Network optimization model to solve a distribution problem for a large company in a business sector

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Dedication

This project is dedicated to our beloved parents and teachers. Parents support us morally. Teachers support us technically and educated us excellently so that we gave our best to them. This application is dedicated to our university, to the society and all the special community of industries having transportation problems for their goods etc. The utility of this problem includes locating the fine delivery course from a factory to a warehouse where the street network has some potential and fee interconnected.

Final Approval

Panel of Examiners

1) **Head of Department** _____
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2) **Program Director (Final Year Projects)** _____
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3) **Supervisor** _____
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Thank you Almighty ALLAH, for continually being there for us. This undertaking is simplest beginningof our life by giving the best of ours to others.

Abstract

For designing network graphs network providesmost beneficial techniques because of their efficient mathematical structure that can be easily portrayed with graph. For manipulation minimum cost flowwhich is the important problem in optimal design generalized network with some constraint a case study of network simplex algorithm is described in this paper. Flow problem in the network can be communicate by the parameters that includes nodes, arcs and external flow for every node that is deliver to the demanded node.Optimization problem is to send flow from source to demand node in such a way total cost through the arc could be minimum and get the efficient path from all route that optimization for network flow is gain by the technique named as network simplex method.

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Definitions and Acronyms

The Minimum Cost Flow (MCF) Problem is to send flow from a set of supply nodes, through the arcs of a network, to a set of demand nodes, at minimum total cost, and without violating the lower and upper bounds on flows through the arcs. The MCF framework is particularly broad, and may be used to model a number of more specialized network problems, including Assignment, Transportation and Transshipment problems, the Shortest Path Problem, and the Maximum Flow problem.

1. Introduction
1.1 Problem Overview (single commodity)

The case examine of the proposed model for a renowned company situated in Pakistan, that's liablefor distribution of all varieties of food merchandise is discussed in this paper.The firm is whose dealer and it has workplaces over 35+ distinctive locations. The distribution of products is as:

- There are few deliver points (supply) with the confined and specified capacityfor the product having single article.
- There also are a few points with designated demand seeking to acquire the good.
- Some items should be stored necessarily and sent to the demand points after a while. Due to the time difference among two node.
- In every target, there is a distribution center having a constrained limit of λ, which may once in a while reach to zero or less because of the overall occupation of the warehouse through different items.