Special Cases of Dominance in Flowshop Scheduling

R. Moras[1], J. Casteñaeda[1], G. Easwaran[1], and P. X. Uhlig[2]

[1]Engineering Department, St. Mary´s University of San Antonio, Texas, USA

[2]Department of Mathematics, St. Mary´s University of San Antonio, Texas, USA

Corresponding author's Email: rmoras@stmarytx.edu

Author Note: Jerome Castañeda recently earned an MSIE from St. Mary´s University, when Profs. Rafael Moras, Gopal Easwaran, and Paul X. Uhlig serve as faculty members.

Abstract: The flowshop scheduling problem is a mathematical model of an assembly line that describes the flow of a set of jobs as they are processed by a set of machines with respect to a given sequence. The given sequence is maintained as the jobs flow through the machines. It is desired to find a sequence that produces optimal performance measures of the associated flowshop. Historically, special cases of flowshop problems have been found and exploited to assist in finding the best sequence. We describe a class of new special cases, develop an algorithm to generate the new special cases, and provide numerical insights into the new special cases. We focus on analyzing the solution space of the new special cases, as opposed to finding an optimal solution.

Keywords: Flowshop Sequencing, Dominance, Antithetic Sequences