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The Uncapacitated Facility Location Problem: Some Applications in Scheduling and Routing

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Abstract—The uncapacitated facility location problem (UFLP) represents a particular structure in integer linear program, and has widespread applications in real life. In this paper, the applicability of UFLP-model is explored in problems arising in non-locational context. Three seemingly unrelated problems from the area of scheduling and routing are chosen for the purpose and the reported works in which their relationship with the UFLP has been studied are reviewed. These problems are found to have structures similar to a UFLP, and based on this, computationally competitive solution procedures could be developed for them. The study shows that several important problems, quite diverse in application, share common structures with the UFLP, and identification of this commonality can be beneficial from both modeling as well as algorithmic development points of view.

Keywords—Uncapacitated facility location problem, Dynamic lot-sizing, Job-scheduling, Bus route design problem, Set covering problem

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