Abstract

Security of a network is important to all organizations, personal computer users, and the military. With the invention of the Internet, major concern is about the security and the history of security allows a better understanding of the emergence of security technology. One of the ways to secure businesses from the Internet is through firewalls and encryption mechanisms. A network can be designed as a sigraph $S$ where every sigraph will have its unique adjacency matrix associated with it. A signed graph (or sigraph in short) $S$ is a graph $G$ in which every edge $x$ carries a value $s(x) \in \{-1, +1\}$ called its sign denoted specially as $S = (G, s)$. Given a sigraph $S$, $H = L(S)$ called the line sigraph of $S$ is that sigraph in which edges of $S$ are represented as vertices, two of these vertices are adjacent whenever the corresponding edges in $S$ have a vertex in common and any such edge $ef$ is defined to be negative whenever both $e$ and $f$ are negative edges in $S$. Here $S$ is called root sigraph of $H$. In this paper first we give an algorithm to obtain a line sigraph [1] and line root sigraph from a given sigraph [1], if it exists. This algorithm is an extension of an algorithm given by Lehot [2] in the realm of sigraphs. In the end we will propose a technique that will use adjacency matrix of $S$ as a parameter to encrypt
and forward the data in the form of adjacency matrix of L(S) and will decrypt it by applying inverse matrix operations.

References


Index Terms

Computer Science Applied Mathematics

Keywords

Algorithm, sigraph, line sigraph, root sigraph, sign-compatible, network, network security, encryption, decryption.