Abstract

Tribonacci String is one combinatoric class that has members in the form of a binary string in which there is no form 111. Gray Code Tribonacci String is a code where the order of occurrences between strings differ by a minimum number of digits. In this study Gray Code that will be used is one that has a Hamming Distance, meaning the appearance of one string with the next string is different only one digit. For example, (0000, 0001, 0011, 0010, 0110, 0101, 0100, 1100, 1101, 1001, 1000, 1010, 1011). This research uses recurrence relation to form Gray Code Tribonacci String with Hamming Distance one. The resulting algorithm is still recursive with complexity n squared. Thus the longer Tribonacci String then the longer the process of formation Gray Code. This is the starting point of the research, developing a loopless algorithm that will reduce the quadratic algorithm from complexity to linearity. Begin by exploring the relation of recurrence, that is for the length of the string 1, 2, 3, and 4 digits. Based on this exploration has generated a loopless algorithm for Gray Tribonacci String code with string length <= 10. Then the loopless algorithm will be implemented using object-oriented programming.

Keyword: String Tribonacci, Tribonacci Number, Gray Code String Tribonacci, loopless Algorithm, Gray Code, Hamming Distance.