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Applying Exact Algorithms in a Problem of Manufacturing Network Flow

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Abstract: Nowadays networks have several applications in the industrial world; a very representative scenario is the manufacturing network. Delivering products on time and satisfying quality specifications is the main objective of a manufacture system within a supply chain, however ensuring the flow of raw materials for preventing the system to stop is another task it needs to assure. Sending specific goods through a system originates a scenario called network flow and the principle advantage of this flow is to facilitate the representation of different issues that occur within the manufacturing system. For these settings, exact algorithms are used to solve multiple problems that can be display; these algorithms find a set of potentials solutions, compare them and select the best one. This study focuses in 2 types of exact algorithms, the Dijkstra and Floyd-Warshall algorithms which comparisons are made, describing their advantages and disadvantages in a real-world-case.

Keywords: Exact Algorithms, Manufacturing Network Flow, Dijkstra, Floyd-Warshall.