separated into four different teams which consist of six members each, and six schedule sets will be applied for each customs officer in each team. The schedule will rotate continuously until all of them get to experience all six sets of their team members' schedule. The schedule will then be cycled again from the starting schedule set after completed 72-days planning period. Other constraints such as public holidays and level of staff's skills can be incorporating into this model for further research.

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