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Chapter 1

LABELED PATHS IN CRYPTOGRAPHY

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ABSTRACT

In recent years, Cryptography has emerged as an important area of research for security purpose. With the increased use of the internet, security now becomes an important challenge in today's world. So, many researchers are using various mathematical concepts in Cryptography to increase security. The field of Graph Theory, especially Graph Labeling and labeled graphs can be used as important tools for encryption for greater security as compared to many conventional methods used in Cryptography. In this chapter, the labeled Path graphs with various labeling schemes namely *harmonious, graceful, sequential* and *felicitous* are being presented as the method of choice for encryption and decryption. Certain other mathematical concepts from Linear Algebra also, have been incorporated with these methods to develop the Cryptography algorithms for data transfer with significantly greater security. The concepts of permutations and combinations also have been used for enhancing the hiding of the messages still further.

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